EBRSR

Chapter 9

LOWER EXTREMITY MOTOR REHABILITATION INTERVENTIONS



HEART & STROKE FOUNDATION
Canadian Partnership for Stroke Recovery

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Welcome to the 21st Edition of the EBRSR!

The EBRSR was initiated in 2001 with funding from the Heart and Stroke Foundation of Canada. The first edition was published in 2002. It is now in its 21st edition. The Lower Extremity Motor Rehabilitation Interventions is chapter 9 and the largest chapter in the EBRSR. It alone has data on 1,548 RCTs published in English journals up to the end of 2024. Special thanks to Ben Luebke, Sarvenaz Mehrabi, Mohammad R. Safaei-Qomi, and Cecilia Flores-Sandoval for their work on updating this chapter. We are working on the next update.

Robert Teasell MD FRCPC

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Chapter Structure and Format

Each intervention is described in a table that includes the following:

Intervention vs Control		
Author (Year) PEDro Score Sample Size (Start) Sample Size (End) Time Post Stroke Study Design	E: Intervention C: Control Duration (Session length, frequency per week, number of weeks)	Outcome Measure Result (Direction of effect)

Interpretation of Results (Direction of Effect)

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats/no between-group stat indicates the study did not report a between groups comparison for that outcome

Key Points Summary

Effect	Interpretation
+	**Favourable**
–	**Not Favourable**
=	**Mixed Evidence**

Modified Sackett Scale

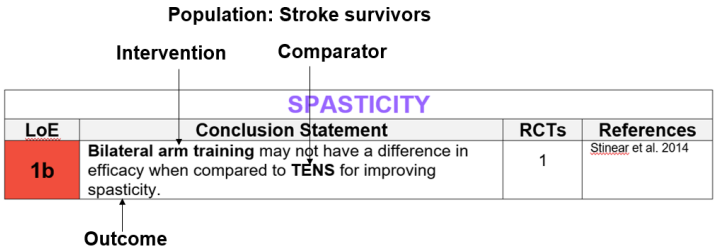
The Modified Sackett Scale was used to determine the level of evidence for each conclusion statement.

Level of evidence	Study design	Description
Level 1a	Randomized controlled trial (RCT)	More than 1 higher quality RCT (PEDro score ≥6).
Level 1b	RCT	1 higher quality RCT (PEDro score ≥6).
Level 2	RCT	Lower quality RCT (PEDro score <6).
	Prospective controlled trial (PCT)	PCT (not randomized).
	Cohort	Prospective longitudinal study using at least 2 similar groups with one exposed to a particular condition.
Level 3	Case Control	A retrospective study comparing conditions, including historical cohorts.
Level 4	Pre-Post	A prospective trial with a baseline measure, intervention, and a post-test using a single group of subjects.
	Post-test	A prospective post-test with two or more groups (intervention followed by post-test and no re-test or baseline measurement) using a single group of subjects
	Case Series	A retrospective study usually collecting variables from a chart review.
Level 5	Observational	Study using cross-sectional analysis to interpret relations. Expert opinion without explicit critical appraisal, or based on physiology, biomechanics or "first principles".
	Case Report	Pre-post or case series involving one subject.

PICO Conclusion Statements

Chapter 9: Lower extremity motor rehabilitation interventions synthesizes study results from only randomized controlled trials (RCTs), all levels of evidence (LoE) and conclusion statements are presented in the Population Intervention Comparator Outcome (PICO) format.

For example:

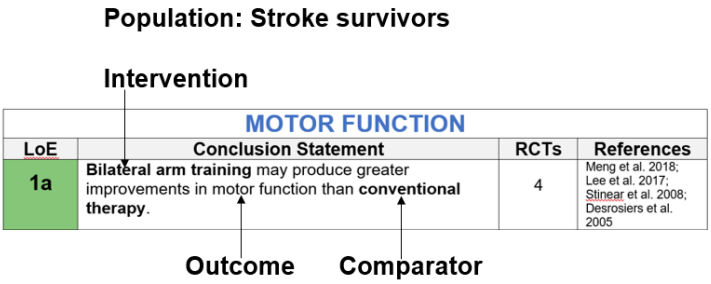


SPASTICITY			
LoE	Conclusion Statement	RCTs	References
1b	**Bilateral arm training** may not have a difference in efficacy when compared to **TENS** for improving spasticity.	1	Stinear et al. 2014

Red statements like above, indicate that the majority of study results when grouped together show no significant differences between intervention and comparator groups.

Green statements indicate that the majority of study results when grouped together show a significant between group difference in favour of the intervention group.

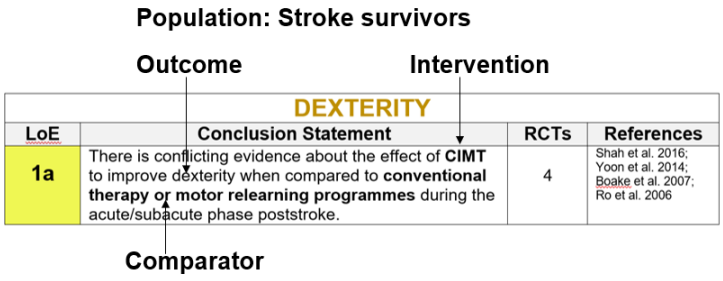
For example:



MOTOR FUNCTION			
LoE	Conclusion Statement	RCTs	References
1a	**Bilateral arm training** may produce greater improvements in motor function than **conventional therapy**.	4	Meng et al. 2018; Lee et al. 2017; Stinear et al. 2008; Desrosiers et al. 2005

Yellow statements indicate that the study results when grouped together are mixed or conflicting, some studies show benefit in favour of the intervention group, while others show no difference between groups.

For example:



DEXTERITY			
LoE	Conclusion Statement	RCTs	References
1a	There is conflicting evidence about the effect of **CIMT** to improve dexterity when compared to **conventional therapy** or **motor relearning programmes** during the acute/subacute phase poststroke.	4	Shah et al. 2016; Yoon et al. 2014; Boake et al. 2007; Ro et al. 2006

Outcome Measures

The Outcome Measure categorization is based on a recently published article:

Teasell, R., Flores-Sandoval, C., Mehrabi, S., Fleet, J. L., Payne, M. W., Viana, R., Peters, S., Bowman, A., & Safaei-Qomi, M. R. (2026). Outcome Measure Frequency in Stroke Rehabilitation Lower Extremity Randomized Controlled Trials and Its Correlation With Research and Clinical Practice Recommendations. Archives of physical medicine and rehabilitation, 107(6), 1416–1428. https://doi.org/10.1016/j.apmr.2026.02.009

Relevant outcome measures, used in 5 or more RCTs, were categorized based on the International Classification of Functioning, Disability and Health (ICF) Domains:

1. Body Functions and Structures
- 1.1 Motor recovery
- 1.2 Biomechanical Gait Measures
- 1.3 Biomechanical Balance Measures
- 1.4 Muscle Strength
- 1.5 Spasticity
- 1.6 Range of Motion
- 1.7 Neurophysiological Measures
- 1.8 Aerobic Measures
- 1.9 Sensory/Proprioception
- 1.10 Pain

2. Activities
- 2.1 Activities of Daily Living
- 2.2. Gait Speed
- 2.3 Gait Endurance
- 2.4 Functional Mobility
- 2.5 Balance
- 2.6 Falls and Fear of Falls

3. Participation
- 3.1 Quality of Life

Other Associated Outcome Measures
- A. Mood
- B. Fatigue and Sleep
- C. Cognition
- D. Upper Extremity

1. Body Functions and Structures

1.1 Motor Recovery

Outcome Measure	Number of RCTs	Description
Fugl-Meyer Assessment (FMA)	357	This stroke-specific, performance-based impairment index assesses motor function, sensation, balance, joint range of motion, and joint pain in patients with post-stroke hemiplegia through observed movements.
National Institutes of Health Stroke Scale (NIHSS)	50	This 15-item impairment scale assesses overall stroke severity across consciousness, vision, motor, sensory, language, and neglect items.
Brunnstrom Recovery Stages (BRS)	36	6-stage scale describing the typical sequence of motor recovery after stroke, from flaccidity to normal coordinated movement.
Rivermead Motor Assessment (RMA)	24	The assessment consists of three domains: gross function (13 items), leg and trunk movements (10 items), and arm movements (15 items). This three-part scale assesses gross function, leg/trunk movement, and arm movement after stroke.
Stroke Impairment Assessment Set (SIAS)	11	Multi-domain battery scoring motor function, muscle tone, sensory function, range of motion, pain, trunk control, and balance after stroke.
Canadian Neurological Scale	9	Assessment used to evaluate and monitor neurological status in patients during the acute phase of stroke. It assesses the level of consciousness, orientation, speech, facial weakness, and motor function of the arm and leg.
Chedoke McMaster Stroke Assessment Scale	7	Comprehensive measures used to assess both physical impairment and functional disability in individuals with stroke. It consists of two components: the Impairment Inventory, which evaluates recovery of the arm, hand, leg, foot, postural control, and shoulder pain, and the Activity Inventory, which assesses gross motor function and walking ability.
Clinical Neurological Deficit Scale	6	Bedside scale quantifying overall neurological deficit severity after a stroke event.
Scandinavian Stroke Scale (SSS)	5	Bedside scale rating consciousness, eye movement, arm/hand/leg motor power, orientation, speech, and gait after stroke.

1.2 Biomechanical Gait Measures

Outcome Measure	Number of RCTs	Description
Step Length/time/width	221	Instrumented gait-lab metrics of the distance, duration, and mediolateral spacing between successive footfalls.
Cadence	203	Number of steps taken per minute while walking
Stride Length/ time/ width	168	Distance, duration, and width of a full gait cycle (heel-strike to the next heel-strike of the same foot).
Gait Cycle phase/time (stance phase/swing phase)	111	Proportion or duration of the gait cycle spent with the foot on the ground (stance) versus moving forward (swing).

Support Time/Period (single and double support time)	109	Time spent bearing weight on one foot (single support) versus both feet (double support) during walking.
Gait Kinetics	106	Investigates the forces and moments of the gait cycle, i.e. ground reaction forces, center of pressure and distribution.
Gait Symmetry	95	Includes stance, spatial, temporal, swing symmetry/ symmetry in any gait phase.
Ankle Kinematics	71	Ankle Joint excursion throughout the stance phase or other phase of gait.
Knee Kinematics	55	Knee Joint excursion throughout the stance phase or other phase of gait.
Hip/pelvis Kinematics	55	Hip/pelvis Joint excursion throughout the stance phase or other phase of gait.
Symmetric/unilateral Weight Bearing	28	Distribution of body weight between the affected and unaffected legs while standing or walking.
Toe angle/ toe off	9	Angle of the foot at, or timing of, the point in gait when the toe leaves the ground.
Heel base placement/ heel rise	7	Position of heel contact at foot strike, or the point in gait when the heel lifts off the ground.

1.3 Biomechanical Balance Measures

Outcome Measure	Number of RCTs	Description
Postural Sway (PS)	43	Instrumented measure of the small movements of the body's center of pressure while standing still.
Limit of Stability	38	Maximum distance a person can intentionally lean or shift their center of gravity without losing balance or stepping.
Weight Distribution	26	Instrumented measure of how body weight is shared between the two feet while standing.
Dynamic Balance Parameters	26	Include quantitative metrics of postural stability during active movement, reflecting the temporal, spatial, and kinematic control of the center of mass such as sway area, sway path, maximal velocity, anteroposterior angle/mediolateral angles, and directional control.
Stabilometry Test (ST)	17	Force-platform test quantifying postural sway/stability while standing. Also known as Static Posturography or Static Balance Assessment.
Postural Control (PC)	13	General instrumented assessment of the body's ability to maintain an upright, stable position.
Overall Stability Test (OST)	8	Computerized platform test producing a composite score of standing balance stability.
Sensory Organization Test	8	Computerized posturography test that manipulates visual and support-surface conditions to assess how a person uses sensory input for balance.

1.4 Muscle Strength

Outcome Measure	Number of RCTs	Description
Isometric/Isokinetic/eccentric muscle force (including maximum voluntary isometric contraction)	122	Dynamometer-measured maximal force a muscle group produces during a static, constant-velocity, or lengthening contraction

Motricity Index	72	Weighted scale summing pinch grip, elbow flexion, and shoulder abduction (or ankle dorsiflexion, knee extension, hip flexion for the leg) to score limb motor strength after stroke.
Medical Research Council Scale (MRCS)	39	It is a measure of overall muscle strength a stroke survivor possesses. The measure consists of 33 functional tasks. Each task is then rated on a 4-point scale (0=cannot complete task, 3=completes task as well as the unaffected side).
Muscle Strength/ Resistance by dynamometer	14	Handheld or fixed dynamometer measurement of the force a muscle group can generate.
Muscle Thickness	14	Ultrasound or imaging measurement of muscle cross-sectional size, used as a proxy for muscle bulk/atrophy.
Trunk Muscle Strength	9	Dynamometer or manual testing of the force generated by trunk (core) musculature.
Gross Lower Limb Extension Strength	6	Measured force output of leg extensor muscle groups (e.g., knee/hip extensors) during a strength task.
One-Repetition Maximum	5	Heaviest load that can be lifted correctly for a single repetition of a given exercise.

1.5 Spasticity

Outcome Measure	Number of RCTs	Description
Modified Ashworth Scale (MAS)	178	6-point clinical scale rating resistance felt during passive muscle stretch, used to grade spasticity. It can be applied to both upper and lower limb muscle groups by passively moving a limb through its range of motion.
Ashworth Scale	24	Original 5-point clinical assessment used to evaluate muscle spasticity and resistance to passive movement in individuals.
Composite Spasticity Index	18	Assess upper and lower limb spasticity in individuals, and it evaluates spasticity using three components: tendon jerk, resistance to passive stretch, and clonus. The resistance-to-passive-stretch component is weighted more heavily because it best reflects muscle hypertonia.
Clonus Score	13	Clinical rating of the presence/duration of clonus (rhythmic involuntary muscle contractions) on rapid stretch
Tendon Reflex Scales	10	Clinical grading of the briskness of deep tendon reflexes, used as an indicator of neuromuscular excitability.
Tardieu Scale	9	Clinical scale measuring spasticity by comparing muscle reaction to stretch at different velocities.
Modified Modified Ashworth Scale	9	A revised version of the Modified Ashworth Scale developed to improve the reliability and clarity of spasticity assessment. It uses a 5-point scale (0-4) and removes the 1+ category from the Modified Ashworth Scale.
Muscle Tone	9	General clinical rating of resting muscle tension/resistance to passive movement.
Modified Tardieu Scale (MTS)	7	Refined Tardieu Scale assessing spasticity by testing muscle response to slow versus fast passive stretch. The MTS is considered more sensitive to the velocity-dependent nature of spasticity than the Ashworth-based scales.

1.6 Range of Motion

Outcome Measure	Number of RCTs	Description

Active Range of Motion (AROM)	74	Degrees of joint movement a person can achieve using their own muscle effort, measured with a goniometer.
Passive Range of Motion (PROM)	57	Degrees of joint movement achievable when an examiner moves the joint without the person's muscular effort.

1.7 Neurophysiological Measures

Outcome Measure	Number of RCTs	Description
Peripheral Neurophysiology (EMG / NCS measures)	104	Electromyography and nerve conduction study measures peripheral nerve and muscle electrical activity. Includes Hmax/Mmax ratio, Compound Muscle Action Potential, M-wave, Motor Action Potential, Electromyography amplitude/latency parameters, Nerve conduction intensity and duration measurements.
Physiological Parameter	61	Includes lab tests, blood markers, weight, body mass index, body composition and vital signs (except heart rate; see Aerobic measures).
Central Neurophysiology (TMS-based corticospinal measures)	34	Includes MEP amplitude, Resting Motor Threshold (RMT), Corticospinal / Corticomotor excitability.
Functional Magnetic Resonance Imaging (fMRI) Parameters	17	Brain imaging measures neural activation patterns based on blood-oxygen-level changes during tasks or at rest.
Electroencephalography (EEG) Parameters	11	Scalp-recorded measures of the brain's electrical activity.

1.8 Aerobic Measures

Outcome Measure	Number of RCTs	Description
Peak Oxygen Consumption (VO2)	41	Highest rate of oxygen uptake achieved during a maximal or symptom-limited exercise test, reflecting cardiorespiratory fitness.
Heart Rate	31	Number of heart beats per minute, measured at rest or during exercise.
Respiratory Measures (Forced Vital Capacity, etc.)	23	Pulmonary function tests (e.g., forced vital capacity) assess lung volume and breathing capacity.
Walking Economy	22	Measures energy costs while the individual is walking.
Rate of Perceived Exertion (RPE)/ Borg RPE	16	Self-reported rating of how hard a person feels they are working during exercise, typically on the Borg scale.
Peak Work Rate (Peak power output (PPO))	10	Highest mechanical power output (e.g., watts on a cycle ergometer) achieved during a maximal exercise test.
Physiological Cost Index (PCI)	9	Ratio of the rise in heart rate during walking-to-walking speed, used as an indirect index of walking energy cost.
Oxygen Consumption (VO2) Max	9	Maximum rate of oxygen consumption an individual can utilize during intense exercise.
Oxygen Consumption (VO2) Ventilatory Threshold	9	Exercise intensity at which ventilation increases disproportionately to oxygen consumption, marking a shift toward anaerobic metabolism.
Exercise Tolerance Test	5	Graded exercise tests used to evaluate cardiovascular response and capacity for physical exertion.

1.9 Sensory/Proprioception

Outcome Measure	Number of RCTs	Description
Lower Limb Proprioception	7	General assessment of the ability to sense the position and movement of the leg/foot without vision.
Joint Position Sense Test (JPST)	5	Test of a person's accuracy in reproducing or detecting a joint position without visual feedback.

1.10 Pain

Outcome Measure	Number of RCTs	Description
Pain Visual Analogue Scale (VAS)	13	Self-reported pain intensity marked on a continuous line, typically 0 (no pain) to 10 (worst pain).
Pain- No Scale Specified	6	Pain reported by participants without a named or standardized measurement tool.
Pain Numeric Rating Scale (NRS)	5	Self-reported pain intensity is rated as a whole number, typically 0 (no pain) to 10 (worst pain).

2. Activities

2.1 Activities of Daily Living

Outcome Measure	Number of RCTs	Description
Barthel Index (BI)	219	Measure of functional independence in individuals with stroke and other neurological conditions. It assesses performance in 10 activities of daily living (ADLs), including feeding, bathing, grooming, dressing, continence, toileting, transfers, mobility, and stair climbing.
Functional Independence Measure (FIM)	126	Assessment of disability and functional independence commonly used in stroke rehabilitation. It consists of 18 items grouped into two domains: Motor (13 items) and Cognitive (5 items), covering areas such as self-care, mobility, communication, and social cognition.
Modified Barthel Index (MBI)	95	Expanded, more finely graded version of the Barthel Index for scoring independence in daily activities.
Modified Rankin Scale (MRS)	57	It is a single-item measure of global disability and functional independence after stroke. The MRS assesses overall functional outcome relative to a person's pre-stroke lifestyle rather than performance on specific tasks.
Nottingham Extended Activities of Daily Life (NEADL)	22	It is a measure of a stroke survivor’s independence with regards to their performance on various activities of daily living. The measure consists of 22 functional tasks.
Frenchay Activities Index (FAI)	16	Questionnaire measuring the frequency of participation in everyday domestic, leisure, and work-related activities. Higher scores indicate greater independence and engagement in everyday life.
Goal Attainment Scale	7	Individualized scale measuring the extent to which a person's own personalized rehabilitation goals were achieved.
Subjective Index of Physical and Social Outcome (SIPSO)	5	Self-report questionnaire measuring perceived physical independence and social integration after stroke.

Human Activity Profile	5	Self-report questionnaire estimating maximal activity levels and average daily energy expenditure.

2.2 Gait Speed

Outcome Measure	Number of RCTs	Description
10-Metre Walk Test (10MWT)	436	Time taken to walk 10 metres at a comfortable or fast pace, used to calculate walking speed.
Gait Speed as a kinematic parameter	238	Refers to gait speed measured by a computerized system, such as GAITRite system, OptoGait, Gait Mat II, etc.
5-Meter Walk Test (5MWT)	24	Time taken to walk 5 metres, used to calculate walking speed.
Unspecified walking speed	15	Walking speed is reported without specifying the distance or method used to obtain it.
6-Meter Walk Test	13	Time taken to walk 6 meters, used to calculate walking speed.
Treadmill walking speed	7	Walking speed measured or set on a treadmill rather than overground.
3-Meter Walk Test	5	Time taken to walk 3 meters, used to calculate walking speed.
8-Metre Walk Test	5	Time taken to walk 8 meters, used to calculate walking speed.

2.3 Gait Endurance

Outcome Measure	Number of RCTs	Description
6-Min Walk Test (6MWT)	288	Total distance walked in 6 minutes, used to assess walking endurance and sub-maximal aerobic capacity.
2-Min Walk Test	30	Total distance walked in 2 minutes, a shorter alternative measure of walking endurance.
Overground Walking Distance 3-Min Walk Test	16	Total distance walked over ground in 3 minutes, used to assess walking endurance.
Daily Steps	15	Number of steps taken over a day, typically recorded with an accelerometer or step counter.

2.4 Functional Mobility

Outcome Measure	Number of RCTs	Description
Timed Up & Go Test (TUG)	395	Time taken to rise from a chair, walk 3 meters, turn, walk back, and sit down, assessing basic sequential functional mobility.
Functional Ambulation Category (FAC)	185	6-point clinical scale used to assess walking ability and the level of assistance required during ambulation. The FAC focuses on the amount of human support needed rather than walking speed or endurance.
Rivermead Mobility Index (RMI)	84	15-item scale assessing a range of mobility skills from turning in bed to running.
Tinetti Scale (TGS)	42	Performance-based scale scoring balance and gait tasks to estimate fall risk. Includes balance and gait components; also known as Performance-Oriented Mobility Assessment (POMA).

Dynamic Gait Index	41	8-item performance test assessing the ability to adapt gait to changing task demands (e.g., speed changes, turning head, obstacles).
Stair Climb Test (SCT)	32	Time taken to ascend and/or descend a flight of stairs.
Five Time Sit-to-Stand Test (FTSTS)	29	Time taken to stand up and sit down from a chair five times consecutively, without using arms if possible.
Sit-to-Stand Test (STS)	25	Timed or repetition-based test of the ability to rise from and/or return to a seated position.
Motor Assessment Scale	20	Performance-based measures used to assess functional motor recovery after stroke. It evaluates 8 everyday motor tasks, including bed mobility, sitting balance, standing, walking, upper arm function, and hand activities.
Stroke Rehabilitation Assessment of Movement (SRAM)	18	Is a measure of how well stroke patients can perform functional tasks. This measure consists of 30 functional tasks which are then subdivided into 5 subsections: supine, sitting, standing, standing (while gripping a stable support) and standing plus walking activities.
Dual Task	17	Assessment that combines a task with a walking test (secondary task could be cognitive or motor).
Functional Gait Assessment	17	10-item scale assessing postural stability during varied walking tasks.
Step Test	15	Number of times a person can tap one foot on a step within a set time, testing dynamic single-leg balance.
Modified Motor Assessment Scale	13	A revised version of the Motor Assessment Scale developed to improve scoring consistency and ease of use. The general tonus item was removed, and some item descriptions were clarified while maintaining the original focus on functional motor performance after stroke.
Community Walking Performance	12	Assessment of walking ability and confidence under real-world community conditions (e.g., outdoors, obstacles, distances).
Modified Rivermead Mobility Index (MRMI)	11	Shortened/adapted version of the Rivermead Mobility Index for scoring mobility skills.
Short Physical Performance Battery (SPPB)	11	Composite test of balance, gait speed, and chair-stand performance, commonly used to assess physical function in older adults.
Mobility Scale	8	General scale rating a person's overall level of mobility or mobility-related independence.
Modified Emory Functional Ambulation Profile	8	Adapted timed test of walking performance across varied terrains and obstacles.
30-Second Sit-to-Stand Test	8	Number of times a person can stand fully and sit back down within 30 seconds
Emory Functional Ambulatory Category	7	Categorical rating of the level of assistance needed for functional ambulation.
Wisconsin Gait Scale	7	Is a measure that evaluates the gait parameters and walking abilities of a stroke patient.
Rivermead Gait Assessment	5	10-item scale assessing postural stability during varied walking tasks.

2.5 Balance

Outcome Measure	Number of RCTs	Description
Berg Balance Scale (BBS)	488	Assessment used to evaluate balance and postural control in individuals with stroke. It consists of 14 functional tasks assessing both static and dynamic balance.
Trunk Impairment Scale (TIS)	76	17-item, performance-based assessment of static sitting balance, dynamic sitting balance, and trunk coordination following stroke. Scores range from 0–23, with higher scores indicating better trunk function
Functional Reach Test	63	A clinical outcome measure and assessment tool for ascertaining dynamic balance in a simple task. It measures the distance between the length of an outstretched arm in a maximal forward reach, while maintaining a fixed base of support.
Postural Assessment Stroke Scale (PASS)	48	An outcome measure specifically designed to assess and monitor postural control after stroke. It contains 12 four-level items of varying difficulty for assessing ability to maintain or change a given lying, sitting, or standing posture.
Static Balance Index (SBI)-Parameters (Sitting Balance)	44	Instrumented or clinical parameters quantifying steadiness while maintaining a seated position.
Trunk Control Test (TCT)	25	Is a measure that assesses the level of motor impairment a stroke patient has in the trunk/abdominal region. This measure consists of 4 functional tasks. For each task the patient receives points for a maximum of 100 points
Mini Balance Evaluation Systems Test	20	Is a shortened measure of balance, including assessments related to anticipatory postural adjustments, reactive postural control, sensory orientation, and dynamic gait.
Single Leg Stance (SLS)	14	Refers to balance control
Romberg's Test of Balance	13	Is an assessment of balance that measures participants' postural sway or stability. The test involves standing with your feet together while an observer notes any body movement and is conducted with both eyes open and closed
Brunel Balance Assessment	12	Hierarchical scale assessing sitting, standing, and stepping balance ability.
Lateral Reach Test	8	Maximum distance a person can reach sideways while standing without losing balance.
Modified Functional Reach Tests	8	Assessment of the maximum distance a person can reach sideways while standing without losing balance.
Balance (No Specific Scale)	6	General or unspecified assessment of balance ability.
Four Square Step Test	6	Is a measure of dynamic balance that assesses a participant's ability to step over objects when approaching from the front, the side, and from the back.

2.6 Falls and Fear of Falls

Outcome Measure	Number of RCTs	Description
Activities-Specific Balance Confidence Scale (ABC Scale)	60	Self-report questionnaire rating confidence in performing daily activities without losing balance or falling.

The Falls Efficacy Scale – International (FES-I)	38	It is a measure of fear of falling or concerns about falling. It is a 16-item questionnaire, useful to the researchers and clinicians interested in fear of falling, with a score ranging from a minimum of 16 to a maximum of 64.
Rate of Falls (RoF)	19	Number of falls recorded over a defined follow-up period
Fall Risk	15	General estimate or index of the likelihood of experiencing a fall.

3. Participation

3.1 Quality of Life

Outcome Measure	Number of RCTs	Description
Stroke Impact Scale (SIS)	72	It is a stroke-specific, self-report, health status measure designed to assess multidimensional stroke outcomes, including strength, hand function, Activities of Daily Living / Instrumental Activities of Daily Living (ADL/IADL), mobility, communication, emotion, memory and thinking, and participation.
Short Form-36 (SF-36)	53	Patient-reported measure of health-related quality of life (HRQoL). It consists of 36 items across eight domains: physical functioning, role limitations due to physical health, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health.
Stroke Specific Quality of Life	45	The Stroke Specific Quality of Life scale (SS-QOL) is a patient-centered outcome measure intended to provide an assessment of health-related quality of life (HRQOL) specific to patients with stroke.
EuroQol Group Standardised Measure of Quality of Life (EQ-5-D)	39	It is a non-disease-specific measure of health-related quality of life consisting of six domains which include mobility, self-care, main activity, social relationships, pain, mood and three levels within each domain
Nottingham Health Profile	13	It is a measure of any health-related problems. It consists of two parts. The first part covers six areas including sleep, physical mobility, energy, pain, emotional reactions, and social isolation. The second part focuses on areas of daily life that would be most impacted by health status including employment, social life, interests, etc.
Clinical Global Impression of Change (CGI)	11	Clinician- or patient-rated global judgment of overall change in condition based on baseline.
Short Form-12 (SF12)	9	A shortened version of the SF-36 designed to provide a quick assessment of health-related quality of life. It contains 12 items derived from the SF-36.
Caregiver Strain Index	9	Questionnaire measuring the level of strain experienced by an informal caregiver.
EuroQol Visual Analogue Scale (EQ-VAS)	8	Single visual analogue scale on which respondents rate their overall current health state.
World Health Organization Quality of Life (WHOQOL-BREF)	6	26-item generic questionnaire assessing quality of life across physical, psychological, social, and environmental domains.

Other Associated Outcome Measures

A. Mood

Outcome Measure	Number of RCTs	Description
Hospital Anxiety and Depression Scale (HADS)	27	A self-report screening tool used to identify symptoms of anxiety and depression in individuals with medical conditions, including stroke. It consists of 14 items, with 7 items assessing anxiety (HADS-A) and 7 items assessing depression (HADS-D).
Beck Depression Inventory (BDI)	14	Self-report questionnaire for assessing the severity of depressive symptoms in adolescents and adults, including individuals with stroke. It consists of 21 items covering emotional, cognitive, and physical symptoms of depression.
Geriatric Depression Scale (GDS) - Short	11	Self-report screening tool designed to identify depression in older adults, including individuals recovering from stroke. The original version contains 30 yes/no questions that assess mood, interests, life satisfaction, and other symptoms of depression.
Patient Health Questionnaire-9 (PHQ-9)	9	9-item self-report questionnaire screening for grading severity of depressive symptoms.
Hamilton Rating Scale for Depression (HRSD)	8	Scale used to stratify severity of depression, to guide treatment and inform progress in patients with already identified depressive disorder
Center for Epidemiological Studies of Depression Scale	6	20-item self-report questionnaire screening for depressive symptoms in the general population
General Self-Efficacy Scale	5	Self-report questionnaire measuring a person's belief in their own ability to cope with and manage life's demands.

B. Fatigue and Sleep

Outcome Measure	Number of RCTs	Description
Fatigue Severity Scale	11	9-item scale measures the severity of fatigue and its effect on a person's activities and lifestyle in patients with a variety of disorders.

C. Cognition

Outcome Measure	Number of RCTs	Description
Montreal Cognitive Assessment (MoCA)	22	A cognitive screening tool designed to detect mild cognitive impairment (MCI) and subtle cognitive deficits that may not be identified by the Mini-Mental State Examination (MMSE). It evaluates multiple cognitive domains, including attention, concentration, executive function, memory, language, visuospatial ability, abstraction, calculation, and orientation
Mini Mental State Examination (MMSE)	23	Screening tools for assessing cognitive function and detecting cognitive impairment. It consists of 11 tasks that evaluate orientation, attention, memory, language, calculation, and visuospatial abilities.

Stroop test	11	Cognitive test measuring selective attention and processing speed via interference between word reading and color naming.
Trail Making Test (A&B)	11	Timed test of visual attention and task-switching, connecting numbered (Part A) or alternating numbered and lettered (Part B) circles in sequence.
Digit/Spatial span	9	Test short-term memory capacity by recalling increasingly long sequences of digits or spatial locations.

D. Upper Extremity

Outcome Measure	Number of RCTs	Description
Fugl-Meyer Assessment Upper Extremity (FMA-UE)	52	Upper-limb subsection of the Fugl-Meyer Assessment scoring arm and hand motor impairment after stroke.
Grip force	26	Dynamometer measurement of the maximal force generated during a hand grip.
9-Hole Peg Test (9HPT)	14	Simple, performance-based tests used to assess fine motor dexterity and finger coordination of the upper extremity. During the test, individuals place and remove nine pegs from a pegboard as quickly as possible using one hand at a time.
Wolf Motor Function Test (WMFT)	12	It quantifies upper extremity motor ability in stroke survivors through timed and functional tasks.
Box and Block Test (BBT)	11	A simple and widely used assessment of unilateral gross manual dexterity in individuals with stroke and other neurological conditions. During the test, participants are required to transfer as many blocks as possible, one at a time, from one compartment of a box to another within 60 seconds.
Ashworth Scale/modified Ashworth Scale for Upper Extremity	9	Is a measure of resistance to passive movement in stroke survivors. In the context of upper extremity, it is applied to upper limb muscles.
Action Research Arm Test (ARAT)	9	Assessment used to evaluate upper limb function and activity limitations. It consists of 19 items divided into four domains: grasp, grip, pinch, and gross movement.
Brunnstrom for Upper Extremity	6	Upper-limb application of the Brunnstrom stages describing the sequence of motor recovery of the arm and hand.
Range of Motion for Upper Extremity	6	It is the extent or limit to which a part of the body can be moved around a joint or a fixed point (Shoulder, elbow, wrist, or hand mobility)

Chapter 9: Lower Extremity Motor Rehabilitation Interventions

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17	Mental Practice	27 (5 new)	15	563
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25	Telerehabilitation and Technology-Based Home Exercise Programs	24 (8 new)	6	707
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27	Electromechanical and Robotic Devices	127 (34 new)	33	769
28	Functional Electrical Stimulation	73 (12 new)	23	855
29	Neuromuscular Electrical Stimulation (NMES)	22 (5 new)	16	902
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31	Muscle Vibration	36 (5 new)	9	947
32	Additional Afferent and Peripheral Stimulation Methods	11 (6 new)	9	966
33	Remote Ischemic Conditioning	2 (0 new)	1	974
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35	Extracorporeal Shockwave Therapy and Therapeutic Ultrasound	14 (5 new)	8	982
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37	Repetitive Transcranial Magnetic Stimulation (rTMS)	33 (8 new)	12	995
38	Theta Burst Stimulation (TBS)	8 (3 new)	4	1016
39	Transcranial Direct Current Stimulation (tDCS)	57 (21 new)	20	1024
40	Antidepressants	8 (0 new)	5	1079
41	Secondary Prevention Medications	7 (1 new)	7	1085
42	Edaravone	2 (0 new)	2	1089
43	Stimulants	10 (0 new)	4	1092
44	Dopamine Agonists	6 (0 new)	3	1096
45	Nerve Block Agents	4 (0 new)	4	1101
46	Botulinum Toxin	46 (6 new)	17	1105
47	Antispastic Drugs	9 (1 new)	6	1131
48	Cerebrolysin	1 (0 new)	0	1136
49	4-Aminopyridine	2 (0 new)	1	1138
50	Biologics and Targeted Molecular Therapies	7 (1 new)	5	1140
51	Anabolic Steroids	1 (0 new)	0	1144
52	Supplements and Vitamins	8 (2 new)	4	1146
53	Acupuncture and Massage	51 (9 new)	13	1157
54	Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation	8 (1 new)	4	1188
55	Traditional Herbal Medicines	8 (1 new)	4	1194

Neurodevelopmental Techniques and Motor Relearning



Adopted from: http://www.bobathconcept.eu/en/main-site/

There are several approaches considered to be neurodevelopmental techniques including the Bobath concept Approach (BCA). The Bobath concept is a comprehensive, problem-solving treatment approach that focuses on motor recovery (e.g. function, movement and tone) of an individual's affected side after a lesion in the central nervous system (Michielsen et al., 2019). Prior to its introduction in the 1950's, stroke rehabilitation largely assumed

a compensatory approach towards the unaffected side for rehabilitation (Kollen et al., 2009). The Bobath concept like other neurodevelopmental techniques relies on the tenets of neuroplasticity, in that motor recovery of the affected side is possible through individualised treatment plans that focus on how tasks are completed, facilitation of movements through therapeutic handling, movement analysis, modification of the environment and appropriate use of verbal cues from therapists (Michielsen et al., 2019).

The motor relearning programme employs practice of task-specific activities to remediate specific motor skills needed to perform that task. Motor tasks are practiced in context relevant environments to enhance sensory input and modulate performance (Pandian et al., 2012).

A total of eighteen RCTs were found that evaluated neurodevelopmental techniques and motor relearning for lower extremity motor rehabilitation. Five RCTs compared Bobath Concept Approach with Conventional Therapies (Balkan et al. 2024; Yazici et al. 2021; Kilinc et al. 2016; Wang et al. 2005; Gelber et al. 1995). One RCT compared Early Bobath Approaches with Late Bobath Approaches (Tang et al. 2014). Two RCTs compared Bobath Concept Approach with Task-Specific Training with Task-Specific Training (Brock et al. 2011; Mudie et al. 2002). Three RCTs compared Motor Relearning Programmes with Conventional Therapy or Sham (Ghrouz et al. 2024; Chan et al. 2006; Bourbonnais et al. 2002). Two RCTs compared Motor Relearning with Bobath Concept Approach (Van Vliet et al. 2005; Langhammer & Stanghelle 2000). One RCT compared Bobath Concept Approach with Proprioceptive Neuromuscular facilitation (Krukowska et al. 2016). Two RCTs compared Bobath Concept Approach Combined with Other Therapies with Bobath or Conventional Therapy (Ashraf et al. 2024; Covcic et al. 2022). One RCT compared Bobath Concept Approach with Task-Specific Training (Sutcu et al. 2023).

In addition, 22 RCTs in which neurodevelopmental techniques and motor relearning formed part of a combined or comparative intervention are cross-referenced at the end of Table 1; their primary listings appear in other tables.

The methodological details and results of all eighteen RCTs are presented in Table 1.

Table 1. RCTs Evaluating Neurodevelopmental Techniques and Motor Relearning for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Bobath Concept Approach vs Conventional Therapies		
Balkan et al. (2024) RCT (4) Nstart=88 Nend=81 TPS=Acute A vs 0	E: Bobath based physical therapy program C: Conventional physiotherapy program Duration: 60 mins/d, 5d/wk, during hospitalization	E vs C: TIS static (+exp) dynamic (+exp) coordination (+exp) total (+exp) Berg Balance Scale (+exp) Modified Ashworth Scale (+exp) Functional Independence Measurement Motor Subscale (+exp) Sitting ability (+exp)
Yazici et al. (2021) RCT (6) Nstart=41 Nend=39 TPS=Acute A vs 0	E: Neurodevelopmental technique (BCA) C: Standard rehabilitation Duration: 60min/d, 5d/wk Bobath & 5d/wk Standard Rehabilitation	E vs C: Stroke Rehabilitation Assessment of Movement Scale (+exp) Upper Extremity (-) Lower Extremity (-) Trunk (+exp) Trunk Impairment Scale (+exp) Berg Balance Scale (+exp) Barthel Index (+exp) hospitalization period (+exp)

Kilinc et al. (2016) RCT (6) Nstart=22 Nend=19 TPS=Chronic A vs B	E: BCA C: Conventional techniques (strengthening, stretching, weight transfer, range of motion) Duration: 60min/d, 3d/wk, for 12wks	E vs C: Trunk Impairment Scale (-) Stroke rehabilitation assessment of movement (-) 10-Meter walking test (-) Berg Balance Scale (-) Functional Reach test (-) Timed Up-and-Go test (-)
Wang et al. (2005) RCT (6) Nstart=44 Nend=44 TPS=Acute A vs B	E: BCA C: Orthopaedic approach (passive, assistive and progressive resistive exercise) Duration: 40min/d, 5d/wk for 4wks	E vs C: Patients with stroke spasticity: Stroke Impairment Assessment set Lower extremity motor control (-) Tone (+exp) Motor Assessment Scale (+exp) Berg Balance Scale (-) Stroke Impact Scale (+exp) Patients with relative recovery: Stroke Impairment Assessment set (-) Motor Assessment Scale (+exp) Berg Balance Scale (+exp) Stroke Impact Scale (+exp)
Gelber et al. (1995) RCT (4) Nstart=27 Nend=27 TPS=Acute A vs B	E: BCA C: Conventional techniques (passive range of motion, resistive exercises, functional tasks with affected side) Duration: Not reported	E vs C: Functional Independence Measure (-) Stride Length (-) Gait Speed (+exp)
Early vs Late Bobath Approaches		
Tang et al. (2014) RCT (6) Nstart=56 Nend=48 TPS=Acute A + B vs A Also in Table 11 (Balance Training)	E: Contemporary BCA + early sitting, standing, and walking strategies with balance training C: Contemporary BCA Duration: 50min/d, 5d/wk, for 8wks	E vs C: Stroke Rehabilitation Assessment of Movement Upper extremity (-) Lower extremity (+exp) Basic mobility (+exp) Overall (+exp) Berg Balance Scale (+exp)
Bobath Concept Approach with Task-Specific Training vs Task-Specific Training		
Brock et al. (2011) RCT (7) Nstart=29 Nend=26 TPS=Subacute A + B vs B Also in Table 5 (Task-Specific Training)	E: BCA + Task specific practice C: Task specific practice Duration: 1h/session, 6sessions/wk, for 2wks	E vs C: Gait Velocity (+exp) 6-Minute Walk Test (-) Berg Balance Scale (-)
Mudie et al. (2002) RCT (4) Nstart=40 Nend=26 TPS=Subacute A vs B vs C vs 0	E1: Task-specific training + Standard physiotherapy E2: BCA + Standard physiotherapy E3: Balance performance monitor feedback training + Standard physiotherapy C: Standard physiotherapy	E1 vs E2 vs E3 vs C: Barthel index (-) total (-) mobility (-) weight distribution (-)

Also in Table 5 (Task-Specific Training)	Duration: 30min/d, 7d/wk, for 2wks	
Motor Relearning Programmes vs Conventional Therapy or Sham		
Ghrouz et al. (2024) RCT (6) Nstart=66 Nend=64 TPS=Subacute A vs 0	E: Motor relearning program C: Conventional physiotherapy Duration: 60min/d, 3d/wk, 8wks	E vs C: BBS (+exp) Static posturography ROA (-) ROC (+exp) RGA (-) RGC (+exp) romberg ML stability (+exp) romberg AP stability (-) somatosensory index (+exp) visual index (-) vestibular index (+exp) Postural control assessment avg max displacement (+exp) avg directional control (+exp) avg reaction time (+exp) limits of stability (+exp) ML rhythmic and directional control (+exp) AP rhythmic and directional control (+exp) postural control total (+exp) Balance index global score (+exp)
Chan et al. (2006) RCT (6) Nstart=66 Nend=52 TPS=Subacute A vs 0	E: Motor relearning C: Conventional therapy Duration: 120min/d, 3d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go Test (-) Functional Independence Measure (+exp) Lawton Assessment of Instrumental Activities of Daily Life (+exp) Community Integration Questionnaire (+exp)
Bourbonnais et al. (2002) RCT (5) Nstart=26 Nend=25 TPS=Chronic A1 vs A2 vs 0	E1: Motor relearning with lower limb force-feedback E2: Motor relearning with upper limb force-feedback C: Untreated paretic limb of opposite treatment group Duration: 3d/wk, for 6wks	E vs C: 2-min Walk Test (+exp) Timed Up and Go test (-) Fugl-Meyer Assessment Upper limb (-) Lower limb (-) Upper Extremity Performance Test for the Elderly (TEMPA) (-) Box-and-block Test (-) Finger-to-nose Test (-) Gait Velocity (+exp)
Motor Relearning vs Bobath Concept Approach		
Van Vliet et al. (2005) RCT (7) Nstart=120 Nend=99 TPS=Acute A vs B	E: BCA C: Motor relearning (Movement science based treatment) Duration: 23min/d, 5d/wk	E vs C: Rivermead Motor Assessment (-) Motor Assessment Scale (-) Ten Hole Peg Test (-) 6-Minute Walk Test (-) Modified Ashworth Scale (-) Nottingham Sensory Assessment (-) Barthel Index (-)

		Extended Activities of Daily Living Scale (-)
Langhammer & Stanghelle (2000) RCT (6) Nstart=61 Nend=61 TPS=Acute A + B vs C + B	E: Motor relearning + Multidisciplinary treatment C: BCA + Multidisciplinary treatment Duration: 40min/d, 5d/wk during hospitalization	E vs C: Motor Assessment Scale (+exp) Sodring Motor Evaluation Scale (-) Barthel Index (-) Nottingham Health Profile (-) length of stay in hospital (+exp) assistive devices (-)
Bobath Concept Approach vs Proprioceptive Neuromuscular facilitation		
Krukowska et al. (2016) RCT (4) Nstart=72 Nend=72 TPS=Subacute A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E1: Neurodevelopmental BCA E2: PNF method (proprioceptive neuromuscular facilitation) Duration 6d/wk, for 6wks (35 sessions total)	E1 vs E2: Gait Parameters Total area of support (+exp1) Center of Pressure pathway length (+exp1)
Bobath Concept Approach Combined with Other Therapies vs Bobath or Conventional Therapy		
Ashraf et al. (2024) RCT (8) Nstart=38 Nend=38 TPS=Subacute A + B vs 0 Also in Table 4 (Trunk Training)	E: Bobath + Core stability training C: Conventional physical therapy Duration: 40 mins/d, 5ds/wk, 8wks	E vs C: Berg balance scale sitting to standing (+exp) standing unsupported (+exp) sitting with back unsupported (+exp) standing to sitting (+exp) transfer (+exp) standing with eyes closed (+exp) standing with feet together (+exp) reaching forward with outstretched arm (+exp) turning to look behind (+exp) Turning 360 degrees (+exp) placing alternate foot on stool (+exp) standing with one foot in front (+exp) standing on one foot (+exp) TIS (+exp)
Covcic et al. (2022) RCT (7) Nstart=40 Nend=40 TPS=Chronic A vs B	E: BCA with specific soft tissue mobilization of lower extremities muscles C: Standard BCA Duration: 45min, 5d/wk, for 5wks Bobath & 20min, 3d/wk, for 5wks soft tissue mobilization	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go test (-) Active Range of Motion Ankle dorsiflexion (+exp) Knee flexion (+exp) Knee extension (+exp)
Bobath Concept Approach vs Task-Specific Training		
Sutcu et al. (2023) RCT (8) Nstart=32 Nend=30 TPS=Chronic A vs B	E: Bobath-based rehabilitation C: Task-oriented training Duration: 1hr/d, 3d/wk, 8wks	E vs C: TIS (-) Stroke rehabilitation assessment of movement (-) Goal attainment scale (-) Muscle thickness paretic rectus abdominis (+exp) non-paretic rectus abdominis (+exp) P-external oblique (-)

		NP-external oblique (-) P-latissimus dorsi (-) NP-latissimus dorsi (-) P-erector spinae (-) NP-erector spinae (-) Limits of stability forward-backward (-) mediolateral (-) Postural sway (-) Velocity (-) Step length (-) Single support (-) Double support (-) Stance (-) Swing (-) Base of support (-) Functional ambulation profile (-)
Additional Comparisons from the Source Dataset		
Mew et al. (2010) RCT (3) Nstart=5 Nend=4 TPS=Acute A1 vs A2	E: Functional (adaptive) movement approach C: functional approach for lower limb dressing Duration: 3times/wk, 8wks	E vs C: Nottingham Stroke Dressing Assessment(No stats) Rivermead Motor Assessment (No stats) Canadian Occupational Performance Measure (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Cui et al. (2024) RCT (5) Nstart=30 Nend=30 TPS=Chronic A + B vs A vs B Primary listing: Table 11 (Balance Training)	E1: Gaze stabilization exercises + balance exercises + routine neurodevelopmental treatment, E2: gaze stabilization exercises + routine neurodevelopmental treatment C: Balance exercises + routine neurodevelopmental treatment Duration: 40min/d, 3d/wk, 4 wks	E1/E2 vs C: Overall stability index eyes open (+exp1) eyes closed (+exp1) Limit of stability (+exp1) TUG (+exp1) BBS (-) gait velocity (+exp1) cadence (+exp1) step time (+exp1) step length (+exp1) Modified Falls Efficacy Scale (-) E1 vs E2: Overall stability index eyes open (+exp1) eyes closed (+exp1) Limit of stability (+exp1) TUG (+exp1) BBS (-) gait velocity (+exp1) cadence (+exp1) step time (+exp1) step length (+exp1) Modified Falls Efficacy Scale (-)
Dengiz et al. (2024) RCT (5) Nstart=27	E: Cervical mobilization + Bobath neurodevelopmental therapy C: Sham spinal mobilization + Bobath neurodevelopmental therapy	E vs C: Craniovertebral angle (-) Balance

Nend=24 TPS=Chronic A + B vs B Primary listing: Table 12 (Stretching or Mobilization Exercises)	Duration: 75min (60min BT + 15min mobilization)/d, 3d/wk, 4wks	left side (-) right side (+exp) forward (+exp) backward (+exp) total balance (+exp) Gait parameters stride number (+exp) stride length (+exp) stride time (+exp) stride velocity (+exp) cadence (+exp) double support time (-) TUG (+exp)
Kim et al. (2024c) RCT (7) Nstart=50 Nend=50 TPS=Chronic A + B vs C + B vs B Primary listing: Table 12 (Stretching or Mobilization Exercises)	E1: Sustained natural apophyseal glides + neurodevelopmental techniques E2: Maitland mobilization + neurodevelopmental techniques C: conventional rehab + neurodevelopmental techniques Duration: less than 10 mins, 5d/wk, 4wks	E1 vs E2: Postural sway(-) FTSST(-) FRT(-) 10MWT(-) 6MWT(-)
Xu et al. (2024) RCT (8) Nstart=35 Nend=35 TPS=Chronic A vs 0 Primary listing: Table 31 (Muscle Vibration)	E: Whole-body vibration + conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) C: Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) Duration: E: 230min/d, 6d/wk, 4wks; C: 200min/d, 6d/wk, 4 wks	E vs C: BBS(-) Functional Reach Test (-) Romberg's test of balance length (-) area(-) Ankle joint dorsiflexion-plantar flexion (DP)(+exp) Ankle joint inversion-eversion (+exp)
Karaca et al. (2024) RCT (5) Nstart=27 Nend=23 TPS=Chronic A + B vs B Primary listing: Table 32 (Additional Afferent and Peripheral Stimulation Methods)	E: Sensory training + Trunk-centred Bobath exercise C: Trunk-centred Bobath exercise Duration: 40 mins/d, 3ds/wk, 8wks	E vs C: TIS static sitting balance (-) dynamic sitting balance (-) coordination (-) total (-) Trunk reposition error (+exp) Berg balance scale (-) 2 minute walk test (-) Barthel index (-)
Patra et al. (2023) RCT (4) Nstart=30 Nend=30 TPS=Subacute A + B vs A Primary listing: Table 5 (Task-Specific Training)	E: Motor Relearning Program + Obstacle walking C: Motor Relearning Program Duration: 30min/d, 5d/wk, 4wks	E vs C: Dynamic gait index (+exp) MAS (+exp)

Duray et al. (2023) RCT (5) Nstart=34 Nend=28 TPS=Chronic A + B vs B Primary listing: Table 31 (Muscle Vibration)	E: Whole body vibration + Neurodevelopmental treatment C: Neurodevelopmental treatment Duration: 60min NDT/d, 3d/wk, 4wks; 20min WBV/d, 2d/wk, same 4 wks	E vs C: 6MWT (+exp) Walking Distance (+exp) VO2max (+exp) FEV (-) FVC (-) PEF (-) ERV (-) IC (-) VC (-) IRV (-) chest circumference measurements epigastric (-) subcostal (-) axillar (-)
Chen et al. (2023b) RCT (8) Nstart=60 Nend=60 TPS=Chronic A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: rTMS + Motor relearning procedure C: Motor relearning procedure + Conventional rehabilitation Duration: 80-90min (20min rTMS + 20-30min MRP + 40min routine)/d, 6d/wk, 4wks	E vs C: MAS (+exp) FMA LL (+exp) balance (+exp) Brunnstrom stage (+exp) Hoffer walking scale (-) MEP extration rate (+exp) threshold (+exp) latency (-) central motor conduction time (+exp)
Kucuktepe et al. (2023) RCT (8) Nstart=42 Nend=42 TPS=Chronic A + B vs B Primary listing: Table 53 (Acupuncture and Massage)	E: Dry needling + Neurodevelopmental therapy C: Neurodevelopmental therapy Duration: 50-55min (45min NDT + 5-10min dry needling)/d, 3d/wk, 4wks	E vs C: MAS gastrocnemius (+exp) quadriceps femoris (-) flexor carpi radialis (-) biceps brachii (-) AROM knee flexion (+exp) ankle dorsiflexion (+exp) elbow extension (+exp) wrist extension (+exp) PROM knee flexion (+exp) ankle dorsiflexion (+exp) elbow extension (+exp) wrist extension (-) NHPT (+exp) 10MWT (+exp) FAB (+exp)
Buyukturan et al. (2022) RCT (6) Nstart=30 Nend=28 TPS=Chronic A1 vs A2	E: Subtalar joint and talocrural joint mobilization + Standard neurodevelopmental techniques C: Talocrural joint only mobilization + Standard neurodevelopmental techniques Duration: 30min/d, 3d/wk, 4wks	E vs C: BBS(+exp) Dorsiflexion strength(+exp) Plantarflexion strength(+exp) TUG(+exp) Gait speed(+exp)

Primary listing: Table 12 (Stretching or Mobilization Exercises)		
Aydogan Arslan et al. (2022) RCT (7) Nstart=21 Nend=21 TPS=Chronic A + B vs B Primary listing: Table 23 (Respiratory Training and Devices)	E: Inspiratory Muscle Training + Neurodevelopmental Bobath Treatment C: Neurodevelopmental Bobath Treatment Duration: 1x/d, 5d/wk, 6wks	E vs C: Respiratory measures Forced vital capacity (-) Forced expiratory volume in 1 second (-) Peak expiratory volume (+exp) FEV1/FVC Ratio (-) Maximum inspiratory pressure (+exp) Maximum expiratory pressure (-) TIS (+exp) TUG (-) Berg Balance Scale (-) 6MWT (-)
Park et al. (2021a) RCT (6) Nstart=21 Nend=21 TPS=Chronic A1 + B vs A2 + B Primary listing: Table 21 (Strength and Resistance Training)	E: Muscle strengthening training to non-paralytic dorsiflexion muscles + neurodevelopmental therapy C: Muscle strengthening training to paralytic dorsiflexion muscles + neurodevelopmental therapy Duration: 60min/d, 5d/wk, for 6wks neurodevelopmental therapy & 30min/d, 3d/wk, for 6wks muscle strengthening exercises	E vs C: EMG Dorsiflexor Muscle Activity (-) Timed Up & Go Test (-) 10-Metre Walk Test (-)
Unal et al. (2021) RCT (6) Nstart=32 Nend=30 TPS=Chronic A + B vs B Primary listing: Table 31 (Muscle Vibration)	E: Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity + Bobath Therapy C: Bobath Therapy Duration: 60min/d, 3d/wk, for 4wks - Bobath therapy & 60min/d, 3d/wk, for 4wks - Matrix rhythm therapy	E vs C: Modified Ashworth Scale Quadriceps (+exp) Hip adductors (-) Gastrocnemius (+exp) Lower extremity total (+exp) ROM Active knee flexion (+exp) passive knee flexion (+exp) active ankle dorsiflexion (-) passive ankle dorsiflexion (+exp) active ankle plantar flexion (+exp) passive ankle plantar flexion (+exp) Static balance Single Leg Stance Test right leg (-) Single Leg Stance Test left leg (+exp) Single Leg Stance Test total (+exp) Timed Get up and go test (+exp) Gait parameters Cadence (+exp) Velocity (+exp) Left gait cycle duration (-) Right gait cycle duration (-) Left stride length (-) Right stride length (-) Left % stride length (-) Right % stride length (-) Left step length (-) Right step length (-) Left stance phase (-)

		Right stance phase (+exp) Left swing phase (-) Right swing phase (+exp) Left double support phase (+exp) Right double support phase (+exp) Left single support phase (+exp) Right single support phase (-) Gait cycle symmetry (-) Pelvic kinematics in gait Symmetry of pelvic tilt (-) Left pelvic tilt angle (-) right pelvic tilt angle (-) Symmetry of pelvic obliquity (-) left pelvic obliquity angle (-) Right pelvic obliquity angle (-) Symmetry of pelvic rotation (+exp) Left pelvic rotation angle (+exp) Right pelvic rotation angle (-)
Cho et al. (2019) RCT (6) Nstart=33 Nend=33 TPS=Subacute A + B vs C + B Primary listing: Table 4 (Trunk Training)	E1: Segmental mid-thoracic mobilization + NDT E2: Foam roller exercises + NDT Duration: 10min, 5x/wk, 4wk (mid thoracic spine mobilization or abdominal drawing in manuever) + 5 sessions neurodevelopmental program/wk, 4wks	E1 vs E2: Dynamic balance Limit of stability (-) Peak Inspiratory Pressure (-) Peak Inspiratory Flow (-) Peak Inspiratory Volume (-) Global rating of change (+exp)
Candan et al. (2019) RCT (6) Nstart=33 Nend=30 TPS=Chronic A + B vs C Primary listing: Table 6 (Constraint-Induced Movement Therapy (CIMT))	E: mCIMT + Neurodevelopmental therapy (NDT) C: NDT Duration: 60min/d, 3d/wk, 4wks NDT & 120min/d, 5d/wk, 2wks NDT or mCIMT	E vs C: Motricity Index (+exp) Stroke Specific Quality of Life Scale (-) Mobility (-) Energy, - Selfcare (-) Vision (-) Language (-) Productivity (-) UE function (-) Thinking (+exp) personality (+exp) Mood (+exp) Family (-), -Social roles (-) Stroke Impact Scale (+exp) Perceived recovery (+exp)
Sanchez-Mila et al. (2018) RCT (7) Nstart=26 Nend=26 TPS=Not reported A + B vs A Primary listing: Table 53 (Acupuncture and Massage)	E: Bobath + dry needling C: Bobath Duration: 60min/1session	E vs C: Modified modified ashworth scale (+exp) Fugl-meyer scale Motor (-) Balance (+exp) Sensory (+exp) Range of motion (+exp) Joint pain (-) Computerised dynamic posturography using SMART Equitest System MVL non-affected forward (+exp) EPE non-affected (+exp)

		MXE backward (+exp) MXE affected/non-affected (+exp) DCL backward (+exp) DCL affected backward (+exp)
Park et al. (2017b) RCT (6) Nstart=26 Nend=25 TPS=Chronic A + B vs C + B Primary listing: Table 18 (Action Observation)	E: Action observation of community ambulation + Functional training based on neurodevelopmental techniques C: Landscape observation + Functional training based on neurodevelopmental techniques Duration: 30min/d, 5sessions/d for 4wks Functional training & 30min/d, 3d/wk for 4wks Action or landscape observation	E vs C: 10-meter Walk Test (+exp) Community Walk Test (+exp) Activity-specific Balance Confidence Scale (+exp) Gait Cycle Time (-) Stride Length (+exp) Single Support (+exp) Double Support (-) Gait Velocity (+exp) Symmetry Index (-) Swing (-) Stance (-) Step (-)
Suh et al. (2014b) RCT (6) Nstart=16 Nend=16 TPS=Chronic A vs 0 Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: gait training + Rhythmic auditory stimulation + conventional therapy (bobath) C: Gait training + conventional therapy (bobath) Duration: 15min/d, 5d/wk, for 3wks gait training with/without RAS & 30min/d, 5d/wk, for 3wks bobath	E vs C: Cadence (-) Stride strength (-) 10 metre-walk (-) Overall stability index (+exp) Anteroposterior Index (+exp) Mediolateral Index (+exp)
Bakhtiary & Fatemy (2008) RCT (8) Nstart=40 Nend=35 TPS=Not reported A + B vs B Primary listing: Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Cyclic NMES + Bobath C: Bobath Approach Duration: 15min/d bobath & 9min/d NMES, 20d	E vs C: PROM ankle dorsiflexion (+exp) Ankle Dorsiflexion Muscle Manual Test (+exp) Hmax/Mmax Ratio (-) Modified Ashworth Scale(+exp)
Eich et al. (2004) RCT (8) Nstart=50 Nend=50 TPS=Subacute A + B vs B Primary listing: Table 9 (Treadmill Training)	E: BWS Treadmill + Bobath physiotherapy C: Bobath physiotherapy Duration: 60min/d, 5d/wk for 6 wks	E vs C: Rivermead Motor Assessment (-) Walking Quality (-) 10-m Walk Test (Max Speed) (+exp) 6-m Walk Test (+exp)
Schauer et al. (2003) RCT (4) Nstart=23 Nend=23 TPS=Subacute A + B vs B Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Musical motor feedback + Conventional gait therapy + Neurodevelopmental therapy C: Conventional gait therapy + Neurodevelopmental therapy Duration: 20min/d, 5d/wk for 3wks Gait therapy, 45min/d Neurodevelopmental therapy	E vs C: Gait Velocity (No stats) Stride Length (No stats) Cadence (No stats) Symmetry Deviation (+exp) Heel-on-toe-off Distance (+exp)
Mulder et al. (1986) RCT (4)	E: Motor relearning + EMG biofeedback C: Motor relearning	E vs C: EMG activity (-)

Nstart=12 Nend=12 TPS=Chronic A + B vs A Primary listing: Table 15 (Biofeedback)	Duration: 40min/d, 3d/wk for 5wk	Gait velocity (-) Range of motion (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Conventional Therapies for improving motor recovery.	1	Wang et al. 2005
2	Motor relearning with lower limb force-feedback may not have a difference in efficacy when compared to Motor relearning with upper limb force-feedback for improving motor recovery.	1	Bourbonnais et al. 2002
1a	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving motor recovery.	2	Van Vliet et al. 2005; Langhammer & Stanghelle 2000
2	Functional (adaptive) movement approach may not have a difference in efficacy when compared to functional approach for lower limb dressing for improving motor recovery.	1	Mew et al. 2010
1b	Repetitive transcranial magnetic stimulation with Motor relearning procedure may produce greater improvements in motor recovery than Motor relearning procedure with Conventional rehabilitation.	1	Chen et al. 2023b
1b	Bobath with dry needling may produce greater improvements in motor recovery than Bobath.	1	Sanchez-Mila et al. 2018
1b	Body weight supported Treadmill with Bobath physiotherapy may not have a difference in efficacy when compared to Bobath physiotherapy for improving motor recovery.	1	Eich et al. 2004

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Bobath Concept Approach may not have a difference in efficacy when compared to Conventional Therapies for improving biomechanical gait measures.	1	Gelber et al. 1995
2	Neurodevelopmental Bobath Concept Approach may produce greater improvements in biomechanical gait measures than proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).	1	Krukowska et al. 2016
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving biomechanical gait measures.	1	Sutcu et al. 2023

2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical gait measures than Balance exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical gait measures than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Cervical mobilization with Bobath neurodevelopmental therapy may produce greater improvements in biomechanical gait measures than Sham spinal mobilization with Bobath neurodevelopmental therapy.	1	Dengiz et al. 2024
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may not have a difference in efficacy when compared to Bobath Therapy for improving biomechanical gait measures.	1	Unal et al. 2021
1b	Action observation of community ambulation with Functional training based on neurodevelopmental techniques may not have a difference in efficacy when compared to Landscape observation with Functional training based on neurodevelopmental techniques for improving biomechanical gait measures.	1	Park et al. 2017b
1b	Gait training with Rhythmic auditory stimulation and conventional therapy (bobath) may not have a difference in efficacy when compared to Gait training with conventional therapy (bobath) for improving biomechanical gait measures.	1	Suh et al. 2014b
2	There is conflicting evidence about the effect of Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy when compared to Conventional gait therapy with Neurodevelopmental therapy for improving biomechanical gait measures.	1	Schauer et al. 2003

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Bobath Concept Approach with Task-Specific Training may not have a difference in efficacy when compared to Task-Specific Training for improving biomechanical balance measures.	1	Mudie et al. 2002
1b	Motor Relearning Programmes may produce greater improvements in biomechanical balance measures than Conventional Therapy or Sham.	1	Ghrouz et al. 2024
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving biomechanical balance measures.	1	Sutcu et al. 2023
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical balance measures than Balance exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical balance measures than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Cervical mobilization with Bobath neurodevelopmental therapy may produce greater improvements in biomechanical balance measures than Sham spinal mobilization with Bobath neurodevelopmental therapy.	1	Dengiz et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to	1	Kim et al. 2024c

	Maitland mobilization with neurodevelopmental techniques for improving biomechanical balance measures.		
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may not have a difference in efficacy when compared to Foam roller exercises with neurodevelopmental therapy for improving biomechanical balance measures.	1	Cho et al. 2019
1b	Bobath with dry needling may produce greater improvements in biomechanical balance measures than Bobath.	1	Sanchez-Mila et al. 2018
1b	Gait training with Rhythmic auditory stimulation and conventional therapy (bobath) may produce greater improvements in biomechanical balance measures than Gait training with conventional therapy (bobath).	1	Suh et al. 2014b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving muscle strength.	1	Sutcu et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in muscle strength than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Modified constraint-induced movement therapy with Neurodevelopmental therapy may produce greater improvements in muscle strength than neurodevelopmental therapy.	1	Candan et al. 2019
1b	Cyclic neuromuscular electrical stimulation with Bobath may produce greater improvements in muscle strength than Bobath Approach.	1	Bakhtiary & Fatemy 2008

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Bobath Concept Approach may produce greater improvements in spasticity than Conventional Therapies.	1	Balkan et al. 2024
1b	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving spasticity.	1	Van Vliet et al. 2005
2	Motor Relearning Program with Obstacle walking may produce greater improvements in spasticity than Motor Relearning Program.	1	Patra et al. 2023
1b	Repetitive transcranial magnetic stimulation with Motor relearning procedure may produce greater improvements in spasticity than Motor relearning procedure with Conventional rehabilitation.	1	Chen et al. 2023b
1b	There is conflicting evidence about the effect of Dry needling with Neurodevelopmental therapy when compared to Neurodevelopmental therapy for improving spasticity.	1	Kucuktepe et al. 2023
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may produce greater improvements in spasticity than Bobath Therapy.	1	Unal et al. 2021
1b	Bobath with dry needling may produce greater improvements in spasticity than Bobath.	1	Sanchez-Mila et al. 2018
1b	Cyclic neuromuscular electrical stimulation with Bobath may produce greater improvements in spasticity than Bobath Approach.	1	Bakhtiary & Fatemy 2008

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach Combined with Other Therapies may produce greater improvements in range of motion than Bobath or Conventional Therapy.	1	Covcic et al. 2022
1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may produce greater improvements in range of motion than Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).	1	Xu et al. 2024
1b	Dry needling with Neurodevelopmental therapy may produce greater improvements in range of motion than Neurodevelopmental therapy.	1	Kucuktepe et al. 2023
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may produce greater improvements in range of motion than Bobath Therapy.	1	Unal et al. 2021
1b	Cyclic neuromuscular electrical stimulation with Bobath may produce greater improvements in range of motion than Bobath Approach.	1	Bakhtiary & Fatemy 2008
2	Motor relearning with electromyography biofeedback may not have a difference in efficacy when compared to Motor relearning for improving range of motion.	1	Mulder et al. 1986

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Whole body vibration with Neurodevelopmental treatment may not have a difference in efficacy when compared to Neurodevelopmental treatment for improving neurophysiological measures.	1	Duray et al. 2023
1b	Repetitive transcranial magnetic stimulation with Motor relearning procedure may produce greater improvements in neurophysiological measures than Motor relearning procedure with Conventional rehabilitation.	1	Chen et al. 2023b
1b	Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy may not have a difference in efficacy when compared to Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy for improving neurophysiological measures.	1	Park et al. 2021a
1b	Cyclic neuromuscular electrical stimulation with Bobath may not have a difference in efficacy when compared to Bobath Approach for improving neurophysiological measures.	1	Bakhtiary & Fatemy 2008
2	Motor relearning with electromyography biofeedback may not have a difference in efficacy when compared to Motor relearning for improving neurophysiological measures.	1	Mulder et al. 1986

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Whole body vibration with Neurodevelopmental treatment may not have a difference in efficacy when compared to Neurodevelopmental treatment for improving aerobic measures.	1	Duray et al. 2023
1b	Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment may not have a difference in efficacy when compared to	1	Aydogan Arslan et al. 2022

	Neurodevelopmental Bobath Treatment for improving aerobic measures.		
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may not have a difference in efficacy when compared to Foam roller exercises with neurodevelopmental therapy for improving aerobic measures.	1	Cho et al. 2019

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving sensory and proprioceptive function.	1	Van Vliet et al. 2005
2	Sensory training with Trunk-centred Bobath exercise may produce greater improvements in sensory and proprioceptive function than Trunk-centred Bobath exercise.	1	Karaca et al. 2024

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach may produce greater improvements in activities of daily living than Conventional Therapies.	3	Balkan et al. 2024; Yazici et al. 2021; Gelber et al. 1995
2	Bobath Concept Approach with Task-Specific Training may not have a difference in efficacy when compared to Task-Specific Training for improving activities of daily living.	1	Mudie et al. 2002
1b	Motor Relearning Programmes may produce greater improvements in activities of daily living than Conventional Therapy or Sham.	1	Chan et al. 2006
1a	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving activities of daily living.	2	Van Vliet et al. 2005; Langhammer & Stanghelle 2000
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving activities of daily living.	1	Sutcu et al. 2023
2	Functional (adaptive) movement approach may not have a difference in efficacy when compared to functional approach for lower limb dressing for improving activities of daily living.	1	Mew et al. 2010
2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving activities of daily living.	1	Karaca et al. 2024

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Bobath Concept Approach when compared to Conventional Therapies for improving gait speed.	2	Kilinc et al. 2016; Gelber et al. 1995
1b	Bobath Concept Approach with Task-Specific Training may produce greater improvements in gait speed than Task-Specific Training.	1	Brock et al. 2011
2	Motor relearning with lower limb force-feedback may produce greater improvements in gait speed than Motor relearning with upper limb force-feedback.	1	Bourbonnais et al. 2002

1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving gait speed.	1	Sutcu et al. 2023
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in gait speed than Balance exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in gait speed than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Cervical mobilization with Bobath neurodevelopmental therapy may produce greater improvements in gait speed than Sham spinal mobilization with Bobath neurodevelopmental therapy.	1	Dengiz et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving gait speed.	1	Kim et al. 2024c
1b	Dry needling with Neurodevelopmental therapy may produce greater improvements in gait speed than Neurodevelopmental therapy.	1	Kucuktepe et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in gait speed than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy may not have a difference in efficacy when compared to Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy for improving gait speed.	1	Park et al. 2021a
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may produce greater improvements in gait speed than Bobath Therapy.	1	Unal et al. 2021
1b	Action observation of community ambulation with Functional training based on neurodevelopmental techniques may produce greater improvements in gait speed than Landscape observation with Functional training based on neurodevelopmental techniques.	1	Park et al. 2017b
1b	Gait training with Rhythmic auditory stimulation and conventional therapy (bobath) may not have a difference in efficacy when compared to Gait training with conventional therapy (bobath) for improving gait speed.	1	Suh et al. 2014b
1b	Body weight supported Treadmill with Bobath physiotherapy may produce greater improvements in gait speed than Bobath physiotherapy.	1	Eich et al. 2004
2	Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy may not have a difference in efficacy when compared to Conventional gait therapy with Neurodevelopmental therapy for improving gait speed.	1	Schauer et al. 2003
2	Motor relearning with electromyography biofeedback may not have a difference in efficacy when compared to Motor relearning for improving gait speed.	1	Mulder et al. 1986

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach with Task-Specific Training may not have a difference in efficacy when compared to Task-Specific Training for improving gait endurance.	1	Brock et al. 2011
2	Motor relearning with lower limb force-feedback may produce greater improvements in gait endurance than Motor relearning with upper limb force-feedback.	1	Bourbonnais et al. 2002
1b	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving gait endurance.	1	Van Vliet et al. 2005
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving gait endurance.	1	Kim et al. 2024c
2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving gait endurance.	1	Karaca et al. 2024
2	Whole body vibration with Neurodevelopmental treatment may produce greater improvements in gait endurance than Neurodevelopmental treatment.	1	Duray et al. 2023
1b	Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment may not have a difference in efficacy when compared to Neurodevelopmental Bobath Treatment for improving gait endurance.	1	Aydogan Arslan et al. 2022
1b	Body weight supported Treadmill with Bobath physiotherapy may produce greater improvements in gait endurance than Bobath physiotherapy.	1	Eich et al. 2004

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Bobath Concept Approach when compared to Conventional Therapies for improving functional mobility.	3	Yazici et al. 2021; Kilinc et al. 2016; Wang et al. 2005
1b	Early Bobath Approaches may produce greater improvements in functional mobility than Late Bobath Approaches.	1	Tang et al. 2014
1b	Motor Relearning Programmes may not have a difference in efficacy when compared to Conventional Therapy or Sham for improving functional mobility.	1	Chan et al. 2006
2	Motor relearning with lower limb force-feedback may not have a difference in efficacy when compared to Motor relearning with upper limb force-feedback for improving functional mobility.	1	Bourbonnais et al. 2002
1a	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving functional mobility.	2	Van Vliet et al. 2005; Langhammer & Stanghelle 2000
1b	Bobath Concept Approach Combined with Other Therapies may not have a difference in efficacy when compared to Bobath or Conventional Therapy for improving functional mobility.	1	Covcic et al. 2022
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving functional mobility.	1	Sutcu et al. 2023

2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in functional mobility than Balance exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in functional mobility than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Cervical mobilization with Bobath neurodevelopmental therapy may produce greater improvements in functional mobility than Sham spinal mobilization with Bobath neurodevelopmental therapy.	1	Dengiz et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving functional mobility.	1	Kim et al. 2024c
2	Motor Relearning Program with Obstacle walking may produce greater improvements in functional mobility than Motor Relearning Program.	1	Patra et al. 2023
1b	Repetitive transcranial magnetic stimulation with Motor relearning procedure may not have a difference in efficacy when compared to Motor relearning procedure with Conventional rehabilitation for improving functional mobility.	1	Chen et al. 2023b
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in functional mobility than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment may not have a difference in efficacy when compared to Neurodevelopmental Bobath Treatment for improving functional mobility.	1	Aydogan Arslan et al. 2022
1b	Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy may not have a difference in efficacy when compared to Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy for improving functional mobility.	1	Park et al. 2021a
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may produce greater improvements in functional mobility than Bobath Therapy.	1	Unal et al. 2021
1b	Action observation of community ambulation with Functional training based on neurodevelopmental techniques may produce greater improvements in functional mobility than Landscape observation with Functional training based on neurodevelopmental techniques.	1	Park et al. 2017b
1b	Body weight supported Treadmill with Bobath physiotherapy may not have a difference in efficacy when compared to Bobath physiotherapy for improving functional mobility.	1	Eich et al. 2004

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Bobath Concept Approach may produce greater improvements in balance than Conventional Therapies.	4	Balkan et al. 2024; Yazici et al. 2021; Kilinc et al. 2016; Wang et al. 2005
1b	Early Bobath Approaches may produce greater improvements in balance than Late Bobath Approaches.	1	Tang et al. 2014

1b	Bobath Concept Approach with Task-Specific Training may not have a difference in efficacy when compared to Task-Specific Training for improving balance.	1	Brock et al. 2011
1a	Motor Relearning Programmes may produce greater improvements in balance than Conventional Therapy or Sham.	2	Ghrouz et al. 2024; Chan et al. 2006
1a	Bobath Concept Approach Combined with Other Therapies may produce greater improvements in balance than Bobath or Conventional Therapy.	2	Ashraf et al. 2024; Covcic et al. 2022
1b	Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving balance.	1	Sutcu et al. 2023
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to Balance exercises with neurodevelopmental treatment for improving balance.	1	Cui et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to gaze stabilization exercises with neurodevelopmental treatment for improving balance.	1	Cui et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving balance.	1	Kim et al. 2024c
1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may not have a difference in efficacy when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) for improving balance.	1	Xu et al. 2024
2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving balance.	1	Karaca et al. 2024
1b	Dry needling with Neurodevelopmental therapy may produce greater improvements in balance than Neurodevelopmental therapy.	1	Kucuktepe et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in balance than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	There is conflicting evidence about the effect of Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment when compared to Neurodevelopmental Bobath Treatment for improving balance.	1	Aydogan Arslan et al. 2022
1b	Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may produce greater improvements in balance than Bobath Therapy.	1	Unal et al. 2021

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to Balance exercises with neurodevelopmental treatment for improving falls and fear of falling.	1	Cui et al. 2024

2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to gaze stabilization exercises with neurodevelopmental treatment for improving falls and fear of falling.	1	Cui et al. 2024
1b	Action observation of community ambulation with Functional training based on neurodevelopmental techniques may produce greater improvements in falls and fear of falling than Landscape observation with Functional training based on neurodevelopmental techniques.	1	Park et al. 2017b

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Bobath Concept Approach may produce greater improvements in quality of life than Conventional Therapies.	1	Wang et al. 2005
1b	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving quality of life.	1	Langhammer & Stanghelle 2000
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may produce greater improvements in quality of life than Foam roller exercises with neurodevelopmental therapy.	1	Cho et al. 2019
1b	Modified constraint-induced movement therapy with Neurodevelopmental therapy may not have a difference in efficacy when compared to neurodevelopmental therapy for improving quality of life.	1	Candan et al. 2019

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Motor relearning with lower limb force-feedback may not have a difference in efficacy when compared to Motor relearning with upper limb force-feedback for improving upper extremity function.	1	Bourbonnais et al. 2002
1b	Motor Relearning may not have a difference in efficacy when compared to Bobath Concept Approach for improving upper extremity function.	1	Van Vliet et al. 2005
1b	Dry needling with Neurodevelopmental therapy may produce greater improvements in upper extremity function than Neurodevelopmental therapy.	1	Kucuktepe et al. 2023

Key Points

- Bobath Concept Approach may be beneficial for improving spasticity, activities of daily living, balance, and quality of life, but not motor recovery and biomechanical gait measures, after stroke when compared to Conventional Therapies; the literature is mixed regarding gait speed and functional mobility.
- Early Bobath Approaches may be beneficial for improving functional mobility and balance after stroke when compared to Late Bobath Approaches.
- Bobath Concept Approach with Task-Specific Training may be beneficial for improving gait speed, but not biomechanical balance measures, activities of daily living, gait endurance, and balance, after stroke when compared to Task-Specific Training.
- Motor Relearning Programmes may be beneficial for improving biomechanical balance measures, activities of daily living, and balance, but not functional mobility, after stroke when compared to Conventional Therapy or Sham.

- Motor relearning with lower limb force-feedback may be beneficial for improving gait speed and gait endurance, but not motor recovery and functional mobility, after stroke when compared to Motor relearning with upper limb force-feedback.
- Motor Relearning may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, activities of daily living, gait endurance, functional mobility, and quality of life after stroke when compared to Bobath Concept Approach.
- Neurodevelopmental Bobath Concept Approach may be beneficial for improving biomechanical gait measures after stroke when compared to proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).
- Bobath Concept Approach Combined with Other Therapies may be beneficial for improving range of motion and balance, but not functional mobility, after stroke when compared to Bobath or Conventional Therapy.
- Bobath Concept Approach may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Task-Specific Training.
- Functional (adaptive) movement approach may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to functional approach for lower limb dressing.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to Balance exercises with neurodevelopmental treatment.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to gaze stabilization exercises with neurodevelopmental treatment.
- Cervical mobilization with Bobath neurodevelopmental therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Sham spinal mobilization with Bobath neurodevelopmental therapy.
- Sustained natural apophyseal glides with neurodevelopmental techniques may not be beneficial for improving biomechanical balance measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Maitland mobilization with neurodevelopmental techniques.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).
- Sensory training with Trunk-centred Bobath exercise may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk-centred Bobath exercise.
- Motor Relearning Program with Obstacle walking may be beneficial for improving spasticity and functional mobility after stroke when compared to Motor Relearning Program.
- Whole body vibration with Neurodevelopmental treatment may be beneficial for improving gait endurance, but not neurophysiological measures and aerobic measures, after stroke when compared to Neurodevelopmental treatment.
- Repetitive transcranial magnetic stimulation with Motor relearning procedure may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not functional mobility, after stroke when compared to Motor relearning procedure with Conventional rehabilitation.
- Dry needling with Neurodevelopmental therapy may be beneficial for improving range of motion, gait speed, and balance after stroke when compared to Neurodevelopmental therapy; the literature is mixed regarding spasticity.
- Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may be beneficial for improving muscle strength, gait speed, functional mobility, and balance after stroke when compared to Talocrural joint only mobilization with neurodevelopmental techniques.

- Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment may not be beneficial for improving aerobic measures, gait endurance, and functional mobility after stroke when compared to Neurodevelopmental Bobath Treatment; the literature is mixed regarding balance.
- Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy may not be beneficial for improving neurophysiological measures, gait speed, and functional mobility after stroke when compared to Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy.
- Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may be beneficial for improving spasticity, range of motion, gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Bobath Therapy.
- Segmental mid-thoracic mobilization with neurodevelopmental therapy may be beneficial for improving quality of life, but not biomechanical balance measures and aerobic measures, after stroke when compared to Foam roller exercises with neurodevelopmental therapy.
- Modified constraint-induced movement therapy with Neurodevelopmental therapy may be beneficial for improving muscle strength, but not quality of life, after stroke when compared to neurodevelopmental therapy.
- Bobath with dry needling may be beneficial for improving motor recovery, biomechanical balance measures, and spasticity after stroke when compared to Bobath.
- Action observation of community ambulation with Functional training based on neurodevelopmental techniques may be beneficial for improving gait speed, functional mobility, and falls and fear of falling, but not biomechanical gait measures, after stroke when compared to Landscape observation with Functional training based on neurodevelopmental techniques.
- Gait training with Rhythmic auditory stimulation and conventional therapy (bobath) may be beneficial for improving biomechanical balance measures, but not biomechanical gait measures and gait speed, after stroke when compared to Gait training with conventional therapy (bobath).
- Cyclic neuromuscular electrical stimulation with Bobath may be beneficial for improving muscle strength, spasticity, and range of motion, but not neurophysiological measures, after stroke when compared to Bobath Approach.
- Body weight supported Treadmill with Bobath physiotherapy may be beneficial for improving gait speed and gait endurance, but not motor recovery and functional mobility, after stroke when compared to Bobath physiotherapy.
- Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy may not be beneficial for improving gait speed after stroke when compared to Conventional gait therapy with Neurodevelopmental therapy; the literature is mixed regarding biomechanical gait measures.
- Motor relearning with electromyography biofeedback may not be beneficial for improving range of motion, neurophysiological measures, and gait speed after stroke when compared to Motor relearning.

Summary of Key Points: Neurodevelopmental Techniques and Motor Relearning

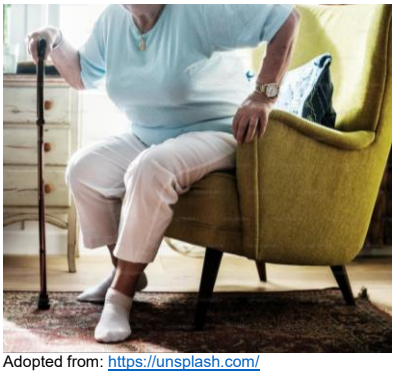
Intervention	Control(s)	Function domain(s)	Effect
Bobath Concept Approach	Conventional Therapies	Spasticity, activities of daily living, balance, quality of life	+
Bobath Concept Approach	Conventional Therapies	Motor recovery, biomechanical gait measures	–
Bobath Concept Approach	Conventional Therapies	Gait speed, functional mobility	=
Early Bobath Approaches	Late Bobath Approaches	Functional mobility, balance	+
Bobath Concept Approach with Task-Specific Training	Task-Specific Training	Gait speed	+
Bobath Concept Approach with Task-Specific Training	Task-Specific Training	Biomechanical balance measures, activities of daily living, gait endurance, balance	–

Motor Relearning Programmes	Conventional Therapy or Sham	Biomechanical balance measures, activities of daily living, balance	+
Motor Relearning Programmes	Conventional Therapy or Sham	Functional mobility	–
Motor relearning with lower limb force-feedback	Motor relearning with upper limb force-feedback	Gait speed, gait endurance	+
Motor relearning with lower limb force-feedback	Motor relearning with upper limb force-feedback	Motor recovery, functional mobility	–
Motor Relearning	Bobath Concept Approach	Motor recovery, spasticity, sensory and proprioceptive function, activities of daily living, gait endurance, functional mobility, quality of life	–
Neurodevelopmental Bobath Concept Approach	proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation)	Biomechanical gait measures	+
Bobath Concept Approach Combined with Other Therapies	Bobath or Conventional Therapy	Range of motion, balance	+
Bobath Concept Approach Combined with Other Therapies	Bobath or Conventional Therapy	Functional mobility	–
Bobath Concept Approach	Task-Specific Training	Biomechanical gait measures, biomechanical balance measures, muscle strength, activities of daily living, gait speed, functional mobility, balance	–
Functional (adaptive) movement approach	functional approach for lower limb dressing	Motor recovery, activities of daily living	–
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	Balance exercises with neurodevelopmental treatment	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility	+
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	Balance exercises with neurodevelopmental treatment	Balance, falls and fear of falling	–
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility	+
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment	Balance, falls and fear of falling	–
Cervical mobilization with Bobath neurodevelopmental therapy	Sham spinal mobilization with Bobath neurodevelopmental therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility	+
Sustained natural apophyseal glides with neurodevelopmental techniques	Maitland mobilization with neurodevelopmental techniques	Biomechanical balance measures, gait speed, gait endurance, functional mobility, balance	–
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Range of motion	+
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent	Balance	–

pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)		
Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise	Sensory and proprioceptive function	+
Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise	Activities of daily living, gait endurance, balance	−
Motor Relearning Program with Obstacle walking	Motor Relearning Program	Spasticity, functional mobility	+
Whole body vibration with Neurodevelopmental treatment	Neurodevelopmental treatment	Gait endurance	+
Whole body vibration with Neurodevelopmental treatment	Neurodevelopmental treatment	Neurophysiological measures, aerobic measures	−
Repetitive transcranial magnetic stimulation with Motor relearning procedure	Motor relearning procedure with Conventional rehabilitation	Motor recovery, spasticity, neurophysiological measures	+
Repetitive transcranial magnetic stimulation with Motor relearning procedure	Motor relearning procedure with Conventional rehabilitation	Functional mobility	−
Dry needling with Neurodevelopmental therapy	Neurodevelopmental therapy	Range of motion, gait speed, balance	+
Dry needling with Neurodevelopmental therapy	Neurodevelopmental therapy	Spasticity	=
Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques	Talocrural joint only mobilization with neurodevelopmental techniques	Muscle strength, gait speed, functional mobility, balance	+
Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment	Neurodevelopmental Bobath Treatment	Aerobic measures, gait endurance, functional mobility	−
Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment	Neurodevelopmental Bobath Treatment	Balance	=
Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy	Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy	Neurophysiological measures, gait speed, functional mobility	−
Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy	Bobath Therapy	Spasticity, range of motion, gait speed, functional mobility, balance	+
Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy	Bobath Therapy	Biomechanical gait measures	−
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy	Quality of life	+
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy	Biomechanical balance measures, aerobic measures	−
Modified constraint-induced movement therapy with Neurodevelopmental therapy	neurodevelopmental therapy	Muscle strength	+
Modified constraint-induced movement therapy with Neurodevelopmental therapy	neurodevelopmental therapy	Quality of life	−
Bobath with dry needling	Bobath	Motor recovery, biomechanical balance measures, spasticity	+

Action observation of community ambulation with Functional training based on neurodevelopmental techniques	Landscape observation with Functional training based on neurodevelopmental techniques	Gait speed, functional mobility, falls and fear of falling	+
Action observation of community ambulation with Functional training based on neurodevelopmental techniques	Landscape observation with Functional training based on neurodevelopmental techniques	Biomechanical gait measures	–
Gait training with Rhythmic auditory stimulation and conventional therapy (bobath)	Gait training with conventional therapy (bobath)	Biomechanical balance measures	+
Gait training with Rhythmic auditory stimulation and conventional therapy (bobath)	Gait training with conventional therapy (bobath)	Biomechanical gait measures, gait speed	–
Cyclic neuromuscular electrical stimulation with Bobath	Bobath Approach	Muscle strength, spasticity, range of motion	+
Cyclic neuromuscular electrical stimulation with Bobath	Bobath Approach	Neurophysiological measures	–
Body weight supported Treadmill with Bobath physiotherapy	Bobath physiotherapy	Gait speed, gait endurance	+
Body weight supported Treadmill with Bobath physiotherapy	Bobath physiotherapy	Motor recovery, functional mobility	–
Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy	Conventional gait therapy with Neurodevelopmental therapy	Gait speed	–
Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy	Conventional gait therapy with Neurodevelopmental therapy	Biomechanical gait measures	=
Motor relearning with electromyography biofeedback	Motor relearning	Range of motion, neurophysiological measures, gait speed	–

Sit-to-Stand Training



Adopted from: https://unsplash.com/

Standing from a seated position is considered the most frequently performed functional task and is necessary for mobility (Alexander et al., 2000). Sit-to-stand training is a targeted and specific intervention aimed at improving this particular movement, as well as at improving balance and muscle strength (Tung et al. 2010). Sit-to-stand training may improve outcomes through restoration of impairment, compensation for impairment, or substitution for impairment (Pollock et al., 2014).

Sit-to-stand training can be modified through providing an unstable support surface or through adjusting the positioning of the nonparetic limb to an asymmetric position, which can improve the weight-bearing rate of the paretic limb when compared to the symmetric foot position (Laufer et al., 2000).

A total of fifteen RCTs were found that evaluated Sit-to-Stand training for lower extremity motor rehabilitation. Four RCTs compared Sit-to-Stand Training with Conventional Therapy (Amala et al. 2024; Logan et al. 2022; Kerr et al. 2017; Tung et al. 2010). One RCT evaluated Sit-to-Stand Training with Various Tools (Rasheeda & Sivakumar 2017). One RCT compared Unstable Sit-to-Stand Support Surface with Stable Sit-to-Stand Support Surface (Mun et al. 2014). Two RCTs compared Sit-to-stand Training with Asymmetrical Foot Position with Sit-to-stand Training with Symmetrical Foot Position (Liu et al. 2016b; Farqalit et al. 2013). One RCT evaluated Sit-to-Stand training with Auditory Feedback (Engardt et al. 1993). Two RCTs evaluated Sit-to-Stand training with Visual Feedback (Hyun et al. 2021; Britton et al. 2008). One RCT compared Modified Sit-to-Stand Training with Conventional Therapy (Suchetha et al. 2018). One RCT evaluated Sit-to-Stand training combined with postural control biofeedback (Cheng et al. 2001). One RCT compared Sit-to-Stand training combined with TENS with Sit-to-Stand Training (Jung et al. 2017b). One RCT compared Intensive Sit-to-Stand Training with Regular Sit-to-Stand Training (DeSousa et al. 2019). One RCT compared Lateral Weight Transference Exercises in Sitting and Standing with Conventional Care (Howe et al. 2005).

In addition, one RCT in which Sit-to-Stand training formed part of a combined or comparative intervention are cross-referenced at the end of Table 2; their primary listings appear in other tables.

The methodological details and results of all fifteen RCTs are presented in Table 2.

Table 2. RCTs Evaluating Sit-to-Stand Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Sit-to-Stand Training vs Conventional Therapy		
Amala et al. (2024) RCT (4) Nstart=66 Nend=66 TPS=Subacute A vs 0	E: Sit-to-stand training + Conventional physiotherapy C: Conventional physiotherapy Duration: 45 mins/d, 5d	E vs C: Berg balance scale (+exp) Barthel Index (+exp) Muscle strength Hip flexers (+exp) Hip extensors (+exp) knee flexors (+exp) knee extensors (+exp)
Logan et al. (2022) RCT (2) Nstart=45 Nend=40 TPS=Acute A + B vs 0	E: Sit-to-Stand training + Standing practice + Conventional therapy C: Conventional therapy Duration: 45min/d, 5-7d/wk, for 3wks	E vs C: Barthel Scale (No stats) Trunk control test (No stats) Visual analog fatigue scale (No stats) Patient Health Questionnaire-9 (No stats) Knee extensor muscle strength (No stats) Modified Ashworth Scale (No stats) stroke Aphasia Depression Questionnaire-10 (No stats) EQ-5D 5L (No stats)
Kerr et al. (2017) RCT (6) Nstart=61 Nend=59 TPS=Acute A vs 0	E: Sit-to-Stand movements performed (Count by using a physical activity monitor) + Conventional therapy C: Conventional rehabilitation Duration: 2wks	E vs C: Modified Rivermead Mobility Index (-) Five tim e Sit-to-stand (-)
Tung et al. (2010) RCT (6) Nstart=32 Nend=32	E: Sit-to-Stand training + Physical therapy C: Physical therapy Duration: E: 30min/d, 3d/wk, 4wks general therapy + 15min/d, 3d/wk, 4wks	E vs C: Static balance-weight distribution (-) Limit of stability Max excursion Anterior (-)

TPS=Chronic A vs 0	sit to stand training ; C: 45min/d, 3d/wk, 4wks general therapy	Affected side (-) Non-affected side (-) Directional control Anterior (+exp) Affected side (-) Non-affected side (-) Berg Balance Scale (-) Sit-to-Stand time (+exp) Muscle Strength Hip extensor affected side (+exp) Hip extensor non-affected side (-) Knee extensor affected/non-affected side (-) Plantar flexors affected/non-affected side (-)
Sit-to-Stand Training with Various Tools		
Rasheeda & Sivakumar (2017) RCT (7) Nstart=74 Nend=67 TPS=Acute A1 vs A2	E: Sit-to-Stand Training (with Swiss ball) C: Sit-to-stand Training (with stool) Duration: 40min/d for 10 days	E vs C: 30-Second Sit-to-stand Test (-) Weight Bearing (+exp) Brunnstrom Recovery Stage (+exp)
Unstable Sit-to-Stand Support Surface vs Stable Sit-to-Stand Support Surface		
Mun et al. (2014) RCT (3) Nstart=30 Nend=19 TPS=Chronic A vs B	E: Unstable support surface sit- to-stand training C: Stable support surface sit-to- stand training Duration: 30min/d, 3d/wk, for 4wks	E vs C: Step length (+exp) Berg Balance Scale (-) Timed Up-and-Go Test (-) 10-Meter Walk Test (-) 6-Minute Walk Test (-)
Sit-to-stand Training with Asymmetrical Foot Position vs Sit-to-stand Training with Symmetrical Foot Position		
Liu et al. (2016b) RCT (7) Nstart=50 Nend=50 TPS=Subacute A vs B	E: Sit-to-stand with asymmetrical foot positioning (paretic foot placed posterior) C: Sit-to-stand training with symmetrical foot position Duration: 30min/d, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Sit-to-stand (+exp) Static balance (+exp) Dynamic balance (+exp)
Fargalit et al. (2013) RCT (8) Nstart=40 Nend=40 TPS=Chronic A1 vs A2	E: Sit-to-stand training with asymmetrical foot position + conventional care C: Sit-to-stand training with symmetrical foot position + conventional care Duration: 30min/d, 5d/wk for 4wk	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go Test (+exp) Sit-to-stand repetitions (+exp)
Sit-to-Stand training with Auditory Feedback		
Engardt et al. (1993) RCT (5) Nstart=42 Nend=40 TPS=Subacute A vs B Also in Table 15 (Biofeedback)	E: Continuous Auditory Feedback During Sit-to-Stand Training C: No Feedback During Sit-to- stand Training Duration: 45min/d, 5d/wk, 6wks	E vs C: Weight distribution (+exp) Motor Assessment Scale (+exp) Barthel Index (-) Fugl-Meyer Assessment (+exp)

Sit-to-Stand training with Visual Feedback		
Britton et al. (2008) RCT (5) Nstart=18 Nend=13 TPS=Subacute A + B vs C Also in Table 15 (Biofeedback)	E: Usual rehabilitation + Sit-to- Stand training + visual feedback C: Usual rehabilitation + Arm task training Duration: 30min/d, 5d/wk, 3wks	E vs C: Frequency of sit-to-stands/day (-) Mean time to rise (-) Weight bearing -affected leg (+exp) Number of attempts to successfully stand three times (-) Sit to stand 1-min test (-)
Modified Sit-to-Stand Training vs Conventional Therapy		
Suchetha et al. (2018) RCT (5) Nstart=30 Nend=28 TPS=Subacute A vs 0 Also in Table 17 (Mental Practice)	E: Modified sit-to-stand training with mental practice + conventional therapy C: Conventional Treatment Duration: 1h/d, 5d/wk, 2wks	E vs C: Berg Balance Scale (+exp) Dynamic Gait Index (+exp)
Sit-to-Stand training combined with postural control biofeedback		
Cheng et al. (2001) RCT (5) Nstart=54 Nend=54 TPS=Subacute A + B vs 0 Also in Table 15 (Biofeedback)	E: Standing postural symmetry training with a visual and auditory biofeedback trainer + repetitive sit-to-stand training+ conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d postural training & 20min/d sit-to-stand training, 5d/wk for 3wks	E vs C: Rate of falls (No stats) the anteroposterior COP (No stats) mediolateral COP (No stats) Rate of rise in force during rising from a chair (No stats) time needed to rise and sit (No stats)
Sit-to-Stand training combined with TENS vs Sit-to-Stand Training		
Jung et al. (2017b) RCT (7) Nstart=41 Nend=40 TPS=Chronic A + B vs A Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E: Sit-to-stand training + TENS + conventional therapy C: Sit-to-stand training + sham TENS + conventional therapy Duration: 15min/d, 5d/wk, 6wks sit-to-stand training & 30min/d, 5d/wk, 6wks TENS or sham 60min/d, 5d/wk, 6wks conventional physiotherapy	E vs C: Postural sway distance (cm) Eyes open (+exp) Eyes closed (+exp) Muscle strength (kg) Hip extensor (+exp) Knee extensor (-) Ankle plantar flexor (-) CSS score (Spasticity) (+exp)
Intensive Sit-to-Stand Training vs Regular Sit-to-Stand Training		
DeSousa et al. (2019) RCT (8) Nstart=30 Nend=30 TPS=Acute A vs B	E: Intensive Sit-To-Stand Training C: Usual Sit-to-Stand Training Duration: 2h/d, 5d/wk, 2wks usual sit-to-stand training; 3hr/d on weekdays + 2hr/d on weekends, 2wks intensive training.	E vs C: Global Impressions of sit-to-stand Change (+exp) Mobility Scale for Acute Stroke Patients – sit-to- stand item (-) Manual Muscle Test: Lower Limb Extensor Strength (-) Gross Lower Limb Extension Strength (+exp) Goal Attainment Scale (-) Change in ability to move from sitting to standing (+exp)
Lateral Weight Transference Exercises in Sitting and Standing VS Conventional Care		
Howe et al. (2005) RCT (7)	E: Lateral weight transference exercises in sitting and standing + Conventional care	E vs C: Lateral Reach Test (-)

Nstart=35 Nend=33 TPS=Acute A vs 0	C: Conventional care Duration: 30min/d, 3d/wk for 4wks	Static Standing Balance (-) Sit-to-Stand-to-Sit (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Hyun et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Subacute A + B vs A Primary listing: Table 15 (Biofeedback)	E: Sit-to-stand training + visual feedback with Wii Balance Board + Standard physiotherapy C: Sit-to-stand Training + Standard physiotherapy Duration: 20min/d, 5d/wk, 6 wks sit-to-stand training & 30min/d, 5d/wk, 6wks physiotherapy	E vs C: Manual muscle Strength test of the Lower Extremities Hip flexor (+exp) hip abductor (+exp) knee extensor (+exp) Centre of Pressure (+exp) Berg Balance Scale (+exp) 10 meter walking test (+exp) Timed Up and Go test (+exp) Stroke-Specific Quality of Life (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sit-to-Stand Training (with Swiss ball) may produce greater improvements in motor recovery than Sit-to-stand Training (with stool).	1	Rasheeda & Sivakumar 2017
2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in motor recovery than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Unstable Sit-to-Stand Support Surface may produce greater improvements in biomechanical gait measures than Stable Sit-to-Stand Support Surface.	1	Mun et al. 2014

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical balance measures.	1	Tung et al. 2010
1b	Sit-to-Stand Training (with Swiss ball) may produce greater improvements in biomechanical balance measures than Sit-to-stand Training (with stool).	1	Rasheeda & Sivakumar 2017

2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in biomechanical balance measures than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993
2	There is conflicting evidence about the effect of Sit-to-Stand training with Visual Feedback when compared to Sit-to-stand Training with physiotherapy for improving biomechanical balance measures.	1	Britton et al. 2008
2	Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical balance measures.	1	Cheng et al. 2001
1b	Sit-to-Stand training combined with transcutaneous electrical nerve stimulation may produce greater improvements in biomechanical balance measures than Sit-to-Stand Training.	1	Jung et al. 2017b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sit-to-Stand Training may produce greater improvements in muscle strength than Conventional Therapy.	3	Amala et al. 2024; Logan et al. 2022; Tung et al. 2010
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in muscle strength than Sit to Stand Training with physiotherapy.	1	Hyun et al. 2021
1b	Sit-to-Stand training combined with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sit-to-Stand Training for improving muscle strength.	1	Jung et al. 2017b
1b	There is conflicting evidence about the effect of Intensive Sit-to-Stand Training when compared to Regular Sit-to-Stand Training for improving muscle strength.	1	DeSousa et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	1	Logan et al. 2022
1b	Sit-to-Stand training combined with transcutaneous electrical nerve stimulation may produce greater improvements in spasticity than Sit-to-Stand Training.	1	Jung et al. 2017b

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Sit-to-Stand Training when compared to Conventional Therapy for improving activities of daily living.	2	Amala et al. 2024; Logan et al. 2022
2	Continuous Auditory Feedback During Sit-to-Stand Training may not have a difference in efficacy when compared to No Feedback During Sit-to- stand Training for improving activities of daily living.	1	Engardt et al. 1993
1b	Intensive Sit-to-Stand Training may not have a difference in efficacy when compared to Regular Sit-to-Stand Training for improving activities of daily living.	1	DeSousa et al. 2019

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Unstable Sit-to-Stand Support Surface may not have a difference in efficacy when compared to Stable Sit-to-Stand Support Surface for improving gait speed.	1	Mun et al. 2014
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in gait speed than Sit to Stand Training with physiotherapy.	1	Hyun et al. 2021

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Unstable Sit-to-Stand Support Surface may not have a difference in efficacy when compared to Stable Sit-to-Stand Support Surface for improving gait endurance.	1	Mun et al. 2014

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	2	Kerr et al. 2017; Tung et al. 2010
1b	Sit-to-Stand Training (with Swiss ball) may not have a difference in efficacy when compared to Sit-to-stand Training (with stool) for improving functional mobility.	1	Rasheeda & Sivakumar 2017
2	Unstable Sit-to-Stand Support Surface may not have a difference in efficacy when compared to Stable Sit-to-Stand Support Surface for improving functional mobility.	1	Mun et al. 2014
1a	Sit-to-stand Training with Asymmetrical Foot Position may produce greater improvements in functional mobility than Sit-to-stand Training with Symmetrical Foot Position.	2	Liu et al. 2016b; Farqalit et al. 2013
2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in functional mobility than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in functional mobility than Sit to Stand Training with physiotherapy.	1	Hyun et al. 2021
2	Sit-to-Stand training with Visual Feedback may not have a difference in efficacy when compared to Sit-to-stand Training with physiotherapy for improving functional mobility.	1	Britton et al. 2008
2	Modified Sit-to-Stand Training may produce greater improvements in functional mobility than Conventional Therapy.	1	Suchetha et al. 2018
1b	Intensive Sit-to-Stand Training may produce greater improvements in functional mobility than Regular Sit-to-Stand Training.	1	DeSousa et al. 2019
1b	Lateral Weight Transference Exercises in Sitting and Standing may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	1	Howe et al. 2005

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	3	Amala et al. 2024; Logan et al. 2022; Tung et al. 2010

2	Unstable Sit-to-Stand Support Surface may not have a difference in efficacy when compared to Stable Sit-to-Stand Support Surface for improving balance.	1	Mun et al. 2014
1a	Sit-to-stand Training with Asymmetrical Foot Position may produce greater improvements in balance than Sit-to-stand Training with Symmetrical Foot Position.	2	Liu et al. 2016b; Farqalit et al. 2013
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in balance than Sit to Stand Training with physiotherapy.	1	Hyun et al. 2021
2	Modified Sit-to-Stand Training may produce greater improvements in balance than Conventional Therapy.	1	Suchetha et al. 2018
1b	Lateral Weight Transference Exercises in Sitting and Standing may not have a difference in efficacy when compared to Conventional Care for improving balance.	1	Howe et al. 2005

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving falls and fear of falling.	1	Cheng et al. 2001

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Logan et al. 2022
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in quality of life than Sit to Stand Training with physiotherapy.	1	Hyun et al. 2021

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving mood.	1	Logan et al. 2022

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Sit-to-Stand Training may not have a difference in efficacy when compared to Conventional Therapy for improving fatigue and sleep.	1	Logan et al. 2022

Key Points

- Sit-to-Stand Training may be beneficial for improving muscle strength, but not biomechanical balance measures, spasticity, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding activities of daily living.

- Sit-to-Stand Training (with Swiss ball) may be beneficial for improving motor recovery and biomechanical balance measures, but not functional mobility, after stroke when compared to Sit-to-stand Training (with stool).
- Unstable Sit-to-Stand Support Surface may be beneficial for improving biomechanical gait measures, but not gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Stable Sit-to-Stand Support Surface.
- Sit-to-stand Training with Asymmetrical Foot Position may be beneficial for improving functional mobility and balance after stroke when compared to Sit-to-stand Training with Symmetrical Foot Position.
- Continuous Auditory Feedback During Sit-to-Stand Training may be beneficial for improving motor recovery, biomechanical balance measures, and functional mobility, but not activities of daily living, after stroke when compared to No Feedback During Sit-to- stand Training.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit to Stand Training with physiotherapy.
- Sit-to-Stand training with Visual Feedback may not be beneficial for improving functional mobility after stroke when compared to Sit-to-stand Training with physiotherapy; the literature is mixed regarding biomechanical balance measures.
- Modified Sit-to-Stand Training may be beneficial for improving functional mobility and balance after stroke when compared to Conventional Therapy.
- Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Conventional rehabilitation.
- Sit-to-Stand training combined with transcutaneous electrical nerve stimulation may be beneficial for improving biomechanical balance measures and spasticity, but not muscle strength, after stroke when compared to Sit-to-Stand Training.
- Intensive Sit-to-Stand Training may be beneficial for improving functional mobility, but not activities of daily living, after stroke when compared to Regular Sit-to-Stand Training; the literature is mixed regarding muscle strength.
- Lateral Weight Transference Exercises in Sitting and Standing may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Care.

Summary of Key Points: Sit-to-Stand Training

Intervention	Control(s)	Function domain(s)	Effect
Sit-to-Stand Training	Conventional Therapy	Muscle strength	+
Sit-to-Stand Training	Conventional Therapy	Biomechanical balance measures, spasticity, functional mobility, balance, quality of life	–
Sit-to-Stand Training	Conventional Therapy	Activities of daily living	=
Sit-to-Stand Training (with Swiss ball)	Sit-to-stand Training (with stool)	Motor recovery, biomechanical balance measures	+
Sit-to-Stand Training (with Swiss ball)	Sit-to-stand Training (with stool)	Functional mobility	–
Unstable Sit-to-Stand Support Surface	Stable Sit-to-Stand Support Surface	Biomechanical gait measures	+
Unstable Sit-to-Stand Support Surface	Stable Sit-to-Stand Support Surface	Gait speed, gait endurance, functional mobility, balance	–
Sit-to-stand Training with Asymmetrical Foot Position	Sit-to-stand Training with Symmetrical Foot Position	Functional mobility, balance	+
Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to- stand Training	Motor recovery, biomechanical balance measures, functional mobility	+

Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to- stand Training	Activities of daily living	–
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit to Stand Training with physiotherapy	Muscle strength, gait speed, functional mobility, balance, quality of life	+
Sit-to-Stand training with Visual Feedback	Sit-to-stand Training with physiotherapy	Functional mobility	–
Sit-to-Stand training with Visual Feedback	Sit-to-stand Training with physiotherapy	Biomechanical balance measures	=
Modified Sit-to-Stand Training	Conventional Therapy	Functional mobility, balance	+
Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation	Conventional rehabilitation	Biomechanical balance measures, falls and fear of falling	–
Sit-to-Stand training combined with transcutaneous electrical nerve stimulation	Sit-to-Stand Training	Biomechanical balance measures, spasticity	+
Sit-to-Stand training combined with transcutaneous electrical nerve stimulation	Sit-to-Stand Training	Muscle strength	–
Intensive Sit-to-Stand Training	Regular Sit-to-Stand Training	Functional mobility	+
Intensive Sit-to-Stand Training	Regular Sit-to-Stand Training	Activities of daily living	–
Intensive Sit-to-Stand Training	Regular Sit-to-Stand Training	Muscle strength	=
Lateral Weight Transference Exercises in Sitting and Standing	Conventional Care	Functional mobility, balance	–

Wheelchair Use



Adopted from http://www.neater.co.uk/neater-uni-chair/

Following stroke, particularly when associated with hemiplegia, individuals often require use of a wheelchair. Wheelchairs are usually self-propelling, but can also be manually propelled (Blower, 1988). The Neater Uni-Chair is

a wheelchair designed for those with hemiplegia and thus only requires one hand to propel and one foot to steer (Mandy et al., 2014). While patients view the temporary use of a wheelchair positively, there is a lack of consensus between clinicians about the benefits of wheelchair use in stroke rehabilitation, particularly in the acute phase (Ashburn & Lynch, 1988; Engstrom, 1995).

The main advantage for early use of wheelchairs is related to support for the hemiplegic sides and greater functional improvement and independence. The popular treatment regimen described by Bobath discourages early self-propulsion in a wheelchair because it is believed to cause poor posture and increased tone on the hemiplegic side, and may have an adverse impact on long- term recovery (Ashburn & Lynch, 1988; Bobath, 1990). These postulated negative impacts include increasing spasticity, encouraging one-sidedness, and reducing motivation to walk (Blower, 1988). While the use of wheelchairs following stroke is widespread, there is limited research evaluating them as an intervention.

A total of two RCTs were found that evaluated wheelchair use for lower extremity motor rehabilitation. One RCT compared Neater Uni-Wheelchair Attachment with Standard Wheelchair (Mandy et al. 2015). One RCT compared Encouraging Self-Propulsion with Discouraging Self-Propulsion (Barrett et al. 2001).

The methodological details and results of all two RCTs are presented in Table 3.

Table 3. RCTs Evaluating Wheelchair Use for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Neater Uni-Wheelchair Attachment vs Standard Wheelchair		
Mandy et al. (2015) RCT crossover (4) Nstart=4 Nend=4 TPS=Not reported A vs B	E: Neater Uni-wheelchair attachment C: Standard wheelchair Duration: Completion of tasks in each chair - 10min rest in between	E vs C: Motor Skills (+exp) Process Skills (-) ADLs Swedish table laying activity (-) Bed making activity (+exp)
Encouraging vs Discouraging Self-Propulsion		
Barrett et al. (2001) RCT (7) Nstart=40 Nend=35 TPS=Acute A vs B	E: Encouraged to self-propelusion C: Discouraged from self- propulsion Duration: 8 wks	E vs C: Barthel index (-) Nottingham extended activities of daily life (-) General health questionnaire 12 (-) Modified ashworth scale (-) 10-metre walk test (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Encouraging Self-Propulsion may not have a difference in efficacy when compared to Discouraging Self-Propulsion for improving spasticity.	1	Barrett et al. 2001

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Neater Uni-Wheelchair Attachment when compared to Wheelchair for improving activities of daily living.	1	Mandy et al. 2015
1b	Encouraging Self-Propulsion may not have a difference in efficacy when compared to Discouraging Self-Propulsion for improving activities of daily living.	1	Barrett et al. 2001

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Encouraging Self-Propulsion may not have a difference in efficacy when compared to Discouraging Self-Propulsion for improving gait speed.	1	Barrett et al. 2001

Key Points

- The literature is mixed regarding the effect of Neater Uni-Wheelchair Attachment on activities of daily living after stroke when compared to Wheelchair.
- Encouraging Self-Propulsion may not be beneficial for improving spasticity, activities of daily living, and gait speed after stroke when compared to Discouraging Self-Propulsion.

Summary of Key Points: Wheelchair Use

Intervention	Control(s)	Function domain(s)	Effect
Neater Uni-Wheelchair Attachment	Wheelchair	Activities of daily living	=
Encouraging Self-Propulsion	Discouraging Self-Propulsion	Spasticity, activities of daily living, gait speed	–

Trunk Training



Adopted from https://www.flintrehab.com/2016/core-exercises-for-stroke-patients/

Trunk impairment is common after stroke and is directly associated with balance and gait (Jijimol et al., 2013; Verheyden et al., 2006). Additionally, trunk control and balance while sitting are well known predictors in functional outcome and hospital stay after a stroke (Franchignoni et al., 1997; Verheyden et al., 2006).

Trunk training targets the trunk or “core muscles”, which include those supporting the lumbo- pelvic-hip complex (Hibbs et al., 2008). An example of a specific trunk stabilization method is the abdominal drawing-in maneuver, which involves selectively activating the transversus abdominis (Hides et al., 2006). Core stability training typically involves a combination of multiple exercises that encourage deep muscle movement and selective pelvic exercises to produce a comprehensive core stabilization rehabilitation program (Haruyama et al. 2017).

A total of 49 RCTs were found that evaluated trunk training for lower extremity motor rehabilitation. Sixteen RCTs compared Trunk Training with Conventional Therapy (Almasoudi et al. 2024; Kaymaz et al. 2024; Aycicek et al. 2024; Nadeem et al. 2024; El Bahrawy et al. 2024; Mahmood et al. 2022; Kim et al. 2022b; Park et al. 2019b; Dubey et al. 2018; Haruyama et al. 2017; Büyükavci et al. 2016; Cabanas-Valdes et al. 2016; Jung et al. 2014; Chung et al. 2013; Saeys et al. 2012; Verheyden et al. 2009). Three RCTs evaluated Trunk Training with Physio Equipment (Choi et al. 2021a; Choi et al. 2020a; Cho et al. 2019). Four RCTs compared Trunk Training with Tilted Platforms with Trunk Training with Horizontal Platforms (Sawa et al. 2024; Sawa et al. 2022; Fukata et al. 2021; Fujino et al. 2016). Eight RCTs compared Trunk Exercise with Unstable Surface with Trunk Exercise with Stable Surface or conventional therapy (Karthikbabu et al. 2022; Khurana et al. 2022; Lee et al. 2020d; Sarwar et al. 2019; Tirupatamma et al. 2019; Karthikbabu et al. 2018; Lim et al. 2012; Karthikbabu et al. 2011). Three RCTs compared Trunk Training Combined with Robotics with Conventional Therapy (Kim et al. 2022f; Min et al. 2020; Moon et al. 2017). One RCT compared Trunk Training Combined with Dual-Task Training with Trunk Training (Ahmed et al. 2021). One RCT compared Trunk Training with Cognitive Training (Van Criekinge et al. 2020). Two RCTs compared Dynamic Neuromuscular Stabilization with Conventional Core Exercises (Yoon et al., 2020; Lee et al. 2018c). Five RCTs compared Trunk Training with Visual or Auditory Feedback with Conventional Therapy (Kim et al. 2023; Shin et al. 2020; Jung et al. 2017a; Shin & Song 2016; De Seze et al. 2001). One RCT compared Trunk Training with Balance Training and TENS with Treadmill Training and Placebo TENS (Lim et al. 2019). Three RCTs evaluated Different Trunk Muscle Activation Exercises Compared to Each other (Younas et al. 2024; Lee et al. 2020d; Muckel et al. 2014). One RCT compared Trunk Training with Delayed with Real-Time Visual Feedback (Inoue et al. 2022a). One RCT compared Kneeling Training with Treadmill Training (Zhang et al. 2024c).

In addition, eleven RCTs in which trunk training formed part of a combined or comparative intervention are cross-referenced at the end of Table 4; their primary listings appear in other tables.

The methodological details and results of all 49 RCTs are presented in Table 4.

Table 4. RCTs Evaluating Trunk Training for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Time post stroke category Study design		
Trunk Training vs Conventional Therapy		
Almasoudi et al. (2024) RCT (6) Nstart=46 Nend=46 TPS=Subacute A vs 0	E: Trunk & hip strategy training + Conventional rehab C: Conventional rehab Duration: 30/min/d, 4d/wk, 6 wks	E vs C: TIS Static (+exp) Dynamic (+exp) Coordination (+exp) Total (+exp) BBS (+exp) FIM (+exp)
Kaymaz et al. (2024) RCT (8) Nstart=26 Nend=23 TPS=Chronic A vs B	E: Trunk stabilization exercise + Conventional neurorehabilitation C: Conventional neurorehabilitation Duration: 5ds/wk, 4wks	E vs C: Muscle thickness non-hemiplegic rectus abdominis (-) hemiplegic side rectus abdominus (-) non-hemiplegic transversus abdominus (-) hemiplegic transversus abdominus (-) Non-hemiplegic internus obliques (-) Hemiplegic internus obliques (-) Non-hemiplegic externus obliques (-) hemiplegic externus obliques (-) Berg balance scale (-) Barthel index (-) Functional reach test (-) Postural assessment scale for stroke patients (-)
Aycicek et al. (2024) RCT (6) Nstart=50 Nend=50 TPS=Chronic A vs 0	E: Core stabilization exercise therapy + conventional rehab C: Conventional rehab Duration: E: 45min/d (30 min conventional rehab + 15 min core stabilization), 5d/wk, 3wks C: 45 min/d, 5d/wk, 3wks	E vs C: FIM Motor (-) Cognitive (-) Total -() 6 Min walk test (-) BBS (-) Stroke Specific Quality of Life (-) muscle thickness (-)
Nadeem et al. (2024) RCT (7) Nstart=74 Nend=74 TPS=Chronic A vs 0 Also in Table 21 (Strength and Resistance Training)	E: Core strengthening exercises + Conventional rehab C: Conventional rehab Duration: 45-50 min/d (15-20 min/session + 30 min rehab), 4d/wk, 8wks	E vs C: TIS (+exp) TUG (+exp)
El Bahrawy et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B vs B	E: Core stability exercises + Customized physiotherapy C: Customized physiotherapy Duration: E: 30min Core stabilization + 90min PT; C: 60min/d, 3d/wk, for 6wks	E vs C: Weight bearing distribution affected lower limb (-) non-affected lower limb (-)
Mahmood et al. (2022) RCT (8) Nstart=44	E: Core stabilization exercises + Conventional PT C: Conventional PT	E vs C: TIS (+exp) FAC (+exp)

Nend=41 TPS=Chronic A vs 0	Duration: 55min (15min core + 40min conventional)/d, 5d/wk, 8wks	SSQOL (+exp) trunk flexion (+exp) extension (+exp) right side flexion (-) left side flexion (-) right side rotation (-) left side rotation (-)
Kim et al. (2022b) RCT (5) Nstart=30 Nend=30 TPS=Subacute A1 vs A2 vs 0	E1: Trunk stabilization exercise using weights + general physiotherapy E2: Trunk stabilization without weights + general physiotherapy C: Conventional rehab (i.e. general physiotherapy) Duration: 60min/d (30 min of intervention + 30 min of general physio) , 5d/wk, 8wks	E1 vs C: Postural sway area eyes open (+exp1) eyes closed (+exp1) Postural length eyes open (+exp1) eyes closed (+exp1) limits of stability forward (+exp1) backward (+exp1) leftward (+exp1) rightward (+exp1) BBS(+exp1) TUG(+exp1) 10MWT (+exp1) E1 vs E2: Postural sway area eyes open (-) eyes closed (+exp1) Postural length eyes open (+exp1) eyes closed (+exp1) limits of stability forward (+exp1) backward (+exp1) leftward (-) rightward (+exp1) BBS(+exp1) TUG(+exp1) 10MWT (+exp1)
Park et al. (2019b) RCT (7) Nstart=30 Nend=29 TPS=Chronic A vs 0 vs B Also in Table 20 (Aquatic Therapy)	E: Land-based and aquatic trunk exercises + conventional physiotherapy C: Conventional physiotherapy C: 60min/d, 5d/wk, 4wks conventional physiotherapy Duration: E: 30min/d, 5d/wk, 4wks land/aquatic trunk exercises + 30min/d, 5d/wk, 4wks conventional PT ; C: 60min/d, 5d/wk, 4wks conventional PT	E vs C: Korean Trunk Impairment Scale (+exp) 5-item, 3-level Postural Assessment Scale for Stroke (+exp) 7-item, 3-level Berg Balance Scale (+exp) Functional reach test (+exp) Modified Barthel index (+exp)
Dubey et al. (2018) RCT (5) Nstart=34 Nend=26 TPS=Chronic A vs 0	E: Pelvic stability training C: Conventional physiotherapy Duration: 60min/d, 3d/wk, 6wks	E vs C: Fugl-Meyer Lower Extremity (+exp) Muscle strength: Hip flexors/extensors/abductors/adductors (+exp) 10-m walk test (+exp) Cadence (+exp)

		Anterior pelvic tilt (-) Lateral pelvic tilt (+exp) Modified Barthel Index (-) Trunk Impairment Scale (+exp)
Haruyama et al. (2017) RCT (6) Nstart=32 Nend=31 TPS=Subacute A vs 0 vs B	E: Core stability training+ Conventional care C: Conventional care (physical therapy + Occupational therapy) C: 60min/d conventional therapy, 5d/wk, 4wks Duration: E: (20min/d core stabilization exercises + 40mins conventional therapy)/d, 5d/wk, 4wk C: 60min/d conventional therapy, 5d/wk, 4wk	E vs C: Trunk Impairment Scale (+exp) Static Sitting Balance (-) Dynamic Sitting Balance (+exp) Trunk Coordination (-) Pelvic Active Range of Motion (+exp) Balance Evaluation Systems Test Brief Version (+exp) Functional Reach Test (-) Timed Up-and-Go Test (+exp) Functional Ambulation Categories (+exp)
Büyükavci et al. (2016) RCT (5) Nstart=65 Nend=61 TPS=Subacute A vs 0	E: Trunk training + conventional therapy C: Conventional therapy Duration: 120min/d, 7d/wk, 3wks trunk training & 120-180min/d, 5d/wk, 3wks conventional therapy	E vs C: Brunnstrom Recovery Stage Upper Extremity (No stats) Hand (No stats) Lower Extremity (No stats) Trunk Impairment Scale Total (No stats) Static Sitting Balance (No stats) Dynamic Sitting Balance (No stats) Coordination (No stats) Berg Balance Scale (No stats) Rivermead Mobility Index (No stats) Functional Independence Measure Motor score (No stats)
Cabanas-Valdes et al. (2016) RCT (7) Nstart=80 Nend=71 TPS=Acute A vs 0	E: Core stability exercises + Conventional therapy C: Conventional therapy Duration: 15min core stability & 1hr Conventional therapy, 5sessions/wk for 5wks	E vs C: Brunel Balance Assessment (+exp) Standing (+exp) Stepping (+exp) Sitting (-) Spanish-Trunk Impairment Scale (+exp) Dynamic sitting balance (+exp) Coordination (+exp) Berg Balance Scale (+exp) Tinetti scale (+exp) Gait (+exp) Balance(+exp) Spanish version of Postural Assessment Scale for Stroke (+exp) Barthel Index (+exp) Function in Sitting Test (+exp)
Jung et al. (2014) RCT (7) Nstart=18 Nend=17 TPS=Chronic A vs 0	E: Weight-shift trunk training on unstable surface + conventional care C: Conventional exercise program Duration: 60min/d (30min weight shifting training/ conventional exercise program + 30 min conventional care), 5d/wk, 4wks	E vs C: Timed Up-and-Go Test (+exp) Trunk Impairment Scale (+exp) Static sitting balance (-) Dynamic sitting balance (+exp) Coordination (-) Trunk repositions error (+exp)
Chung et al. (2013) RCT (5)	E: Trunk training C: Conventional rehabilitation	E vs C: Gait velocity (+exp)

Nstart=16 Nend=16 TPS=Chronic A vs 0	Duration: 30min/d, 3d/wk, for 4wks core exercises & 60min/d, 5d/wk for 4wks general therapy	Step length (-) Stride length (-) Cadence (-) Timed Up-and-Go Test (-)
Saeys et al. (2012) RCT (7) Nstart=33 Nend=32 TPS=Subacute A vs B	E: Trunk training + Conventional rehabilitation C: Conventional therapy + upper limb exercises (sham) Duration: 30min/d, 4d/wk, 8wks	E vs C: Trunk Impairment Scale (+exp) Static sitting balance (-) Dynamic sitting balance (+exp) Coordination (+exp) Tinetti Scale(+exp) Balance (+exp) Gait (+exp) Romberg (eye open/closed) (-) Four Test Balance Scale (+exp) Berg Balance Scale (+exp) Dynamic Gait Index (+exp) Functional Ambulation Categories (-) Rivermead Motor Assessment Battery (+exp) Gross function (+exp) Leg and trunk (+exp) Arm (-)
Verheyden et al. (2009) RCT (6) Nstart=33 Nend=28 TPS=Subacute A vs 0	E: Trunk training + Conventional therapy C: Conventional therapy Duration: 30min/d, 4d/wk, 5wks	E vs C: Trunk Impairment Scale (-) Dynamic balance (+exp) Static balance (-) Coordination (-)
Trunk Training with Physio Equipment		
Choi et al. (2021a) RCT (8) Nstart=24 Nend=24 TPS=Chronic A1 vs A2	E: Pelvic compression belt with trunk stabilization exercises + conventional physical exercise C: Trunk stabilization exercises + conventional physical exercise Duration: 60min/d, 5d/wk, 6wks physical exercise, 30min/d, 5d/wk, 6wks trunk stabilization	E vs C: Postural Assessment Scale for Stroke(+exp) Berg Balance Scale(+exp) Timed Up and Go test(+exp) Center of pressure path length open eyes (-) close eyes (+exp) Center of pressure path velocity open eyes (+exp) close eyes (+exp)
Choi et al. (2020a) RCT (8) Nstart=36 Nend=36 TPS=Chronic A1 + B + C vs A2 + B + C vs A + C	E1: Trunk stabilization exercise + Pelvic compression belt on paretic side + comprehensive rehabilitation therapy E2: Trunk stabilization exercise + Pelvic compression belt on non- paretic side + comprehensive rehabilitation therapy C: Trunk stabilization exercise + comprehensive rehabilitation therapy Duration: 30min/d, 5d/wk, 6wks Trunk stabilization therapy & 60min/d, 5d/wk, 6wks Neurodevelopmental therapy	E1/E2 vs C: Postural Assessment Scale for Stroke(+exp1, +exp2) Timed up-and-go Test (+exp1, +exp2) 10 meter Walk Test(+exp1) 6 minute Walking Test (+exp1) COL path length (+exp1) COL path speed (+exp1, +exp2_ LOS changes (+exp1, +exp2) Stance phase (+exp1) Swing phase (+exp1) Foot rotation change (+exp1, +exp2) E1 vs E2:

		Postural Assessment Scale for Stroke(-) Timed up-and-go Test(-) 10 meter Walk Test(+exp1) 6 minute Walking Test(+exp1) COL path length (+exp1) COL path speed (-) LOS changes (-) Stance phase (+exp1) Swing phase (-) Foot rotation change (-)
Cho et al. (2019) RCT (6) Nstart=33 Nend=33 TPS=Subacute A + B vs C + B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E1: Segmental mid-thoracic mobilization + NDT E2: Foam roller exercises + NDT Duration: 10min, 5x/wk, 4wk (mid thoracic spine mobilization or abdominal drawing in manuever) + 5 sessions neurodevelopmental program/wk, 4wks	E1 vs E2: Dynamic balance Limit of stability (-) Peak Inspiratory Pressure (-) Peak Inspiratory Flow (-) Peak Inspiratory Volume (-) Global rating of change (+exp)
Trunk Training with Tilted Platforms vs Trunk Training with Horizontal Platforms		
Sawa et al. (2024) RCT crossover (6) Nstart=18 Nend=18 TPS=Subacute A1 vs A2	E: Wedge-supported trunk tilt training C: Flat-surface trunk tilt training Duration: 2min/d, 1hr washout	E vs C: Subjective postural vertical Directional errors (-) variability (+exp) sitting pressure (+exp)
Sawa et al. (2022) RCT crossover (7) Nstart=33 Nend=33 TPS=Subacute A1 vs A2	E: Lateral tilt trunk training with 10-degree wedge C: Lateral tilt trunk training without wedge Duration: 2min/d, 7d/wk for 2wks, 3d washout	E vs C: Subjective Postural vertical eyes closed-directional errors (-) eyes closed-variability errors (+exp) eyes open-directional errors (-) eyes open-variability errors (+exp) Functional independence measure (+exp): transfer (+exp) self-care (+exp)
Fukata et al. (2021) RCT (8) Nstart=33 Nend=33 TPS=Acute A vs B	E: Tilted seat (10 degree diagonally backward and down) + Conventional care C: Horizonal seat trunk training + Conventional care Duration: 10-15min/session, 7 sessions, 8d trunk training & 60min/d physical therapy & 20- 60min/d occupational therapy and speech Therapy, 8d	E vs C: Function in Sitting test (+exp) Static (+exp) Dynamic (+exp) Scooting (+exp) Reactive (+exp) Subjective Postural vertical Tilt Direction (+exp) Variability (-) Trunk Impairment scale (+exp) Static (+exp) Dynamic (-) Coordination (-) Trunk Control test (-) Functional independence measure Motor (-) Cognitive (-) Stroke Impairment assessment scale (-)

Fujino et al. (2016) RCT (6) Nstart=43 Nend=40 TPS=Acute A1 vs A2	E: Trunk training on tilted platform + conventional therapy C: Trunk training on horizontal platform + conventional therapy Duration: 15min/d trunk training & 60min/d conventional therapy, 6d/wk, 3wks	E vs C: Stroke Impairment Assessment Set (-) Trunk Control Test (+exp) Trunk laterally tasks paretic side Head orientation (-) Body axis (-) Trunk laterally task nonparetic side Head orientation (+exp) Body axis (+exp)
Trunk Exercise with Unstable Surface vs Trunk Exercise with Stable Surface or conventional therapy		
Karthikbabu et al. (2022) RCT (8) Nstart=84 Nend=81 TPS=Chronic A1 vs A2 vs B	E1: Core stability training on stable surface E2: Core stability training on unstable surface C: Individualized physiotherapy Duration: 60 mins/d (45 mins core stability training or conventional rehab + 15 mins of physiotherapy)	E1 vs C: TIS (+exp1) Trunk strength flexors (+exp1) extensors (+exp1) rotators more affected side (+exp1) rotators less affected side (exp1) lateral flexors more affected side (+exp1) lateral flexors less affected side (+exp1) Weight bearing assymetry (+exp1) Activities-Specific Balance Confidence Scale (+exp1) E2 vs C: TIS (+exp2) Trunk strength flexors (+exp2) extensors (+exp2) rotators more affected side (+exp2) rotators less affected side (+exp2) lateral flexors more affected side (+exp2) lateral flexors less affected side (+exp2) Weight bearing assymetry (+exp2) Activities-Specific Balance Confidence Scale (+exp2) E1 vs E2: TIS (-) Trunk strength flexors (-) extensors (-) rotators more affected side (-) rotators less affected side (-) lateral flexors more affected side (-) lateral flexors less affected side (-) Weight bearing assymetry (-) Activities-Specific Balance Confidence Scale (-)
Khurana et al. (2022) Feasibility/pilot RCT (7) Nstart=20 Nend=20 TPS=Subacute A1 vs A2	E: Upper and lower Trunk excercises on Swiss ball C: Upper and lower trunk excercises on Plinth Duration: 45 min/d, 5d/wk, 4 wks	E vs C: MMSE (+exp) TIS Total, TIS static, TIS dynamic, TIS coordination (+exp) mFRT forward lean, mFRT affected side, mFRT unaffected side (+exp) FBS (+exp)

Lee et al. (2020c) RCT (6) Nstart=38 Nend=35 TPS=Subacute A vs B	E: Trunk Exercise on Unstable Surfaces + conventional rehabilitation C: Upper limb range of motion exercises + conventional rehabilitation Duration: 30min/d, 2d/wk, 6wks	E vs C: Grip Strength (-) Stroke Rehabilitation Assessment of Movement (-) Trunk Impairment Scale (+exp) Fugl-Meyer lower extremity motor scale(-) Affected Plantar cutaneous sensation of the big toe(-) 6 m walk test(+exp) Sitting with foot support performance Static sway area(-) Forward leaning(-) Arm raising(-) Sitting without foot support Static sway area(+exp) Forward leaning(+exp) Arm raising(+exp) Standing balance Static sway area(-) Forward leaning(+exp) Arm raising(-)
Sarwar et al. (2019) RCT (5) Nstart=30 Nend=30 TPS=Chronic A1 vs A2	E: Trunk exercise with unstable surface C: Trunk exercise with stable surface Duration: Not Reported	E vs C: Trunk Impairment Scale (+exp) Timed Up-and-Go Test (-) Berg Balance Scale (+exp)
Tirupatamma et al. (2019) RCT (3) Nstart=50 Nend=30 TPS=Not reported A vs B Also in Table 11 (Balance Training)	E: Trunk balance training on rocker board + conventional therapy C: Trunk balance training on plain surface + conventional therapy Duration: 45min/d, 6d/wk, 6wks	E vs C: Berg Balance Score (+exp) Functional Reach Test (+exp) 2-Minute Walk Test (+exp)
Karthikbabu et al. (2018) RCT (7) Nstart=108 Nend=86 TPS=Chronic A vs B vs 0	E1: Stable trunk training with plinth E2: Unstable trunk training with Swiss ball C: Standard physiotherapy Duration: 60min/d, 3d/wk, 6wks	E1/ E2 vs C: Trunk Impairment Scale (+exp1, +exp2) Brunel Balance Assessment (+exp1, +exp2) Tinetti scale (+exp1, +exp2) 10-Metre Walk Test (+exp1, +exp2) Stroke Impact Scale-16 (+exp1, +exp2) Reintegration to Normal Living Index (+exp1, +exp2) E1 vs E2: Trunk Impairment Scale (-) Brunel Balance Assessment (-) Tinetti scale (-) 10-Metre Walk Test (-) Stroke Impact Scale-16 (-) Reintegration to Normal Living Index (-)
Lim et al. (2012) RCT (4) Nstart=21	E: Trunk training, enhanced (draw-in + bridge) C: Trunk training, standard (bridge)	E vs C: Sway velocity (+exp) Sway area (+exp)

Nend=21 TPS=Chronic A + B vs C	Duration: 30-35min/d, 4d/wk, for 8wks	Sway length (+exp)
Karthikbabu et al. (2011) RCT (8) Nstart=30 Nend=30 TPS=Acute A1 vs A2	E: Trunk training on unstable surface (physio ball) + conventional care (acute physical therapy) C: Trunk training on stable surface (plinth) + conventional care (acute physical therapy) Duration: 1h/d, 4d/wk, 3wks	E vs C: Trunk impairment scale (+exp) Static sitting balance (-) Dynamic siting balance (+exp) Coordination (+exp) Brunel balance assessment (+exp) Standing (-) Stepping (+exp)
Trunk Training Combined with Robotics vs Conventional Therapy		
Kim et al. (2022f) RCT (6) Nstart=40 Nend=40 TPS=Not reported A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted trunk control training + Conventional trunk stabilization exercise C: Conventional trunk stabilization exercise + stretching exercise Duration: 30 min/d, 5d/wk for 8 wks trunk stabilization exercise & 15min/d, 5d/wk for 8 wks robot- assisted trunk control therapy/stretching exercise	E vs C: Trunk Impairment Scale (+exp) Berg Balance Scale (+exp) Functional Reach Test (+exp) Limit of Stability (+exp) Centre of Pressure (+exp)
Min et al. (2020) RCT (7) Nstart=38 Nend=38 TPS=Chronic A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Trunk stability robot training (3DBT-33) + conventional physical therapy C: Conventional Physical Therapy Duration: 30min/d, 5d/wk, 4wks conventional physical therapy; 30min/d robot training, 5d/wk, 4wks	E vs C: Functional Ambulation Categories(-) timed up and go test (-) Berg Balance Scale (+exp) Korean Modified Barthel Index (+expd) Fugl-Meyer Assessment of Lower Extremity (+exp)
Moon et al. (2017) RCT (4) Nstart=30 Nend=24 TPS=Chronic A vs B	E: Spine stability exercise using the Spine Balance 3D system C: Spine stability exercise through the Bridge exercise without using an equipment Duration: 30min/d, 3d/wk, 7wks	E vs C: Trunk Muscle Strength Test (+exp) Timed Up and Go (+exp) 10-m walking test (+exp) Step length Non-affected (+exp) Affected (-) wight bearing symmetry (Non-affected and Affected) (-) gait Distance (+exp)
Trunk Training Combined with Dual-Task Training vs Trunk Training		
Ahmed et al. (2021) RCT (8) Nstart=84 Nend=84 TPS=Chronic A + B vs A Also in Table 16 (Dual-Task Training)	E: High-intensity multiplanar trunk training + dual-task training + conventional rehabilitation C: Trunk training + conventional rehabilitation. Duration: 45min/d, 5d/wk for 3mo	E vs C: Trunk Impairment Scale (+exp) Dynamic Control(+exp) Coordination (+exp) Timed-Up-And-Go (+exp) Cognitive (+exp) 10-Metre Walk Test (+exp) Berg Balance Scale (+exp) Stroke Impact Scale (+exp)
Trunk Training vs Cognitive Training		
Van Criekinge et al. (2020) RCT (7)	E: Standard care + Trunk Training C: Standard care + Cognitive Training	E vs C:

Nstart=45 Nend=39 TPS=Subacute A vs B	Duration: 120min/d standard care & 60min/d, 4d/wk, 4wks trunk training/cognitive training	Tinetti Performance-Oriented Mobility Assessment (+exp) Balance (-) Gait (+exp) Step time (-) Step length (+exp) Step width (+exp) Stance (-) Walking speed (+exp) CoM displacements (Horizontal/ Vertical) (+exp) Gait Deviation Index (-) Trunk Impairment Scale (+exp) Static SB (-) Dynamic SB (+exp) Coordination (+exp) ROM for thorax: Sagittal stance/Sagittal swing/ Transversal swing (+exp) Frontal stance/Frontal swing/ Transversal stance (-) ROM for pelvis: Sagittal stance/Sagittal swing/Frontal swing (-) Frontal stance/Transversal stance/ Transversal swing (+exp)
Dynamic Neuromuscular Stabilization vs Conventional Core Exercises		
Yoon et al. (2020) RCT (5) Nstart=31 Nend=31 TPS=Subacute A vs B	E: Dynamic neuromuscular core- postural chain stabilization C: Neurodevelopmental treatment Duration: 30min/d, 3d/wk, 4wks	E vs C: Trunk impairment scale (-) Berg balance scale (+exp) Functional ambulation category (+exp) Diaphragm movement (+exp) Asymmetrical ratio of diaphragm movement (No stats) Paretic Deep abdominal muscle thickness TrA (+exp) IO (+exp) EO (-) Non-paretic Deep abdominal muscle thickness TrA (+exp) IO (-) EO (-) Asymmetrical ratio of deep abdominal muscles thickness TrA (No stats) IO (No stats) EO (No stats)
Lee et al. (2018c) RCT (5) Nstart=30 Nend=28 TPS=Chronic A vs B	E: Dynamic neuromuscular core stabilization (DNS) C: Conventional core stabilization exercises Duration: 30min/d, 5d/wk for 4wks DNS & 20 sessions conventional core stabilization	E vs C: Trunk impairment scale (-) Berg Balance scale (-) Falls Efficacy scale (-) EMG (anticipatory postural adjustment time for EO, TrA/IO, and ES) during paretic/nonparetic shoulder flexion (+exp)

Trunk Training with Visual or Auditory Feedback vs Conventional Therapy		
Kim et al. (2023) RCT (8) Nstart=30 Nend=30 TPS=Chronic A1 vs A2	E: Conventional rehab using Laser pointer feedback and trunk rehab C: Conventional rehab and trunk rehab Duration: 60min/d(30min conventional, 30min trunk), 3-5d/wk(conventional:5, Trunk:3), 6wks	E vs C: BBS(+exp) Gait pressure kinematics(-) 10MWT(+exp) FES(+exp)
Shin et al. (2020) RCT (7) Nstart=24 Nend=24 TPS=Chronic A vs 0 Also in Table 15 (Biofeedback)	E: Smartphone-based visual feedback trunk control training + Conventional rehabilitation C: Conventional Rehabilitation Duration: 50min/d, 5d/wk, 4wk Conventional Rehabilitation	E vs C: Trunk Impairment Scale (+exp) Velocity (+exp) Cadence (+exp) Stride length (+exp) Stride Time (+exp) Step length (+exp) Step width (+exp) Step time (+exp) Double Limb support (+exp)
Jung et al. (2017a) RCT (6) Nstart=46 Nend=43 TPS=Chronic A + B vs A Also in Table 15 (Biofeedback)	E: Trunk stabilization exercises + audiovisual biofeedback (Pressure biofeedback unit) C: Trunk stabilization exercises Duration: 50min/d, 5d/wk,6wks	E vs C: Thickness of trunk muscles (+exp) TrA-affected (+exp) TrA-unaffected (+exp) IO-affected (-) IO-unaffected (-) EO-affected (+con) EO-unaffected (+con) Symmetric ratio (-) Static sitting balance ability (+exp) Dynamic sitting balance ability (+exp)
Shin & Song (2016) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Also in Table 15 (Biofeedback)	E: Smartphone visual feedback for trunk control training + Conventional care C: Conventional care Duration: 80min/d conventional care + 20min/d Smartphone therapy, 5d/wk, 4wks	E vs C: Timed Up-and-Go (+exp) Static balance Eyes closed (+exp) Eyes open (+exp) Trunk Impairment scale (+exp) Modified Functional reach test (+exp)
De Seze et al. (2001) RCT (6) Nstart=20 Nend=20 TPS=Subacute A vs B Also in Table 15 (Biofeedback)	E: Trunk postural control training with visual and auditory feedback + Conventional neurorehabilitation C: Conventional neurorehabilitation Duration: 120min/d, 5d/wk for 3mo	E vs C: Motricity Index (-) Ashworth scale (-) Mini-mental status exam (-) Upright Equilibrium Index (+exp) Sitting Equilibrium Index (-) Functional Ambulation Category (+exp) Functional Independence Measure (-) Trunk Control Test (+exp) Bells Neglect Test (+exp)
Trunk Training with Balance Training and TENS vs Treadmill Training and Placebo TENS		
Lim et al. (2019) RCT (7) Nstart=37 Nend=30 TPS=Subacute	E: Multi-sensorimotor training (Stabilize-T and Reha bar exercises + TENS) + Conventional PT C: Treadmill training + placedo TENS + conventional PT Duration: 60min/d, 5d/wk for 8wks	E vs C: Balance (-) Anterior-posterior (+exp) Medial-lateral (-) Proprioception (+exp)

A + B vs C + B Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))		
Different Trunk Muscle Activation Exercises Compared to Each other		
Younas et al. (2024) RCT (5) Nstart=66 Nend=30 TPS=Chronic A vs B	E1: Task-oriented trunk training + Conventional treatment C: Bobath based trunk training + Conventional therapy Duration: 60 mins/d, 3ds/wk, 12 wks	E1 vs C: TIS (+exp) Berg Balance scale (+exp)
Lee et al. (2020d) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs B vs 0	E1: Trunk stabilization exercise with abdominal hallowing + Conventional rehabilitation program E2: Trunk stabilization exercise with bracing maneuver + Conventional rehabilitation program C: Conventional rehabilitation program Duration: 20min/d, 3d/wk, 6wks	E1/E2 vs C: Functional Reach Test (-) Berg Balance Scale (-) Timed Up and Go test (+exp1) 10-meter walk test (-) Abdominal muscles thickness Affected side (-) Non-affected side (-) E1 vs E2: Functional Reach Test (-) Berg Balance Scale (-) Timed Up and Go test(-) 10-meter walk test (-) Abdominal muscles thickness Affected side (-) Non-affected side (-)
Muckel et al. (2014) RCT (7) Nstart=20 Nend=19 TPS=Subacute A1 vs A2	E: External focus on trunk control C: Internal focus on trunk control Duration: 3 times	E vs C: Maximum distance in Lateral body weight shifting (+exp) Anterior posterior deviation (-)
Trunk Training with Delayed vs Real-Time Visual Feedback		
Inoue et al. (2022a) Feasibility/pilot RCT (4) Nstart=27 Nend=24 TPS=Acute A1 vs A2 Also in Table 15 (Biofeedback)	E: Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay C: Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time Duration: 30 times/day, 5 days/wk,	E vs C: PASS (-) Static sitting task mean velocity of COP (-) Mean percentage of body weight on the paretic side (-) Lateral sitting task to the paretic side mean velocity of COP (-) Mean percentage of body weight on the paretic side (-) Lateral sitting task to the non-paretic side mean velocity of COP (-) Mean percentage of body weight on the non-paretic side (-) Forward sitting task mean velocity of COP (-) Mean percentage of body weight on the anterior direction (-) Five times sit to stand task (-) SIAS (-)

		TIS (-) FAC (-) FIM (-)
Kneeling Training vs Treadmill Training		
Zhang et al. (2024c) RCT (6) Nstart=67 Nend=62 TPS=Not reported A vs B	E: Kneeling training C: Conventional treadmill walking training Duration: 30 mins/d, 6ds/wk, 4wks	E vs C: FMA-LE (-) Berg balance scale (+exp) Step length non-paretic (-) paretic (+exp) Step height non-paretic (-) paretic (-) Paretic hip flexion-extension (-) paretic knee flexion-extension (-) Vertical displacement of center of gravity (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Ashraf et al. (2024) RCT (8) Nstart=38 Nend=38 TPS=Subacute A + B vs 0 Primary listing: Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Bobath + Core stability training C: Conventional physical therapy Duration: 40 mins/d, 5ds/wk, 8wks	E vs C: Berg balance scale sitting to standing (+exp) standing unsupported (+exp) sitting with back unsupported (+exp) standing to sitting (+exp) transfer (+exp) standing with eyes closed (+exp) standing with feet together (+exp) reaching forward with outstretched arm (+exp) turning to look behind (+exp) Turning 360 degrees (+exp) placing alternate foot on stool (+exp) standing with one foot in front (+exp) standing on one foot (+exp) TIS (+exp)
Rana et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B + C vs B + C Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Metronome training + core strengthening + general balance exercises C: Core strengthening + general balance exercises Duration: 8wks	E vs C: TUG (+exp) Tinetti Test (+exp)
Li et al. (2024c) RCT (5) Nstart=120 Nend=120 TPS=Not reported A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Core muscle training + Functional electrical stimulation C: Core muscle training Duration: 5d/wk, 8wks	E vs C: Lower Extremity Muscle Strength paralytic dorsiflexor (+exp) plantar flexor (+exp) knee extensor (+exp) knee flexor (+exp) 10MWT (+exp) TUG (+exp) BBS (+exp)

		FAC (-) Lower Extremity Motricity Index (+exp)
Karaca et al. (2024) RCT (5) Nstart=27 Nend=23 TPS=Chronic A + B vs B Primary listing: Table 32 (Additional Afferent and Peripheral Stimulation Methods)	E: Sensory training + Trunk-centred Bobath exercise C: Trunk-centred Bobath exercise Duration: 40 mins/d, 3ds/wk, 8wks	E vs C: TIS static sitting balance (-) dynamic sitting balance (-) coordination (-) total (-) Trunk reposition error (+exp) Berg balance scale (-) 2 minute walk test (-) Barthel index (-)
Jung et al. (2021) RCT (7) Nstart=24 Nend=24 TPS=Subacute A vs B Primary listing: Table 11 (Balance Training)	E: Space Balance 3D system for active trunk training + conventional physical and occupational therapy C: General trunk training + Conventional physical and occupational physiotherapy Duration: 30min/d, 5d/wk, for 3wks	E vs C: Trunk Impairment Scale (+exp) Trunk Flexion muscle strength (+exp) Trunk Extension muscle strength (+exp) Static balance (+exp) Brunel Balance Assessment (+exp)
Cho et al. (2020b) RCT (8) Nstart=28 Nend=28 TPS=Chronic A + B vs A Primary listing: Table 13 (Orthotic Devices)	E: Trunk rehabilitation + Kinesio taping C: Trunk rehabilitation + Placebo taping Duration: 18hr/d, 7d/wk, 8wks Taping & 60min/d, 3d/wk, 8wks Trunk rehabilitation	E vs C: Dynamic center of pressure affected-side sway area (-) unaffected-side sway area (-) forward sway area (+exp) backward sway area (-) LOS total area (-) Static sway area (-) Static sway length (-)
Jung et al. (2017a) RCT (6) Nstart=46 Nend=43 TPS=Chronic A + B vs A Primary listing: Table 15 (Biofeedback)	E: Trunk stabilization exercises + audiovisual biofeedback (Pressure biofeedback unit) C: Trunk stabilization exercises Duration: 50min/d, 5d/wk,6wks	E vs C: Thickness of trunk muscles (+exp) TrA-affected (+exp) TrA-unaffected (+exp) IO-affected (-) IO-unaffected (-) EO-affected (+con) EO-unaffected (+con) Symmetric ratio (-) static sitting balance ability (+exp) dynamic sitting balance ability (+exp)
Shin & Song (2016) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Primary listing: Table 15 (Biofeedback)	E: Smartphone visual feedback for trunk control training + Conventional care C: Conventional care Duration: 80min/d conventional care + 20min/d Smartphone therapy, 5d/wk, 4wks	E vs C: Timed Up and Go (+exp) Static balance Eyes closed (+exp) Eyes open (+exp) Trunk Impairment scale (+exp) Modified Functional reach test (+exp)
Park et al. (2016) RCT (5) Nstart=28 Nend=28	E: Aquatic therapy (Halliwick, Watsu, and Trunk Training) C: Trunk control exercises Duration: 30min/d, 3d/wk, 4wks	E vs C: Gait Speed (-) Walking cycle (+con) Affected side stance phase (-)

TPS=Chronic A vs B Primary listing: Table 20 (Aquatic Therapy)		Affected side stride length (+con) Symmetry index of stance phase (-) Symmetry index of stride length (-)
Ko et al. (2016) RCT (6) Nstart=34 Nend=30 TPS=Acute A + B vs A vs B Primary listing: Table 29 (Neuromuscular Electrical Stimulation (NMES))	E1: Trunk NMES + Core muscle training E2: Trunk NMES C: Core Training Duration: 20min/d, 3d/wk, for 3wks	E1 vs C: Trunk Impairment Scale (-) Dynamic Sitting Balance (+exp1) Berg Balance Scale (+exp1) Postural Assessment for Stroke Scale (-) Modified Barthel Index (-) E1 vs E2: Trunk Impairment Scale (-) Dynamic Sitting Balance (-) Berg Balance Scale (+exp1) Postural Assessment for Stroke Scale (-) Modified Barthel Index (-)
Chung et al. (2014) RCT (4) Nstart=26 Nend=19 TPS=Chronic A + B vs A Primary listing: Table 15 (Biofeedback)	E: Core stability exercises + real time feedback + conventional physical therapy C: Core stability exercises + conventional physical therapy Duration: 30min/session, 3d/wk for 6wks	E vs C: Timed Up and Go test (+exp) Gait velocity (+exp) Gait cadence (-) Affected side Stride length (+exp) Step length (-) Single support time (+exp) Double support time (-) Non-affected side Stride length (+exp) Step length (-) Single support time (-) Double support time (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training may produce greater improvements in motor recovery than Conventional Therapy.	3	Dubey et al. 2018; Büyükavci et al. 2016; Saeys et al. 2012
1a	Trunk Training with Tilted Platforms may not have a difference in efficacy when compared to Trunk Training with Horizontal Platforms for improving motor recovery.	2	Fukata et al. 2021; Fujino et al. 2016
1b	Trunk Exercise with Unstable Surface may not have a difference in efficacy when compared to Trunk Exercise with Stable Surface or conventional therapy for improving motor recovery.	1	Lee et al. 2020c

1b	Trunk Training Combined with Robotics may produce greater improvements in motor recovery than Conventional Therapy.	1	Min et al. 2020
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving motor recovery.	1	Inoue et al. 2022a
1b	Kneeling Training may not have a difference in efficacy when compared to Treadmill Training for improving motor recovery.	1	Zhang et al. 2024c

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	2	Dubey et al. 2018; Chung et al. 2013
1b	Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy may produce greater improvements in biomechanical gait measures than Trunk stabilization exercise with Pelvic compression belt on non- paretic side and comprehensive rehabilitation therapy.	1	Choi et al. 2020a
1b	Trunk Training with Physio Equipment may not have a difference in efficacy when compared to Trunk stabilization exercises with conventional physical exercise for improving biomechanical gait measures.	1	Choi et al. 2020a
2	There is conflicting evidence about the effect of Trunk Training Combined with Robotics when compared to Conventional Therapy for improving biomechanical gait measures.	1	Moon et al. 2017
1b	Trunk Training may not have a difference in efficacy when compared to Cognitive Training for improving biomechanical gait measures.	1	Van Criekinge et al. 2020
2	Dynamic Neuromuscular Stabilization may not have a difference in efficacy when compared to Conventional Core Exercises for improving biomechanical gait measures.	1	Yoon et al. 2020
1a	Trunk Training with Visual or Auditory Feedback may produce greater improvements in biomechanical gait measures than Conventional Therapy.	2	Shin et al. 2020; Jung et al. 2017a
1b	Kneeling Training may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	1	Zhang et al. 2024c
1b	Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may not have a difference in efficacy when compared to Trunk stabilization exercises for improving biomechanical gait measures.	1	Jung et al. 2017a
2	Aquatic therapy (Halliwick, Watsu, and Trunk Training) may result in lesser improvements in biomechanical gait measures when compared to Trunk control exercises.	1	Park et al. 2016
2	Core stability exercises with real time feedback and conventional physical therapy may not have a difference in efficacy when compared to Core stability exercises with conventional physical therapy for improving biomechanical gait measures.	1	Chung et al. 2014

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training may produce greater improvements in biomechanical balance measures than Conventional Therapy.	2	El Bahrawy et al. 2024; Kim et al. 2022b

2	Trunk stabilization exercise using weights with general physiotherapy may produce greater improvements in biomechanical balance measures than Trunk stabilization without weights with general physiotherapy.	1	Kim et al. 2022b
1b	Trunk Training with Physio Equipment may produce greater improvements in biomechanical balance measures than Trunk stabilization exercises with conventional physical exercise.	1	Choi et al. 2021a
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may not have a difference in efficacy when compared to Foam roller exercises with neurodevelopmental therapy for improving biomechanical balance measures.	1	Cho et al. 2019
1b	Trunk Exercise with Unstable Surface may produce greater improvements in biomechanical balance measures than Trunk Exercise with Stable Surface or conventional therapy.	2	Karthikbabu et al. 2022; Lim et al. 2012
1b	Core stability training on stable surface may not have a difference in efficacy when compared to Core stability training on unstable surface for improving biomechanical balance measures.	1	Karthikbabu et al. 2022
1b	Core stability training on stable surface may produce greater improvements in biomechanical balance measures than Individualized physiotherapy.	1	Karthikbabu et al. 2022
1b	Trunk Training Combined with Robotics may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Kim et al. 2022f
1b	Trunk rehabilitation with Kinesio taping may not have a difference in efficacy when compared to Trunk rehabilitation with Placebo taping for improving biomechanical balance measures.	1	Cho et al. 2020b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	3	Kaymaz et al. 2024; Aycicek et al. 2024; Dubey et al. 2018
1b	Trunk Exercise with Unstable Surface may produce greater improvements in muscle strength than Trunk Exercise with Stable Surface or conventional therapy.	1	Karthikbabu et al. 2022
1b	Core stability training on stable surface may not have a difference in efficacy when compared to Core stability training on unstable surface for improving muscle strength.	1	Karthikbabu et al. 2022
1b	Core stability training on stable surface may produce greater improvements in muscle strength than Individualized physiotherapy.	1	Karthikbabu et al. 2022
2	Trunk Training Combined with Robotics may produce greater improvements in muscle strength than Conventional Therapy.	1	Moon et al. 2017
2	There is conflicting evidence about the effect of Dynamic Neuromuscular Stabilization when compared to Conventional Core Exercises for improving muscle strength.	1	Yoon et al. 2020
1a	There is conflicting evidence about the effect of Trunk Training with Visual or Auditory Feedback when compared to Conventional Therapy for improving muscle strength.	2	Jung et al. 2017a; De Seze et al. 2001
2	Core muscle training with Functional electrical stimulation may produce greater improvements in muscle strength than Core muscle training.	1	Li et al. 2024c
1b	Space Balance 3D system for active trunk training with conventional physical and occupational therapy may produce greater	1	Jung et al. 2021

	improvements in muscle strength than General trunk training with Conventional physical and occupational physiotherapy.		
1b	There is conflicting evidence about the effect of Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) when compared to Trunk stabilization exercises for improving muscle strength.	1	Jung et al. 2017a

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training with Visual or Auditory Feedback may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	1	De Seze et al. 2001

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	2	Mahmood et al. 2022; Haruyama et al. 2017
2	Dynamic Neuromuscular Stabilization may produce greater improvements in range of motion than Conventional Core Exercises.	1	Lee et al. 2018c
1b	Kneeling Training may not have a difference in efficacy when compared to Treadmill Training for improving range of motion.	1	Zhang et al. 2024c

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Different Trunk Muscle Activation Exercises Compared to Each other when compared to Bobath based trunk training with Conventional therapy for improving neurophysiological measures.	1	Muckel et al. 2014
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving neurophysiological measures.	1	Inoue et al. 2022a

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may not have a difference in efficacy when compared to Foam roller exercises with neurodevelopmental therapy for improving aerobic measures.	1	Cho et al. 2019

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training with Tilted Platforms may produce greater improvements in sensory and proprioceptive function than Trunk Training with Horizontal Platforms.	3	Sawa et al. 2024; Sawa et al. 2022; Fukata et al. 2021
1b	Trunk Exercise with Unstable Surface may not have a difference in efficacy when compared to Trunk Exercise with Stable Surface or conventional therapy for improving sensory and proprioceptive function.	1	Lee et al. 2020c
1b	Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may produce greater improvements in sensory and	1	Lim et al. 2019

	proprioceptive function than Treadmill Training and Placebo transcutaneous electrical nerve stimulation.		
2	Sensory training with Trunk-centred Bobath exercise may produce greater improvements in sensory and proprioceptive function than Trunk-centred Bobath exercise.	1	Karaca et al. 2024

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	7	Almasoudi et al. 2024; Kaymaz et al. 2024; Aycicek et al. 2024; Park et al. 2019b; Dubey et al. 2018; Büyükavci et al. 2016; Cabanas-Valdes et al. 2016
1a	Trunk Training with Tilted Platforms may produce greater improvements in activities of daily living than Trunk Training with Horizontal Platforms.	2	Sawa et al. 2022; Fukata et al. 2021
1b	Stable trunk training with plinth may not have a difference in efficacy when compared to Unstable trunk training with Swiss ball for improving activities of daily living.	1	Karthikbabu et al. 2018
1b	Stable trunk training with plinth or Unstable trunk training with Swiss ball may produce greater improvements in activities of daily living than Standard physiotherapy.	1	Karthikbabu et al. 2018
1b	Trunk Training with Visual or Auditory Feedback may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	De Seze et al. 2001
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving activities of daily living.	1	Inoue et al. 2022a
2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving activities of daily living.	1	Karaca et al. 2024
1b	Trunk neuromuscular electrical stimulation with Core muscle training may not have a difference in efficacy when compared to Core Training for improving activities of daily living.	1	Ko et al. 2016
1b	Trunk neuromuscular electrical stimulation with Core muscle training may not have a difference in efficacy when compared to Trunk neuromuscular electrical stimulation for improving activities of daily living.	1	Ko et al. 2016

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Trunk Training may produce greater improvements in gait speed than Conventional Therapy.	3	Kim et al. 2022b; Dubey et al. 2018; Chung et al. 2013
2	Trunk stabilization exercise using weights with general physiotherapy may produce greater improvements in gait speed than Trunk stabilization without weights with general physiotherapy.	1	Kim et al. 2022b
1b	Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy may produce greater improvements in gait speed than Trunk stabilization exercise with Pelvic compression belt on non- paretic side and comprehensive rehabilitation therapy.	1	Choi et al. 2020a

1b	Trunk Training with Physio Equipment may not have a difference in efficacy when compared to Trunk stabilization exercises with conventional physical exercise for improving gait speed.	1	Choi et al. 2020a
1b	Trunk Exercise with Unstable Surface may produce greater improvements in gait speed than Trunk Exercise with Stable Surface or conventional therapy.	2	Lee et al. 2020c; Lim et al. 2012
1b	Stable trunk training with plinth may not have a difference in efficacy when compared to Unstable trunk training with Swiss ball for improving gait speed.	1	Karthikbabu et al. 2018
1b	Stable trunk training with plinth or Unstable trunk training with Swiss ball may produce greater improvements in gait speed than Standard physiotherapy.	1	Karthikbabu et al. 2018
1b	Trunk Training Combined with Dual-Task Training may produce greater improvements in gait speed than Trunk Training.	1	Ahmed et al. 2021
1b	Trunk Training may produce greater improvements in gait speed than Cognitive Training.	1	Van Criekinge et al. 2020
1a	Trunk Training with Visual or Auditory Feedback may produce greater improvements in gait speed than Conventional Therapy.	2	Kim et al. 2023; Shin et al. 2020
1b	Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program may not have a difference in efficacy when compared to Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program for improving gait speed.	1	Lee et al. 2020d
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving gait speed.	1	Inoue et al. 2022a
2	Core muscle training with Functional electrical stimulation may produce greater improvements in gait speed than Core muscle training.	1	Li et al. 2024c
2	Aquatic therapy (Halliwick, Watsu, and Trunk Training) may not have a difference in efficacy when compared to Trunk control exercises for improving gait speed.	1	Park et al. 2016
2	Core stability exercises with real time feedback and conventional physical therapy may produce greater improvements in gait speed than Core stability exercises with conventional physical therapy.	1	Chung et al. 2014

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving gait endurance.	1	Aycicek et al. 2024
1b	Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy may produce greater improvements in gait endurance than Trunk stabilization exercise with Pelvic compression belt on non- paretic side and comprehensive rehabilitation therapy.	1	Choi et al. 2020a
1b	Trunk Training with Physio Equipment may produce greater improvements in gait endurance than Trunk stabilization exercises with conventional physical exercise.	1	Choi et al. 2020a
2	Trunk Exercise with Unstable Surface may produce greater improvements in gait endurance than Trunk Exercise with Stable Surface or conventional therapy.	1	Tirupatamma et al. 2019

2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving gait endurance.	1	Karaca et al. 2024

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training may produce greater improvements in functional mobility than Conventional Therapy.	9	Nadeem et al. 2024; Mahmood et al. 2022; Kim et al. 2022b; Haruyama et al. 2017; Büyükavci et al. 2016; Cabanas-Valdes et al. 2016; Jung et al. 2014; Chung et al. 2013; Saeys et al. 2012
2	Trunk stabilization exercise using weights with general physiotherapy may produce greater improvements in functional mobility than Trunk stabilization without weights with general physiotherapy.	1	Kim et al. 2022b
1a	There is conflicting evidence about the effect of Trunk Training with Physio Equipment when compared to Trunk stabilization exercises with conventional physical exercise for improving functional mobility.	2	Choi et al. 2021a; Choi et al. 2020a
1b	Trunk Exercise with Unstable Surface may not have a difference in efficacy when compared to Trunk Exercise with Stable Surface or conventional therapy for improving functional mobility.	2	Lee et al. 2020c; Sarwar et al. 2019
1b	Stable trunk training with plinth may not have a difference in efficacy when compared to Unstable trunk training with Swiss ball for improving functional mobility.	1	Karthikbabu et al. 2018
1b	There is conflicting evidence about the effect of Trunk Training Combined with Robotics when compared to Conventional Therapy for improving functional mobility.	2	Min et al. 2020; Moon et al. 2017
1b	Trunk Training Combined with Dual-Task Training may produce greater improvements in functional mobility than Trunk Training.	1	Ahmed et al. 2021
1b	Trunk Training may produce greater improvements in functional mobility than Cognitive Training.	1	Van Criekinge et al. 2020
2	Dynamic Neuromuscular Stabilization may produce greater improvements in functional mobility than Conventional Core Exercises.	1	Yoon et al. 2020
1a	Trunk Training with Visual or Auditory Feedback may produce greater improvements in functional mobility than Conventional Therapy.	2	Shin & Song 2016; De Seze et al. 2001
1b	Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program may not have a difference in efficacy when compared to Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program for improving functional mobility.	1	Lee et al. 2020d
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving functional mobility.	1	Inoue et al. 2022a
1b	Metronome training with core strengthening and general balance exercises may produce greater improvements in functional mobility than Core strengthening with general balance exercises.	1	Rana et al. 2024
2	There is conflicting evidence about the effect of Core muscle training with Functional electrical stimulation when compared to Core muscle training for improving functional mobility.	1	Li et al. 2024c

1b	Smartphone visual feedback for trunk control training with Conventional care may produce greater improvements in functional mobility than Conventional care.	1	Shin & Song 2016
2	Core stability exercises with real time feedback and conventional physical therapy may produce greater improvements in functional mobility than Core stability exercises with conventional physical therapy.	1	Chung et al. 2014

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Trunk Training may produce greater improvements in balance than Conventional Therapy.	14	Almasoudi et al. 2024; Kaymaz et al. 2024; Aycicek et al. 2024; Nadeem et al. 2024; Mahmood et al. 2022; Kim et al. 2022b; Park et al. 2019b; Dubey et al. 2018; Haruyama et al. 2017; Büyükavci et al. 2016; Cabanas-Valdes et al. 2016; Jung et al. 2014; Saeys et al. 2012; Verheyden et al. 2009
2	Trunk stabilization exercise using weights with general physiotherapy may produce greater improvements in balance than Trunk stabilization without weights with general physiotherapy.	1	Kim et al. 2022b
1a	There is conflicting evidence about the effect of Trunk Training with Physio Equipment when compared to Trunk stabilization exercises with conventional physical exercise for improving balance.	2	Choi et al. 2021a; Choi et al. 2020a
1b	Trunk stabilization exercise with Pelvic compression belt on paretic side with comprehensive rehabilitation therapy may not have a difference in efficacy when compared to Trunk stabilization exercise with Pelvic compression belt on non- paretic side with comprehensive rehabilitation therapy for improving balance.	1	Choi et al. 2020a
1a	Trunk Training with Tilted Platforms may produce greater improvements in balance than Trunk Training with Horizontal Platforms.	2	Fukata et al. 2021; Fujino et al. 2016
1a	Trunk Exercise with Unstable Surface may produce greater improvements in balance than Trunk Exercise with Stable Surface or conventional therapy.	5	Karthikbabu et al. 2022; Lee et al. 2020c; Sarwar et al. 2019; Tirupatamma et al. 2019; Karthikbabu et al. 2011
1b	Core stability training on stable surface may not have a difference in efficacy when compared to Core stability training on unstable surface for improving balance.	1	Karthikbabu et al. 2022
1b	Core stability training on stable surface may produce greater improvements in balance than Individualized physiotherapy.	1	Karthikbabu et al. 2022
1b	Stable trunk training with plinth may not have a difference in efficacy when compared to Unstable trunk training with Swiss ball for improving balance.	1	Karthikbabu et al. 2018
1b	Stable trunk training with plinth or Unstable trunk training with Swiss ball may produce greater improvements in balance than Standard physiotherapy.	1	Karthikbabu et al. 2018
1a	Trunk Training Combined with Robotics may produce greater improvements in balance than Conventional Therapy.	2	Kim et al. 2022f; Min et al. 2020
1b	Trunk Training Combined with Dual-Task Training may produce greater improvements in balance than Trunk Training.	1	Ahmed et al. 2021
1b	Trunk Training may produce greater improvements in balance than Cognitive Training.	1	Van Criekinge et al. 2020

2	Dynamic Neuromuscular Stabilization may not have a difference in efficacy when compared to Conventional Core Exercises for improving balance.	2	Yoon et al. 2020; Lee et al. 2018c
1a	Trunk Training with Visual or Auditory Feedback may produce greater improvements in balance than Conventional Therapy.	5	Kim et al. 2023; Shin et al. 2020; Jung et al. 2017a; Shin & Song 2016; De Seze et al. 2001
1b	Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation for improving balance.	1	Lim et al. 2019
2	Different Trunk Muscle Activation Exercises Compared to Each other may produce greater improvements in balance than Bobath based trunk training with Conventional therapy.	1	Younas et al. 2024
1b	Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program may not have a difference in efficacy when compared to Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program for improving balance.	1	Lee et al. 2020d
2	Trunk Training with Delayed may not have a difference in efficacy when compared to Real-Time Visual Feedback for improving balance.	1	Inoue et al. 2022a
1b	Kneeling Training may produce greater improvements in balance than Treadmill Training.	1	Zhang et al. 2024c
1b	Bobath with Core stability training may produce greater improvements in balance than Conventional physical therapy.	1	Ashraf et al. 2024
2	Core muscle training with Functional electrical stimulation may produce greater improvements in balance than Core muscle training.	1	Li et al. 2024c
2	Sensory training with Trunk-centred Bobath exercise may not have a difference in efficacy when compared to Trunk-centred Bobath exercise for improving balance.	1	Karaca et al. 2024
1b	Space Balance 3D system for active trunk training with conventional physical and occupational therapy may produce greater improvements in balance than General trunk training with Conventional physical and occupational physiotherapy.	1	Jung et al. 2021
1b	Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may produce greater improvements in balance than Trunk stabilization exercises.	1	Jung et al. 2017a
1b	Smartphone visual feedback for trunk control training with Conventional care may produce greater improvements in balance than Conventional care.	1	Shin & Song 2016
1b	There is conflicting evidence about the effect of Trunk neuromuscular electrical stimulation with Core muscle training when compared to Core Training for improving balance.	1	Ko et al. 2016
1b	Trunk neuromuscular electrical stimulation with Core muscle training may not have a difference in efficacy when compared to Trunk neuromuscular electrical stimulation for improving balance.	1	Ko et al. 2016

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Exercise with Unstable Surface may produce greater improvements in falls and fear of falling than Trunk Exercise with Stable Surface or conventional therapy.	1	Karthikbabu et al. 2022

1b	Core stability training on stable surface may not have a difference in efficacy when compared to Core stability training on unstable surface for improving falls and fear of falling.	1	Karthikbabu et al. 2022
1b	Core stability training on stable surface may produce greater improvements in falls and fear of falling than Individualized physiotherapy.	1	Karthikbabu et al. 2022
2	Dynamic Neuromuscular Stabilization may not have a difference in efficacy when compared to Conventional Core Exercises for improving falls and fear of falling.	1	Lee et al. 2018c
1b	Trunk Training with Visual or Auditory Feedback may produce greater improvements in falls and fear of falling than Conventional Therapy.	1	Kim et al. 2023

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Aycicek et al. 2024
1b	Segmental mid-thoracic mobilization with neurodevelopmental therapy may produce greater improvements in quality of life than Foam roller exercises with neurodevelopmental therapy.	1	Cho et al. 2019
1b	Stable trunk training with plinth may not have a difference in efficacy when compared to Unstable trunk training with Swiss ball for improving quality of life.	1	Karthikbabu et al. 2018
1b	Stable trunk training with plinth or Unstable trunk training with Swiss ball may produce greater improvements in quality of life than Standard physiotherapy.	1	Karthikbabu et al. 2018
1b	Trunk Training Combined with Dual-Task Training may produce greater improvements in quality of life than Trunk Training.	1	Ahmed et al. 2021

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Trunk Training with Tilted Platforms when compared to Trunk Training with Horizontal Platforms for improving cognition.	1	Fujino et al. 2016
1b	Trunk Exercise with Unstable Surface may produce greater improvements in cognition than Trunk Exercise with Stable Surface or conventional therapy.	1	Khurana et al. 2022
1b	There is conflicting evidence about the effect of Trunk Training with Visual or Auditory Feedback when compared to Conventional Therapy for improving cognition.	1	De Seze et al. 2001

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Trunk Training may not have a difference in efficacy when compared to Conventional Therapy for improving upper extremity function.	2	Büyükavci et al. 2016; Saeys et al. 2012

1b	Trunk Exercise with Unstable Surface may not have a difference in efficacy when compared to Trunk Exercise with Stable Surface or conventional therapy for improving upper extremity function.	1	Lee et al. 2020c

Key Points

- Trunk Training may be beneficial for improving motor recovery, biomechanical balance measures, gait speed, functional mobility, and balance, but not biomechanical gait measures, muscle strength, range of motion, activities of daily living, gait endurance, and quality of life, after stroke when compared to Conventional Therapy.
- Trunk stabilization exercise using weights with general physiotherapy may be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Trunk stabilization without weights with general physiotherapy.
- Trunk Training with Physio Equipment may be beneficial for improving biomechanical balance measures and gait endurance, but not biomechanical gait measures and gait speed, after stroke when compared to Trunk stabilization exercises with conventional physical exercise; the literature is mixed regarding functional mobility and balance.
- Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not balance, after stroke when compared to Trunk stabilization exercise with Pelvic compression belt on non- paretic side and comprehensive rehabilitation therapy.
- Segmental mid-thoracic mobilization with neurodevelopmental therapy may be beneficial for improving quality of life, but not biomechanical balance measures and aerobic measures, after stroke when compared to Foam roller exercises with neurodevelopmental therapy.
- Trunk Training with Tilted Platforms may be beneficial for improving sensory and proprioceptive function, activities of daily living, and balance, but not motor recovery, after stroke when compared to Trunk Training with Horizontal Platforms.
- Trunk Exercise with Unstable Surface may be beneficial for improving biomechanical balance measures, muscle strength, gait speed, gait endurance, balance, and falls and fear of falling, but not motor recovery, sensory and proprioceptive function, and functional mobility, after stroke when compared to Trunk Exercise with Stable Surface or conventional therapy.
- Core stability training on stable surface may not be beneficial for improving biomechanical balance measures, muscle strength, balance, and falls and fear of falling after stroke when compared to Core stability training on unstable surface.
- Stable trunk training with plinth may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and quality of life after stroke when compared to Unstable trunk training with Swiss ball.
- Trunk Training Combined with Robotics may be beneficial for improving motor recovery, biomechanical balance measures, muscle strength, and balance after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical gait measures and functional mobility.
- Trunk Training Combined with Dual-Task Training may be beneficial for improving gait speed, functional mobility, balance, and quality of life after stroke when compared to Trunk Training.
- Trunk Training may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Cognitive Training.
- Dynamic Neuromuscular Stabilization may be beneficial for improving range of motion and functional mobility, but not biomechanical gait measures, balance, and falls and fear of falling, after stroke when compared to Conventional Core Exercises; the literature is mixed regarding muscle strength.
- Trunk Training with Visual or Auditory Feedback may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, balance, and falls and fear of falling, but not spasticity and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding muscle strength.
- Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation.

- Different Trunk Muscle Activation Exercises Compared to Each other may be beneficial for improving balance after stroke when compared to Bobath based trunk training with Conventional therapy; the literature is mixed regarding neurophysiological measures.
- Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program may not be beneficial for improving gait speed, balance, and functional mobility after stroke when compared to Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program.
- Trunk Training with Delayed may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Real-Time Visual Feedback.
- Kneeling Training may be beneficial for improving balance, but not motor recovery, biomechanical gait measures, and range of motion, after stroke when compared to Treadmill Training.
- Bobath with Core stability training may be beneficial for improving balance after stroke when compared to Conventional physical therapy.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.
- Core muscle training with Functional electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance after stroke when compared to Core muscle training; the literature is mixed regarding functional mobility.
- Sensory training with Trunk-centred Bobath exercise may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk-centred Bobath exercise.
- Space Balance 3D system for active trunk training with conventional physical and occupational therapy may be beneficial for improving muscle strength and balance after stroke when compared to General trunk training with Conventional physical and occupational physiotherapy.
- Trunk rehabilitation with Kinesio taping may not be beneficial for improving biomechanical balance measures after stroke when compared to Trunk rehabilitation with Placebo taping.
- Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may be beneficial for improving balance, but not biomechanical gait measures, after stroke when compared to Trunk stabilization exercises; the literature is mixed regarding muscle strength.
- Smartphone visual feedback for trunk control training with Conventional care may be beneficial for improving functional mobility and balance after stroke when compared to Conventional care.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living after stroke when compared to Core Training; the literature is mixed regarding balance.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living and balance after stroke when compared to Trunk neuromuscular electrical stimulation.
- Core stability exercises with real time feedback and conventional physical therapy may be beneficial for improving gait speed and functional mobility, but not biomechanical gait measures, after stroke when compared to Core stability exercises with conventional physical therapy.
- Core stability training on stable surface may be beneficial for improving biomechanical balance measures, muscle strength, balance, and falls and fear of falling after stroke when compared to Individualized physiotherapy.
- Stable trunk training with plinth may be beneficial for improving activities of daily living, gait speed, balance, and quality of life after stroke when compared to Standard physiotherapy.
- Unstable trunk training with Swiss ball may be beneficial for improving activities of daily living, gait speed, balance, and quality of life after stroke when compared to Standard physiotherapy.
- Trunk stabilization exercise with Pelvic compression belt on paretic side with comprehensive rehabilitation therapy may not be beneficial for improving balance after stroke when compared to Trunk stabilization exercise with Pelvic compression belt on non- paretic side with comprehensive rehabilitation therapy.
- Aquatic therapy (Halliwick, Watsu, and Trunk Training) may not be beneficial for improving gait speed after stroke when compared to Trunk control exercises; Aquatic therapy (Halliwick, Watsu, and Trunk

Training) may result in lesser improvements in biomechanical gait measures when compared to Trunk control exercises.

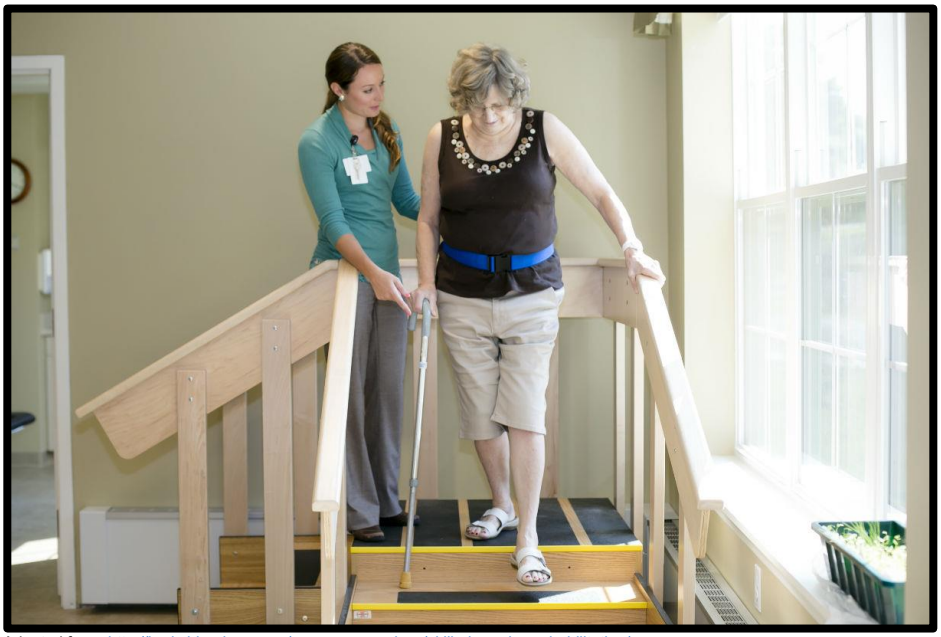
Summary of Key Points: Trunk Training

Intervention	Control(s)	Function domain(s)	Effect
Trunk Training	Conventional Therapy	Motor recovery, biomechanical balance measures, gait speed, functional mobility, balance	+
Trunk Training	Conventional Therapy	Biomechanical gait measures, muscle strength, range of motion, activities of daily living, gait endurance, quality of life	–
Trunk stabilization exercise using weights with general physiotherapy	Trunk stabilization without weights with general physiotherapy	Biomechanical balance measures, gait speed, functional mobility, balance	+
Trunk Training with Physio Equipment	Trunk stabilization exercises with conventional physical exercise	Biomechanical balance measures, gait endurance	+
Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy	Trunk stabilization exercise with Pelvic compression belt on non-paretic side and comprehensive rehabilitation therapy	Biomechanical gait measures, gait speed, gait endurance	+
Trunk Training with Physio Equipment	Trunk stabilization exercises with conventional physical exercise	Gait endurance	+
Trunk Training with Physio Equipment	Trunk stabilization exercises with conventional physical exercise	Biomechanical gait measures, gait speed	–
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy	Quality of life	+
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy	Biomechanical balance measures, aerobic measures	–
Trunk Training with Tilted Platforms	Trunk Training with Horizontal Platforms	Sensory and proprioceptive function, activities of daily living, balance	+
Trunk Training with Tilted Platforms	Trunk Training with Horizontal Platforms	Motor recovery	–
Trunk Exercise with Unstable Surface	Trunk Exercise with Stable Surface or conventional therapy	Biomechanical balance measures, muscle strength, gait speed, gait endurance, balance, falls and fear of falling	+
Trunk Exercise with Unstable Surface	Trunk Exercise with Stable Surface or conventional therapy	Motor recovery, sensory and proprioceptive function, functional mobility	–
Core stability training on stable surface	Core stability training on unstable surface	Biomechanical balance measures, muscle strength, balance, falls and fear of falling	–
Stable trunk training with plinth	Unstable trunk training with Swiss ball	Activities of daily living, gait speed, functional mobility, balance, quality of life	–
Trunk Training Combined with Robotics	Conventional Therapy	Motor recovery, biomechanical balance measures, muscle strength, balance	+
Trunk Training Combined with Robotics	Conventional Therapy	Biomechanical gait measures, functional mobility	=

Trunk Training Combined with Dual-Task Training	Trunk Training	Gait speed, functional mobility, balance, quality of life	+
Trunk Training	Cognitive Training	Gait speed, functional mobility, balance	+
Trunk Training	Cognitive Training	Biomechanical gait measures	–
Dynamic Neuromuscular Stabilization	Conventional Core Exercises	Range of motion, functional mobility	+
Dynamic Neuromuscular Stabilization	Conventional Core Exercises	Biomechanical gait measures, balance, falls and fear of falling	–
Dynamic Neuromuscular Stabilization	Conventional Core Exercises	Muscle strength	=
Trunk Training with Visual or Auditory Feedback	Conventional Therapy	Biomechanical gait measures, gait speed, functional mobility, balance, falls and fear of falling	+
Trunk Training with Visual or Auditory Feedback	Conventional Therapy	Spasticity, activities of daily living	–
Trunk Training with Visual or Auditory Feedback	Conventional Therapy	Muscle strength	=
Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation	Sensory and proprioceptive function	+
Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation	Balance	–
Different Trunk Muscle Activation Exercises Compared to Each other	Bobath based trunk training with Conventional therapy	Balance	+
Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program	Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program	Gait speed, balance, functional mobility	–
Different Trunk Muscle Activation Exercises Compared to Each other	Bobath based trunk training with Conventional therapy	Neurophysiological measures	=
Trunk Training with Delayed	Real-Time Visual Feedback	Motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, balance	–
Kneeling Training	Treadmill Training	Balance	+
Kneeling Training	Treadmill Training	Motor recovery, biomechanical gait measures, range of motion	–
Bobath with Core stability training	Conventional physical therapy	Balance	+
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises	Functional mobility	+
Core muscle training with Functional electrical stimulation	Core muscle training	Muscle strength, gait speed, balance	+
Core muscle training with Functional electrical stimulation	Core muscle training	Functional mobility	=
Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise	Sensory and proprioceptive function	+

Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise	Activities of daily living, gait endurance, balance	–
Space Balance 3D system for active trunk training with conventional physical and occupational therapy	General trunk training with Conventional physical and occupational physiotherapy	Muscle strength, balance	+
Trunk rehabilitation with Kinesio taping	Trunk rehabilitation with Placebo taping	Biomechanical balance measures	–
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Balance	+
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Biomechanical gait measures	–
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Muscle strength	=
Smartphone visual feedback for trunk control training with Conventional care	Conventional care	Functional mobility, balance	+
Trunk neuromuscular electrical stimulation with Core muscle training	Core Training	Activities of daily living	–
Trunk neuromuscular electrical stimulation with Core muscle training	Core Training	Balance	=
Trunk neuromuscular electrical stimulation with Core muscle training	Trunk neuromuscular electrical stimulation	Activities of daily living, balance	–
Core stability exercises with real time feedback and conventional physical therapy	Core stability exercises with conventional physical therapy	Gait speed, functional mobility	+
Core stability exercises with real time feedback and conventional physical therapy	Core stability exercises with conventional physical therapy	Biomechanical gait measures	–
Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy	Trunk stabilization exercise with Pelvic compression belt on non-paretic side and comprehensive rehabilitation therapy	Balance	–
Core stability training on stable surface	Individualized physiotherapy	Biomechanical balance measures, muscle strength, balance, falls and fear of falling	+
Stable trunk training with plinth	Standard physiotherapy	Activities of daily living, gait speed, balance, quality of life	+
Unstable trunk training with Swiss ball	Standard physiotherapy	Activities of daily living, gait speed, balance, quality of life	+
Trunk Training with Physio Equipment	Trunk stabilization exercises with conventional physical exercise	Functional mobility, balance	=
Trunk stabilization exercise with Pelvic compression belt on paretic side with comprehensive rehabilitation therapy	Trunk stabilization exercise with Pelvic compression belt on non-paretic side with comprehensive rehabilitation therapy	Balance	–
Aquatic therapy (Halliwick, Watsu, and Trunk Training)	Trunk control exercises	Biomechanical gait measures, gait speed	–

Task-Specific Training



Adopted from: http://berkshireplace.com/programs-services/skilled-nursing-rehabilitation/

Task-specific training, also referred to as task-oriented, goal-directed, or functional task practice, involves therapy in which patients perform practical motor tasks that would be used in their everyday life, such as walking up the stairs. Tasks should be relevant, repetitive, and should be designed to progress towards performance of the whole task while being reinforced with feedback (Hubbard et al., 2009).

Task-specific circuit training is a tailored intervention program targeting balance, gait, strength, aerobic capacity, and range of movement. The training involves performing various exercises at different stations and is often performed in groups. In addition to lower limb recovery, benefits associated with circuit training include peer support and social interaction, as well as more efficient use of therapy staff.

A total of 48 RCTs were found that evaluated Task-Specific training for lower extremity motor rehabilitation. Six RCTs compared Task-Specific Training with Conventional Therapy (Song et al. 2024; Ain et al. 2022; Arabzadeh et al. 2018; Ntsiea et al. 2015; Richards et al. 2004; Salbach et al. 2004). Two RCTs evaluated Task oriented training with altered sensory input (Kuberan et al. 2017; Park & Won 2017). Two RCTs compared Task Oriented sitting Reach Training with Sham Training (Dean et al. 2007; Dean et al. 1997). One RCT compared Task Specific Treadmill Training with Standard Treadmill Training (Kwon et al. 2015). One RCT compared Task-Oriented Training with Speed Dependent Treadmill Training (Sharma et al. 2014). One RCT compared Task Oriented Resistance Training with No Treatment (Yang et al. 2006). Four RCTs compared Task Oriented Gait Training with Conventional Training (Knox et al. 2018; Qurat-ul-Ain et al. 2018; Qurat-ul-Ain et al. 2018; Richards et al. 1993). Four RCTs compared Task Specific Circuit Training with Conventional/Sham (Martins et al. 2020; Kim et al. 2016d; English et al. 2015; Indurkar et al. 2013). One RCT compared Task-Specific Training with Orthoses (Kwakkel & Wagenaar 2002). One RCT compared Task Oriented Leg Training with Body Weight Support Training (Brunelli et al. 2019). One RCT compared Activity Repetition Training with Task Oriented Training (Ghous et al. 2017). One RCT evaluated Task-Specific Training Different Modalities (Gjelsvik et al. 2014). Eight RCTs compared Task Specific Training Combined with Other Therapies with Task Specific Therapy (Jeong et al. 2023; Patra et al. 2023; Kim et al. 2021b; Malik et al. 2021; Cha et al. 2016; Marin et al. 2013; Verma et al. 2011; Kluding et al. 2008). One RCT compared Lower body with Upper Body Task Specific Training (Dean et al. 2000). Two RCTs compared High Intensity Task-Specific Training with Low Intensity Training or vs Conventional Therapy (Outermans et al.2004). Two RCTs compared Task Oriented Training with Tilt Table with Tilt Table Alone (Kim et al. 2015g; Kim et al. 2015g). One RCT compared Task-Specific Circuit Training with Group Activities (Mudge et al. 2009). One RCT compared Task-Specific Training with Proprioceptive Neuromuscular Facilitation (Anandan et al. 2020). Three RCTs compared Group Task-Oriented Circuit Training with Conventional Training (Ali et al. 2020; Renner et al. 2016; Vandeport et al. 2012). Three RCTs evaluated Task-related Training combined with TENS (Ng et al. 2016; Hui-Chan et al. 2009; Ng & Hui-Chan 2007). Two RCTs compared Task-Specific Training with Bobath Concept

Approach with Task-Specific Training (Brock et al. 2011; Mudie et al. 2002). One RCT compared Task-Specific Training with Trunk Training (Priya et al. 2024).

In addition, fifteen RCTs in which Task-Specific training formed part of a combined or comparative intervention are cross-referenced at the end of Table 5; their primary listings appear in other tables.

The methodological details and results of all 48 RCTs are presented in Table 5.

Table 5. RCTs Evaluating Task-Specific Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Task-Specific Training vs Conventional Therapy		
Song et al. (2024) RCT (4) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: Task-specific training + Conventional rehab C: Conventional rehab Duration: 40 min/d (2 x 20min), 5d/wk, 2wks	E vs C: gait parameters step length (+exp) step speed/ velocity (+exp) support phase (+exp) ROM shoulder flexion (+exp) elbow flexion (+exp)
Ain et al. (2022) RCT (4) Nstart=14 Nend=12 TPS=Chronic A vs 0	E: Task-specific training C: Conventional rehabilitation Duration: E: 8 wks	E vs C: Timed-Up-and-Go Test (+exp) Trunk Control Measurement Scale (-) 6-Minute Walk Test (-) Berg Balance Scale (+exp)
Arabzadeh et al. (2018) RCT (5) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: Task-oriented Exercises C: Conventional Physiotherapy Duration: 50min/session, for 4wks	E vs C: Berg Balance Scale (+exp) Center of Pressure (COP) path length (+exp) COP Confidence Ellipse Area (+exp) Plantar Pressure Distribution (weight bearing) Affected side (-) Nonaffected Side (-)
Ntsiea et al. (2015) RCT (7) Nstart=80 Nend=80 TPS=Subacute A vs 0	E: Workplace intervention program (functional exercises) + Usual rehabilitation therapy C: Usual rehabilitation therapy Duration: 3-6 months	E vs C: Rate of return to work (+exp) Barthel index (+exp) Modified Rivermead mobility index (+exp) Montreal Cognitive Assessment (-) Stroke specific quality of asklife scale (-)
Richards et al. (2004) RCT (6) Nstart=63 Nend=60 TPS=Subacute A vs 0 Also in Table 9 (Treadmill Training)	E: Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) + Conventional physiotherapy C: Conventional physiotherapy Duration: 60min/d, 5d/wk for 8wks	E vs C: Gait speed (-) Fugl-Meyer Assessment Leg (-) Arm (-) Timed Up and Go test (-) Barthel Index (-) Berg Balance Scale (-)
Salbach et al. (2004)	E: Task-oriented training	E vs C:

RCT (8) Nstart=91 Nend=84 TPS=Chronic A vs B	C: Upper extremity activities (sham) Duration: 60min/d, 3d/wk, for 6wks	6-min Walk Test (+exp) 5-m Walk (+exp) Timed Up and Go (-) Berg Balance Scale (-)
Task oriented training with altered sensory input		
Kuberan et al. (2017) RCT (5) Nstart=26 Nend=26 TPS=Chronic A + B vs 0	E: Task-oriented training + Altered sensory input C: Conventional physical therapy Duration: 45-60min/d, 5d/wk for 3wks	E vs C: Dynamic Gait Index (-) Timed Up-and-Go Test (+exp) Fall Efficacy Scale (+exp)
Park & Won (2017a) RCT (5) Nstart=28 Nend=26 TPS=Chronic A + B vs 0	E: Task-Oriented Training + altered sensory input C: Conventional Physical Training Duration: Physical Therapy 5d/wk, 4wks + Task-oriented Training 1hr/d, 3d/wk, 4wks	E vs C: Berg Balance Scale (+exp) Activities-Specific Balance Confidence Scale (-) Limit of Stability (-)
Task Oriented sitting Reach Training vs Sham Training		
Dean et al. (2007) RCT (7) Nstart=12 Nend=9 TPS=Acute A vs 0	E: Sitting Reach Training + Regular physiotherapy C: Sham Training + Regular physiotherapy Duration: 30min/d, 5d/wk, 2wks	E vs C: Maximum Sitting Reach Distance (modified functional reach test in sitting) (+exp) Reaching Time (+exp) Peak vertical force through affected foot during reaching (+exp) Peak vertical force through affected foot during standing up (+exp) 10-Meter Walking Test (-)
Dean et al. (1997) RCT (7) Nstart=20 Nend=19 TPS=Chronic A vs 0	E: Task- oriented reach training C: Sham training Duration: 30min/session, 10 sessions over 2wks	E vs C: Maximum distance reached Ipsilateral (+exp) Forward (+exp) Across (+exp) Peak Vertical Ground reaction forces Ipsilateral (-) Forward (+exp) Across (+exp) Hand movement time Ipsilateral (+exp) Forward (-) Across (+exp) 10-Meter Walk Test (-) Cognitive task Letter cancellation (+con) Word puzzle (-) Mathematics (-)
Task Specific Treadmill Training vs Standard Treadmill Training		
Kwon et al. (2015) RCT (5) Nstart=40 Nend=40 TPS=Chronic	E: Task-oriented treadmill training + conventional therapy C: Treadmill training + conventional therapy	E vs C: Timed Up & Go Test (+exp) 6-Minute Walk Test (+exp) Gait Stride length (+exp)

A1 vs A2 Also in Table 9 (Treadmill Training)	Duration: 30min/d, 5d/wk, 8wks conventional therapy, task-oriented treadmill training or conventional treadmill	Gait cycle (+exp) Cadence (+exp) Affected step length (+exp) Average speed (+exp) Affected single support (+exp) Affected step Affected speed (+exp)
Task-Oriented Training vs Speed Dependent Treadmill Training		
Sharma et al. (2014) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs B	E: Task-oriented training (focused on LE function and gait) C: Speed-dependent treadmill training Duration: 30min/d, 3d/wk, 4wks	E vs C: Berg Balance Scale (-) Rivermead Mobility Index (-)
Task Oriented Resistance Training vs No Treatment		
Yang et al. (2006) RCT (7) Nstart=48 Nend=48 TPS=Chronic A vs 0 Also in Table 21 (Strength and Resistance Training)	E: Task-oriented progressive resistance strength training C: No treatment Duration: 30min/d, 3d/wk for 4wks Task-oriented resistance training	E vs C: Muscle strength Hip flexor (+exp) Hip extensor (+exp) Knee flexor (+exp) Knee extensor (+exp) Ankle dorsiflexor (+exp) Ankle plantarflexor (+exp) 10-m Walk Velocity (+exp) Cadence (+exp) Stride length (+exp) 6-Minute Walk Test (+exp) Step Test (+exp) Timed Up-and-Go Test (+exp)
Task Oriented Gait Training vs Conventional Training		
Knox et al. (2018) RCT (7) Nstart=144 Nend=128 TPS=Subacute A vs B vs C Also in Table 21 (Strength and Resistance Training)	E1: Task oriented circuit gait training E2: Strength training of lower extremities C: Educational session on stroke management Duration: E1/E2: 60min/d, 6d/12wk intervention sessions & C: 90min/d, 1d	E1/E2 vs C: Berg Balance Scale (+exp1) 10m walk Comfortable Gait Speed (+exp1) Fast gait speed (+exp1) Timed Up and Go test (+exp1) 6-minute walk test (+exp1, +exp2) E1 vs E2: Berg Balance Scale (+exp1) 10-Meter Walk Test Comfortable Gait Speed (+exp1) Fast gait speed (+exp1) Timed Up and Go test (+exp1) 6-minute walk test (+exp1)
Qurat-ul-Ain et al. (2018) RCT (5) Nstart=36 Nend=30 TPS=Subacute A vs 0	E: Task specific Circuit Gait Training C: Conventional standard rehabilitation (Gait training) Duration: 40-50min/d, 4d/wk, for 6wks	E vs C: Timed Up-and-Go Test (+exp) Cadence (+exp) Step length (+exp) Step width (+exp)

Richards et al. (1993) RCT (6) Nstart=27 Nend=27 TPS=Acute A vs B vs 0 vs C Also in Table 9 (Treadmill Training)	E: Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) + conventional hospital care C1: Early, intensive traditional PT approach + conventional hospital care C2: Conventional PT + conventional hospital care Duration: E/C1: 60min, 2sessions/d, 5d/wk, 5wks & C2: 60min/d, 5d/wk, 5wks	E vs C1 vs C2: 6m gait velocity (-) Fugle-Meyer Balance (-) Leg(-) Arm(No stats) Barthel index(-) Berg balance scale (No stats)
Task Specific Circuit Training vs Conventional/Sham		
Martins et al. (2020) RCT (8) Nstart=36 Nend=28 TPS=Chronic A vs B	E: Task-specific circuit training (focused on UE and LE mobility) C: Training program including stretching, memory exercises and health education Duration: 60min/d, 3d/wk, for 12wks	E vs C: Energy Expenditure (-) Human Activity Profile Adjusted Activity Score (-) Upper Extremity Performance Test for the Elderly (-) Walking Speed (-) Grip Strength (-) Knee Extensor Strength (-) Six-Minute Walk Test (-) Stroke Specific Quality of Life (+exp)
Kim et al. (2016d) RCT (6) Nstart=20 Nend=20 TPS=Acute A vs 0	E: Task-specific circuit training (focused on mobility and gait training) C: Conventional rehabilitation Duration: E: 90mins/d, 5d/wk, 4wks, C: 60mins/d, 5d/wk, 4wks	E vs C: Fugl-Meyer Assessment (-) Berg Balance Scale (-) 6-Minute Walk Test (-) Modified Barthel Index (-)
English et al. (2015) RCT (7) Nstart=283 Nend=261 TPS=Acute A vs 0 vs B1 vs C vs B2	E: Group Circuit class therapy C1: Usual care C2: Seven-day week usual therapy Duration: E: 3h/d, 5d/wk circuit class training; C: 5d/wk usual care C2: 7d/wk seven-day week therapy	E vs C1: 6min Walk test (-) Gait speed (-) Functional Ambulatory category (-) Functional Independence Measure (-) Wolf Motor Function test (-) Stroke Impact scale (-) Length of stay (-) Australian Quality of Life scale (-) E vs C2: 6min Walk test (-) Gait speed (-) Functional Ambulatory category (-) Functional Independence measure (-) Wolf Motor Function test (-) Stroke Impact scale (-) Length of stay (-) Australian Quality of Life scale (-) C1 vs C2 6min Walk test (-) Gait speed (-) Functional Ambulatory category (-) Functional Independence measure (-) Wolf Motor Function test (-) Stroke Impact scale (-)

		Length of stay (-) Australian Quality of Life scale (-)
Indurkar et al. (2013) RCT (4) Nstart=30 Nend=30 TPS=Chronic A vs 0 Also in Table 21 (Strength and Resistance Training)	E: Task Oriented circuit LE strength training + physiotherapy C: Conventional physiotherapy Duration: 30min/d, 6dwk for 3wks circuit training & 60min physiotherapy	E vs C: 6-min Walk Test (+exp) 5m Walk Test (+exp) Berg Balance (+exp) Timed Up and Go (+exp)
Task-Specific Training vs Orthoses		
Kwakkel & Wagenaar (2002) RCT (5) Nstart=53 Nend=53 TPS=Acute A1 vs A2 vs B	E1: Lower extremity task- specific rehabilitation E2: Upper extremity task- specific rehabilitation C: Immobilization of paretic LE and UE using inflatable pressure splint Duration: 30min/d, 5d/wk, for 20wks	E1 vs E2: 10m Walking speed (+exp1) Continuous relative phase paretic arm (-) Continuous relative phase non-paretic arm (-) Continuous relative phase non-paretic leg (-) Continuous relative phase paretic leg (-) Standard deviation of Continuous Relative Phase leg (-) Standard deviation of Continuous Relative Phase arm (-) E1 vs C: Walking speed (+exp1) Continuous relative phase paretic arm (-) Continuous relative phase non-paretic arm (-) Continuous relative phase non-paretic leg (-) Continuous relative phase paretic leg (-) Standard deviation of Continuous Relative Phase leg (-) Standard deviation of Continuous Relative Phase arm (-) E2 vs C: Walking speed (-) Continuous relative phase paretic arm (-) Continuous relative phase non-paretic arm (-) Continuous relative phase non-paretic leg (-) Continuous relative phase paretic leg (-) Standard deviation of Continuous Relative Phase leg (-) Standard deviation of Continuous Relative Phase arm (-)
Task Oriented Leg Training vs Body Weight Support Training		
Brunelli et al. (2019) RCT (6) Nstart=37 Nend=34 TPS=Acute A vs B	E: Conventional Physiotherapy + Body Weight Support training C: Conventional Physiotherapy + Task-oriented leg training Duration: 40-min PT + 40 min BWS or task specific trainings/d, 5d/wk, 4wks	E vs C: Functional Ambulation Classification (+exp) Rivermead Mobility Index (-) Barthel Index (-) 6-minute walk test (-)
Activity Repetition Training vs Task Oriented Training		
Ghous et al. (2017) RCT (4)	E: Activity Repetition (salat prayer) Training	E vs C: Berg Balance Scale (+exp)

Nstart=32 Nend=27 TPS=Chronic A vs B	C: Task oriented training Duration: 60min/d, 4d/wk, for 6 wks	Motor assessment scale (+exp) Time Up and Go Test (+exp)
Task-Specific Training Different Modalities		
Gjelsvik et al. (2014) RCT (7) Nstart=167 Nend=105 TPS=Acute A vs B vs 0	E1: early supported discharge to Day unit focussed on task- oriented training E2: early supported discharge to patients home focussed on task-oriented training C: Traditional treatment Duration: 5wks	E1 v E2 v C: Postural Assessment Scale for Stroke (-) Functional Ambulation categories (-) Trunk Impairment Scale-modified Norwegian version (+exp2) Timed Up-and-Go (-) 5-meter timed walk (-) Self-reported Numerical Rating Scale Walking (+exp1) Balance (-) ADL (+exp1, +exp2) Physical activity (-) Pain (-) Tiredness (-) E1 v E2: Postural Assessment Scale for Stroke (-) Functional Ambulation categories (-) Trunk Impairment Scale-modified Norwegian version (+exp2) Timed Up-and-Go (-) 5-meter timed walk (-) Self-reported Numerical Rating Scale Walking (-) Balance (-) ADL (-) Physical activity (-) Pain (-) Tiredness (-)
Task Specific Training Combined with Other Therapies vs Task Specific Therapy		
Jeong et al. (2023) Feasibility/pilot RCT (6) Nstart=38 Nend=38 TPS=Chronic A + B vs A vs 0	E1: Task-oriented training + Abdominal drawing-in maneuver, E2: Task-oriented training C: Conventional physical therapy Duration: 30min/d, 4d/wk, for 5wks	E1/E2 vs C: TIS (+exp1/2) PASS (+exp1/2) FRT (+exp1/2) BBS (+exp1/2) Weight-bearing ratio (+exp1/2) MBI (+exp1) E1 vs E2: TIS (+exp1) PASS (+exp1) FRT (+exp1) BBS (+exp1) Weight-bearing ratio (+exp1) MBI (+exp1)
Patra et al. (2023) RCT (4) Nstart=30 Nend=30 TPS=Subacute	E: Motor Relearning Program + Obstacle walking C: Motor Relearning Program Duration: 30min/d, 5d/wk, 4wks	E vs C: Dynamic gait index (+exp) MAS (+exp)

A + B vs A Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)		
Kim et al. (2021b) RCT (5) Nstart=45 Nend=37 TPS=Chronic A + B vs A vs 0	E1: Task-specific training + cognitive sensorimotor exercise E2: Task-specific training + conventional physical therapy C: Conventional physical therapy Duration: 60min/d, 5d/wk for 8wks	E1 vs E2: Proprioception error (+exp1) Composite spasticity score (-) Gastrocnemius muscle tone (-) 10-Metre Walk Test (-) E1 vs C: Proprioception error (+exp1, +exp2) Composite spasticity score (+exp1, +exp2) Gastrocnemius muscle tone (+exp1, +exp2) 10-Metre Walk Test (+exp1, +exp2)
Malik et al. (2021) RCT (6) Nstart=52 Nend=43 TPS=Subacute A + B vs A Also in Table 26 (Virtual Reality)	E: Task-oriented training + Virtual reality training C: Task-oriented training Duration: 40-45min/d, 3d/wk, 8wks task oriented training & 15-20/d 3d/wk, 8wks virtual reality training	E vs C: Fugl-Meyer Assessment-Lower Extremity (+exp) Berg Balance Test (+exp) Timed Up and Go test (+exp) Dynamic Gait Index (-)
Cha et al. (2016) RCT (6) Nstart=25 Nend=20 TPS=Chronic A + B vs C Also in Table 19 (Mirror Therapy)	E: Task-oriented training + mirror therapy C: Task oriented training Duration: 30min/d, 2 sessions/d, 5d/wk for 4wks	E vs C: Berg Balance scale (+exp) Timed Up-and-Go test (+exp) Balance index (+exp) Dynamic limit of stability (+exp)
Marin et al. (2013) RCT (8) Nstart=20 Nend=20 TPS=Chronic A + B vs A Also in Table 31 (Muscle Vibration)	E: Task-Specific Training + Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) C: Task-Specific Training + Sham Vibration Duration: 1-2d/wk, 12wks (17 total sessions) ; 120min/session, 10 sessions/1mo, for 3mo rehabilitation sessions	E vs C: Muscle thickness (-) Berg Balance Scale (-) Maximal isometric voluntary contraction of knee extensor (-)
Verma et al. (2011) RCT (8) Nstart=30 Nend=30 TPS=Subacute A + B vs 0 Also in Table 17 (Mental Practice)	E: Task-oriented circuit class training + Motor imagery C: Standard rehabilitation (Bobath) Duration: 15min/d, 7d/wk, 2wks motor imagery, 25min/d, 7d/wk, 2wks task-oriented circuit class training, 40min/d, 7d/wk, 2wks standard rehabilitation	E vs C: Functional ambulation category (+exp) Rivermead Visual gait assessment (+exp) Step length asymmetry (-) Cadence (+exp) Stride length asymmetry (-) 10-meter Walk test Maximum speed (-) Comfortable speed (+exp) 6-Minute Walk test (+exp)
Kluding et al. (2008) RCT (5) Nstart=17 Nend=16 TPS=Chronic	E: Task-specific training + Ankle joint mobilizations C: Task-specific training Duration: 30min/d, 2d/wk for 4wk	E vs C: Passive ROM (+exp) Active ROM (+exp) Ankle Kinematics (-); -during sit-to-stand (-); during Gait (-)

A + B vs A Also in Table 12 (Stretching or Mobilization Exercises)		Weight bearing symmetry; -during static standing (-); - during sit-to-stand (+con) Sit-to-Stand time (+exp) Rivermead mobility index (-)
Lower body vs Upper Body Task Specific Training		
Dean et al. (2000) RCT (5) Nstart=12 Nend=9 TPS=Chronic A1 vs A2	E: Task-related lower body circuit training C: Task-related upper body circuit training Duration: 60min/d, 3d/wk for 4wks	E vs C: 10-meter Walk Test With Assistive Device (-) Without Assistive Device (+exp) 6-minute Walk Test (+exp) Step Test (+exp) Timed Up and Go (-) Sit-to-stand (+exp)
High Intensity Task-Specific Training vs Low Intensity Training or vs Conventional Therapy		
Outermans et al. (2010) RCT (6) Nstart=44 Nend=32 TPS=Acute A vs B	E: High-intensity task-oriented training + Usual therapy C: Low-intensity circuit physiotherapy + usual care Duration: 75min/d, 3d/wk, 4wks	E vs C: 10-Metre Walk Test (+exp) 6-Minute Walk Test (+exp) Berg Balance Scale (-) Functional Reach Test (-)
Task Oriented Training with Tilt Table vs Tilt Table Alone		
Kim et al. (2015i) RCT (6) Nstart=39 Nend=39 TPS=Acute A1 vs A2 vs 0	E1: Tilt Table + Conventional therapy E2: Task-oriented training on tilt table + Conventional therapy C: Conventional therapy Duration: 50min/d, 5d/wk, 3wks	E2 vs E1/C: Barthel Index (+exp2) National Institutes of Health Stroke Scale (+exp2) Fugl-Meyer Assessment (+exp2) EMG parameters activation changes in the BF and MG muscles of the affected side during flexion movement of the affected leg (+exp2) activation changes in the BF, MG, and RF muscles of the less-affected side during extension movement of the affected leg (+con, +exp1)
Kim et al. (2015g) RCT (5) Nstart=37 Nend=30 TPS=Chronic A1 vs B vs A2	E1: Tilt table one-leg standing training + Conventional rehabilitation E2: Tilt table progressive task- oriented training + Conventional rehabilitation C: Tilt table (Both legs strapped) + Conventional rehabilitation Duration: 30min/d, 5d/wk, 3wks routine therapy + 20min/d, 5d/wk, 3wks tilt table	E1 vs E2: Lower extremity muscle strength Hip flexors (-) hip extensors (-) knee flexors (+exp2) knee extensors (+exp2) ankle dorsiflexors (+exp2) ankle plantarflexes (+exp2) Gait velocity (-) Cadence (-) Stride length (+exp2) Gait symmetry ratio (+exp2) Double support period (+exp2) E1/E2 vs C: Lower extremity muscle strength Hip flexors (+exp1, +exp2) hip extensors (+exp1, +exp2) knee flexors (+exp1, +exp2) knee extensors (+exp1, +exp2)

		ankle dorsiflexors (+exp1, +exp2) ankle plantarflexes (+exp1, +exp2) Gait velocity (+exp1, +exp2) Cadence (+exp1, +exp2) Stride length (+exp2) Gait symmetry ratio (+exp1, +exp2) Double support period (+exp1, +exp2)
Task-Specific Circuit Training vs Group Activities		
Mudge et al. (2009) RCT (7) Nstart=58 Nend=55 TPS=Chronic A vs B	E: Task-specific circuit training C: Social and educational classes Duration: 50-60min/d, 3d/wk, 4wks Circuit-training & 90min/d, 2d/wk, 4wks social and educational session	E vs C: 10m walk test (-) six minute walk test (+exp) Activities-Based Confidence Scale(-) Rivermead Mobility Index (-) Physical Activity and Disability Scale (-) Usual walking performance (-): -Mean steps/d (-) Peak activity index(-) Percentage of time inactive(-) Max 1 (steps/min) (-)
Task-Specific Training vs Proprioceptive Neuromuscular Facilitation		
Anandan et al. (2020) RCT (4) Nstart=74 Nend=50 TPS=Chronic A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E1: Task-specific training E2: Proprioceptive Neuromuscular Facilitation Duration: 60min/session, 10wks	E1 vs E2: Modified Ashworth Scale (+exp1) Action Research Arm Test (+exp1) Berg Balance Scale (+exp1) Dynamic Gait Index (+exp1)
Group Task-Oriented Circuit Training vs Conventional Training		
Ali et al. (2020) RCT (6) Nstart=22 Nend=22 TPS=Subacute A1 vs A2	E: Group task specific training C: Individual task specific training Duration: 50min/d, 3d/wk for 6wk	E vs C: Berg Balance Scale (-) Dynamic Gait Index (-) Motor Assessment Scale (-) Timed-Up-and-Go Test (-) 10-Meter Walk Test (-) Ashworth's Scale (-) 6 Minute Walk Test (-) Functional Reach Test (-)
Renner et al. (2016) RCT (7) Nstart=73 Nend=64 TPS=Subacute A1 vs A2	E: Group task-specific training + rehabilitation therapies C: Individual task-specific + rehabilitation therapies training Duration: 90min/d, 5d/wk, 6wks	E vs C: Stroke Impact Scale (-) Rivermead mobility index (-) Falls Efficacy scale (-) Hospital Anxiety and Depression scale Depression (-) Anxiety (+exp) Fatigue Severity scale (-) Motricity index (-) Functional ambulation categories (-) 6-minute walk test (-) 10-meter walk (-) Timed balance test (-) Timed-up-and-go (-)

		Chair stand-up test (-) Modified stairs climb test (+exp) Letter cancellation task (-)
Vandeport et al. (2012) RCT (7) Nstart=250 Nend=242 TPS=Subacute A vs 0	E: Group Task-oriented circuit training in community C: Usual outpatient physiotherapy Duration: 90min/d, 2d/wk for 12wks - Circuit training	E vs C: Stroke impact scale mobility (-) strength (-) memory and thinking (+exp) mood and emotions (-) communication and other (-) typical ADL (-) ability to use affected hand (-) social participation (-) stroke recovery (-) Rivermead mobility index (-) Falls efficacy scale (-) Nottingham extended ADL mobility (-) kitchen (-) domestic (-) leisure (+exp) Hospital Anxiety and Depression scale depression (-) anxiety (-) Fatigue severity scale (-) Motricity index arm (-) leg (-) Functional ambulation category (-) 6min Walk test (+exp) 5m Walk test (+exp) Timed balance test (-) Timed Up and Go (-) Modified Stairs test (-) Letter cancellation test time to finish (-) omissions-left (-) omissions-right (-)
Task-related Training combined with TENS		
Ng et al. (2016) RCT (7) Nstart=76 Nend=69 TPS=Subacute A + B vs C Also in Table 11 (Balance Training); Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E: TENS + task-oriented balance training + conventional therapy C: C: Sham TENS+ task- oriented balance training + conventional therapy Duration: 60min/d, 2d/wk, 8wks. TENS + TOBT concurrent 150min/d conventional physiotherapy	E vs C: Berg Balance Scale (+exp) 6-minute walk test (-) Modified Rivermead Mobility Index(-) Timed up and go test(+exp) SF-36 Physical function(+exp) Role physical (-) Bodily pain(-) General health(-) Vitality(-) Social functioning(-) Role functioning-emotion(-) Mental health(-)

Hui-Chan et al. (2009) RCT (7) Nstart=109 Nend=101 TPS=Chronic A vs B vs A + C vs 0 Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No treatment Duration: 60min/d, 5d/wk, 4wks TENS ; 60min/d, 5d/wk, 4wks Placebo TENS; 60min/d, 5d/wk, 4wks Task- related training	E1/E2/E3 vs C: Composite spasticity scale (+exp1, +exp2, +exp3) Maximum isometric contraction Ankle Dorsiflexion (+exp2, +exp3) Ankle Plantarflexion (+exp2, +exp3) Gait velocity (+exp3) 6min Walk test (+exp2, +exp3) Timed Up and Go (+exp2, +exp3) E3 vs E1: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp3) Ankle Plantarflexion (exp3) Gait velocity (+exp3) 6min Walk test (+exp3) Timed Up and Go (+exp3) E3 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (-) Ankle Plantarflexion (-) Gait velocity (+exp3) 6min Walk test (-) Timed Up and Go (+exp3) E1 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp1) Ankle Plantarflexion (-) Gait velocity (-) 6min Walk test (-) Timed Up and Go (-)
Ng & Hui-Chan (2007) RCT (6) Nstart=88 Nend=80 TPS=Chronic A vs B vs A + C vs D Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No active treatment Duration: 60min/d, 5d/wk for 4wks	E1/E2/E3 vs C: Composite Spasticity scale (+exp1, +exp2, +exp3) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (+exp1, +exp2, +exp3) peak torque-ankle plantarflexors (+exp2, +exp3) Gait velocity (+exp3) E3 vs E1: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3) E3 vs E2: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3)

Task-Specific Training with Bobath Concept Approach vs Task-Specific Training		
Brock et al. (2011) RCT (7) Nstart=29 Nend=26 TPS=Subacute A + B vs B	E: BCA + Task specific practice C: Task specific practice Duration: 1h/session, 6sessions/wk, for 2wks	E vs C: Gait Velocity (+exp) 6-Minute Walk Test (-) Berg Balance Scale (-)
Mudie et al. (2002) RCT (4) Nstart=40 Nend=26 TPS=Subacute A vs B vs C vs 0	E1: Task-specific training + Standard physiotherapy E2: BCA + Standard physiotherapy E3: Balance performance monitor feedback training + Standard physiotherapy C: Standard physiotherapy Duration: 30min/d, 7d/wk, for 2wks	E1 vs E2 vs E3 vs C: Barthel index (-) total (-) mobility (-) weight distribution (-)
Task-Specific Training vs Trunk Training		
Priya et al. (2024) RCT (7) Nstart=30 Nend=30 TPS=Not reported A vs B	E: Task-oriented training C: Swiss ball exercises Duration: 5d/wk, for 4wks	E vs C: TIS (+exp)
Additional Comparisons from the Source Dataset		
Patel et al. (2021b) RCT (7) Nstart=60 Nend=60 TPS=Not reported A + B vs X	E: Task-oriented approach training + Conventional PT C: Task-oriented training only Duration: 4d/wk for 6wks	E vs C: Modified Ashworth scale (+exp) Modified Barthel index (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Traxler et al. (2024) Feasibility/pilot RCT (8) Nstart=36 Nend=36 TPS=Chronic A + B + C vs B + C vs 0 Primary listing: Table 12 (Stretching or Mobilization Exercises)	E1: Manual therapy + task oriented training + home exercise program, E2: task oriented training + home exercise program C: conventional rehab Duration: Clinic: 45min/d, 2d/wk, 4wks Home: 20min/d, 4d/wk, 4wks	E1 vs E2: MiniBestest(-) TUG(-) 10MWT(-) Active Ankle ROM(+exp1) Passive Ankle ROM(+exp1) SIS Strength(-) ADL(-) mobility(-) social participation(-) overall recovery(-) E1 vs C: MiniBestest(+exp1) TUG(+exp1) 10MWT(-) Active Ankle ROM(+exp1) Passive Ankle ROM(+exp1) SIS Strength(+exp1) ADL(+exp1) mobility(+exp1)

		social participation(+exp1) overall recovery(+exp1) E2 vs C: MiniBestest(+exp2) TUG(+exp2) 10MWT(-) Active Ankle ROM(+exp2) Passive Ankle ROM(-) SIS Strength(+exp2) ADL(-) mobility(+exp2) social participation(-) overall recovery(+exp2)
Mulder et al. (2024) RCT (5) Nstart=41 Nend=37 TPS=Subacute A vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Armed4Stroke (Task-specific Exercise Telerehabilitation Program) + Usual Care C: Usual Care Duration: E: 30min/day, 5x/wk, for 8wks, C: Usual Care for 8wks	E vs C: Stroke Impact Scale (SIS) Strength (+exp) Rivermead Mobility Index (RMI) (-) Functional Ambulation Categories (FAC) (-) Change Assessment Questionnaire (CAQ) 5-Metre Walk Test (5MWT) (-) 6-Minute Walk Test (6MWT) (-) Berg Balance Scale (BBS) (-) Motricity Index (MI) (-) Nottingham Extended ADL (NEADL) NEADL-Leisure (+exp) Modified Rankin Scale (mRS) (-) Transition Preparedness Scale (TPS) (-) Stroke Self-Efficacy Questionnaire (SSEQ) (-) General Self-Efficacy Scale (GSES) (-) EuroQol 5 Dimensions (EQ5D) (-) Fatigue Severity Scale (FSS) (-) Family Assessment Device-General Functioning (FAD-GF) (-) Hospital Anxiety and Depression Scale (HADS) Anxiety (-) Depression (-) Patient Reported Outcome Measurement Information System (PROMIS) (-) Caregiver Strain Index (CSI) (-) Carer-related Quality of Life Instrument (CarerQoL) (-) Preparedness for Caregiving Scale (PCS) (-).
Toktas et al. (2024) RCT (7) Nstart=32 Nend=28 TPS=Chronic A + B vs C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: dual tDCS + Task-specific training C: Sham tDCS + Task specific training Duration: 80min(20min tDCS + 60min physio)/d, 5d/wk, 4wks	E vs C: TUG (-) BBS (-) 10MWT (-) FMA-LE (-) Stroke Specific Quality of Life (-) energy(-) family roles(-)

		language(-) mobility(+exp) mood(-) personality(-) self-care(-) social roles(-) thinking(-) upper extremity(-) vision(-) work/productivity(-)
Hsu et al. (2023) RCT (8) Nstart=27 Nend=27 TPS=Acute A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: bihemispheric tDCS + task oriented training C: Sham tDCS + task oriented therapy Duration: 40min/d, 5d/wk, 2wks	E vs C: FMA-UE(+exp) ARAT(-) FMA-LE(+exp) mRS(-)
Batool et al. (2022) RCT (9) Nstart=64 Nend=64 TPS=Subacute A + B vs B Primary listing: Table 11 (Balance Training)	E: Visual scanning exercises + task specific activities C: Placebo eye exercises + task specific activities(not sham) Duration: 45min/d(30min TST, 15min Vision training), 6d/wk, 4wks	E vs C: BBS(+exp) sitting to standing (+exp) standing unsupported (+exp) sitting unsupported (-) standing to sitting (-) transfers (-) standing with eyes closed (+exp) standing with feet together (+exp) reaching forward with outstretched arm (-) retrieving object from floor (+exp) turning to look behind (+exp) turning 360 degrees (+exp) placing alternate foot on stool (-) standing with one foot in front (-) standing on one foot (-) BI (+exp) feeding (-) bathing (-) grooming (-) dressing (-) bowels (-) bladder (-) toilet use (-) transfers (-) mobility (-) stairs (-)
Abdullahi et al. (2021) RCT (9) Nstart=58 Nend=56 TPS=Chronic A + B vs C + B	E: CIMT + task specific training C: mCIMT + task specific training Duration: 3h/d, 5d/wk, for 4wks	E vs C: Fugl Meyer (-) Berg Balance Scale (-) Rivermead Mobility Index (-) Modified Ashworth Scale (+exp) Ten-Meter Walk Test (-) Six-Minute Walk test (-)

Primary listing: Table 6 (Constraint-Induced Movement Therapy (CIMT))		Rate of perceived exertion (+exp)
Ganesh et al. (2018) RCT (6) Nstart=94 Nend=83 TPS=Chronic A1 + B vs A2 + B vs C vs D Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Faradic electrical stimulation + Task-oriented exercise E2: Russian electrical stimulation +Task-oriented exercises C: Conventional care with task- oriented approach Duration: E1, E2: 10min electrical stimulation + 40 min conventional care 5d/wk, for 6wks C: 40 min conventional care 5d/wk, for 6wks	E1 vs E2: Active ankle range of motion (-) Passive ankle range of motion (+exp2) Modified modified Ashworth scale (+exp1) Modified Emory Functional ambulation profile Walking speed (-) E2 vs C: Active ankle range of motion (-) Passive ankle range of motion (+exp2) Modified modified Ashworth scale (-) Modified Emory Functional ambulation profile Walking speed (-) E1 vs C: Active ankle range of motion (-) Passive ankle range of motion (-) Modified modified Ashworth scale (+exp1) Modified Emory Functional ambulation profile Walking speed (-)
Lannin et al. (2018) RCT (8) Nstart=37 Nend=34 TPS=Chronic A + B vs A vs B Primary listing: Table 46 (Botulinum Toxin)	E: Single dose of botulinum toxin-A (500U) + Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) C1: Single dose of botulinum toxin-A (500U) C2: Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) Duration: 1 dose botulinum toxin-A & 60min/d, 2d/wk, for 8wks rehabilitation program	E vs C1 vs C2: Goal Attainment Scale (-) 6-min Walk Test (-) Box and Block Test (-) Tardieu Scale (-)
Kumar et al. (2016) RCT (7) Nstart=40 Nend=40 TPS=Chronic A + B vs A Primary listing: Table 17 (Mental Practice)	E: Task-specific training + Mental practice (Motor Imagery) C: Task-specific training Duration: 45-60min/d, 4d/wk for 3wks task-specific training & 15min/d, 4d/wk, for 3wks motor imagery	E vs C: Muscle Strength Hip Flexors (+exp) Hip Extensors (+exp) Knee Flexors (-) Knee Extensors (+exp) Ankle -Dorsiflexors (+exp) Ankle Plantarfelxors (-) 10m walk test (+exp)
Chan et al. (2015) RCT (8) Nstart=37 Nend=37 TPS=Chronic A + B vs C vs D Primary listing: Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: TENS + Task-related training E2: Sham TENS + Task- related training C: No active treatment (health education) Duration: 60min/d, 5d/wk, for 6wks	E1/E2 vs C: Trunk impairment score (+exp) trunk muscle strength (+exp) Lateral reach test (+exp1) Static sitting balance (-) Dynamic sitting balance (+exp) E1 vs E2: Trunk impairment scale(+exp1) trunk muscle strength (-) Dynamic sitting balance (+exp1)
Park et al. (2015b) RCT (5) Nstart=24	E1: tDCS + Task-related training E2: Sham tDCS + Task- related training C: Task-related training	E1 vs C: Gait Speed (+exp1) Stance/Swing Phase (+exp1)

Nend=24 TPS=Chronic A + B vs C vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	Duration: 30min/d, 3d/wk for 4wks	Step Length (-)
Khallaf et al. (2014) RCT (5) Nstart=16 Nend=16 TPS=Chronic A + B vs 0 Primary listing: Table 15 (Biofeedback)	E: Gait training with postural control visual feedback on monitor + task specific exercises C: Gait training + physiotherapy Duration: 90min/d, 5d/wk, 8wks Exercises Treatment Group & 50min/d, 5d/wk, 8wks Exercises Control Group	E vs C: Foot placement/contact during walking (+exp)
Malouin et al. (2009) RCT (6) Nstart=12 Nend=12 TPS=Chronic A + B vs C Primary listing: Table 17 (Mental Practice)	E1: Task-specific training + Mental practice E2 Task-specific training + Cognitive training C: No training Duration: 3d/wk for 4wk	E1v E2 vs C: Limb loading (+exp1) kinesthetic visual imagery questionnaire (No stats) gait speed (No stats) Timed Up and Go (No stats)
Hui-Chan et al. (2009) RCT (7) Nstart=109 Nend=101 TPS=Chronic A vs B vs A + C vs 0 Primary listing: Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No treatment Duration: 60min/d, 5d/wk, for 4wks TENS ; 60min/d, 5d/wk, for 4wks Placebo TENS; 60min/d, 5d/wk, for 4wks Task-related training	E1/E2/E3 vs C: Composite spasticity scale (+exp1, +exp2, +exp3) Maximum isometric contraction Ankle Dorsiflexion (+exp2, +exp3) Ankle Plantarflexion (+exp2, +exp3) Gait velocity (+exp3) 6min Walk test (+exp2, +exp3) Timed Up and Go (+exp2, +exp3) E3 vs E1: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp3) Ankle Plantarflexion (exp3) Gait velocity (+exp3) 6min Walk test (+exp3) Timed Up and Go (+exp3) E3 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (-) Ankle Plantarflexion (-) Gait velocity (+exp3) 6min Walk test (-) Timed Up and Go (+exp3) E1 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp1) Ankle Plantarflexion (-) Gait velocity (-) 6min Walk test (-)

		Timed Up and Go (-)
Ng & Hui-Chan (2007) RCT (6) Nstart=88 Nend=80 TPS=Chronic A vs B vs A + C vs D Primary listing: Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No active treatment Duration: 60min/d, 5d/wk for 4wks	E1/E2/E3 vs C: Composite Spasticity scale (+exp1, +exp2, +exp3) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (+exp1, +exp2, +exp3) peak torque-ankle plantarflexors (+exp2, +exp3) Gait velocity (+exp3) E3 vs E1: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3) E3 vs E2: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Richards et al. 2004
1b	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving motor recovery.	1	Kim et al. 2016d
1b	Task Specific Training Combined with Other Therapies may produce greater improvements in motor recovery than Task Specific Therapy.	1	Malik et al. 2021
1b	Task Oriented Training with Tilt Table may produce greater improvements in motor recovery than Tilt Table Alone.	1	Kim et al. 2015i
1b	Dual transcranial direct current stimulation with Task-specific training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task specific training for improving motor recovery.	1	Toktas et al. 2024
1b	Bihemispheric transcranial direct current stimulation with task oriented training may produce greater improvements in motor recovery than Sham transcranial direct current stimulation with task oriented therapy.	1	Hsu et al. 2023

1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving motor recovery.	1	Abdullahi et al. 2021
1b	Task-specific training with Mental practice E2 Task-specific training and Cognitive training may not have a difference in efficacy when compared to No training for improving motor recovery.	1	Malouin et al. 2009

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Task-Specific Training may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Song et al. 2024
1b	Task Oriented sitting Reach Training may produce greater improvements in biomechanical gait measures than Sham Training.	1	Dean et al. 1997
2	Task Specific Treadmill Training may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Kwon et al. 2015
1b	Task Oriented Resistance Training may produce greater improvements in biomechanical gait measures than No Treatment.	1	Yang et al. 2006
2	Task Oriented Gait Training may produce greater improvements in biomechanical gait measures than Conventional Training.	1	Qurat-ul-Ain et al. 2018
1b	Task Specific Training Combined with Other Therapies may not have a difference in efficacy when compared to Task Specific Therapy for improving biomechanical gait measures.	2	Verma et al. 2011; Kluding et al. 2008
2	There is conflicting evidence about the effect of Tilt table one-leg standing training with Conventional rehabilitation when compared to Tilt table progressive task- oriented training with Conventional rehabilitation for improving biomechanical gait measures.	1	Kim et al. 2015g
2	There is conflicting evidence about the effect of Transcranial direct current stimulation with Task-related training when compared to Task-related training for improving biomechanical gait measures.	1	Park et al. 2015b
2	Gait training with postural control visual feedback on monitor with task specific exercises may produce greater improvements in biomechanical gait measures than Gait training with physiotherapy.	1	Khallaf et al. 2014

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Task-Specific Training when compared to Conventional Therapy for improving biomechanical balance measures.	1	Arabzadeh et al. 2018
2	Task oriented training with altered sensory input may not have a difference in efficacy when compared to Conventional physical therapy for improving biomechanical balance measures.	1	Park & Won 2017a
1b	There is conflicting evidence about the effect of Task Specific Training Combined with Other Therapies when compared to Task Specific Therapy for improving biomechanical balance measures.	2	Cha et al. 2016; Kluding et al. 2008
1b	Task-oriented training with Abdominal drawing-in maneuver may produce greater improvements in biomechanical balance measures than Task-oriented training.	1	Jeong et al. 2023
2	Task-Specific Training with Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving biomechanical balance measures.	1	Mudie et al. 2002

1b	Task-specific training with Mental practice E2 Task-specific training and Cognitive training may produce greater improvements in biomechanical balance measures than No training.	1	Malouin et al. 2009

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task Oriented Resistance Training may produce greater improvements in muscle strength than No Treatment.	1	Yang et al. 2006
1b	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving muscle strength.	1	Martins et al. 2020
1b	Task Specific Training Combined with Other Therapies may not have a difference in efficacy when compared to Task Specific Therapy for improving muscle strength.	1	Marin et al. 2013
2	Tilt table one-leg standing training with Conventional rehabilitation may result in lesser improvements in muscle strength when compared to Tilt table progressive task- oriented training with Conventional rehabilitation.	1	Kim et al. 2015g
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving muscle strength.	2	Renner et al. 2016; Vandeport et al. 2012
1a	There is conflicting evidence about the effect of TENS with Task-related training when compared to TENS for improving muscle strength.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving muscle strength.	1	Hui-Chan et al. 2009
1b	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Ng & Hui-Chan 2007
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving muscle strength.	1	Mulder et al. 2024
1b	Task-specific training with Mental practice (Motor Imagery) may produce greater improvements in muscle strength than Task-specific training.	1	Kumar et al. 2016
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in muscle strength than No active treatment (health education).	1	Chan et al. 2015
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Chan et al. 2015

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Task Specific Training Combined with Other Therapies may produce greater improvements in spasticity than Task Specific Therapy.	1	Patra et al. 2023
2	Task-specific training with cognitive sensorimotor exercise may not have a difference in efficacy when compared to Task-specific training with conventional physical therapy for improving spasticity.	1	Kim et al. 2021b
2	Task-specific training may produce greater improvements in spasticity than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1b	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving spasticity.	1	Ali et al. 2020
1a	TENS with Task-related training may not have a difference in efficacy when compared to TENS for improving spasticity.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving spasticity.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving spasticity.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training for improving spasticity.	1	Ng & Hui-Chan 2007
1b	Task-oriented approach training + Conventional PT may produce greater improvements in spasticity than Task-oriented training only.	1	Patel et al. 2021b
1b	Constraint-induced movement therapy with task specific training may produce greater improvements in spasticity than modified constraint-induced movement therapy with task specific training.	1	Abdullahi et al. 2021
1b	Faradic electrical stimulation with Task-oriented exercise may produce greater improvements in spasticity than Russian electrical stimulation with Task-oriented exercises.	1	Ganesh et al. 2018
1b	Faradic electrical stimulation with Task-oriented exercise may produce greater improvements in spasticity than Conventional care with task- oriented approach or 40 min conventional care 5d/wk, for 6wks.	1	Ganesh et al. 2018
1b	Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not have a difference in efficacy when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) for improving spasticity.	1	Lannin et al. 2018

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Task Specific Training Combined with Other Therapies may produce greater improvements in range of motion than Task Specific Therapy.	1	Kluding et al. 2008
1b	Task Oriented Training with Tilt Table may produce greater improvements in range of motion than Tilt Table Alone.	1	Kim et al. 2015i

1b	There is conflicting evidence about the effect of Manual therapy with task oriented training and home exercise program when compared to conventional rehab for improving range of motion.	1	Traxler et al. 2024
1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in range of motion than task oriented training with home exercise program.	1	Traxler et al. 2024
1b	There is conflicting evidence about the effect of Faradic electrical stimulation with Task-oriented exercise when compared to Russian electrical stimulation with Task-oriented exercises for improving range of motion.	1	Ganesh et al. 2018
1b	There is conflicting evidence about the effect of Faradic electrical stimulation with Task-oriented exercise when compared to Conventional care with task- oriented approach or 40 min conventional care 5d/wk, for 6wks for improving range of motion.	1	Ganesh et al. 2018

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving aerobic measures.	1	Martins et al. 2020
1b	Constraint-induced movement therapy with task specific training may produce greater improvements in aerobic measures than modified constraint-induced movement therapy with task specific training.	1	Abdullahi et al. 2021

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Task-specific training with cognitive sensorimotor exercise may produce greater improvements in sensory and proprioceptive function than Task-specific training with conventional physical therapy.	1	Kim et al. 2021b

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Task-Specific Training when compared to Conventional Therapy for improving activities of daily living.	2	Ntsiea et al. 2015; Richards et al. 2004
1b	Task Oriented Gait Training may not have a difference in efficacy when compared to Conventional Training for improving activities of daily living.	1	Richards et al. 1993
1a	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving activities of daily living.	2	Kim et al. 2016d; English et al. 2015
1b	Task Oriented Leg Training may not have a difference in efficacy when compared to Body Weight Support Training for improving activities of daily living.	1	Brunelli et al. 2019
1b	Early supported discharge to Day unit focussed on task- oriented training may not have a difference in efficacy when compared to Traditional treatment for improving activities of daily living.	1	Gjelsvik et al. 2014

1b	Task Specific Training Combined with Other Therapies may produce greater improvements in activities of daily living than Task Specific Therapy.	1	Jeong et al. 2023
1b	Task-oriented training with Abdominal drawing-in maneuver may produce greater improvements in activities of daily living than Task-oriented training.	1	Jeong et al. 2023
1b	Task-oriented training with Abdominal drawing-in maneuver may produce greater improvements in activities of daily living than Conventional physical therapy.	1	Jeong et al. 2023
1b	Task-oriented training may not have a difference in efficacy when compared to Conventional physical therapy for improving activities of daily living.	1	Jeong et al. 2023
1b	Task Oriented Training with Tilt Table may produce greater improvements in activities of daily living than Tilt Table Alone.	1	Kim et al. 2015i
1b	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving activities of daily living.	1	Vandeport et al. 2012
2	Task-Specific Training with Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving activities of daily living.	1	Mudie et al. 2002
1b	Task-oriented approach training + Conventional PT may produce greater improvements in activities of daily living than Task-oriented training only.	1	Patel et al. 2021b
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving activities of daily living.	1	Mulder et al. 2024
1b	Bihemispheric transcranial direct current stimulation with task oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with task oriented therapy for improving activities of daily living.	1	Hsu et al. 2023
1b	Visual scanning exercises with task specific activities may not have a difference in efficacy when compared to Placebo eye exercises with task specific activities(not sham) for improving activities of daily living.	1	Batool et al. 2022
1b	Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not have a difference in efficacy when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) for improving activities of daily living.	1	Lannin et al. 2018

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training may produce greater improvements in gait speed than Conventional Therapy.	2	Song et al. 2024; Richards et al. 2004
1a	Task Oriented sitting Reach Training may not have a difference in efficacy when compared to Sham Training for improving gait speed.	2	Dean et al. 2007; Dean et al. 1997
2	Task Specific Treadmill Training may produce greater improvements in gait speed than Treadmill Training.	1	Kwon et al. 2015
1b	Task Oriented Resistance Training may produce greater improvements in gait speed than No Treatment.	1	Yang et al. 2006
1a	Task Oriented Gait Training may produce greater improvements in gait speed than Conventional Training.	2	Knox et al. 2018; Richards et al. 1993

1b	Task oriented circuit gait training may produce greater improvements in gait speed than Strength training of lower extremities.	1	Knox et al. 2018
1a	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving gait speed.	3	Martins et al. 2020; English et al. 2015; Indurkar et al. 2013
2	Lower extremity task- specific rehabilitation may produce greater improvements in gait speed than Upper extremity task- specific rehabilitation.	1	Kwakkel & Wagenaar 2002
2	Lower extremity task- specific rehabilitation may produce greater improvements in gait speed than Immobilization of paretic LE and UE using inflatable pressure splint.	1	Kwakkel & Wagenaar 2002
2	Upper extremity task- specific rehabilitation may not have a difference in efficacy when compared to Immobilization of paretic LE and UE using inflatable pressure splint for improving gait speed.	1	Kwakkel & Wagenaar 2002
1b	There is conflicting evidence about the effect of Task Specific Training Combined with Other Therapies when compared to Task Specific Therapy for improving gait speed.	1	Verma et al. 2011
2	Task-specific training with cognitive sensorimotor exercise may not have a difference in efficacy when compared to Task-specific training with conventional physical therapy for improving gait speed.	1	Kim et al. 2021b
2	There is conflicting evidence about the effect of Lower body when compared to Upper Body Task Specific Training for improving gait speed.	1	Dean et al. 2000
1b	High Intensity Task-Specific Training may produce greater improvements in gait speed than Low Intensity Training or Conventional Therapy.	1	Outermans et al. 2010
2	Tilt table one-leg standing training with Conventional rehabilitation may not have a difference in efficacy when compared to Tilt table progressive task- oriented training with Conventional rehabilitation for improving gait speed.	1	Kim et al. 2015g
1b	Task-Specific Circuit Training may not have a difference in efficacy when compared to Group Activities for improving gait speed.	1	Mudge et al. 2009
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving gait speed.	3	Ali et al. 2020; Renner et al. 2016; Vandeport et al. 2012
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in gait speed than No treatment.	1	Hui-Chan et al. 2009
1a	TENS with Task-related training may produce greater improvements in gait speed than TENS.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in gait speed than Placebo transcutaneous electrical nerve stimulation with Task-related training.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving gait speed.	1	Hui-Chan et al. 2009
1b	TENS with Task-related training may produce greater improvements in gait speed than No treatment.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in gait speed than No active treatment.	1	Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in gait speed than transcutaneous electrical nerve stimulation or Placebo	1	Ng & Hui-Chan 2007

	transcutaneous electrical nerve stimulation with Task- related training.		
1b	Task-Specific Training with Bobath Concept Approach may produce greater improvements in gait speed than Task-Specific Training.	1	Brock et al. 2011
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to conventional rehab for improving gait speed.	1	Traxler et al. 2024
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to task oriented training with home exercise program for improving gait speed.	1	Traxler et al. 2024
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving gait speed.	1	Mulder et al. 2024
1b	Dual transcranial direct current stimulation with Task-specific training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task specific training for improving gait speed.	1	Toktas et al. 2024
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving gait speed.	1	Abdullahi et al. 2021
1b	Task-specific training with Mental practice (Motor Imagery) may produce greater improvements in gait speed than Task-specific training.	1	Kumar et al. 2016
2	Transcranial direct current stimulation with Task-related training may produce greater improvements in gait speed than Task-related training.	1	Park et al. 2015b
1b	Task-specific training with Mental practice E2 Task-specific training and Cognitive training may not have a difference in efficacy when compared to No training for improving gait speed.	1	Malouin et al. 2009

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training may produce greater improvements in gait endurance than Conventional Therapy.	2	Ain et al. 2022; Salbach et al. 2004
2	Task Specific Treadmill Training may produce greater improvements in gait endurance than Treadmill Training.	1	Kwon et al. 2015
1b	Task Oriented Resistance Training may produce greater improvements in gait endurance than No Treatment.	1	Yang et al. 2006
1b	Task oriented circuit gait training may produce greater improvements in gait endurance than Strength training of lower extremities.	1	Knox et al. 2018
1b	Task oriented circuit gait training or Strength training of lower extremities may produce greater improvements in gait endurance than Educational session on stroke management.	1	Knox et al. 2018
1a	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving gait endurance.	4	Martins et al. 2020; Kim et al. 2016d; English et al. 2015; Indurkar et al. 2013
1b	Task Oriented Leg Training may not have a difference in efficacy when compared to Body Weight Support Training for improving gait endurance.	1	Brunelli et al. 2019

1b	Task Specific Training Combined with Other Therapies may produce greater improvements in gait endurance than Task Specific Therapy.	1	Verma et al. 2011
2	Lower body may produce greater improvements in gait endurance than Upper Body Task Specific Training.	1	Dean et al. 2000
1b	High Intensity Task-Specific Training may produce greater improvements in gait endurance than Low Intensity Training or Conventional Therapy.	1	Outermans et al. 2010
1b	There is conflicting evidence about the effect of Task-Specific Circuit Training when compared to Group Activities for improving gait endurance.	1	Mudge et al. 2009
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving gait endurance.	3	Ali et al. 2020; Renner et al. 2016; Vandeport et al. 2012
1b	Task-related Training combined with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy for improving gait endurance.	1	Ng et al. 2016
1b	TENS with Task-related training may produce greater improvements in gait endurance than TENS.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving gait endurance.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving gait endurance.	1	Hui-Chan et al. 2009
1b	Task-Specific Training with Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving gait endurance.	1	Brock et al. 2011
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving gait endurance.	1	Mulder et al. 2024
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving gait endurance.	1	Abdullahi et al. 2021
1b	Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not have a difference in efficacy when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) for improving gait endurance.	1	Lannin et al. 2018

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Task-Specific Training when compared to Conventional Therapy for improving functional mobility.	4	Ain et al. 2022; Ntsiea et al. 2015; Richards et al. 2004; Salbach et al. 2004
2	There is conflicting evidence about the effect of Task oriented training with altered sensory input when compared to Conventional physical therapy for improving functional mobility.	1	Kuberan et al. 2017

2	Task Specific Treadmill Training may produce greater improvements in functional mobility than Treadmill Training.	1	Kwon et al. 2015
2	Task-Oriented Training may not have a difference in efficacy when compared to Speed Dependent Treadmill Training for improving functional mobility.	1	Sharma et al. 2014
1b	Task Oriented Resistance Training may produce greater improvements in functional mobility than No Treatment.	1	Yang et al. 2006
1b	Task Oriented Gait Training may produce greater improvements in functional mobility than Conventional Training.	2	Knox et al. 2018; Qurat-ul-Ain et al. 2018
1b	Task oriented circuit gait training may produce greater improvements in functional mobility than Strength training of lower extremities.	1	Knox et al. 2018
1b	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving functional mobility.	2	English et al. 2015; Indurkar et al. 2013
1b	There is conflicting evidence about the effect of Task Oriented Leg Training when compared to Body Weight Support Training for improving functional mobility.	1	Brunelli et al. 2019
2	Activity Repetition Training may produce greater improvements in functional mobility than Task Oriented Training.	1	Ghous et al. 2017
1b	Early supported discharge to Day unit focussed on task- oriented training may not have a difference in efficacy when compared to Traditional treatment for improving functional mobility.	1	Gjelsvik et al. 2014
1a	Task Specific Training Combined with Other Therapies may produce greater improvements in functional mobility than Task Specific Therapy.	5	Patra et al. 2023; Malik et al. 2021; Cha et al. 2016; Verma et al. 2011; Kluding et al. 2008
2	Lower body may produce greater improvements in functional mobility than Upper Body Task Specific Training.	1	Dean et al. 2000
1b	Task-Specific Circuit Training may not have a difference in efficacy when compared to Group Activities for improving functional mobility.	1	Mudge et al. 2009
2	Task-specific training may produce greater improvements in functional mobility than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving functional mobility.	3	Ali et al. 2020; Renner et al. 2016; Vandeport et al. 2012
1b	There is conflicting evidence about the effect of Task-related Training combined with transcutaneous electrical nerve stimulation when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving functional mobility.	1	Ng et al. 2016
1b	TENS with Task-related training may produce greater improvements in functional mobility than TENS.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in functional mobility than Placebo transcutaneous electrical nerve stimulation with Task-related training.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving functional mobility.	1	Hui-Chan et al. 2009
1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in functional mobility than task oriented training with home exercise program.	1	Traxler et al. 2024

1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in functional mobility than conventional rehab.	1	Traxler et al. 2024
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving functional mobility.	1	Mulder et al. 2024
1b	Dual transcranial direct current stimulation with Task-specific training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task specific training for improving functional mobility.	1	Toktas et al. 2024
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving functional mobility.	1	Abdullahi et al. 2021
1b	Faradic electrical stimulation with Task-oriented exercise may not have a difference in efficacy when compared to Russian electrical stimulation with Task-oriented exercises for improving functional mobility.	1	Ganesh et al. 2018
1b	Faradic electrical stimulation with Task-oriented exercise may not have a difference in efficacy when compared to Conventional care with task- oriented approach or 40 min conventional care 5d/wk, for 6wks for improving functional mobility.	1	Ganesh et al. 2018
1b	Task-specific training with Mental practice E2 Task-specific training and Cognitive training may not have a difference in efficacy when compared to No training for improving functional mobility.	1	Malouin et al. 2009

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Task-Specific Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	4	Ain et al. 2022; Arabzadeh et al. 2018; Richards et al. 2004; Salbach et al. 2004
2	Task oriented training with altered sensory input may produce greater improvements in balance than Conventional physical therapy.	1	Park & Won 2017a
1b	Task Oriented sitting Reach Training may produce greater improvements in balance than Sham Training.	1	Dean et al. 2007
2	Task-Oriented Training may not have a difference in efficacy when compared to Speed Dependent Treadmill Training for improving balance.	1	Sharma et al. 2014
1a	Task Oriented Gait Training may not have a difference in efficacy when compared to Conventional Training for improving balance.	2	Knox et al. 2018; Richards et al. 1993
1b	Task oriented circuit gait training may produce greater improvements in balance than Strength training of lower extremities.	1	Knox et al. 2018
1b	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving balance.	2	Kim et al. 2016d; Indurkar et al. 2013
2	Lower extremity task- specific rehabilitation may not have a difference in efficacy when compared to Upper extremity task-specific rehabilitation for improving balance.	1	Kwakkel & Wagenaar 2002
2	Activity Repetition Training may produce greater improvements in balance than Task Oriented Training.	1	Ghous et al. 2017
1b	Early supported discharge to Day unit focussed on task- oriented training may not have a difference in efficacy when compared to Traditional treatment for improving balance.	1	Gjelsvik et al. 2014

1a	Task Specific Training Combined with Other Therapies may produce greater improvements in balance than Task Specific Therapy.	3	Malik et al. 2021; Cha et al. 2016; Marin et al. 2013
1b	Task-oriented training with Abdominal drawing-in maneuver may produce greater improvements in balance than Task-oriented training.	1	Jeong et al. 2023
1b	Task-oriented training with Abdominal drawing-in maneuver or Task-oriented training may produce greater improvements in balance than Conventional physical therapy.	1	Jeong et al. 2023
1b	High Intensity Task-Specific Training may not have a difference in efficacy when compared to Low Intensity Training or Conventional Therapy for improving balance.	1	Outermans et al. 2010
2	Task-specific training may produce greater improvements in balance than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving balance.	3	Ali et al. 2020; Renner et al. 2016; Vandeport et al. 2012
1b	Task-related Training combined with transcutaneous electrical nerve stimulation may produce greater improvements in balance than C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy.	1	Ng et al. 2016
1b	Task-Specific Training with Bobath Concept Approach may not have a difference in efficacy when compared to Task-Specific Training for improving balance.	1	Brock et al. 2011
1b	Task-Specific Training may produce greater improvements in balance than Trunk Training.	1	Priya et al. 2024
1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in balance than task oriented training with home exercise program.	1	Traxler et al. 2024
1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in balance than conventional rehab.	1	Traxler et al. 2024
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving balance.	1	Mulder et al. 2024
1b	Dual transcranial direct current stimulation with Task-specific training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task specific training for improving balance.	1	Toktas et al. 2024
1b	Visual scanning exercises with task specific activities may produce greater improvements in balance than Placebo eye exercises with task specific activities(not sham).	1	Batool et al. 2022
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving balance.	1	Abdullahi et al. 2021
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in balance than No active treatment (health education).	1	Chan et al. 2015
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in balance than Sham transcutaneous electrical nerve stimulation with Task- related training.	1	Chan et al. 2015

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Task oriented training with altered sensory input when compared to Conventional physical therapy for improving falls and fear of falling.	2	Kuberan et al. 2017; Park & Won 2017a
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving falls and fear of falling.	2	Renner et al. 2016; Vandeport et al. 2012

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving quality of life.	2	Martins et al. 2020; English et al. 2015
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving quality of life.	2	Renner et al. 2016; Vandeport et al. 2012
1b	Task-related Training combined with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy for improving quality of life.	1	Ng et al. 2016
1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in quality of life than task oriented training with home exercise program.	1	Traxler et al. 2024
1b	There is conflicting evidence about the effect of Manual therapy with task oriented training and home exercise program when compared to conventional rehab for improving quality of life.	1	Traxler et al. 2024
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving quality of life.	1	Mulder et al. 2024
1b	Dual transcranial direct current stimulation with Task-specific training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task specific training for improving quality of life.	1	Toktas et al. 2024

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving mood.	2	Renner et al. 2016; Vandeport et al. 2012
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving mood.	1	Mulder et al. 2024

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving fatigue and sleep.	2	Renner et al. 2016; Vandeport et al. 2012
2	Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not have a difference in efficacy when compared to Usual Care for improving fatigue and sleep.	1	Mulder et al. 2024

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training may not have a difference in efficacy when compared to Conventional Therapy for improving cognition.	1	Ntsiea et al. 2015
1b	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving cognition.	1	Vandeport et al. 2012

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training may produce greater improvements in upper extremity function than Conventional Therapy.	2	Song et al. 2024; Richards et al. 2004
1a	Task Specific Circuit Training may not have a difference in efficacy when compared to Conventional/Sham for improving upper extremity function.	2	Martins et al. 2020; English et al. 2015
2	Task-specific training may produce greater improvements in upper extremity function than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1b	Group Task-Oriented Circuit Training may not have a difference in efficacy when compared to Conventional Training for improving upper extremity function.	1	Vandeport et al. 2012
1b	There is conflicting evidence about the effect of Bihemispheric transcranial direct current stimulation with task oriented training when compared to Sham transcranial direct current stimulation with task oriented therapy for improving upper extremity function.	1	Hsu et al. 2023
1b	Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not have a difference in efficacy when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) for improving upper extremity function.	1	Lannin et al. 2018

Key Points

- Task-Specific Training may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not motor recovery and balance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical balance measures, activities of daily living, and functional mobility.
- Task oriented training with altered sensory input may be beneficial for improving balance, but not biomechanical balance measures, after stroke when compared to Conventional physical therapy; the literature is mixed regarding falls and fear of falling and functional mobility.
- Task Oriented sitting Reach Training may be beneficial for improving biomechanical gait measures and balance, but not gait speed, after stroke when compared to Sham Training.

- Task Specific Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Task-Oriented Training may not be beneficial for improving functional mobility and balance after stroke when compared to Speed Dependent Treadmill Training.
- Task Oriented Resistance Training may be beneficial for improving biomechanical gait measures, muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to No Treatment.
- Task Oriented Gait Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not activities of daily living and balance, after stroke when compared to Conventional Training.
- Task oriented circuit gait training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Strength training of lower extremities.
- Task Specific Circuit Training may not be beneficial for improving motor recovery, muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional/Sham.
- Lower extremity task- specific rehabilitation may be beneficial for improving gait speed, but not balance, after stroke when compared to Upper extremity task- specific rehabilitation.
- Task Oriented Leg Training may not be beneficial for improving activities of daily living and gait endurance after stroke when compared to Body Weight Support Training; the literature is mixed regarding functional mobility.
- Activity Repetition Training may be beneficial for improving functional mobility and balance after stroke when compared to Task Oriented Training.
- Early supported discharge to Day unit focussed on task- oriented training may not be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Traditional treatment.
- Task Specific Training Combined with Other Therapies may be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, gait endurance, functional mobility, and balance, but not biomechanical gait measures and muscle strength, after stroke when compared to Task Specific Therapy; the literature is mixed regarding biomechanical balance measures and gait speed.
- Task-oriented training with Abdominal drawing-in maneuver may be beneficial for improving biomechanical balance measures, activities of daily living, and balance after stroke when compared to Task-oriented training.
- Task-specific training with cognitive sensorimotor exercise may be beneficial for improving sensory and proprioceptive function, but not spasticity and gait speed, after stroke when compared to Task-specific training with conventional physical therapy.
- Lower body may be beneficial for improving gait endurance and functional mobility after stroke when compared to Upper Body Task Specific Training; the literature is mixed regarding gait speed.
- High Intensity Task-Specific Training may be beneficial for improving gait speed and gait endurance, but not balance, after stroke when compared to Low Intensity Training or Conventional Therapy.
- Task Oriented Training with Tilt Table may be beneficial for improving motor recovery, range of motion, and activities of daily living after stroke when compared to Tilt Table Alone.
- Tilt table one-leg standing training with Conventional rehabilitation may not be beneficial for improving gait speed after stroke when compared to Tilt table progressive task- oriented training with Conventional rehabilitation; the literature is mixed regarding biomechanical gait measures; Tilt table one-leg standing training with Conventional rehabilitation may result in lesser improvements in muscle strength when compared to Tilt table progressive task- oriented training with Conventional rehabilitation.
- Task-Specific Circuit Training may not be beneficial for improving gait speed and functional mobility after stroke when compared to Group Activities; the literature is mixed regarding gait endurance.
- Task-specific training may be beneficial for improving spasticity, functional mobility, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Group Task-Oriented Circuit Training may not be beneficial for improving muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Conventional Training.

- Task-related Training combined with transcutaneous electrical nerve stimulation may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No treatment.
- TENS with Task-related training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity, after stroke when compared to TENS; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed and functional mobility, but not muscle strength, spasticity, and gait endurance, after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No active treatment.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed, but not muscle strength and spasticity, after stroke when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Task-Specific Training with Bobath Concept Approach may be beneficial for improving gait speed, but not biomechanical balance measures, activities of daily living, gait endurance, and balance, after stroke when compared to Task-Specific Training.
- Task-Specific Training may be beneficial for improving balance after stroke when compared to Trunk Training.
- Task-oriented approach training + Conventional PT may be beneficial for improving spasticity and activities of daily living after stroke when compared to Task-oriented training only.
- Manual therapy with task oriented training and home exercise program may be beneficial for improving functional mobility and balance, but not gait speed, after stroke when compared to conventional rehab; the literature is mixed regarding range of motion and quality of life.
- Manual therapy with task oriented training and home exercise program may be beneficial for improving range of motion, functional mobility, balance, and quality of life, but not gait speed, after stroke when compared to task oriented training with home exercise program.
- Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not be beneficial for improving muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Usual Care.
- Dual transcranial direct current stimulation with Task-specific training may not be beneficial for improving motor recovery, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sham transcranial direct current stimulation with Task specific training.
- Bihemispheric transcranial direct current stimulation with task oriented training may be beneficial for improving motor recovery, but not activities of daily living, after stroke when compared to Sham transcranial direct current stimulation with task oriented therapy.
- Visual scanning exercises with task specific activities may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Placebo eye exercises with task specific activities(not sham).
- Constraint-induced movement therapy with task specific training may be beneficial for improving spasticity and aerobic measures, but not motor recovery, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to modified constraint-induced movement therapy with task specific training.
- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Russian electrical stimulation with Task-oriented exercises; the literature is mixed regarding range of motion.

- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Conventional care with task- oriented approach or 40 min conventional care 5d/wk, for 6wks; the literature is mixed regarding range of motion.
- Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not be beneficial for improving spasticity, activities of daily living, and gait endurance after stroke when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting).
- Task-specific training with Mental practice (Motor Imagery) may be beneficial for improving muscle strength and gait speed after stroke when compared to Task-specific training.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving muscle strength and balance after stroke when compared to No active treatment (health education).
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving balance, but not muscle strength, after stroke when compared to Sham transcutaneous electrical nerve stimulation with Task- related training.
- Transcranial direct current stimulation with Task-related training may be beneficial for improving gait speed after stroke when compared to Task-related training; the literature is mixed regarding biomechanical gait measures.
- Gait training with postural control visual feedback on monitor with task specific exercises may be beneficial for improving biomechanical gait measures after stroke when compared to Gait training with physiotherapy.
- Task-specific training with Mental practice E2 Task-specific training and Cognitive training may be beneficial for improving biomechanical balance measures, but not motor recovery, gait speed, and functional mobility, after stroke when compared to No training.
- Task oriented circuit gait training may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Strength training of lower extremities may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Lower extremity task- specific rehabilitation may be beneficial for improving gait speed after stroke when compared to Immobilization of paretic LE and UE using inflatable pressure splint.
- Upper extremity task- specific rehabilitation may not be beneficial for improving gait speed after stroke when compared to Immobilization of paretic LE and UE using inflatable pressure splint.
- Task-oriented training with Abdominal drawing-in maneuver may be beneficial for improving activities of daily living and balance after stroke when compared to Conventional physical therapy.
- Task-oriented training may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Conventional physical therapy.
- TENS with Task-related training may be beneficial for improving gait speed after stroke when compared to No treatment.

Summary of Key Points: Task-Specific Training

Intervention	Control(s)	Function domain(s)	Effect
Task-Specific Training	Conventional Therapy	Biomechanical gait measures, gait speed, gait endurance	+
Task-Specific Training	Conventional Therapy	Motor recovery, balance	–
Task-Specific Training	Conventional Therapy	Biomechanical balance measures, activities of daily living, functional mobility	=
Task oriented training with altered sensory input	Conventional physical therapy	Balance	+
Task oriented training with altered sensory input	Conventional physical therapy	Functional mobility, falls and fear of falling	=

Task oriented training with altered sensory input	Conventional physical therapy	Biomechanical balance measures	–
Task Oriented sitting Reach Training	Sham Training	Biomechanical gait measures, balance	+
Task Oriented sitting Reach Training	Sham Training	Gait speed	–
Task Specific Treadmill Training	Treadmill Training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Task-Oriented Training	Speed Dependent Treadmill Training	Functional mobility, balance	–
Task Oriented Resistance Training	No Treatment	Biomechanical gait measures, muscle strength, gait speed, gait endurance, functional mobility	+
Task Oriented Gait Training	Conventional Training	Biomechanical gait measures, gait speed, functional mobility	+
Task Oriented Gait Training	Conventional Training	Activities of daily living, balance	–
Task oriented circuit gait training	Strength training of lower extremities	Gait speed, gait endurance, functional mobility, balance	+
Task Specific Circuit Training	Conventional/Sham	Motor recovery, muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	–
Lower extremity task- specific rehabilitation	Upper extremity task- specific rehabilitation	Gait speed	+
Lower extremity task- specific rehabilitation	Upper extremity task- specific rehabilitation	Balance	–
Task Oriented Leg Training	Body Weight Support Training	Activities of daily living, gait endurance	–
Task Oriented Leg Training	Body Weight Support Training	Functional mobility	=
Activity Repetition Training	Task Oriented Training	Functional mobility, balance	+
Early supported discharge to Day unit focussed on task- oriented training	Traditional treatment	Activities of daily living, functional mobility, balance	–
Task Specific Training Combined with Other Therapies	Task Specific Therapy	Motor recovery, spasticity, range of motion, activities of daily living, gait endurance, functional mobility, balance	+
Task Specific Training Combined with Other Therapies	Task Specific Therapy	Biomechanical gait measures, muscle strength	–
Task Specific Training Combined with Other Therapies	Task Specific Therapy	Biomechanical balance measures, gait speed	=
Task-oriented training with Abdominal drawing-in maneuver	Task-oriented training	Biomechanical balance measures, activities of daily living, balance	+
Task-specific training with cognitive sensorimotor exercise	Task-specific training with conventional physical therapy	Sensory and proprioceptive function	+
Task-specific training with cognitive sensorimotor exercise	Task-specific training with conventional physical therapy	Spasticity, gait speed	–
Lower body	Upper Body Task Specific Training	Gait endurance, functional mobility	+

Lower body	Upper Body Task Specific Training	Gait speed	=
High Intensity Task-Specific Training	Low Intensity Training or vs Conventional Therapy	Gait speed, gait endurance	+
High Intensity Task-Specific Training	Low Intensity Training or vs Conventional Therapy	Balance	–
Task Oriented Training with Tilt Table	Tilt Table Alone	Motor recovery, range of motion, activities of daily living	+
Tilt table one-leg standing training with Conventional rehabilitation	Tilt table progressive task-oriented training with Conventional rehabilitation	Muscle strength, gait speed	–
Tilt table one-leg standing training with Conventional rehabilitation	Tilt table progressive task-oriented training with Conventional rehabilitation	Muscle strength	–
Task-Specific Circuit Training	Group Activities	Gait speed, functional mobility	–
Task-Specific Circuit Training	Group Activities	Gait endurance	=
Task-specific training	Proprioceptive Neuromuscular Facilitation	Spasticity, functional mobility, balance	+
Group Task-Oriented Circuit Training	Conventional Training	Muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Task-related Training combined with transcutaneous electrical nerve stimulation	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Balance	+
Task-related Training combined with transcutaneous electrical nerve stimulation	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Gait endurance, quality of life	–
Task-related Training combined with transcutaneous electrical nerve stimulation	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Functional mobility	=
Transcutaneous electrical nerve stimulation	No treatment	Gait speed	+
TENS with Task-related training	TENS	Gait speed, gait endurance, functional mobility	+
TENS with Task-related training	TENS	Spasticity	–
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task-related training	Gait speed, functional mobility	+
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task-related training	Muscle strength, spasticity, gait endurance	–
Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task-related training	Spasticity, gait speed, gait endurance, functional mobility	–

Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task-related training	Muscle strength	=
Transcutaneous electrical nerve stimulation	No active treatment	Gait speed	+
TENS with Task-related training	TENS	Gait speed	+
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training	Gait speed	+
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training	Muscle strength, spasticity	–
Task-Specific Training with Bobath Concept Approach	Task-Specific Training	Gait speed	+
Task-Specific Training with Bobath Concept Approach	Task-Specific Training	Biomechanical balance measures, activities of daily living, gait endurance, balance	–
Task-Specific Training	Trunk Training	Balance	+
Task-oriented approach training + Conventional PT	Task-oriented training only	Spasticity, activities of daily living	+
Manual therapy with task oriented training and home exercise program	conventional rehab	Functional mobility, balance	+
Manual therapy with task oriented training and home exercise program	conventional rehab	Gait speed	–
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program	Range of motion, functional mobility, balance, quality of life	+
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program	Gait speed	–
Manual therapy with task oriented training and home exercise program	conventional rehab	Range of motion, quality of life	=
Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care	Usual Care	Muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	–
Dual transcranial direct current stimulation with Task-specific training	Sham transcranial direct current stimulation with Task specific training	Motor recovery, gait speed, functional mobility, balance, quality of life	–
Bihemispheric transcranial direct current stimulation with task oriented training	Sham transcranial direct current stimulation with task oriented therapy	Motor recovery	+
Bihemispheric transcranial direct current stimulation with task oriented training	Sham transcranial direct current stimulation with task oriented therapy	Activities of daily living	–
Visual scanning exercises with task specific activities	Placebo eye exercises with task specific activities(not sham)	Balance	+
Visual scanning exercises with task specific activities	Placebo eye exercises with task specific activities(not sham)	Activities of daily living	–

Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training	Spasticity, aerobic measures	+
Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training	Motor recovery, gait speed, gait endurance, functional mobility, balance	–
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Spasticity	+
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Functional mobility	–
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Range of motion	=
Faradic electrical stimulation with Task-oriented exercise	Conventional care with task-oriented approach or 40 min conventional care 5d/wk, for 6wks	Functional mobility	–
Faradic electrical stimulation with Task-oriented exercise	Conventional care with task-oriented approach or 40 min conventional care 5d/wk, for 6wks	Range of motion	=
Faradic electrical stimulation with Task-oriented exercise	Conventional care with task-oriented approach or 40 min conventional care 5d/wk, for 6wks	Spasticity	+
Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting)	Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting)	Spasticity, activities of daily living, gait endurance	–
Task-specific training with Mental practice (Motor Imagery)	Task-specific training	Muscle strength, gait speed	+
Transcutaneous electrical nerve stimulation with Task-related training	No active treatment (health education)	Muscle strength, balance	+
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training	Balance	+
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training	Muscle strength	–
Transcranial direct current stimulation with Task-related training	Task-related training	Gait speed	+
Transcranial direct current stimulation with Task-related training	Task-related training	Biomechanical gait measures	=
Gait training with postural control visual feedback on monitor with task specific exercises	Gait training with physiotherapy	Biomechanical gait measures	+
Task-specific training with Mental practice E2 Task-specific training and Cognitive training	No training	Biomechanical balance measures	+
Task-specific training with Mental practice E2 Task-specific training and Cognitive training	No training	Motor recovery, gait speed, functional mobility	–
Task oriented circuit gait training	Educational session on stroke management	Gait endurance	+

Strength training of lower extremities	Educational session on stroke management	Gait endurance	+
Lower extremity task- specific rehabilitation	Immobilization of paretic LE and UE using inflatable pressure splint	Gait speed	+
Upper extremity task- specific rehabilitation	Immobilization of paretic LE and UE using inflatable pressure splint	Gait speed	−
Task-oriented training with Abdominal drawing-in maneuver	Conventional physical therapy	Activities of daily living, balance	+
Task-oriented training	Conventional physical therapy	Activities of daily living	−
Task-oriented training	Conventional physical therapy	Balance	+
TENS with Task-related training	No treatment	Gait speed	+
Tilt table one-leg standing training with Conventional rehabilitation	Tilt table progressive task-oriented training with Conventional rehabilitation	Biomechanical gait measures	=
TENS with Task-related training	TENS	Muscle strength	=

Constraint-Induced Movement Therapy (CIMT)



Adopted from: https://unsplash.com/

CIMT of the lower extremity (CIMT-LE) draws many aspects of CIMT of the upper extremity. As in CIMT for the upper extremity, CIMT-LE is designed to overcome the tendency among hemiparetic patients to avoid the use of their paretic limb, a process termed “learned non-use”. Despite similarities of protocols used in CIMT such as motor activity logs, supervised training and shaping, there are key differences implemented in CIMT for the LE. Unique to the protocols used during CIMT-LE, is the omission of restraint of the stronger limb. This is rationalized by the risk of falls and related injuries. In addition, both lower limbs are required to produce a natural gait cycle and restraint of one limb may hinder shaping interventions aimed at promoting gait and functional ambulation (dos Anjos et al., 2020).

A total of nine RCTs were found that evaluated Constraint-Induced movement therapy (CIMT) for lower extremity motor rehabilitation. Five RCTs compared mCIMT Therapy or Conventional Rehabilitation with Neurodevelopmental Therapy or Conventional Rehabilitation (Menezes-Oliveira et al. 2024; Aloraini et al. 2022; Candan et al. 2019; Candan et al. 2017; Zhu et al. 2016b). One RCT compared mCIMT Use Therapy with Forced Use Therapy (Fuzaro et al. 2012). One RCT evaluated CIMT with Task-Specific Training (Abdullahi et al. 2021). One RCT compared VR Combined with CIMT with VR or Conventional Training (Choi et al. 2017a). One RCT compared CIMT With Immobilization with Without Immobilization (da Silva Filho et al. 2017).

In addition, two RCTs in which Constraint-Induced movement therapy (CIMT) formed part of a combined or comparative intervention are cross-referenced at the end of Table 6; their primary listings appear in other tables.

The methodological details and results of all nine RCTs are presented in Table 6.

Table 6. RCTs Evaluating Constraint-Induced Movement Therapy (CIMT) for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
mCIMT vs Neurodevelopmental Therapy or Conventional Rehabilitation		
Menezes-Oliveira et al. (2024) RCT (6) Nstart=42 Nend=39 TPS=Chronic A vs 0	E: Lower extremity constraint induced movement therapy C: Conventional physiotherapy Duration: 2.5 hours, 15 days	E vs C: Mini-Bestest Assisstance (+exp) Performance (-) Confidence (-) 10 metre walk test (-) TUG (-) Gait deviation index (-) Step width (-) First double support (-) Single support (-) Second double support more affected side (-) less affected side (+exp) Step Length more affected (+exp) less affected (-) Cadence (-) Walking speed more affected (-) less affected (+exp)
Aloraini et al. (2022) RCT (7) Nstart=38 Nend=38 TPS=Chronic A vs 0	E: constraint-induced movement therapy for the lower extremity (CIMT-LE) C: Conventional rehab Duration: 3.5hrs/d, 5d/wk, 2wks	E vs C: FMA-LE(+exp) BBS(+exp) 10MWT(+exp) 6MWT(-)
Candan et al. (2019) RCT (6) Nstart=33 Nend=30 TPS=Chronic A + B vs C Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: mCIMT + Neurodevelopmental therapy (NDT) C: NDT Duration: 60min/d, 3d/wk, 4wks NDT & 120min/d, 5d/wk, 2wks NDT or mCIMT	E vs C: Motricity Index (+exp) Stroke Specific Quality of Life Scale (-) Mobility (-) Energy, - Selfcare (-) Vision (-) Language (-) Productivity (-) UE function (-) Thinking (+exp) personality (+exp) Mood (+exp) Family (-), -Social roles (-) Stroke Impact Scale (+exp) Perceived recovery (+exp)
Candan et al. (2017) RCT (6)	E: mCIMT on paretic LE C: NDT	E vs C: Berg balance scale (+exp)

Nstart=33 Nend=30 TPS=Chronic A vs B	Duration: 120min/d, 5d/wk, 2wks	Functional Ambulation Category (+exp) Walking Velocity (-) Cadence (+exp) Step length ratio (+exp) Postural Symmetry Ratio (+exp)
Zhu et al. (2016b) RCT (5) Nstart=22 Nend=22 TPS=Subacute A vs 0	E: mCIMT + conventional rehabilitation C: Conventional Rehabilitation Duration: 120min/d, 5d/wk, 4wks mCIMT & 45min/d, 5d/wk, 4wks conventional therapy	E vs C: Centre of Mass (-) P1 (-) nP1 (-) P2 (-) nP2 (-) COM Y range (-) normalized COM Y (+exp) Velocity (-) normalized Velocity (+exp) Step Width (-) normalized Step Width (+exp) Step Length Affected Side (-) normalized Step Length Affected Side (-) Step Length non-affected side (-) normalized Step Length non-affected side (+exp) Paretic Swing time (-) Non-paretic swing time (+exp)
mCIMT vs Forced Use Therapy		
Fuzaro et al. (2012) RCT (6) Nstart=72 Nend=37 TPS=Chronic A vs B + C vs D vs B	E: mCIMT C: Forced use therapy Duration: E: 23h/d immobilization of Non Paretic upper limb + 50min/d, 5d/wk exercise training for Paretic upper limb, 5d/wk; 4wk C: 23h/d immobilization by restraint wearing of Non Paretic upper limb, 5d/wk, 4wk	E vs C: Stroke Impact scale (+exp) Berg Balance scale (-) Fugl-Meyer assessment (+exp) 10m Walk test (-) Timed Up and Go (-)
CIMT with Task-Specific Training		
Abdullahi et al. (2021) RCT (9) Nstart=58 Nend=56 TPS=Chronic A + B vs C + B Also in Table 5 (Task-Specific Training)	E: CIMT + task specific training C: mCIMT + task specific training Duration: 3h/d, 5d/wk, for 4wks	E vs C: Fugl Meyer (-) Berg Balance Scale (-) Rivermead Mobility Index (-) Modified Ashworth Scale (+exp) Ten-Meter Walk Test (-) Six-Minute Walk test (-) Rate of perceived exertion (+exp)
VR Combined with CIMT vs VR or Conventional Training		
Choi et al. (2017a) RCT (7) Nstart=36 Nend=36 TPS=Chronic A vs B vs 0	E1: game-based CIMT + Traditional physical therapy E2: General game-based training + Traditional PT C: Traditional physical therapy Duration: 30min/d, 3d/wk, 4wks game training & 60min/d, 5d/wk, 4wks traditional PT	E1/E2 vs C: Center of pressure - AP (exp1), - ML (+exp1) Sway mean velocity (-) Sway area (+exp1) symmetric weight bearing (+exp1, +exp2) Functional Reach Test(-) modified Functional Reach Test (+exp1, +exp2)

		Timed Up and Go Test (-) E1 vs E2: Center of pressure - AP (-), - ML (+exp1) Sway mean velocity (-) Sway area (+exp1) symmetric weight bearing (+exp1) Functional Reach Test(-) modified Functional Reach Test (-) Timed Up and Go Test (-)
CIMT With Immobilization vs Without Immobilization		
da Silva Filho et al. (2017) RCT (5) Nstart=26 Nend=18 TPS=Chronic A vs B	E: Constraint induced movement therapy (immobilization of non-paretic UL) C: Modified CIMT (without immobilization) Duration: 40min/d, 3d/wk for 4wks for movement training & 6h daily immobilization of non- paretic UL.	E vs C: Berg Balance scale (-) Gait speed (+exp) Timed Up and Go (+exp) Going up and down stairs (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Lee et al. (2022b) RCT (6) Nstart=47 Nend=43 TPS=Chronic A1 vs A2 vs B vs C Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Healbot no pelvic mode E2: Healbot pelvic mode E3: Healbot CIMT mode C: Conventional gait training with treadmill Duration: 30min/d 2-3d/wk, 4wks	E1/E2/E3 vs C: 10MWT(+exp3) BBS(+exp2) FAC(-) TUG(+exp2) MI(+exp3)
Silva et al. (2017) RCT (8) Nstart=38 Nend=36 TPS=Subacute A + B vs A Primary listing: Table 9 (Treadmill Training)	E: Constraint induced movement training on treadmill + home exercises C: Treadmill training Duration: 30min/d for 9d Treadmill training (constraint/ no constraint)	E vs C: Berg Balance Scale (-) Timed Up and Go Test (-) Turn Speed (-) Stride Length (-) Stride Time (-) Stride Width (-) Symmetry Ratio of Swing Time (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may produce greater improvements in motor recovery than Neurodevelopmental Therapy or Conventional Rehabilitation.	1	Aloraini et al. 2022

1b	Modified constraint-induced movement therapy Use Therapy may produce greater improvements in motor recovery than Forced Use Therapy.	1	Fuzaro et al. 2012
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving motor recovery.	1	Abdullahi et al. 2021

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may not have a difference in efficacy when compared to Neurodevelopmental Therapy or Conventional Rehabilitation for improving biomechanical gait measures.	3	Menezes-Oliveira et al. 2024; Candan et al. 2017; Zhu et al. 2016b
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may produce greater improvements in biomechanical gait measures than General game-based training with Traditional physical therapy.	1	Choi et al. 2017a
1b	Constraint induced movement training on treadmill with home exercises may not have a difference in efficacy when compared to Treadmill training for improving biomechanical gait measures.	1	Silva et al. 2017

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may produce greater improvements in biomechanical balance measures than Traditional physical therapy.	1	Choi et al. 2017a
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may produce greater improvements in biomechanical balance measures than General game-based training with Traditional physical therapy.	1	Choi et al. 2017a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may produce greater improvements in muscle strength than Neurodevelopmental Therapy or Conventional Rehabilitation.	1	Candan et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Constraint-induced movement therapy with task specific training may produce greater improvements in spasticity than modified constraint-induced movement therapy with task specific training.	1	Abdullahi et al. 2021

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Constraint-induced movement therapy with task specific training may produce greater improvements in aerobic measures than modified constraint-induced movement therapy with task specific training.	1	Abdullahi et al. 2021

2. Activities

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may not have a difference in efficacy when compared to Neurodevelopmental Therapy or Conventional Rehabilitation for improving gait speed.	4	Menezes-Oliveira et al. 2024; Aloraini et al. 2022; Candan et al. 2017; Zhu et al. 2016b
1b	Modified constraint-induced movement therapy Use Therapy may not have a difference in efficacy when compared to Forced Use Therapy for improving gait speed.	1	Fuzaro et al. 2012
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving gait speed.	1	Abdullahi et al. 2021
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to Traditional physical therapy for improving gait speed.	1	Choi et al. 2017a
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving gait speed.	1	Choi et al. 2017a
2	Constraint-induced movement therapy With Immobilization may produce greater improvements in gait speed than Without Immobilization.	1	da Silva Filho et al. 2017
1b	Healbot no pelvic mode may produce greater improvements in gait speed than Conventional gait training with treadmill.	1	Lee et al. 2022b

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may not have a difference in efficacy when compared to Neurodevelopmental Therapy or Conventional Rehabilitation for improving gait endurance.	1	Aloraini et al. 2022
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving gait endurance.	1	Abdullahi et al. 2021

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation when compared to Neurodevelopmental Therapy or Conventional Rehabilitation for improving functional mobility.	2	Menezes-Oliveira et al. 2024; Candan et al. 2017
1b	Modified constraint-induced movement therapy Use Therapy may not have a difference in efficacy when compared to Forced Use Therapy for improving functional mobility.	1	Fuzaro et al. 2012
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving functional mobility.	1	Abdullahi et al. 2021

1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to Traditional physical therapy for improving functional mobility.	1	Choi et al. 2017a
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving functional mobility.	1	Choi et al. 2017a
2	Constraint-induced movement therapy With Immobilization may produce greater improvements in functional mobility than Without Immobilization.	1	da Silva Filho et al. 2017
1b	Healbot no pelvic mode may produce greater improvements in functional mobility than Conventional gait training with treadmill.	1	Lee et al. 2022b
1b	Constraint induced movement training on treadmill with home exercises may not have a difference in efficacy when compared to Treadmill training for improving functional mobility.	1	Silva et al. 2017

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may produce greater improvements in balance than Neurodevelopmental Therapy or Conventional Rehabilitation.	3	Menezes-Oliveira et al. 2024; Aloraini et al. 2022; Candan et al. 2017
1b	Modified constraint-induced movement therapy Use Therapy may not have a difference in efficacy when compared to Forced Use Therapy for improving balance.	1	Fuzaro et al. 2012
1b	Constraint-induced movement therapy with task specific training may not have a difference in efficacy when compared to modified constraint-induced movement therapy with task specific training for improving balance.	1	Abdullahi et al. 2021
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to Traditional physical therapy for improving balance.	1	Choi et al. 2017a
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving balance.	1	Choi et al. 2017a
2	Constraint-induced movement therapy With Immobilization may not have a difference in efficacy when compared to Without Immobilization for improving balance.	1	da Silva Filho et al. 2017
1b	Healbot no pelvic mode may produce greater improvements in balance than Conventional gait training with treadmill.	1	Lee et al. 2022b
1b	Constraint induced movement training on treadmill with home exercises may not have a difference in efficacy when compared to Treadmill training for improving balance.	1	Silva et al. 2017

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may not have a difference in efficacy	1	Candan et al. 2019

	when compared to Neurodevelopmental Therapy or Conventional Rehabilitation for improving quality of life.		
1b	Modified constraint-induced movement therapy Use Therapy may produce greater improvements in quality of life than Forced Use Therapy.	1	Fuzaro et al. 2012

Key Points

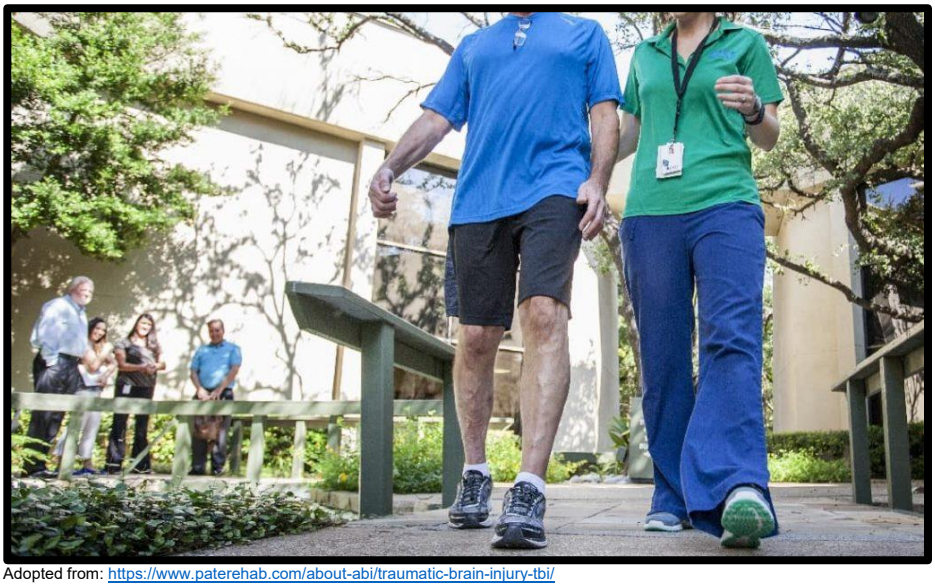
- Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may be beneficial for improving motor recovery, muscle strength, and balance, but not biomechanical gait measures, gait speed, gait endurance, and quality of life, after stroke when compared to Neurodevelopmental Therapy or Conventional Rehabilitation; the literature is mixed regarding functional mobility.
- Modified constraint-induced movement therapy Use Therapy may be beneficial for improving motor recovery and quality of life, but not gait speed, functional mobility, and balance, after stroke when compared to Forced Use Therapy.
- Constraint-induced movement therapy with task specific training may be beneficial for improving spasticity and aerobic measures, but not motor recovery, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to modified constraint-induced movement therapy with task specific training.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to Traditional physical therapy.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to General game-based training with Traditional physical therapy.
- Constraint-induced movement therapy With Immobilization may be beneficial for improving gait speed and functional mobility, but not balance, after stroke when compared to Without Immobilization.
- Healbot no pelvic mode may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Conventional gait training with treadmill.
- Constraint induced movement training on treadmill with home exercises may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Treadmill training.

Summary of Key Points: Constraint-Induced Movement Therapy (CIMT)

Intervention	Control(s)	Function domain(s)	Effect
Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation	Neurodevelopmental Therapy or Conventional Rehabilitation	Motor recovery, muscle strength, balance	+
Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation	Neurodevelopmental Therapy or Conventional Rehabilitation	Biomechanical gait measures, gait speed, gait endurance, quality of life	–
Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation	Neurodevelopmental Therapy or Conventional Rehabilitation	Functional mobility	=
Modified constraint-induced movement therapy Use Therapy	Forced Use Therapy	Motor recovery, quality of life	+
Modified constraint-induced movement therapy Use Therapy	Forced Use Therapy	Gait speed, functional mobility, balance	–
Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training	Spasticity, aerobic measures	+

Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training	Motor recovery, gait speed, gait endurance, functional mobility, balance	–
Game-based constraint-induced movement therapy with Traditional physical therapy	Traditional physical therapy	Biomechanical balance measures	+
Game-based constraint-induced movement therapy with Traditional physical therapy	Traditional physical therapy	Gait speed, functional mobility, balance	–
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy	Biomechanical gait measures, biomechanical balance measures	+
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy	Gait speed, functional mobility, balance	–
Constraint-induced movement therapy With Immobilization	Without Immobilization	Gait speed, functional mobility	+
Constraint-induced movement therapy With Immobilization	Without Immobilization	Balance	–
Healbot no pelvic mode	Conventional gait training with treadmill	Gait speed, functional mobility, balance	+
Constraint induced movement training on treadmill with home exercises	Treadmill training	Biomechanical gait measures, functional mobility, balance	–

Non-Technological Overground Walking and Gait Training



Adopted from: https://www.paterehab.com/about-abi/traumatic-brain-injury-tbi/

Gait training is one of the most common interventions provided following a stroke (Jette et al., 2005). Overground gait training includes walking and related exercises with or without cueing from a physical therapist but does not include use of technology aids such as those used to administer body weight support (States et al., 2009).

A total of 40 RCTs were found that evaluated Non-Technological overground walking and gait training for lower extremity motor rehabilitation. Five RCTs compared Overground Walking with Treadmill Training (Gangopadhyay et al. 2021; Timmermans et al. 2021; Combs-Miller et al. 2014; Bonnyaud et al. 2013a; Bonnyaud et al. 2013a). Two RCTs compared High Intensity Overground Walking with Conventional Therapy (Shen et al. 2015; Gordon et al. 2013). Three RCTs compared Community-based gait training with conventional training (Kim et al. 2014d; Park et

al. 2011b; Lord et al. 2008). One RCT compared Bent Knee (Prowling) Gait Training with Conventional Therapy (Dalal et al. 2018). Eight RCTs compared Backward or Sideway Walking Training with Standing Practice or Conventional Therapy (Chatterjee et al. 2023; Kalyana et al. 2023; Huang et al. 2021; Sethy et al. 2021; Kale et al. 2019; Rose et al. 2018; Kim et al. 2017a; Yang et al. 2005). Five RCTs compared Stair or Ramp Training with Flat Surface Gait Training (Yoon-Hee et al. 2020; Park et al. 2015d; Seo & Kim 2015; Lee & Seo 2014d; Seo et al. 2014). One RCT compared Gait Training with Motor Imagery with Conventional Gait Training (Sawant 2020). Two RCTs compared Gait Training or Overground Walking with Feedback with Without Feedback (Kim et al. 2020b; Danks et al. 2016). Two RCTs compared Gait Training with Postural Assistance Support with Gait Training with Conventional Support (Kawakami et al. 2024; Dragin et al. 2014). Two RCTs compared Gait training with Insoles with Gait training with Conventional Shoes (Park et al. 2024a; Sheikh et al. 2016). Two RCTs compared Accurate Adaptability Walking with Steady State Walking (Muroi et al. 2024; Clark et al. 2021). One RCT compared Implicit Motor Learning with Walking with Explicit Motor Learning with Walking (Jie et al. 2021). One RCT compared Curved Gait Training with Straight Gait Training (Lee et al. 2024b). One RCT compared Gait Training on Sand with Gait Training on Firm Surface (Lee et al. 2023c). One RCT evaluated High-Intensity Walking Training with or without Step Activity Monitoring (Thompson et al. 2024).

In addition, 20 RCTs in which Non-Technological overground walking and gait training formed part of a combined or comparative intervention are cross-referenced at the end of Table 7; their primary listings appear in other tables.

The methodological details and results of all 40 RCTs are presented in Table 7.

Table 7. RCTs Evaluating Non-Technological Overground Walking and Gait Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Overground Walking vs Treadmill Training		
Gangopadhyay et al. (2021) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E: Body weight supported treadmill training (BWST) + conventional rehabilitation C: Overground gait training + conventional rehabilitation Duration: 20min/d BWST/overground gait training & 40min/d conventional rehabilitation, 3d/wk for 4wks	E vs C: Timed Up-and-Go (+exp) Gait Cadence (+exp) 10-meter Walk test (+exp) Berg Balance scale (+exp)
Timmermans et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Chronic A vs B Also in Table 9 (Treadmill Training); Table 26 (Virtual Reality)	E1: Treadmill-based C-Mill (using gait-dependent augmented reality) E2: Overground walking therapy (walking-adaptability exercises with physical obstacles) Duration: 90min/d, 2d/wk for 5wks	E1 vs E2: 10m Walk test (-) Context (+exp) Context and Cognitive (-) Cognitive (-) Interactive walkway assessment Obstacles (-) Obstacles and cognitive (-) Cognitive dual-task performance (-)
Combs-Miller et al. (2014) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E: Body weight supported treadmill training C: Overground walking training Duration: 30min, 5d/wk for 2wk	E vs C: 10m Walk test fast subscale (-) 10m Walk test comfortable subscale (+con) 6min Walk test (-) Step length (-) stance time symmetry (-) Swing time symmetry (-) ICF Measure of Participation and ACTivities

		activities (-) participation (-)
Bonnyaud et al. (2013a) RCT (4) Nstart=26 Nend=26 TPS=Chronic A vs B	E: Overground gait training C: Treadmill gait training Duration: 20min, single session	E vs C: Gait Speed (-) Gait Cadence (-) Single limb support phase Paretic (-) Non-paretic (-) Step length Paretic (-) Non-paretic (-) Peak hip flexion/extension (-) Peak knee extension/flexion (-) Peak ankle dorsi/plantar flexion (-) Vertical ground reaction force Total support phase-both sides (-) Single support phase-both sides (-) Peak propulsion-both sides (-) Peak braking-both sides (-)
Bonnyaud et al. (2013b) RCT (4) Nstart=60 Nend=60 TPS=Chronic A1 vs A2 vs A3 vs B Also in Table 9 (Treadmill Training)	E1: Overground gait training with ankle mass E2: Treadmill gait training with ankle mass C1: Overground gait training without mass C2: Treadmill gait training without mass Duration: 20min/d, 1 session	E1 vs C1: Speed (-) Cadence (-) Step Length (Paretic/Non-paretic) (-) Peak Hip Flexion (Paretic/Non-paretic) (-) Peak Knee Flexion (Paretic/Non-paretic) (-) Peak Ankle Dorsiflexion (Paretic/Non-paretic) (-) Vertical GRF (Paretic/Non-paretic) (-) Peak Propulsion (Paretic/Non-paretic) (-) Peak Breaking (Paretic/Non-paretic) (-) E2 vs C2: Speed (-) Cadence (-) Step Length (Paretic/Non-paretic) (-) Peak Hip Flexion (Paretic/Non-paretic) (-) Peak Knee Flexion (Paretic/Non-paretic) (-) Peak Ankle Dorsiflexion Paretic (-) Non-paretic (+con) Vertical GRF (Paretic/Non-paretic) (-) Peak Propulsion (Paretic/Non-paretic) (-) Peak Breaking Paretic (-) Nonparetic (+con)
High Intensity Overground Walking vs Conventional Therapy		
Shen et al. (2015) RCT (6) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: Overground Walking (Intensified Walk Training) C: Conventional Therapy Duration: 40-60 min/d, 5-6 d/wk for 5 wks	E vs C: Fugl-Meyer Assessment (+exp) Barthel Index (+exp) 6-minute Walking Test (+exp)
Gordon et al. (2013)	E: Overground walking (aerobic, high intensity)	E vs C:

RCT (7) Nstart=128 Nend=116 TPS=Chronic A vs 0	C: Conventional therapy (Massage) Duration: 25min/d, 3d/wk, 12wks massage & 15-30min/d, 3d/wk, 12wks aerobic exercise	SF-36 Physical health component (+exp) Mental component (-) Barthel Index (-) Older Americans Resources and Services Questionnaire (-) 6 Minute Walk Test (+exp) Resting heart rate (-) Motricity index Affected (-) Unaffected (-)
Community-based gait training vs conventional training		
Kim et al. (2014d) RCT (6) Nstart=26 Nend=22 TPS=Chronic A vs 0 vs B	E: Community walking training program + conventional care (physical and occupational therapy) C: Conventional care (physical and occupational therapy) Duration: E: 30min/d Community walking training program + 60min/d conventional care, 5d/wk, 4wks C: 60min/d conventional care, 5d/wk, 4wks	E vs C: 10-Metre Walk Test (+exp) 6-min Walk Test (+exp) Community walk test (+exp) Stroke impact scale (+exp)
Park et al. (2011b) RCT (7) Nstart=27 Nend=25 TPS=Chronic A vs 0	E: Community-based ambulation training + conventional physical therapy C: Conventional physical therapy Duration: 1h/d, 7d/wk for 4wks - Functional training, 1h/d, 3d/wk for 4wks - Community based ambulation training	E vs C: 10-Metre Walk Test (+exp) 6-Minute Walk Test (-) Community Walk Test (+exp) Walking ability questionnaire (+exp) Activities-specific balance confidence scale (+exp)
Lord et al. (2008) RCT (6) Nstart=36 Nend=30 TPS=Subacute A vs 0	E: Functional gait activities in community environments C: Conventional care physiotherapy Duration: 2d/wk, 7wks	E vs C: 10m Walk test (-) 6min Walk test (-) Activities-specific Balance Confidence scale (-) Subjective index of Physical and Social outcome (-)
Bent Knee (Prowling) Gait Training vs Conventional Therapy		
Dalal et al. (2018) RCT (8) Nstart=32 Nend=29 TPS=Not reported A vs 0	E: Bent Knee Gait training (prowling) with Proprioceptive Training + Conventional Care • C: Conventional Care • Duration: 15-20min Prowling and Proprioceptive training & 45-60min Conventional Physiotherapy - 6 sessions	E vs C: Knee hyperextension (+exp) Ankle dorsiflexion (+exp) Time taken (-) Wisconsin Gait Scale (+exp)
Backward or Sideway Walking Training vs Standing Practice or Conventional Therapy		
Chatterjee et al. (2023) RCT (8) Nstart=60 Nend=60 TPS=Subacute A vs 0	E: Backward gait training (BGT) + conventional physiotherapy C: Conventional physiotherapy Duration: 35-45min/d, 5d/wk, 4wks	E vs C: BBS (+exp) Bathroom Weighing Machine affected limb (+exp) unaffected limb (+exp)
Kalyana et al. (2023) RCT (7)	E: Backward walking + Conventional therapy C: Conventional therapy	E vs C: BI (no stat)

Nstart=40 Nend=40 TPS=Not reported A vs 0	Duration: 70min (30min backward walking + 40min conventional)/d, 3d/wk, 3wks	BBS (no stat)
Huang et al. (2021) RCT (7) Nstart=26 Nend=24 TPS=Chronic A vs 0 vs B	E: Lateral stair walking + traditional physiotherapy C: Traditional treatment C: 30min/d, 1d/wk, 12wks Duration: E: 15min lateral stair climbing+15min traditional treatment/d, 1x/wk for 12wks; C: 30min/d, 1x/wk for 12wks	E vs C: Muscle strength hip extensors (-) hip flexors (-) hip abductors (-) knee extensors (-) knee flexors (-) ankle plantar flexors (+exp) ankle dorsiflexors (-) Postural assessment Stroke scale (+exp) Fugl-Meyer assessment Lower extremity (-) Barthel index (+exp) Timed Up and Go (+exp) Stance phase unaffected side (-) affected side (-) Swing phase unaffected side (-) affected side (-) Single support time unaffected side (-) affected side (-) Double support time unaffected side (-) affected side (-) Stride length (-) Gait velocity (+exp) Gait cadence (-)
Sethy et al. (2021) RCT (6) Nstart=56 Nend=56 TPS=Chronic A vs 0	E: Backwards and sideways overground walking C: Conventional training Duration: 30min/d, 5d/wk, 6wks	E vs C: 10m Walk test (+exp) 6min Walk test (+exp)
Kale et al. (2019) RCT (4) Nstart=30 Nend=30 TPS=Not reported A vs B	E: Walking backwards + conventional forward walking C: Conventional forward walking Duration: Backward walk duration not specified + 20min/d conventional training, 3d/wk, 4wks	E vs C: Single limb support (+exp) Double limb support (+exp) Stride time (+exp) Step time (+exp) Cadence (+exp) Speed (+exp) Stride length (+exp) Step length (+exp) Step width (+exp)
Rose et al. (2018) RCT (5) Nstart=18 Nend=16	E: Backward Walking Training + Scheduled Therapy C: Standing Balance Training + Scheduled Therapy	E vs C: Five-Meter Walk Test (+exp) 3-Meter Backward Walk Test (+exp)

TPS=Acute A + B vs C + B	Duration: 30min/session for 8 sessions	Activities-Specific Balance Confidence Scale (+exp) Berg Balance Scale (-) Sensory Organization Test (-) Function Independence Measure-Mobility (-)
Kim et al. (2017a) RCT (6) Nstart=66 Nend=51 TPS=Chronic A vs B vs 0	E1: Lateral Walking Training + Conventional PT E2: Backward Walking Training + Conventional PT C: Conventional therapy Duration: 60min/d, 3d/wk, 3wks	E1 vs E2: 10-m Walk Test(+exp1) Cadence (-) Stride length affected side (+exp1) Gait symmetry ratio (+exp1) Double support period (+exp1) E1/E2 vs C: 10-m Walk Test(+exp1, +exp2) Cadence (+exp1, +exp2) Stride length affected side (+exp1) Gait symmetry ratio (+exp1) Double support period (+exp1)
Yang et al. (2005) RCT (6) Nstart=25 Nend=25 TPS=Chronic A vs 0	E: Backward Walking Training + • Conventional Rehabilitation C: Conventional Rehabilitation • Duration: 40min/d, 3d/wk for • 3wks Conventional rehabilitation, 30min/d, 3d/wk for 3wks Backward walking training	E vs C: Gait Velocity (+exp) Cadence (-) Stride Length (+exp) Gait Cycle (-) Symmetry Index (+exp)
Stair or Ramp Training vs Flat Surface Gait Training		
Yoon-Hee et al. (2020) RCT (8) Nstart=20 Nend=20 TPS=Chronic A1 + B vs A2 + B	E1: 15cm Stair Height Training + Comprehensive rehabilitation E2: 10cm Stair Height Training + Comprehensive rehabilitation Duration: 30 min/d, 5d/wk, 6wks stair training + 30 min/d, 4d/wk , 6wks comprehensive rehabilitation	E1 vs E2: Berg Balance Scale (-) Timed Up-and-Go Test (-) EMG Muscle Activity Rectus femoris (+exp1) Biceps femoris (+exp1) Tibialis anterior (+exp1) Gastrocnemius (-)
Park et al. (2015d) RCT (5) Nstart=24 Nend=24 TPS=Chronic A vs B	E: Stair gait training C: Flat surface gait training Duration: 15min/d, 3d/wk for 8wk	E vs C: Manual Muscle strength Tester Rectus femoris (+exp) Gastrocnemius (-) Tiabialis anterior (+con) Timed Up and Go Test (-) Step length (-)
Seo & Kim (2015) RCT (4) Nstart=30 Nend=20 TPS=Chronic A vs B	E: Ramp gait training C: Flat surface gait training Duration: 30min/d, 3d/wk, 4wks	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (-) Functional Reach Test (-)
Lee & Seo (2014d) RCT (4) Nstart=40 Nend=40 TPS=Chronic A vs B	E: Stair gait training C: Flat surface gait training Duration: 1hr/d, 5d/wk for 4wk	E vs C: Weight-bearing footprint (+exp) Limit of Stability Anterior (+exp) Posterior (+exp) Romberg

		Surface area ellipse (+exp) length (-)
Seo et al. (2014) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs B	E: Stair gait training C: Flat surface gait training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Weight Bearing (-) Limit of Stability (-) Romberg Test surface area ellipse (+exp) length (+exp) average speed (-) length/area (+exp)
Gait Training with Motor Imagery vs Conventional Gait Training		
Sawant (2020) RCT (4) Nstart=82 Nend=82 TPS=Not reported A vs B1 vs 0 vs B2 Also in Table 17 (Mental Practice)	E: Gait training + guided motor imagery + conventional exercises C: Gait training + conventional exercises Duration: E: 20min/d, 3d/wk, 4wks gait training + 10min/d, 3d/wk, 4wks motor imagery C: 30min/d, 3d/wk, 4wks gait training	E vs C: Functional Gait Assessment (+exp) 10-Meter Walk Test (+exp)
Gait Training or Overground Walking with Feedback vs Without Feedback		
Kim et al. (2020b) RCT (5) Nstart=30 Nend=24 TPS=Chronic A vs B	E: Visual performance feedback training during overground walking + conventional physical therapy C: Overground walking without feedback + conventional physical therapy Duration: 30min/d overground walking & 60min/d physical therapy, 3d/wk, 6wk	E vs C: Timed Up and Go test (+exp) Step length (+exp) Stride length (+exp) Single support time on affected side (+exp) Double support time (-) Walking velocity (+exp) Step length ratio (-) Stride length ratio (+exp) Single support time ratio (+exp)
Danks et al. (2016) RCT (4) Nstart=37 Nend=27 TPS=Chronic A + B vs A	E: E: Fast Walking training (FAST) + Step activity monitoring (SAM) program C: C: Fast Walking training (FAST) Duration: 30min/d, 3d/wk, 12wks	E vs C: Steps per Day (-) Total Time Walking Per Day (-) 10-Meter Walk Test Self-Selected Speed (-) Maximal Speed (-) 6-Minute-Walk Test: Distance (+exp)
Gait Training with Postural Assistance Support vs Gait Training with Conventional Support		
Kawakami et al. (2024) RCT (5) Nstart=27 Nend=27 TPS=Acute A + B vs B	E: Safety suspension device + Overground Walking + Regular Physical Therapy C: Overground Walking + Regular Physical Therapy Duration: 60min/d Gait Training, 5d/wk + 60min/d PT, 7d/wk for 4wk	E vs C: Number of days to reach a Functional ambulation categories Score of 3 points (+exp)
Dragin et al. (2014) RCT (7) Nstart=22 Nend=22 TPS=Subacute A vs B	E: Gait training + postural assistance support (Walkaround device) + Conventional PT C: Gait training with conventional supports + Conventional PT Duration: 30min/d, 5d/wk, 4wks	E vs C: Barthel index (-) Fugl-Meyer Score (-) Berg Balance scale (-) 10 m walk test (+exp)

Gait training with Insoles vs Gait training with Conventional Shoes		
Park et al. (2024a) RCT crossover (6) Nstart=36 Nend=36 TPS=Chronic A + B vs A Also in Table 13 (Orthotic Devices)	E: Gait training (with insole on non-paretic foot) C: Gait training (without insole) Duration: 10-20min (+5 min practice walking), experiment conducted 1x/participant	E vs C: gait parameters step count (-) step velocity (+exp) cadence (-) step-time differential (+exp) step length differential (-) step time (+exp) step length (+exp) cycle time (-) stride length (-) H-H Base Support (+exp) stride velocity (+exp) Gait cycle swing phase (+exp) stance phase (+exp) single support time (-) double support time (-) Double Support Unload Phase (+exp)
Sheikh et al. (2016) RCT (7) Nstart=28 Nend=28 TPS=Chronic A vs B Also in Table 13 (Orthotic Devices)	E: Gait training + compelled weight-shift insole device C: Gait training with conventional insole Duration: 90min/d, 6d/wk, 6wks	E vs C: Weight bearing (+exp) Gait velocity (-) Stance symmetry ratio (-) Swing symmetry ratio (-) Overall symmetry ratio (-) Step symmetry ratio (-)
Accurate Adaptability Walking vs Steady State Walking		
Muroi et al. (2024) RCT (6) Nstart=38 Nend=38 TPS=Subacute A vs 0	E: Training for walking throuh an opening + Conventional therapy C: Regular walking exercises + Conventional therapy Duration: 40min/d, 5d/wk, 3wks	E vs C: Collision rate (+exp) Time to passage of opening (+exp) 10MWT (-) TUG (-) BBS (-) ABC (-) Perceptual judgement of passability (-)
Clark et al. (2021) RCT (5) Nstart=38 Nend=36 TPS=Chronic A vs B	E1: Accurate adaptability walking E2: Steady state walking Duration: 30min/d, 3d/wk, 12wks	E1 vs E2: 10-meter walk test (-) Dynamic gait index (-) Activities-Specific Balance Confidence Scale (-) satisfaction with mobility function and recovery (-) Serial 7-Subtraction (-) Fugl-Meyer assessment (+exp1) Prefrontal activity in fNIRS typical walking (-), - dual-task walking (+exp1) obstacle walking (-)
Implicit vs Explicit Motor Learning with Walking		
Jie et al. (2021) RCT (7)	E: Implicit motor learning + walking C: Explicit motor learning + walking	E vs C: 10-metre walk test (-)

Nstart=79 Nend=73 TPS=Chronic A1 vs A2	Duration: 30min/session, 3d/wk, 3wk	Modified Dynamic Gait Index (-) Dual Task performance effect Motor task (-) Cognitive task (-) Movement Specific Reinvestment Scale adapted for gait (-) Stroke and Aphasia Quality of Life Scale (-) Global Perceived Effect scale (-)
Curved Gait Training vs Straight Gait Training		
Lee et al. (2024b) RCT (7) Nstart=45 Nend=45 TPS=Subacute A1 vs A2 vs B	E1: Outward curved gait training; E2: Inward curved gait training C: Straight gait training Duration: 30min/d, 5d/wk, 4wks	E1/E2 vs C: Muscle activity gluteus medius (+exp2) vastus lateralis (-) vastus medialis (-) step length (-) stance phase (-) swing phase (-) velocity (-) max force (-) TUG (+exp2) E1 vs E2: Muscle activity gluteus medius (-) vastus lateralis (-) vastus medialis (-) step length (-) stance phase (-) swing phase (-) velocity (-) max force (-) TUG (-)
Gait Training on Sand vs Gait Training on Firm Surface		
Lee et al. (2023c) Feasibility/pilot RCT (6) Nstart=28 Nend=28 TPS=Chronic A vs B	E: Gait training on sand C: Gait training on a firm floor Duration: 60min/d, 5d/wk , 1 wk	E vs C: 10MWT(+exp) BBS(-) FAC(-) TUG(-)
High-Intensity Walking Training with or without Step Activity Monitoring		
Thompson et al. (2024) RCT (8) Nstart=250 Nend=200 TPS=Chronic A vs B vs A + B	E1: High-intensity Walking intervention E2: Step activity monitoring behavioural intervention E3: High-intensity Walking intervention + Step activity monitoring behavioural intervention Duration: FAST group: 40 mins/d (30 mins of treadmill +10 mins of overground gait training), 3ds/wk, 12 wks, SAM: 2-3 sessions/wk, 12 wks	E1 vs E2: Sessions attended (-) Mean treadmill minutes walked (-) Mean fitbit-wearing days/week (no stat) Percent of Fitbit-wearing days on which step goal was achieved (-) Mean percent heart rate reserve treadmill training (-) over ground training (-) steps/day (+exp1) 6 minute walk test (-) Self-selected walking speed (-) VO2 (-)

		E1 vs E3: Sessions attended (-) Mean treadmill minutes walked (-) Mean fitbit-wearing days/week (no stat) Percent of Fitbit-wearing days on which step goal was achieved (-) Mean percent heart rate reserve treadmill training (-) over ground training (-) steps/day (+exp3) 6 minute walk test (-) Self-selected walking speed (-) VO2 (-) E2 vs E3: Sessions attended (-) Mean treadmill minutes walked (-) Mean fitbit-wearing days/week (+exp3) Percent of Fitbit-wearing days on which step goal was achieved (-) Mean percent heart rate reserve treadmill training (-) over ground training (-) steps/day (-) 6 minute walk test (-) Self-selected walking speed (-) VO2 (-)
Additional Comparisons from the Source Dataset		
Wakida et al. (2020) RCT crossover (4) Nstart=25 Nend=22 TPS=Chronic A1 vs A2	E1: Discrete-skill step training on paretic hip extension movement; E2: Discrete-skill step training on paretic swing movement; E3: Discrete-skill step training using both training methods Duration: 30 repetitions, 6 month washout	E1 vs E2: Walking speed (No sat) Stride length (No stats) Cadence (No stats) Ground reaction force (No stats)
Kleynen et al. (2019) RCT (6) Nstart=56 Nend=56 TPS=Chronic A vs B	E1: Analogy learning E2: Environmental constraints E3: Action observation Duration: repeated 3x	E1 vs E2 vs E3: gait speed (No stats) step length/width/heigh (No stats)
Nagy et al. (2017) RCT (6) Nstart=20 Nend=17 TPS=Chronic A + B vs X	E: Conventional gait training therapy + Conductive (Petho) methods education C: Conventional gait training Duration: 60min/d, 5d/wk, 18d Conventional gait training & 75min/d, 5d/wk, 18d Conductive education	E vs C: Global gait parameters stride length (No stats) cadence (No stats) velocity (No stats) Spatial parameters foot rotation (No stats) step length (No stats) step width (No stats) temporal parameters step time (No stats) stance phase (No stats) functional independence measure (No stats)

		muscle strength(Medical Research Council) (No stats) modified ashworth scale (No stats) fugl-meyer balance test (No stats) 3-min walk test (No stats) timed up and go (No stats) range of motion (No stats) International Classification of Functioning Disability and Health domains (ICF) (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Huo et al. (2024) RCT (6) Nstart=40 Nend=30 TPS=Subacute A vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted overground gait training C: Conventional rehab Duration: E: 30min/d, 5d/wk,4 wks (20 sessions); C: 60 min/d (30min/d twice daily), 5d/wk, 4wks	E vs C: BBS (+exp) Functional Ambulation Category (+exp) FMA-LE (+exp) mBI (+exp)
Osundiya et al. (2023) RCT (6) Nstart=28 Nend=25 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 30min/d, 2x/wk, 6wks	E vs C: Lower Extremity Motor Coordination Test paretic limb (-) nonparetic limb (-) NEADL (-) mobility (-) kitchen (-) domestic (-) leisure (-)
Cheng et al. (2022) Feasibility/pilot RCT (8) Nstart=18 Nend=17 TPS=Chronic A + B vs B Primary listing: Table 9 (Treadmill Training)	E: Inclined treadmill training + overground walking C: Regular treadmill training + overground walking Duration: 30min treadmill, & 5min overground walking 2- 3d/wk, for 4-6wks, total of 12 sessions.	E vs C: Ankle movement during gait Dorsiflexion angle at inital contact changes (+exp) Coefficient of variation of dorsiflexion at initial contact (-) Muscle activities during gait tibialis anterior at initial contact (+exp) tibialis anterio in swing phase (+exp) medial gastrocnemius in stance phase (+exp) Spasticity index changes (-) Muscle strength hip extensors (-) knee extensors (+exp) Ankle dorsiflexors (-) Ankle plantarflexors (-) gait velocity (-) cadence (+exp) stride length (-) stair climbing unaffected leg leading (-) affected leg leading (+exp)
Moon et al. (2022) RCT (6)	E: Backward walking observational training & Conventional therapy	E vs C: Gait velocity (+exp)

Nstart=29 Nend=24 TPS=Chronic A vs B Primary listing: Table 18 (Action Observation)	C: Landscape observational training (sham) & Conventional therapy Duration: 30min/d, 3d/wk, for 4wks observational training & 30min/d, 5d/wk, for 4wks conventional therapy	Step length (+exp) Stride length (+exp) 5 timed sit-to stand(+exp) Activities-specific balance confidence scale(+exp) Affected side Weight distribution (+exp) Center of pressure displacement (+exp) Velocity (+exp) Length (+exp)
Elsner et al. (2020) RCT (6) Nstart=12 Nend=12 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 30min/d, 3d/wk, for 4wks	E vs C: 10-Meter Walk Test (-) 6-Min Walk Test (-) Berg Balance Scale (-) Stride Length (-)
Moon & Bae (2019) RCT (6) Nstart=17 Nend=14 TPS=Chronic A vs B + A Primary listing: Table 18 (Action Observation)	E: Action observation of backward walking C: Landscape video + Backward walking training Duration: 30min/d, 5d/wk for 4wks - Conventional therapy, 10min/d - Action observation or Landscape video, 20min/d - Backwards walking training	E vs C: Dynamic Gait Index (+exp) 10-Metre Walking Test (+exp) Timed Up and Go Test (+exp)
Lee et al. (2019a) RCT (5) Nstart=28 Nend=26 TPS=Chronic A + B vs A + C Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Gait training program (treadmill + overground walking) wearing a hip-assist robot C: Gait training (treadmill training + over ground walking) Duration: 45min/session, 10x for 4wks.	E vs C: Gait speed (+exp) cadence (+exp1) stride length (+exp) Fugl-Meyer Assessment scale(+exp) Temporal symmetry ratio (+exp) Spatial step symmetry ratio (+exp) Muscle maximum voluntary contraction rectus femoris (+exp) tibialis anterior (+exp) biceps femoris (+exp) medial of gastrocnemius (+exp) metabolic energy cost (+exp) Korean- Fall Efficacy Scale (+exp) Berg Balance Scale (No stats) Motricity Index (+exp)
Lewek et al. (2018) RCT (4) Nstart=48 Nend=37 TPS=Chronic A1 + B vs A2 + B vs B Primary listing: Table 9 (Treadmill Training)	E1: Error Augmentation treadmill training + Overground walking E2: Error Minimization treadmill training + Overground walking C: Conventional treadmill training + Overground walking Duration: 30-35min/session, for 18 sessions	E vs C: Step length asymmetry (-) stance time asymmetry (-) Step length (-) Gait speed (-)
Gama et al. (2017) RCT (6) Nstart=32 Nend=28	E: Overground walking with BWS C: Treadmill training with BWS Duration: 45min/d, 3d/wk, for 6wks	E vs C: 10-Meter Walk Test (-) 6-Minute Walk Test (-) Functional Independence measure (-)

TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)		Fugl-Meyer Assessment Lower Extremity (-) Step length (-) Step length symmetry ratio (+exp) Single limb support duration (-)
Bizovicar et al. (2017) RCT (5) Nstart=22 Nend=19 TPS=Subacute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Overground gait training using E-Go device + Standard Physiotherapy C: Overground walking training + Standard Physiotherapy Duration: 45min/d, 3wks physiotherapy, followed by gait training at convenient duration, 15 sessions	E vs C: FMA (-) Gait distance (-) BBS (-) FAC (-) FIM (-)
Morone et al. (2016) RCT (7) Nstart=44 Nend=42 TPS=Subacute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Overground walking training with i-Walker robotic assistive device C: Conventional overground walking training Duration: 80min/d, 5d/wk, 4wks	E vs C: 10-Meter Walk Test (+exp) 6-Minute Walk Test (+exp) Tinetti Scale (+exp) Modified Ashworth Scale (-) Barthel Index (-) Canadian Neurological Scale (-) Upright gait stability (-)
Bonnyaud et al. (2013a) RCT (4) Nstart=26 Nend=26 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E: Overground gait training C: Treadmill gait training Duration: 20min, single session	E vs C: Gait Speed (-) Gait Cadence (-) Single limb support phase paretic (-) non-paretic (-) Step length paretic (-) non-paretic (-) Peak hip flexion/extension (-) Peak knee extension/flexion (-) Peak ankle dorsi/plantar flexion (-) Vertical ground reaction force Total support phase-both sides (-) single support phase-both sides (-) Peak propulsion-both sides (-) Peak braking-both sides (-)
Ada et al. (2013) RCT (9) Nstart=102 Nend=98 TPS=Chronic A1 vs A2 vs B Primary listing: Table 9 (Treadmill Training)	E1: Long-term Treadmill and Overground Walking E2: Short-term Treadmill and Overground Walking C: No Intervention Duration: 30 min/d, 3d/wk, 8wks for short-term training and 16wks for long-term training	E1 vs C: 6-minute Walk Test (+exp1) 10-m Walk Test at comfortable speed Speed (+exp1) Step Length (-) Cadence (+exp1) 10-m Walk Test at Fast speed Speed (+exp1) Step Length (+exp) Cadence (-) EuroQol EQ-5D (+exp) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (-)

		Falls Rate (-) E2 vs C: 6-minute Walk Test (+exp2) 10-m Walk Test at comfortable speed Speed (-) Step Length (-) Cadence (-) 10-m Walk Test at Fast speed Speed (-) Step Length (-) Cadence (-) EuroQol EQ-5D (-) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (-) Falls Rate (-) E1 vs E2: 6-minute Walk Test (+exp1) 10-m Walk Test at comfortable speed Speed (-) Step Length (-) Cadence (-) 10-m Walk Test at Fast speed; - Speed (-) Step Length (+exp1) Cadence (-) EuroQol EQ-5D (+exp1) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (+exp1)
Mayo et al. (2013) RCT (7) Nstart=87 Nend=65 TPS=Chronic A vs B Primary listing: Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E1: Home-based cycle ergometer exercise E2: Home-based overground walking exercise Duration: 30min/d, 5d/wk for 3wk	E1 vs E2: 6min Walk test (-) 5-meter Walk test (No stats) Berg Balance scale (No stats) Community balance and mobility scale (No stats) Stroke impact scale physical (No stats) participation (No stats) Physical Function Index of the Medical Outcomes Study RAND-36 Item Health Survey (No stats): physical (No stats) emotional (No stats) social (No stats) EuroQoL-5D (No stats) Geriatric Depression scale-short form (No stats) Adherence to exercise program (No stats)
Kim & Oh (2012b) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 10min/d, 3d/wk for 6wks	E vs C: Gait speed (+exp) Stride length (+exp) Single support time (+exp)

Langhammer & Stanghelle (2010) RCT (8) Nstart=40 Nend=34 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E1: Treadmill training + Rehabilitation program E2: Overground gait training + Rehabilitation program Duration: 30min/d, 5d/wk, treadmill or overground gait & 3hr & 50min/d, 5d/wk, rehabilitation program	E1 vs E2: 6-minute walk test (+exp) 10-meter walk test (+exp) Stride length right leg (+exp) Stride length left leg (+exp) step width (+exp) cadence (-) pulse at rest (-) pulse in activity (-)
Moore et al. (2010) RCT crossover (5) Nstart=30 Nend=20 TPS=Chronic A + B vs C Primary listing: Table 9 (Treadmill Training)	E: Intensive locomotor training (BWS treadmill + overground walking) C: No training Duration: 2-5d/wk, for 4wks	E vs C: Fastest velocity (+exp) Self-selected velocity (-) 12-m walk test (-) VO2 Peak (-) peak treadmill speed (+exp) O2 Cost (+exp) Berg Balance Scale (-) Timed Up and Go (-)
Embrey et al. (2010) RCT crossover (4) Nstart=33 Nend=28 TPS=Chronic A + B vs B Primary listing: Table 28 (Functional Electrical Stimulation)	E: FES of Dorsiflexors and Plantar Flexors + Overground Walking program C: Overground Walking program Duration: 6-8h/d, 7d/wk, for 3mo FES & 1h/d, 6d/wk, for 3mo Walking program	E vs C: 6min Walk Test (+exp) Emory Functional Ambulatory profile (-) Isometric muscle strength of ankle (-) Modified Ashworth scale (-) Stroke Impact scale-16 (+exp)
Peurala et al. (2009) RCT (5) Nstart=56 Nend=47 TPS=Acute A vs B vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Gait Trainer GT I (Rehastim) E2: Overground gait training C: Conventional physiotherapy Duration: 60min/d, 5d/wk, for 3wks interventions & 55min/d, for 3wks Conventional physiotherapy	E1/E2 vs C: Functional Ambulation Category (+exp1, +exp2) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Motor Assessment Scale (+exp1, +exp2) Rivermead Motor Assessment Gross motor function (-) Leg and trunk (-) Rivermead Mobility Index (-) E1 vs E2: Functional Ambulation Category (-) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Motor Assessment Scale (-) Rivermead Motor Assessment Gross motor function (-) Leg and trunk (-) Rivermead Mobility Index (-)
Ada et al. (2003) RCT (7) Nstart=29 Nend=27 TPS=Chronic A vs B	E: Treadmill training and overground gait training C: Placebo program of low- intensity home exercise program + Telerehabilitation Duration: 30min/d, 3d/wk, for 4wks Treadmill and overground walking, 3d/wk, for 4wks Placebo program	E vs C: 6-Minute Walk Distance Test (+exp) 10-Metre Walk Speed Test (+exp) Stroke-adapted Sickness Impact Profile (SA-SIP30) (-) Step Length Affected Leg (+exp)

Primary listing: Table 9 (Treadmill Training); Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)		Intact Leg (+exp) Step Width (-) Cadence (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Intensity Overground Walking may produce greater improvements in motor recovery than Conventional Therapy.	1	Shen et al. 2015
1b	Backward or Sideway Walking Training may not have a difference in efficacy when compared to Standing Practice or Conventional Therapy for improving motor recovery.	1	Huang et al. 2021
1b	Gait Training with Postural Assistance Support may not have a difference in efficacy when compared to Gait Training with Conventional Support for improving motor recovery.	1	Dragin et al. 2014
2	Accurate Adaptability Walking may produce greater improvements in motor recovery than Steady State Walking.	1	Clark et al. 2021
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving motor recovery.	1	Nagy et al. 2017
1b	Robot-assisted overground gait training may produce greater improvements in motor recovery than Conventional rehab.	1	Huo et al. 2024
1b	Overground gait training with Rhythmic auditory stimulation may not have a difference in efficacy when compared to Overground gait training for improving motor recovery.	1	Osundiya et al. 2023
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in motor recovery than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	Overground walking with body weight supported may not have a difference in efficacy when compared to Treadmill training with body weight supported for improving motor recovery.	1	Gama et al. 2017
1b	Overground walking training with i-Walker robotic assistive device may not have a difference in efficacy when compared to Conventional overground walking training for improving motor recovery.	1	Morone et al. 2016
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Conventional physiotherapy for improving motor recovery.	1	Peurala et al. 2009
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving motor recovery.	1	Peurala et al. 2009
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared	1	Bizovicar et al. 2017

	to Overground walking training with Standard Physiotherapy for improving motor recovery.		

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Overground Walking may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	4	Gangopadhyay et al. 2021; Combs-Miller et al. 2014; Bonnyaud et al. 2013a; Bonnyaud et al. 2013b
1a	Backward or Sideway Walking Training may not have a difference in efficacy when compared to Standing Practice or Conventional Therapy for improving biomechanical gait measures.	4	Huang et al. 2021; Kale et al. 2019; Kim et al. 2017a; Yang et al. 2005
1b	Lateral Walking Training with Conventional physical therapy may produce greater improvements in biomechanical gait measures than Backward Walking Training with Conventional physical therapy.	1	Kim et al. 2017a
2	Stair or Ramp Training may not have a difference in efficacy when compared to Flat Surface Gait Training for improving biomechanical gait measures.	1	Park et al. 2015d
2	Gait Training or Overground Walking with Feedback may produce greater improvements in biomechanical gait measures than Without Feedback.	1	Kim et al. 2020b
1a	Gait training with Insoles may not have a difference in efficacy when compared to Gait training with Conventional Shoes for improving biomechanical gait measures.	2	Park et al. 2024a; Sheikh et al. 2016
1b	Curved Gait Training may not have a difference in efficacy when compared to Straight Gait Training for improving biomechanical gait measures.	1	Lee et al. 2024b
1b	Outward curved gait training may not have a difference in efficacy when compared to Inward curved gait training for improving biomechanical gait measures.	1	Lee et al. 2024b
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving biomechanical gait measures.	1	Nagy et al. 2017
1b	Inclined treadmill training with overground walking may produce greater improvements in biomechanical gait measures than Regular treadmill training with overground walking.	1	Cheng et al. 2022
1b	Backward walking observational training & Conventional therapy may produce greater improvements in biomechanical gait measures than Landscape observational training (sham) & Conventional therapy.	1	Moon et al. 2022
1b	There is conflicting evidence about the effect of Overground gait training with Rhythmic auditory stimulation when compared to Overground gait training for improving biomechanical gait measures.	2	Elsner et al. 2020; Kim & Oh 2012b
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in biomechanical gait measures than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
2	Error Augmentation treadmill training with Overground walking may not have a difference in efficacy when compared to Conventional treadmill training with Overground walking for improving biomechanical gait measures.	1	Lewek et al. 2018

1b	Overground walking with body weight supported may not have a difference in efficacy when compared to Treadmill training with body weight supported for improving biomechanical gait measures.	1	Gama et al. 2017
2	Overground gait training may not have a difference in efficacy when compared to Treadmill gait training for improving biomechanical gait measures.	1	Bonnyaud et al. 2013a
1b	There is conflicting evidence about the effect of Long-term Treadmill and Overground Walking when compared to No Intervention for improving biomechanical gait measures.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving biomechanical gait measures.	1	Ada et al. 2013
1b	There is conflicting evidence about the effect of Treadmill training with Rehabilitation program when compared to Overground gait training with Rehabilitation program for improving biomechanical gait measures.	1	Langhammer & Stanghelle 2010
1b	There is conflicting evidence about the effect of Treadmill training with overground gait training when compared to Placebo program of low- intensity home exercise program with Telerehabilitation for improving biomechanical gait measures.	1	Ada et al. 2003

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Backward or Sideway Walking Training may not have a difference in efficacy when compared to Standing Practice or Conventional Therapy for improving biomechanical balance measures.	1	Rose et al. 2018
2	Stair or Ramp Training may produce greater improvements in biomechanical balance measures than Flat Surface Gait Training.	2	Lee & Seo 2014d; Seo et al. 2014
1b	Gait training with Insoles may produce greater improvements in biomechanical balance measures than Gait training with Conventional Shoes.	1	Sheikh et al. 2016
1b	Backward walking observational training & Conventional therapy may produce greater improvements in biomechanical balance measures than Landscape observational training (sham) & Conventional therapy.	1	Moon et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Intensity Overground Walking may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Gordon et al. 2013
1b	Backward or Sideway Walking Training may not have a difference in efficacy when compared to Standing Practice or Conventional Therapy for improving muscle strength.	1	Huang et al. 2021
2	There is conflicting evidence about the effect of Stair or Ramp Training when compared to Flat Surface Gait Training for improving muscle strength.	1	Park et al. 2015d
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving muscle strength.	1	Nagy et al. 2017
1b	Inclined treadmill training with overground walking may not have a difference in efficacy when compared to Regular treadmill training with overground walking for improving muscle strength.	1	Cheng et al. 2022

2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in muscle strength than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
2	Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may not have a difference in efficacy when compared to Overground Walking program for improving muscle strength.	1	Embrey et al. 2010

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving spasticity.	1	Nagy et al. 2017
1b	Inclined treadmill training with overground walking may not have a difference in efficacy when compared to Regular treadmill training with overground walking for improving spasticity.	1	Cheng et al. 2022
1b	Overground walking training with i-Walker robotic assistive device may not have a difference in efficacy when compared to Conventional overground walking training for improving spasticity.	1	Morone et al. 2016
2	Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may not have a difference in efficacy when compared to Overground Walking program for improving spasticity.	1	Embrey et al. 2010

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Overground Walking may not have a difference in efficacy when compared to Treadmill Training for improving range of motion.	2	Bonnyaud et al. 2013a; Bonnyaud et al. 2013b
1b	There is conflicting evidence about the effect of Bent Knee (Prowling) Gait Training when compared to Conventional Therapy for improving range of motion.	1	Dalal et al. 2018
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving range of motion.	1	Nagy et al. 2017
1b	There is conflicting evidence about the effect of Inclined treadmill training with overground walking when compared to Regular treadmill training with overground walking for improving range of motion.	1	Cheng et al. 2022
2	Overground gait training may not have a difference in efficacy when compared to Treadmill gait training for improving range of motion.	1	Bonnyaud et al. 2013a

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	15cm Stair Height Training with Comprehensive rehabilitation may produce greater improvements in neurophysiological measures than 10cm Stair Height Training with Comprehensive rehabilitation.	1	Yoon-Hee et al. 2020
1b	Curved Gait Training may not have a difference in efficacy when compared to Straight Gait Training for improving neurophysiological measures.	1	Lee et al. 2024b
1b	Outward curved gait training may not have a difference in efficacy when compared to Inward curved gait training for improving neurophysiological measures.	1	Lee et al. 2024b

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Intensity Overground Walking may not have a difference in efficacy when compared to Conventional Therapy for improving aerobic measures.	1	Gordon et al. 2013
1b	Step activity monitoring behavioural intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving aerobic measures.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to Step activity monitoring behavioural intervention for improving aerobic measures.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving aerobic measures.	1	Thompson et al. 2024
2	Intensive locomotor training (body weight supported treadmill with overground walking) may not have a difference in efficacy when compared to No training for improving aerobic measures.	1	Moore et al. 2010

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving activities of daily living.	1	Timmermans et al. 2021
1a	High Intensity Overground Walking may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	2	Shen et al. 2015; Gordon et al. 2013
1b	Community-based gait training may not have a difference in efficacy when compared to conventional training for improving activities of daily living.	1	Lord et al. 2008
1b	There is conflicting evidence about the effect of Backward or Sideway Walking Training when compared to Standing Practice or Conventional Therapy for improving activities of daily living.	2	Huang et al. 2021; Rose et al. 2018
1b	Gait Training with Postural Assistance Support may not have a difference in efficacy when compared to Gait Training with Conventional Support for improving activities of daily living.	1	Dragin et al. 2014
1b	Implicit Motor Learning with Walking may not have a difference in efficacy when compared to Explicit Motor Learning with Walking for improving activities of daily living.	1	Jie et al. 2021
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving activities of daily living.	1	Nagy et al. 2017
1b	Robot-assisted overground gait training may produce greater improvements in activities of daily living than Conventional rehab.	1	Huo et al. 2024
1b	Overground gait training with Rhythmic auditory stimulation may not have a difference in efficacy when compared to Overground gait training for improving activities of daily living.	1	Osundiya et al. 2023

1b	Overground walking with body weight supported may not have a difference in efficacy when compared to Treadmill training with body weight supported for improving activities of daily living.	1	Gama et al. 2017
1b	Overground walking training with i-Walker robotic assistive device may not have a difference in efficacy when compared to Conventional overground walking training for improving activities of daily living.	1	Morone et al. 2016
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to No Intervention for improving activities of daily living.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving activities of daily living.	1	Ada et al. 2013
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving activities of daily living.	1	Bizovicar et al. 2017

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Overground Walking may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	4	Gangopadhyay et al. 2021; Combs-Miller et al. 2014; Bonnyaud et al. 2013a; Bonnyaud et al. 2013b
2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving gait speed.	1	Timmermans et al. 2021
1a	Community-based gait training may produce greater improvements in gait speed than conventional training.	3	Kim et al. 2014d; Park et al. 2011b; Lord et al. 2008
1a	Backward or Sideway Walking Training may produce greater improvements in gait speed than Standing Practice or Conventional Therapy.	5	Huang et al. 2021; Sethy et al. 2021; Kale et al. 2019; Rose et al. 2018; Yang et al. 2005
1b	Lateral Walking Training with Conventional physical therapy may produce greater improvements in gait speed than Backward Walking Training with Conventional physical therapy.	1	Kim et al. 2017a
2	Gait Training with Motor Imagery may produce greater improvements in gait speed than Conventional Gait Training.	1	Sawant 2020
2	Gait Training or Overground Walking with Feedback may not have a difference in efficacy when compared to Without Feedback for improving gait speed.	2	Kim et al. 2020b; Danks et al. 2016
1b	Gait Training with Postural Assistance Support may produce greater improvements in gait speed than Gait Training with Conventional Support.	1	Dragin et al. 2014
1a	Gait training with Insoles may produce greater improvements in gait speed than Gait training with Conventional Shoes.	2	Park et al. 2024a; Sheikh et al. 2016
1b	Accurate Adaptability Walking may not have a difference in efficacy when compared to Steady State Walking for improving gait speed.	2	Muroi et al. 2024; Clark et al. 2021
1b	Implicit Motor Learning with Walking may not have a difference in efficacy when compared to Explicit Motor Learning with Walking for improving gait speed.	1	Jie et al. 2021
1b	Curved Gait Training may not have a difference in efficacy when compared to Straight Gait Training for improving gait speed.	1	Lee et al. 2024b

1b	Outward curved gait training may not have a difference in efficacy when compared to Inward curved gait training for improving gait speed.	1	Lee et al. 2024b
1b	Gait Training on Sand may produce greater improvements in gait speed than Gait Training on Firm Surface.	1	Lee et al. 2023c
1b	Step activity monitoring behavioural intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving gait speed.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to Step activity monitoring behavioural intervention for improving gait speed.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving gait speed.	1	Thompson et al. 2024
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving gait speed.	1	Nagy et al. 2017
1b	Inclined treadmill training with overground walking may not have a difference in efficacy when compared to Regular treadmill training with overground walking for improving gait speed.	1	Cheng et al. 2022
1b	Backward walking observational training & Conventional therapy may produce greater improvements in gait speed than Landscape observational training (sham) & Conventional therapy.	1	Moon et al. 2022
1b	There is conflicting evidence about the effect of Overground gait training with Rhythmic auditory stimulation when compared to Overground gait training for improving gait speed.	2	Elsner et al. 2020; Kim & Oh 2012b
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in gait speed than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
2	Error Augmentation treadmill training with Overground walking may not have a difference in efficacy when compared to Conventional treadmill training with Overground walking for improving gait speed.	1	Lewek et al. 2018
1b	Overground walking with body weight supported may not have a difference in efficacy when compared to Treadmill training with body weight supported for improving gait speed.	1	Gama et al. 2017
1b	Overground walking training with i-Walker robotic assistive device may produce greater improvements in gait speed than Conventional overground walking training.	1	Morone et al. 2016
2	Overground gait training may not have a difference in efficacy when compared to Treadmill gait training for improving gait speed.	1	Bonnyaud et al. 2013a
1b	Long-term Treadmill and Overground Walking may produce greater improvements in gait speed than No Intervention.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving gait speed.	1	Ada et al. 2013
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait speed.	1	Mayo et al. 2013
1b	Treadmill training with Rehabilitation program may produce greater improvements in gait speed than Overground gait training with Rehabilitation program.	1	Langhammer & Stanghelle 2010

2	Intensive locomotor training (body weight supported treadmill with overground walking) may produce greater improvements in gait speed than No training.	1	Moore et al. 2010
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Conventional physiotherapy for improving gait speed.	1	Peurala et al. 2009
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving gait speed.	1	Peurala et al. 2009
1b	Treadmill training with overground gait training may produce greater improvements in gait speed than Placebo program of low- intensity home exercise program with Telerehabilitation.	1	Ada et al. 2003

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Walking may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Combs-Miller et al. 2014
1a	High Intensity Overground Walking may produce greater improvements in gait endurance than Conventional Therapy.	2	Shen et al. 2015; Gordon et al. 2013
1a	Community-based gait training may not have a difference in efficacy when compared to conventional training for improving gait endurance.	3	Kim et al. 2014d; Park et al. 2011b; Lord et al. 2008
1b	Backward or Sideway Walking Training may produce greater improvements in gait endurance than Standing Practice or Conventional Therapy.	1	Sethy et al. 2021
2	Gait Training or Overground Walking with Feedback may not have a difference in efficacy when compared to Without Feedback for improving gait endurance.	1	Danks et al. 2016
1b	Gait training with Insoles may not have a difference in efficacy when compared to Gait training with Conventional Shoes for improving gait endurance.	1	Park et al. 2024a
1b	Step activity monitoring behavioural intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving gait endurance.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to Step activity monitoring behavioural intervention for improving gait endurance.	1	Thompson et al. 2024
1b	High-intensity Walking intervention may not have a difference in efficacy when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention for improving gait endurance.	1	Thompson et al. 2024
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving gait endurance.	1	Nagy et al. 2017
1b	Overground gait training with Rhythmic auditory stimulation may not have a difference in efficacy when compared to Overground gait training for improving gait endurance.	1	Elsner et al. 2020
1b	Overground walking with body weight supported may not have a difference in efficacy when compared to Treadmill training with body weight supported for improving gait endurance.	1	Gama et al. 2017
1b	Overground walking training with i-Walker robotic assistive device may produce greater improvements in gait endurance than Conventional overground walking training.	1	Morone et al. 2016

1b	Long-term Treadmill and Overground Walking may produce greater improvements in gait endurance than No Intervention.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may produce greater improvements in gait endurance than Short-term Treadmill and Overground Walking.	1	Ada et al. 2013
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait endurance.	1	Mayo et al. 2013
1b	Treadmill training with Rehabilitation program may produce greater improvements in gait endurance than Overground gait training with Rehabilitation program.	1	Langhammer & Stanghelle 2010
2	Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may produce greater improvements in gait endurance than Overground Walking program.	1	Embrey et al. 2010
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Conventional physiotherapy for improving gait endurance.	1	Peurala et al. 2009
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving gait endurance.	1	Peurala et al. 2009
1b	Treadmill training with overground gait training may produce greater improvements in gait endurance than Placebo program of low-intensity home exercise program with Telerehabilitation.	1	Ada et al. 2003
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving gait endurance.	1	Bizovicar et al. 2017

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Walking may produce greater improvements in functional mobility than Treadmill Training.	1	Gangopadhyay et al. 2021
2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving functional mobility.	1	Timmermans et al. 2021
1a	Community-based gait training may produce greater improvements in functional mobility than conventional training.	2	Kim et al. 2014d; Park et al. 2011b
1b	Bent Knee (Prowling) Gait Training may produce greater improvements in functional mobility than Conventional Therapy.	1	Dalal et al. 2018
1b	Backward or Sideway Walking Training may produce greater improvements in functional mobility than Standing Practice or Conventional Therapy.	1	Huang et al. 2021
1b	15cm Stair Height Training with Comprehensive rehabilitation may not have a difference in efficacy when compared to 10cm Stair Height Training with Comprehensive rehabilitation for improving functional mobility.	1	Yoon-Hee et al. 2020
2	Stair or Ramp Training may not have a difference in efficacy when compared to Flat Surface Gait Training for improving functional mobility.	2	Park et al. 2015d; Seo & Kim 2015
2	Gait Training with Motor Imagery may produce greater improvements in functional mobility than Conventional Gait Training.	1	Sawant 2020

2	Gait Training or Overground Walking with Feedback may produce greater improvements in functional mobility than Without Feedback.	1	Kim et al. 2020b
2	Gait Training with Postural Assistance Support may produce greater improvements in functional mobility than Gait Training with Conventional Support.	1	Kawakami et al. 2024
1b	Accurate Adaptability Walking may not have a difference in efficacy when compared to Steady State Walking for improving functional mobility.	2	Muroi et al. 2024; Clark et al. 2021
1b	Implicit Motor Learning with Walking may not have a difference in efficacy when compared to Explicit Motor Learning with Walking for improving functional mobility.	1	Jie et al. 2021
1b	Curved Gait Training may produce greater improvements in functional mobility than Straight Gait Training.	1	Lee et al. 2024b
1b	Outward curved gait training may not have a difference in efficacy when compared to Inward curved gait training for improving functional mobility.	1	Lee et al. 2024b
1b	Gait Training on Sand may not have a difference in efficacy when compared to Gait Training on Firm Surface for improving functional mobility.	1	Lee et al. 2023c
1b	Conventional gait training therapy + Conductive (Petho) methods education may not have a difference in efficacy when compared to Conventional gait training for improving functional mobility.	1	Nagy et al. 2017
1b	Robot-assisted overground gait training may produce greater improvements in functional mobility than Conventional rehab.	1	Huo et al. 2024
1b	There is conflicting evidence about the effect of Inclined treadmill training with overground walking when compared to Regular treadmill training with overground walking for improving functional mobility.	1	Cheng et al. 2022
1b	Backward walking observational training & Conventional therapy may produce greater improvements in functional mobility than Landscape observational training (sham) & Conventional therapy.	1	Moon et al. 2022
1b	Action observation of backward walking may produce greater improvements in functional mobility than Landscape video with Backward walking training.	1	Moon & Bae 2019
1b	Overground walking training with i-Walker robotic assistive device may produce greater improvements in functional mobility than Conventional overground walking training.	1	Morone et al. 2016
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to No Intervention for improving functional mobility.	1	Ada et al. 2013
1b	There is conflicting evidence about the effect of Long-term Treadmill and Overground Walking when compared to Short-term Treadmill and Overground Walking for improving functional mobility.	1	Ada et al. 2013
2	Intensive locomotor training (body weight supported treadmill with overground walking) may not have a difference in efficacy when compared to No training for improving functional mobility.	1	Moore et al. 2010
2	Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may not have a difference in efficacy when compared to Overground Walking program for improving functional mobility.	1	Embrey et al. 2010
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Conventional physiotherapy for improving functional mobility.	1	Peurala et al. 2009

2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving functional mobility.	1	Peurala et al. 2009
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving functional mobility.	1	Bizovicar et al. 2017

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Walking may produce greater improvements in balance than Treadmill Training.	1	Gangopadhyay et al. 2021
1a	Backward or Sideway Walking Training may produce greater improvements in balance than Standing Practice or Conventional Therapy.	3	Chatterjee et al. 2023; Huang et al. 2021; Rose et al. 2018
1b	15cm Stair Height Training with Comprehensive rehabilitation may not have a difference in efficacy when compared to 10cm Stair Height Training with Comprehensive rehabilitation for improving balance.	1	Yoon-Hee et al. 2020
2	Stair or Ramp Training may produce greater improvements in balance than Flat Surface Gait Training.	3	Seo & Kim 2015; Lee & Seo 2014d; Seo et al. 2014
1b	Gait Training with Postural Assistance Support may not have a difference in efficacy when compared to Gait Training with Conventional Support for improving balance.	1	Dragin et al. 2014
1b	Accurate Adaptability Walking may not have a difference in efficacy when compared to Steady State Walking for improving balance.	1	Muroi et al. 2024
1b	Gait Training on Sand may not have a difference in efficacy when compared to Gait Training on Firm Surface for improving balance.	1	Lee et al. 2023c
1b	Robot-assisted overground gait training may produce greater improvements in balance than Conventional rehab.	1	Huo et al. 2024
1b	Overground gait training with Rhythmic auditory stimulation may not have a difference in efficacy when compared to Overground gait training for improving balance.	1	Elsner et al. 2020
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may not have a difference in efficacy when compared to Gait training (treadmill training + over ground walking) for improving balance.	1	Lee et al. 2019a
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving balance.	1	Mayo et al. 2013
2	Intensive locomotor training (body weight supported treadmill with overground walking) may not have a difference in efficacy when compared to No training for improving balance.	1	Moore et al. 2010
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving balance.	1	Bizovicar et al. 2017

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Community-based gait training when compared to conventional training for improving falls and fear of falling.	2	Park et al. 2011b; Lord et al. 2008
2	Backward or Sideway Walking Training may produce greater improvements in falls and fear of falling than Standing Practice or Conventional Therapy.	1	Rose et al. 2018
1b	Accurate Adaptability Walking may not have a difference in efficacy when compared to Steady State Walking for improving falls and fear of falling.	2	Muroi et al. 2024; Clark et al. 2021
1b	Backward walking observational training & Conventional therapy may produce greater improvements in falls and fear of falling than Landscape observational training (sham) & Conventional therapy.	1	Moon et al. 2022
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in falls and fear of falling than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to No Intervention for improving falls and fear of falling.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving falls and fear of falling.	1	Ada et al. 2013

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Walking may not have a difference in efficacy when compared to Treadmill Training for improving quality of life.	1	Combs-Miller et al. 2014
1b	There is conflicting evidence about the effect of High Intensity Overground Walking when compared to Conventional Therapy for improving quality of life.	1	Gordon et al. 2013
1b	Community-based gait training may produce greater improvements in quality of life than conventional training.	1	Kim et al. 2014d
1b	Implicit Motor Learning with Walking may not have a difference in efficacy when compared to Explicit Motor Learning with Walking for improving quality of life.	1	Jie et al. 2021
1b	Long-term Treadmill and Overground Walking may produce greater improvements in quality of life than No Intervention.	1	Ada et al. 2013
1b	There is conflicting evidence about the effect of Long-term Treadmill and Overground Walking when compared to Short-term Treadmill and Overground Walking for improving quality of life.	1	Ada et al. 2013
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving quality of life.	1	Mayo et al. 2013
2	Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may produce greater improvements in quality of life than Overground Walking program.	1	Embrey et al. 2010
1b	Treadmill training with overground gait training may not have a difference in efficacy when compared to Placebo program of low-	1	Ada et al. 2003

	intensity home exercise program with Telerehabilitation for improving quality of life.		

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	15cm Stair Height Training with Comprehensive rehabilitation may produce greater improvements in upper extremity function than 10cm Stair Height Training with Comprehensive rehabilitation.	1	Yoon-Hee et al. 2020
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in upper extremity function than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a

Key Points

- Overground Walking may be beneficial for improving functional mobility and balance, but not biomechanical gait measures, range of motion, gait speed, gait endurance, and quality of life, after stroke when compared to Treadmill Training.
- Treadmill-based with augmented reality may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking with physical obstacles.
- High Intensity Overground Walking may be beneficial for improving motor recovery and gait endurance, but not muscle strength, aerobic measures, and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding quality of life.
- Community-based gait training may be beneficial for improving gait speed, functional mobility, and quality of life, but not activities of daily living and gait endurance, after stroke when compared to conventional training; the literature is mixed regarding falls and fear of falling.
- Bent Knee (Prowling) Gait Training may be beneficial for improving functional mobility after stroke when compared to Conventional Therapy; the literature is mixed regarding range of motion.
- Backward or Sideway Walking Training may be beneficial for improving gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, but not motor recovery, biomechanical gait measures, biomechanical balance measures, and muscle strength, after stroke when compared to Standing Practice or Conventional Therapy; the literature is mixed regarding activities of daily living.
- Lateral Walking Training with Conventional physical therapy may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Backward Walking Training with Conventional physical therapy.
- 15cm Stair Height Training with Comprehensive rehabilitation may be beneficial for improving neurophysiological measures, but not functional mobility and balance, after stroke when compared to 10cm Stair Height Training with Comprehensive rehabilitation.
- Stair or Ramp Training may be beneficial for improving biomechanical balance measures and balance, but not biomechanical gait measures and functional mobility, after stroke when compared to Flat Surface Gait Training; the literature is mixed regarding muscle strength.
- Gait Training with Motor Imagery may be beneficial for improving gait speed and functional mobility after stroke when compared to Conventional Gait Training.
- Gait Training or Overground Walking with Feedback may be beneficial for improving biomechanical gait measures and functional mobility, but not gait speed and gait endurance, after stroke when compared to Without Feedback.
- Gait Training with Postural Assistance Support may be beneficial for improving gait speed and functional mobility, but not motor recovery, activities of daily living, and balance, after stroke when compared to Gait Training with Conventional Support.

- Gait training with Insoles may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and gait endurance, after stroke when compared to Gait training with Conventional Shoes.
- Accurate Adaptability Walking may be beneficial for improving motor recovery, but not gait speed, functional mobility, balance, and falls and fear of falling, after stroke when compared to Steady State Walking.
- Implicit Motor Learning with Walking may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Explicit Motor Learning with Walking.
- Curved Gait Training may be beneficial for improving functional mobility, but not biomechanical gait measures, neurophysiological measures, and gait speed, after stroke when compared to Straight Gait Training.
- Outward curved gait training may not be beneficial for improving biomechanical gait measures, neurophysiological measures, gait speed, and functional mobility after stroke when compared to Inward curved gait training.
- Gait Training on Sand may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Gait Training on Firm Surface.
- Step activity monitoring behavioural intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention.
- High-intensity Walking intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to Step activity monitoring behavioural intervention.
- High-intensity Walking intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention.
- Conventional gait training therapy + Conductive (Petho) methods education may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional gait training.
- Robot-assisted overground gait training may be beneficial for improving motor recovery, activities of daily living, functional mobility, and balance after stroke when compared to Conventional rehab.
- Overground gait training with Rhythmic auditory stimulation may not be beneficial for improving motor recovery, activities of daily living, gait endurance, and balance after stroke when compared to Overground gait training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Inclined treadmill training with overground walking may be beneficial for improving biomechanical gait measures, but not muscle strength, spasticity, and gait speed, after stroke when compared to Regular treadmill training with overground walking; the literature is mixed regarding range of motion and functional mobility.
- Backward walking observational training & Conventional therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and falls and fear of falling after stroke when compared to Landscape observational training (sham) & Conventional therapy.
- Action observation of backward walking may be beneficial for improving functional mobility after stroke when compared to Landscape video with Backward walking training.
- Gait training program (treadmill + overground walking) wearing a hip-assist robot may be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, gait speed, and falls and fear of falling, but not balance, after stroke when compared to Gait training (treadmill training + over ground walking).
- Error Augmentation treadmill training with Overground walking may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional treadmill training with Overground walking.

- Overground walking with body weight supported may not be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait speed, and gait endurance after stroke when compared to Treadmill training with body weight supported.
- Overground walking training with i-Walker robotic assistive device may be beneficial for improving gait speed, gait endurance, and functional mobility, but not motor recovery, spasticity, and activities of daily living, after stroke when compared to Conventional overground walking training.
- Overground gait training may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Treadmill gait training.
- Long-term Treadmill and Overground Walking may be beneficial for improving gait speed, gait endurance, and quality of life, but not activities of daily living, functional mobility, and falls and fear of falling, after stroke when compared to No Intervention; the literature is mixed regarding biomechanical gait measures.
- Long-term Treadmill and Overground Walking may be beneficial for improving gait endurance, but not biomechanical gait measures, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Short-term Treadmill and Overground Walking; the literature is mixed regarding functional mobility and quality of life.
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Treadmill training with Rehabilitation program may be beneficial for improving gait speed and gait endurance after stroke when compared to Overground gait training with Rehabilitation program; the literature is mixed regarding biomechanical gait measures.
- Intensive locomotor training (body weight supported treadmill with overground walking) may be beneficial for improving gait speed, but not aerobic measures, functional mobility, and balance, after stroke when compared to No training.
- Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may be beneficial for improving gait endurance and quality of life, but not muscle strength, spasticity, and functional mobility, after stroke when compared to Overground Walking program.
- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional physiotherapy.
- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Overground gait training.
- Treadmill training with overground gait training may be beneficial for improving gait speed and gait endurance, but not quality of life, after stroke when compared to Placebo program of low- intensity home exercise program with Telerehabilitation; the literature is mixed regarding biomechanical gait measures.
- Overground gait training using E-Go device with Standard Physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Overground walking training with Standard Physiotherapy.

Summary of Key Points: Non-Technological Overground Walking and Gait Training

Intervention	Control(s)	Function domain(s)	Effect
Overground Walking	Treadmill Training	Functional mobility, balance	+
Overground Walking	Treadmill Training	Biomechanical gait measures, range of motion, gait speed, gait endurance, quality of life	–
Treadmill-based with augmented reality	Overground walking with physical obstacles	Activities of daily living, gait speed, functional mobility	–
High Intensity Overground Walking	Conventional Therapy	Motor recovery, gait endurance	+
High Intensity Overground Walking	Conventional Therapy	Muscle strength, aerobic measures, activities of daily living	–
High Intensity Overground Walking	Conventional Therapy	Quality of life	=

Community-based gait training	conventional training	Gait speed, functional mobility, quality of life	+
Community-based gait training	conventional training	Activities of daily living, gait endurance	–
Community-based gait training	conventional training	Falls and fear of falling	=
Bent Knee (Prowling) Gait Training	Conventional Therapy	Functional mobility	+
Bent Knee (Prowling) Gait Training	Conventional Therapy	Range of motion	=
Backward or Sideway Walking Training	Standing Practice or Conventional Therapy	Gait speed, gait endurance, functional mobility, balance, falls and fear of falling	+
Backward or Sideway Walking Training	Standing Practice or Conventional Therapy	Motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength	–
Backward or Sideway Walking Training	Standing Practice or Conventional Therapy	Activities of daily living	=
Lateral Walking Training with Conventional physical therapy	Backward Walking Training with Conventional physical therapy	Biomechanical gait measures, gait speed	+
15cm Stair Height Training with Comprehensive rehabilitation	10cm Stair Height Training with Comprehensive rehabilitation	Neurophysiological measures	+
15cm Stair Height Training with Comprehensive rehabilitation	10cm Stair Height Training with Comprehensive rehabilitation	Functional mobility, balance	–
Stair or Ramp Training	Flat Surface Gait Training	Biomechanical balance measures, balance	+
Stair or Ramp Training	Flat Surface Gait Training	Biomechanical gait measures, functional mobility	–
Stair or Ramp Training	Flat Surface Gait Training	Muscle strength	=
Gait Training with Motor Imagery	Conventional Gait Training	Gait speed, functional mobility	+
Gait Training or Overground Walking with Feedback	Without Feedback	Biomechanical gait measures, functional mobility	+
Gait Training or Overground Walking with Feedback	Without Feedback	Gait speed, gait endurance	–
Gait Training with Postural Assistance Support	Gait Training with Conventional Support	Gait speed, functional mobility	+
Gait Training with Postural Assistance Support	Gait Training with Conventional Support	Motor recovery, activities of daily living, balance	–
Gait training with Insoles	Gait training with Conventional Shoes	Biomechanical balance measures, gait speed	+
Gait training with Insoles	Gait training with Conventional Shoes	Biomechanical gait measures, gait endurance	–
Accurate Adaptability Walking	Steady State Walking	Motor recovery	+
Accurate Adaptability Walking	Steady State Walking	Gait speed, functional mobility, balance, falls and fear of falling	–
Implicit Motor Learning with Walking	Explicit Motor Learning with Walking	Activities of daily living, gait speed, functional mobility, quality of life	–

Curved Gait Training	Straight Gait Training	Functional mobility	+
Curved Gait Training	Straight Gait Training	Biomechanical gait measures, neurophysiological measures, gait speed	–
Outward curved gait training	Inward curved gait training	Biomechanical gait measures, neurophysiological measures, gait speed, functional mobility	–
Gait Training on Sand	Gait Training on Firm Surface	Gait speed	+
Gait Training on Sand	Gait Training on Firm Surface	Functional mobility, balance	–
Step activity monitoring behavioural intervention	High-intensity Walking intervention with Step activity monitoring behavioural intervention	Aerobic measures, gait speed, gait endurance	–
High-intensity Walking intervention	Step activity monitoring behavioural intervention	Aerobic measures, gait speed, gait endurance	–
High-intensity Walking intervention	High-intensity Walking intervention with Step activity monitoring behavioural intervention	Aerobic measures, gait speed, gait endurance	–
Conventional gait training therapy + Conductive (Petho) methods education	Conventional gait training	Motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, activities of daily living, gait speed, gait endurance, functional mobility	–
Robot-assisted overground gait training	Conventional rehab	Motor recovery, activities of daily living, functional mobility, balance	+
Overground gait training with Rhythmic auditory stimulation	Overground gait training	Motor recovery, activities of daily living, gait endurance, balance	–
Inclined treadmill training with overground walking	Regular treadmill training with overground walking	Biomechanical gait measures	+
Inclined treadmill training with overground walking	Regular treadmill training with overground walking	Muscle strength, spasticity, gait speed	–
Inclined treadmill training with overground walking	Regular treadmill training with overground walking	Range of motion, functional mobility	=
Backward walking observational training & Conventional therapy	Landscape observational training (sham) & Conventional therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, falls and fear of falling	+
Overground gait training with Rhythmic auditory stimulation	Overground gait training	Gait endurance, balance	–
Action observation of backward walking	Landscape video with Backward walking training	Functional mobility	+
Gait training program (treadmill + overground walking) wearing a hip-assist robot	Gait training (treadmill training + over ground walking)	Motor recovery, biomechanical gait measures, muscle strength, gait speed, falls and fear of falling	+
Gait training program (treadmill + overground walking) wearing a hip-assist robot	Gait training (treadmill training + over ground walking)	Balance	–
Error Augmentation treadmill training with Overground walking	Conventional treadmill training with Overground walking	Biomechanical gait measures, gait speed	–

Overground walking with body weight supported	Treadmill training with body weight supported	Motor recovery, biomechanical gait measures, activities of daily living, gait speed, gait endurance	–
Overground walking training with i-Walker robotic assistive device	Conventional overground walking training	Gait speed, gait endurance, functional mobility	+
Overground walking training with i-Walker robotic assistive device	Conventional overground walking training	Motor recovery, spasticity, activities of daily living	–
Overground gait training	Treadmill gait training	Biomechanical gait measures, range of motion, gait speed	–
Long-term Treadmill and Overground Walking	No Intervention	Gait speed, gait endurance, quality of life	+
Long-term Treadmill and Overground Walking	No Intervention	Activities of daily living, functional mobility, falls and fear of falling	–
Long-term Treadmill and Overground Walking	No Intervention	Biomechanical gait measures	=
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Gait endurance	+
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Biomechanical gait measures, activities of daily living, gait speed, falls and fear of falling	–
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Biomechanical gait measures, activities of daily living, gait speed	–
Home-based cycle ergometer exercise	Home-based overground walking exercise	Gait speed, gait endurance, balance, quality of life	–
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program	Gait speed, gait endurance	+
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program	Biomechanical gait measures	=
Intensive locomotor training (body weight supported treadmill with overground walking)	No training	Gait speed	+
Intensive locomotor training (body weight supported treadmill with overground walking)	No training	Aerobic measures, functional mobility, balance	–
Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program	Overground Walking program	Gait endurance, quality of life	+
Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program	Overground Walking program	Muscle strength, spasticity, functional mobility	–
Gait Trainer GT I (Rehastim)	Conventional physiotherapy	Motor recovery, gait speed, gait endurance, functional mobility	–
Gait Trainer GT I (Rehastim)	Overground gait training	Motor recovery, gait speed, gait endurance, functional mobility	–
Treadmill training with overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Gait speed, gait endurance	+
Treadmill training with overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Quality of life	–

Treadmill training with overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Biomechanical gait measures	=
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Quality of life, functional mobility	=
Overground gait training with Rhythmic auditory stimulation	Overground gait training	Biomechanical gait measures, gait speed	=
Overground gait training using E-Go device with Standard Physiotherapy	Overground walking training with Standard Physiotherapy	Motor recovery, activities of daily living, gait endurance, functional mobility, balance	–

Cycle Ergometer Training



Adopted from: https://www.verywellfit.com/best-indoor-cycling-bikes-4160109

Use of a cycle ergometer for stationary cycling has been used as a safe form of exercise training in those with challenges in maintaining balance and independent gait (Brown et al., 1997). Cycling shares similar locomotor patterns with walking and is typically used for improving muscle strength, aerobic capacity, and to facilitate muscle control in the lower limbs (Kautz & Brown, 1998; Ozaki et al., 2015; Raasch & Zajac, 1999).

A total of 28 RCTs were found that evaluated cycle ergometer training for lower extremity motor rehabilitation. Fourteen RCTs compared Cycle Ergometer Training with Conventional Therapy (Bharti et al. 2022; Horvath et al. 2022; Hu et al. 2022; da Rosa Pinheiro et al. 2021; Karthiga et al. 2020; Wang et al. 2016a; Kim et al. 2015e; Jin et al. 2013; Jin et al. 2012; Letombe et al. 2010; Katz-leurer et al. 2007; Katz-Leurer et al. 2006; Katz-Leurer et al. 2003; Katz-Leurer et al. 2003). Three RCTs compared Cycle Ergometer Training with Sham or No Treatment (Lund et al. 2018; Sandberg et al. 2016; Potempa et al. 1995). One RCT compared Cycle Ergometer with Stretching (Quaney et al. 2009). One RCT compared In-Bed Cycling with Usual Care (Sandberg et al. 2020). One RCT compared Active Cycling with Education and Coaching with Active Cycling with Education or Passive Mobilization (Vanroy et al. 2017.2020). One RCT compared Cycle Ergometer and Treadmill Training with Conventional Therapy (Toledano-Zarhi et al. 2011). One RCT compared Cycle Ergometer Training with Overground Walking (Fujita et al. 2020). One RCT compared Cycle Ergometer with Sliding Machine (Song et al. 2015). One RCT compared Progressive Resistance Training and Cycling with Sham Progressive Resistance Training and Cycling (Lee et al. 2008). One RCT compared Interlimb Coupling Training with Conventional Therapy (Arya et al. 2020). One RCT compared Cycle Ergometry with VR with Cycle Ergometry (Lee 2019d). One RCT compared EMG-triggered Pedalling Training with Pedalling Training (Lee 2022e). One RCT compared Aerobic Cycling with Aerobic Cycling with Cognitive Training (Yeh et al. 2022).

In addition, 22 RCTs in which cycle ergometer training formed part of a combined or comparative intervention are cross-referenced at the end of Table 8; their primary listings appear in other tables.

The methodological details and results of all 28 RCTs are presented in Table 8.

Table 8. RCTs Evaluating Cycle Ergometer Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Cycle Ergometer Training vs Conventional Therapy		
Bharti et al. (2022) RCT (5) Nstart=34 Nend=34 TPS=Acute A vs 0	E: Leg and arm cycle ergometer + conventional rehabilitation C: Conventional rehab Duration: 50min 2x/d, 7 consecutive days	E vs C: POMA(+exp) MI(+exp) Trunk control test(+exp) PASS(+exp)
Horvath et al. (2022) RCT (6) Nstart=37 Nend=35 TPS=Chronic A vs B	E: Aerobic cycling + conventional custom physiotherapy C: Conventional custom physiotherapy Duration: 60min/d, 5d/wk, 4wks	E vs C: VO2PEAK(-) metabolic equivalent(-) Load time(-) HRmax(-) VO2VT(+exp) oxygen uptake(+exp) RER(-) 6MWT(+exp) FIM(no stat) exercise duration (-)
Hu et al. (2022) RCT (3) Nstart=52 Nend=52 TPS=Chronic A vs 0	E: Motomed viva 2 cycling C: Conventional Therapy Duration: 20 min/d, 6d/wk, 8 wks	E vs C: FAC(+exp) 10 meter max walking speed (+exp) FMA (+exp) Nerve growth factor (+exp) Brain-derived neurotrophic factor (+exp) Neurotrophin-3 (+exp)
da Rosa Pinheiro et al. (2021) RCT (6) Nstart=20 Nend=20 TPS=Acute A vs 0	E: Conventional physiotherapy + aerobic cycle ergometer C: Conventional physiotherapy Duration: 40min/d, 5d/wk, for 1wk	E vs C: Lower limb strength Hip flexor (+exp) Knee extensor (+exp) Ankle dorsiflexor (+exp) 10-metre walk test (+exp) Berg Balance Scale (+exp) ICU-Mobility Scale (+exp) Perme Score (+exp)
Karthiga et al. (2020) RCT (3) Nstart=20 Nend=20 TPS=Acute A vs 0	E: Conventional physiotherapy + cycle ergometry training C: Conventional physiotherapy Duration: 1h/d, 15d physiotherapy; 30min/d, 15d cycle ergometry	E vs C: Fugl-Meyer Assessment (+exp) Step Test (+exp) Functional Ambulation Category (+exp)
Wang et al. (2016a) RCT (7) Nstart=42	E: Aerobic training (cycle ergometer) C: Conventional rehabilitation Duration: 40min/d, 3d/wk for 6wks	E vs C: Functional Ambulation Category (+exp) Fugl-Meyer Assessment (+exp)

Nend=34 TPS=Subacute A vs 0		Barthel Index (+exp)
Kim et al. (2015e) RCT (8) Nstart=32 Nend=32 TPS=Chronic A vs 0	E: Cycling exercise + Conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 6wks Cycling	E vs C: 10-Metre Walk Test (+exp) Timed Up & Go Test (+exp) Berg Balance Scale (+exp)
Jin et al. (2013) RCT (4) Nstart=128 Nend=128 TPS=Chronic A vs 0	E: Progressive aerobic cycling training C: Conventional therapy Duration: 40min/d, 5d/wk, for 12wks	E vs C: Peak VO2 (+exp) Systolic blood pressure Resting (-) Peak (-) Diastolic blood pressure Resting (-) Peak (-) Heart rate Resting (+exp) peak (-) Muscle strength paretic knee extension (+exp) non paretic knee extension (+exp) 6-minute walking distance (+exp) Berg Balance Scale (-) Modified Ashworth scale (-)
Jin et al. (2012) RCT (4) Nstart=133 Nend=133 TPS=Chronic A vs 0	E: Aerobic training (cycle ergometer) C: Conventional rehabilitation Duration: 40min/d, 5d/wk for 8wks	E vs C: Peak VO2 (+exp) 6-minute walk distance (+exp) Rivermead Mobility Index (-) knee muscle strength (paretic/non-paretic) (+exp) Berg balance Scale(-) modified Ashworth scale (-)
Letombe et al. (2010) RCT (3) Nstart=18 Nend=18 TPS=Acute A vs 0 Also in Table 9 (Treadmill Training)	E: Aerobic training (cycle ergometer, treadmill, balance) C: Conventional rehabilitation Duration: 40-60min/d, 4d/wk for 4wks	E vs C: Maximal Aerobic Power (+exp) VO2peak (+exp) Test Duration (+exp) Barthel Scale (+exp) Katz ADL Scale (+exp)
Katz-Ieurer et al. (2007) RCT (5) Nstart=64 Nend=64 TPS=Acute A vs 0	E: Leg cycle ergometer training C: Conventional rehabilitation Duration: 10-30min/d, 3-5d/wk, 8wks	E vs C: Heart Rate Variability (-) HR at rest (-) peak workload (+exp) walking distance (-) stairs climbing (+exp) Functional Independence Measure (-)
Katz-Leurer et al. (2006) RCT (6) Nstart=24 Nend=23	E: Leg cycle ergometer + Conventional rehabilitation C: Conventional Rehabilitation	E vs C: Postural Assessment Scale (+exp) Static (+exp) Dynamic (+exp)

TPS=Subacute A vs 0	Duration: 10-30min/d, 5d/wk for 3wks cycling	Fugl-Meyer Assessment Lower Extremity (+exp) Functional Independence Measure Total (-) Motor (+exp)
Katz-Leurer et al. (2003) RCT (5) Nstart=92 Nend=90 TPS=Acute A vs 0	E: Aerobic Leg cycle ergometer + Conventional rehabilitation C: Conventional rehabilitation Duration: 10-20min/d, 5d/wk for 2wks then 30min/d, 3d/wk for 6wks Leg cycle	E vs C: Stress test Max workload (+exp) Heart rate (-) Functional Independence Measure total (-) Stairs climbing (+exp) walking distance (+exp) walking speed (-) Frenchay Activities Index (No stats) light housework (No stats) social outings (No stats) walking outside (No stats)
Cycle Ergometer Training vs Sham or No Treatment		
Lund et al. (2018) RCT (5) Nstart=43 Nend=43 TPS=Chronic A vs B vs 0 Also in Table 21 (Strength and Resistance Training)	E1: Aerobic training on cycle ergometer E2: Resistance training of lower extremities C: Sham training of upper extremities Duration: 3sessions/wk for 12wks	E1 vs E2 vs C: Berg Balance Scale (-) Peak oxygen consumption (No stats) maximal voluntary contractions (No stats) 6 min walking test (-) 10m walk speed (-)
Sandberg et al. (2016) RCT (7) Nstart=56 Nend=56 TPS=Acute A vs 0	E: Aerobic exercise on ergometer cycle C: No treatment Duration: 60min/d, 2d/wk for 12wks	E vs C: Peak work rate (+exp) 6-minute walk test (+exp) Maximum walking speed 10 meters (+exp) timed up and go (+exp) single leg stance right eyes open (+exp) left eyes open (+exp) right eyes closed (+exp) left eyes closed (-) EQ-5D VAS (+exp) SIS recovery (+exp) EQ-5D index (-) SIS participation (-)
Potempa et al. (1995) RCT (5) Nstart=42 Nend=42 TPS=Chronic A vs 0	E: Aerobic training (cycle ergometer) C: Sham exercise (passive range- of-motion) Duration: 30min/d, 3d/wk for 10wks	E vs C: At Rest Fugl-Meyer index (-) heart rate (-) systolic pressure (-) Diastolic pressure (-) Maximal exercise heart rate (-) VO2 (+exp) VCO2 (+exp) VE (+exp) Respiratory exchange ratio (-) Workload (+exp)

		Exercise time (+exp)
Cycle Ergometer vs Stretching		
Quaney et al. (2009) RCT (6) Nstart=40 Nend=38 TPS=Chronic A vs B	E: Aerobic Exercise (progressive resistive stationary bicycle training) C: Stretching Exercise at home Duration: 45min/d, 3d/wk for 8wks	E vs C: Vo2max (+exp) Wisconsin Card Sorting Task (-) Stroop task (-) Trail-making (-) Serial Reaction Timed Task random (-) repeated (+exp) predictive grip force modulation (+exp) Fugl-Meyer sensorimotor test (-) Berg Balance Scale(-) Get Up and Go test (+exp)
In-Bed Cycling vs Usual Care		
Sandberg et al. (2020) RCT (6) Nstart=56 Nend=52 TPS=Acute A vs 0	E: In- Bed cycling + Usual care C: Usual care Duration: 20min/d, 5d/wk for 3wks bed cycling	E vs C: 6-minute walk (-) Modified Rankin Scale (-) Barthel Index (-)
Active Cycling with Education and Coaching vs Active Cycling with Education or Passive Mobilization		
Vanroy et al. (2017) RCT (6) Nstart=59 Nend=53 TPS=Subacute A + B vs A + C vs A + D vs A1 vs A2 vs E	Phase I E: Active Cycling + Education C: Passive mobilization therapy Phase II E1: Active cycling + Coaching E2: Active cycling + non-Coaching E1: after initial phase 30mins/d, 3d/wk, for 9 months, Coached Active Cycling E2: after initial phase 30mins/d, 3d/wk, for 9 months, non-Coached Active Cycling Duration: E1 + E2: 30mins/d, 3d/wk, 3 months Active Cycling interval (week 1-8) to continuous (week 9-12) E1: after initial phase 30mins/d, 3d/wk, 9 months, Coached Active Cycling E2: after initial phase 30mins/d, 3d/wk, 9 months, non-Coached Active Cycling C: 30 min/d, 3d/wk, 3 months	E vs C: Heart rate-rest (-) Heart rate-peak (-) VO2peak (-) Oxygen uptake efficiency slope (-) Respiratory exchange ratio (-) Borg's Rating of Perceived Exertion (-) Maximal isometric knee extension paretic (-) nonparetic (-) Functional Ambulation category (-) 10m Walk test comfortable speed (-) maximum speed (-)
Cycle Ergometer and Treadmill Training vs Conventional Therapy		
Toledano-Zarhi et al. (2011) RCT (6) Nstart=28 Nend=27 TPS=Acute A vs 0 Also in Table 9 (Treadmill Training)	E: Aerobic training (treadmill and cycle ergometer) C: Conventional rehabilitation Duration: 35-55min/d, 3d/wk for 6wks	E vs C: 6min Walk test (-) Stair Climb test ascending (-) descending (-) Four Square step test (-) Physiological parameters blood pressure (-) heart rate (-) metabolic equivalents (-)
Cycle Ergometer Training vs Overground Walking		
Fujita et al. (2020)	E: Cycle ergometer	E vs C:

RCT (8) Nstart=21 Nend=21 TPS=Chronic A vs B	C: Overground walking Duration: 10min/single session	Ankle kinematics (-) Knee Kinematics Knee flexion angle at toe-off (+exp) Peak knee flexion angle during early swing phase (+exp) plantar flexion angle at peak knee flex (+con) plantar flexion velocity at toe-off(+exp) Hip Kinematics peak hip flexion velocity (+exp) electromyographic parameter biceps femoris (+exp) rectus femoris(-) vastus lateralis (-) tibialis anterior (-) medial gastrocnemius (-) soleus (-) Gait Velocity (-) Step length (-) Stride length (-) Cadence (-) single/ double support (-)
Cycle Ergometer vs Sliding Machine		
Song et al. (2015) RCT (4) Nstart=40 Nend=40 TPS=Chronic A1 vs A2	E1: Aerobic training (Ergometer bicycle training) E2: Aerobic training (sliding machine) Duration: 30min/d, 5d/wk for 8wks	E1 vs E2: 10-Metre Walk Test (-) Limit of Stability (+exp)
Progressive Resistance Training and Cycling vs Sham Progressive Resistance Training and Cycling		
Lee et al. (2008) RCT (8) Nstart=52 Nend=48 TPS=Chronic A + B vs A vs C vs 0 Also in Table 21 (Strength and Resistance Training)	E1: Aerobic cycling + progressive resistance training (PRT) E2: Aerobic cycling + sham PRT E3: Sham cycling + PRT C: Sham cycling + Sham PRT Duration: 60min/d, 3d/wk for 10wks	E2/E3 vs C: 6MWT distance (-) endurance-affected (+exp3) Endurance unaffected side (+exp2, +exp3) 10MWT fast speed (-) habitual speed (-) Stair climbing power (+exp3) Peak power output (+exp2, +exp3) Peak heart rate (-) Peak oxygen uptake (+exp2) Treadmill walking physical cost index (+exp2) Treadmill walking oxygen cost (-) 1RM in affected leg (+exp3) 1RM in unaffected leg (+exp3) Power in affected leg (+exp3) Power in unaffected leg (+exp3) SF-36 (-) Ewart self-efficacy walking (+exp3)

		Stair climbing (+exp3) E1 vs C: 6MWT distance (-) endurance-affected (+exp1) Endurance unaffected side (+exp1) 10MWT fast speed (-) habitual speed (+con) Stair climbing power (+exp1) Peak power output (+exp1) Peak heart rate (-) Peak oxygen uptake (+exp1) Treadmill walking physical cost index (+exp1) Treadmill walking oxygen cost (-) 1RM in affected leg (+exp1) 1RM in unaffected leg (+exp1) Power in affected leg (+exp1) Power in unaffected leg (+exp1) SF-36 (-) Ewart self-efficacy walking (-) Stair climbing (-)
Interlimb Coupling Training vs Conventional Therapy		
Arya et al. (2020) RCT (9) Nstart=50 Nend=50 TPS=Chronic A vs 0	E: Interlimb coupling activities (rowing, bicycle ergometer, wall cycle and elliptical machine) C: Conventional rehabilitation Duration: 60min/d, 3d/wk for 8wks	E vs C: Fugl-Meyer Assessment (+exp) FMA-UE (+exp) FMA-LE (+exp) Rivermead Visual Gait Assessment (+exp) Functional Ambulation Classification (+exp) modified Rankin Scale (-)
Cycle Ergometry with VR vs Cycle Ergometry		
Lee (2019d) RCT (7) Nstart=42 Nend=42 TPS=Chronic A + B vs A Also in Table 26 (Virtual Reality)	E: Speed-Interactive Pedaling Training + Virtual Reality C: Pedaling Training Duration: 40 min/d, 5d/wk, for 6wks	E vs C: Fugl-Meyer assessment (+exp) Static sitting balance (+exp) Modified Functional reach test (+exp) trunk impairment scale (+exp) Gait velocity (+exp) Cadence (+exp) Stride time (+exp) Step time (+exp) Stride length (+exp) Step length (+exp)
EMG-triggered Pedalling Training vs Pedalling Training		
Lee (2022e) RCT (7) Nstart=44 Nend=41 TPS=Chronic A1 vs A2	E: EMG-triggered Pedaling training C: Pedaling training Duration: 50min/d, 5d/wk for 4wks	E vs C: Velocity (+exp) Cadence (-) Stride time (-) Step time affected side (+exp) unaffected side (-)

Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))		Single Limb Support time affected side (+exp) unaffected side (-) Double limb support (+exp) Stride Length (+exp) Step length affected (+exp) unaffected (+exp) Gait symmetery step length (-) step time (+exp) FMA-LE (+exp) Changes in Muscle Activation of Affected side: Rectus Femoris Muscle (+exp) Biceps Femoris muscle (+exp) Tibialis Anterior Muscle (-) Gastrocnemius Muscle (+exp) Changes in Muscle Activation of Unaffected side: Rectus Femoris Muscle (-) Biceps Femoris muscle (-) Tibialis Anterior Muscle (-) Gastrocnemius Muscle (-) Symmetry Ratio: Rectus Femoris Muscle (+exp) Biceps Femoris muscle (+exp) Tibialis Anterior Muscle (-) Gastrocnemius Muscle (+exp)
Aerobic Cycling vs Aerobic Cycling with Cognitive Training		
Yeh et al. (2022) RCT (6) Nstart=56 Nend=56 TPS=Chronic A vs B vs A + B	E1: Aerobic cycling exercise training E2: Computerized cognitive training E3: Aerobic exercise + computerized cognitive training Duration: 60min/d, 3d/wk for 12wks	E1 vs E2 vs E3: MoCA (+exp3) Wechsler Memory Scale Faces (-) Verbal paired associates (-) Word list IA (-) Word List IB (-) Word list II (+exp3) Word list IA delayed (+exp1, +exp3) Spatial span (-) : Stroop Congruence accuracy (-) Incongruence accurary (-) TUG (-) 6-Meter walk test (-) FIM (-) Lawton Assessment of Activities of Daily Living (-) Community integration questionnaire (-) Stroke impact scale (-)
Additional Comparisons from the Source Dataset		
Kautz et al. (2005) RCT (3) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: therapist-supervised in home Cycle ergometer with 30min pedaling C: No treatment Duration: 90min sessions, 3x/wk, 12wk	E vs C: Paretic leg work (-) EMG Rectus femoris (-) Vastus medialis (-) Biceps femoris (-)

		Semimembranosus (-) Tangential Pedal force (-) Group EMG (-) Pedaling speed (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Wang et al. (2024b) Feasibility/pilot RCT (8) Nstart=32 Nend=32 TPS=Chronic A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: r-TMS + Visual-Feedback Cycling Exercise C: Sham r-TMS + Visual-Feedback Cycling Exercise Duration: 20min/d, 5d/wk, 2wks	E vs C: FMA-LE (+exp) BBS (+exp) 2-Minute Walk Test cadence (-) speed (+exp) stride length (+exp) gait cycle restoration (+exp) step duration (+exp) affected foot duration (+exp) single limb support (+exp) swing phase (-) double support phase (-) initial contact angle (+exp) toe-off angle (-)
Nindorera et al. (2023) RCT crossover (8) Nstart=46 Nend=46 TPS=Chronic A vs B Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Circuit walking, balance, cycling and strength training (CBCS) C: Sociocultural intervention (board games, cultural discourse and drama) Duration: 120min/d, 3x/wk for 12wk	E vs C: ACTIVLIM Stroke Scale(+exp) Stroke Impairment Assessment Scale (SIAS) (+exp) Berg Balance Scale (BBS) (+exp) Hospital Anxiety and Depression Scale (HADS) (-) 6-Minute Walk Test (6MWT) (+exp) 10-Metre Walk Test (10MWT) (-) Participation Measurement Scale (PMscale) (+exp)
Yuan et al. (2021) RCT (8) Nstart=30 Nend=30 TPS=Subacute A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Brain-computer interface- controlled pedaling training C: Sham BCI-controlled pedaling training Duration: 2sessions/d, 6d/wk, for 2wks	E vs C: Fugl-Meyer Assessment (+exp) Digital Span Test (+exp) Symbol Digit Modalities Test (+exp) Attention Index (+exp) Mini-Mental State Examination (-) Montreal Cognitive Assessment (-)
Kotov et al. (2021) RCT (5) Nstart=47 Nend=41 TPS=Subacute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: ExoAtlet exoskeleton exercises + standard rehabilitation E2: Ortorent MOTO pedal trainer for active-passive training + standard rehabilitation Duration: 10-30min/d, 5d/wk, for 2wks	E1 v E2: Medical research council scale (+exp1) Modified Ashworth scale (-) Hauser Ambulation index (+exp1) 10m Walk test (+exp1) Berg Balance scale (+exp1) Modified Rankin scale (+exp1) Barthel index (+exp1) Romberg test (Statokinesiogram Measures) length with eye open (+exp) area with eye open/closed (-) energy index eye open/closed (-)

Shariat et al. (2021) RCT (7) Nstart=36 Nend=30 TPS=Chronic A1 + B vs A2 + B Primary listing: Table 28 (Functional Electrical Stimulation)	E: Leg cycling + FES with interval patterns timing C: Leg cycling + FES with linear patterns timing Duration: 28min/d, 3d/wk, for 4wks	E vs C: Functional ambulation classification (-) 10-M Walk Test (-) Timed up and go test (+exp) Single leg stance (-) Active Ankle ROM affected side (+exp) Active Knee ROM affected side (+exp) Spasticity in quadriceps (+exp) Modified Ashworth scale (+exp) Spasticity in plantar flexor (+exp)
Chieffo et al. (2021) RCT crossover (9) Nstart=12 Nend=11 TPS=Chronic A vs 0 Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: HF-rTMS with Hesed coil during active cycling C: Sham rTMS during cycling Duration: 11 sessions over 3wks, 4wks washout	E vs C: Fugl-Meyer Assessment lower extremity (+exp) Modified Ashworth Scale (+exp) 10-metre Walk test (-) 6-min Walk test (-) Resting motor threshold (+exp)
Koch et al. (2020) RCT (5) Nstart=131 Nend=94 TPS=Subacute A + B + C vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Aerobic training (Stationary treadmill or bicycle ergometer) + resistance training + cognitive training C: Sham Combined aerobic and resistance training + Sham Cognitive training Duration: 80-100min/d, 3d/wk, 12wks	E vs C: Adverse Events (-) Feasibility (+exp) Montreal Cognitive Assessment (-) Hopkins Verbal Learning Test Revised (-) Hopkins Verbal Learning Test Revised Delayed Recall (-) Grooved Pegboard (-) Stroop delis Kaplan Executive function test (-) WAIS-IV Coding Digit Symbol Substitution Test (-) Brief Visuospatial Memory Test-R (-) Brief Visuospatial Memory Test-R Delayed Recall Digit Span Backwards (-) CogState Brief Battery (-) Center for Epidemiological Studies Depression Scale (-) Stroke Impact Scale (-) Timed Up and Go Test (-) 15 Meters Walk Speed (-) 6-minute walk test (-) 30-second chair stand repetition test (-) single repetition maximal leg (-) single repetition maximal chest press (-) grip strength affected grip strength non-affected (-)
Cheng et al. (2020) RCT (8) Nstart=20 Nend=18 TPS=Chronic A + B vs C + B Primary listing: Table 52 (Supplements and Vitamins)	E: Protein supplement + Cycle ergometer exercise C: Carbohydrate supplement + Cycle ergometer exercise Duration: 40min, 3d/wk, for 8wks exercise & 40gr supplement, 3d/wk, for 8wks	E vs C: Cardiopulmonary exercise test(+exp) Timed up-and-go (+exp) 6-minute walking test(+exp) Berg Balance Scale(+exp) Fugl-Meyer Assessment Lower Extremity (+exp) Body composition changes

		Body mass (+exp) Fat mass (+exp) Lean mass (+exp)
Lund et al. (2018) RCT (5) Nstart=43 Nend=43 TPS=Chronic A vs B vs 0 Primary listing: Table 21 (Strength and Resistance Training)	E1: Aerobic training on cycle ergometer E2: Resistance training of lower extremities C: Sham training of upper extremities Duration: 3sets/wk for 12wks	E1 vs E2 vs C: Berg Balance Scale (-) Peak oxygen consumption (No stats) maximal voluntary contractions (No stats) 6 min walking test (-) 10m walk speed (-)
Bustamante Valles et al. (2016) RCT (3) Nstart=27 Nend=20 TPS=Chronic A + B vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices); Table 28 (Functional Electrical Stimulation)	E: Circuit Training (NESS L300 & Motomed Viva 2 FES+ Cycling & Brain trainer) C: Conventional Therapy Duration: 2hrs, 24 sessions over 6-8wks	E vs C: Fugl-Meyer Assessment (+exp) 6-Minute Walk Test (-) 10-Meter Walk Test (-) Timed Up and Go Test (-)
De Sousa et al. (2016) RCT (8) Nstart=40 Nend=40 TPS=Subacute A + B vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: Cycling + FES + conventional care C: Conventional care Duration: 32min/d of FES cycling + 1h conventional therapy 5d/wk, for 4wks experimental group, 60min conventional therapy in control	E vs C: Functional Independence Measure (-) Muscle Strength Affected Leg Knee Extensors (-) Unaffected Leg Knee Extensors (-) Manual Muscle Testing of Key of Affected LE Muscles (+exp) Maximal Force (-) Modified Tardieu Scale for Plantar Flexors o Affected Leg (-)
Peri et al. (2016) RCT (7) Nstart=16 Nend=16 TPS=Acute A + B vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: Active cycling + FES C: Physiotherapy Duration: 75min/d, 5d/wk for 3wks	E vs C: Mechanical Efficiency Index (+exp) 6-Minute Walk Test (-) Functional Independence Measure Motor (-) Cognitive (-) Gait speed (-) Double Support Time (-) Unbalance U Score (-) Area Symmetry Index (-) Work Produced by Paretic Leg (-)
Bauer et al. (2015) RCT (7) Nstart=40 Nend=40 TPS=Subacute A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Active Leg Cycling + FES (unilaterally on the paretic lower limb) C: Active Leg Cycling Duration: 20min/d, 3d/wk for 4wks Cycling	E vs C: Functional Ambulation Category (+exp) Performance-Oriented Mobility Assessment (+exp) Motricity Index (-) Modified Ashworth Scale (-) Gait speed (+con)
Yang et al. (2014) RCT crossover (7) Nstart=31	E: Conventional Rehabilitation + Cycling training + biofeedback C: Conventional Rehabilitation (CR)	E vs C: Fugl-Meyer assessment-lower limb (+exp) 6min Walk test (+exp)

Nend=30 TPS=Chronic A + B vs 0 Primary listing: Table 15 (Biofeedback)	Duration: 30min/d for 4wks Cycling ; 120min/d for 4wks Conventional rehabilitation – no washout	10m Walk Test (+exp) Modified Ashworth Scale (+exp)
Mayo et al. (2013) RCT (7) Nstart=87 Nend=65 TPS=Chronic A vs B Primary listing: Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E1: Home-based cycle ergometer exercise E2: Home-based overground walking exercise Duration: 30min/d, 5d/wk for 3wk	E1 vs E2: 6min Walk test (-) 5-meter Walk test (No stats) Berg Balance scale (No stats) Community balance and mobility scale (No stats) Stroke impact scale physical (No stats) participation (No stats) Physical Function Index of the Medical Outcomes Study RAND-36 Item Health Survey (No stats): physical (No stats) emotional (No stats) social (No stats) EuroQoL-5D (No stats) Geriatric Depression scale-short form (No stats) Adherence to exercise program (No stats)
Lo et al. (2012) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs B Primary listing: Table 28 (Functional Electrical Stimulation)	E: Functional electrical stimulation + cycling C: Cycling Duration: 20 min single session	E vs C: Limits of stability Reaction time Forward (-) Backward (-) Affected (-) Unaffected (-) Movement velocity Forward (+con) Backward (-) Affected (-) Unaffected (-) Directional control Forward (+exp) Backward (-) Affected (-) Unaffected (-) Endpoint excursion Forward (+con) Backward (-) Affected (-) Unaffected (-) Maximum excursion Forward (+exp) Backward (-) Affected (-) Unaffected (-) Muscle tone H/M ratio (-) Relaxation index (-)

Ambrosini et al. (2012) RCT (6) Nstart=35 Nend=30 TPS=Subacute A vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: Cycling induced by FES + Conventional Rehabilitation C: Cycling placebo FES + Conventional Rehabilitation Duration: 25min/d, 5d/wk, 4wks	E vs C: Motricity Index (+exp) Gait Speed (-)
Ambrosini et al. (2011) RCT (8) Nstart=35 Nend=30 TPS=Subacute A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Cycling + FES C: Cycling + Sham FES Duration: 25min/d, 5d/wk for 4wks	E vs C: 50-Metre Walk Test (+exp) Motricity Index (+exp) Trunk Control Test (+exp) Upright Motor Control Test (+exp) Pedaling Unbalance (+exp)
Lee et al. (2008) RCT (8) Nstart=52 Nend=48 TPS=Chronic A + B vs A vs C vs 0 Primary listing: Table 21 (Strength and Resistance Training)	E1: Aerobic cycling + progressive resistance training (PRT) E2: Aerobic cycling + sham PRT E3: Sham cycling + PRT C: Sham cycling + Sham PRT Duration: 60min/d, 3d/wk for 10wks	E1/E2/E3 v C: 6MWT distance (-) endurance-affected (+exp3, +exp1) Endurance unaffected side (+exp1, +exp2, +exp3) 10MWT Fast speed (-) Habitual speed (-) Stair climbing power (+exp1, +exp3) Treadmill walking physical cost index (+exp1, +exp2) Treadmill walking oxygen cost (-) Power in affected leg (+exp1, +exp3) SF-36 (-)
Ferrante et al. (2008) RCT (6) Nstart=20 Nend=20 TPS=Subacute A + B vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: FES + Cycling Ergometer + Conventional Care C: Conventional Care Duration: 35min/d, 5d/wk, for 4wks FES+ cycling & 3hr/d Conventional Care	E vs C: Trunk Control test (-) Motricity index (-) Upright Motor control test (-) 50m Walk test (-) Sit to Stand test Raising speed from slow to self-selected (+exp) Raising speed from self-selected to fast (-) Maximal Voluntary contraction (+exp)
Janssen et al. (2008) RCT (4) Nstart=16 Nend=12 TPS=Chronic A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Cycling + FES C: Cycling + Sham FES Duration: 30min/d, 2d/wk for 6wks	E vs C: Vo2peak (-) POmax (-) MVC torque (-) 6-Minute Walk Test (-) Berg Balance Scale (-) Rivermead Mobility Index (-)
Sullivan et al. (2007) RCT (7) Nstart=80 Nend=71	E1: BWS treadmill with upper extremity ergometry training E2: Resistive leg cycling with upper extremity ergometry training.	E1 vs E2: Self-selected walking speed (+exp1) Fast walking speed (+exp1) 6-minute walk test (-)

TPS=Chronic A vs B vs C vs D Primary listing: Table 9 (Treadmill Training)	E3: BWS treadmill with resistive leg cycling training. E4: BWS treadmill with lower extremity progressive resistive exercise. Duration: 60min/d, 4d/wk for 6wks	Peak torque (-) E1 vs E3 vs E4: Self-selected walking speed (-) Fasting walking speed (-) 6-minute walk test (-) Composite torque (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cycle Ergometer Training may produce greater improvements in motor recovery than Conventional Therapy.	4	Hu et al. 2022; Karthiga et al. 2020; Wang et al. 2016a; Katz-Leurer et al. 2006
2	Cycle Ergometer Training may not have a difference in efficacy when compared to Sham or No Treatment for improving motor recovery.	1	Potempa et al. 1995
1b	Cycle Ergometer may not have a difference in efficacy when compared to Stretching for improving motor recovery.	1	Quaney et al. 2009
1b	Interlimb Coupling Training may produce greater improvements in motor recovery than Conventional Therapy.	1	Arya et al. 2020
1b	Cycle Ergometry with virtual reality may produce greater improvements in motor recovery than Cycle Ergometry.	1	Lee 2019d
1b	Electromyography-triggered Pedalling Training may produce greater improvements in motor recovery than Pedalling Training.	1	Lee 2022e
1b	Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may produce greater improvements in motor recovery than Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.	1	Wang et al. 2024b
1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in motor recovery than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	Brain-computer interface- controlled pedaling training may produce greater improvements in motor recovery than Sham brain-computer interface-controlled pedaling training.	1	Yuan et al. 2021
1b	High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may produce greater improvements in motor recovery than Sham repetitive transcranial magnetic stimulation during cycling.	1	Chieffo et al. 2021
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in motor recovery than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may produce greater improvements in motor recovery than Conventional Care.	1	Bustamante Valles et al. 2016

1b	Conventional Rehabilitation with Cycling training and biofeedback may produce greater improvements in motor recovery than Conventional Rehabilitation (CR).	1	Yang et al. 2014
1b	Cycling with functional electrical stimulation may produce greater improvements in motor recovery than Cycling with Sham functional electrical stimulation.	1	Ambrosini et al. 2011
1b	Functional electrical stimulation with Cycling Ergometer and Conventional Care may not have a difference in efficacy when compared to Conventional Care for improving motor recovery.	1	Ferrante et al. 2008

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer Training may not have a difference in efficacy when compared to Overground Walking for improving biomechanical gait measures.	1	Fujita et al. 2020
1b	Cycle Ergometry with virtual reality may produce greater improvements in biomechanical gait measures than Cycle Ergometry.	1	Lee 2019d
1b	Electromyography-triggered Pedalling Training may produce greater improvements in biomechanical gait measures than Pedalling Training.	1	Lee 2022e
1b	Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may produce greater improvements in biomechanical gait measures than Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.	1	Wang et al. 2024b
1b	Active cycling with functional electrical stimulation may not have a difference in efficacy when compared to Physiotherapy for improving biomechanical gait measures.	1	Peri et al. 2016

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Aerobic training (Ergometer bicycle training) may produce greater improvements in biomechanical balance measures than Aerobic training (sliding machine).	1	Song et al. 2015
2	Functional electrical stimulation with cycling may not have a difference in efficacy when compared to Cycling for improving biomechanical balance measures.	1	Lo et al. 2012

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer Training may produce greater improvements in muscle strength than Conventional Therapy.	2	da Rosa Pinheiro et al. 2021; Jin et al. 2012
2	Cycle Ergometer Training may not have a difference in efficacy when compared to Sham or No Treatment for improving muscle strength.	1	Lund et al. 2018
1b	Active Cycling with Education and Coaching may not have a difference in efficacy when compared to Active Cycling with Education or Passive Mobilization for improving muscle strength.	1	Vanroy et al. 2017
1b	Progressive Resistance Training and Cycling may produce greater improvements in muscle strength than Sham Progressive Resistance Training and Cycling.	1	Lee et al. 2008

2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in muscle strength than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving muscle strength.	1	Lund et al. 2018
1b	Cycling with functional electrical stimulation and conventional care may not have a difference in efficacy when compared to Conventional care for improving muscle strength.	1	De Sousa et al. 2016
1b	Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may not have a difference in efficacy when compared to Active Leg Cycling for improving muscle strength.	1	Bauer et al. 2015
1b	Cycling induced by functional electrical stimulation with Conventional Rehabilitation may produce greater improvements in muscle strength than Cycling placebo functional electrical stimulation with Conventional Rehabilitation.	1	Ambrosini et al. 2012
1b	There is conflicting evidence about the effect of Cycling with functional electrical stimulation when compared to Cycling with Sham functional electrical stimulation for improving muscle strength.	2	Ambrosini et al. 2011; Janssen et al. 2008
1b	There is conflicting evidence about the effect of Functional electrical stimulation with Cycling Ergometer and Conventional Care when compared to Conventional Care for improving muscle strength.	1	Ferrante et al. 2008
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to Resistive leg cycling with upper extremity ergometry training for improving muscle strength.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving muscle strength.	1	Sullivan et al. 2007

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Cycle Ergometer Training may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	2	Jin et al. 2013; Jin et al. 2012
2	ExoAtlet exoskeleton exercises with rehabilitation may not have a difference in efficacy when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation for improving spasticity.	1	Kotov et al. 2021
1b	Leg cycling with functional electrical stimulation with interval patterns timing may produce greater improvements in spasticity than Leg cycling with functional electrical stimulation with linear patterns timing.	1	Shariat et al. 2021
1b	High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may produce greater improvements in spasticity than Sham repetitive transcranial magnetic stimulation during cycling.	1	Chieffo et al. 2021
1b	Cycling with functional electrical stimulation and conventional care may not have a difference in efficacy when compared to Conventional care for improving spasticity.	1	De Sousa et al. 2016
1b	Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may not have a difference in efficacy when compared to Active Leg Cycling for improving spasticity.	1	Bauer et al. 2015

1b	Conventional Rehabilitation with Cycling training and biofeedback may produce greater improvements in spasticity than Conventional Rehabilitation (CR).	1	Yang et al. 2014
2	Functional electrical stimulation with cycling may not have a difference in efficacy when compared to Cycling for improving spasticity.	1	Lo et al. 2012

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Cycle Ergometer Training may produce greater improvements in range of motion than Conventional Therapy.	1	Jin et al. 2013
1b	Cycle Ergometer Training may result in lesser improvements in range of motion when compared to Overground Walking.	1	Fujita et al. 2020
1b	Leg cycling with functional electrical stimulation with interval patterns timing may produce greater improvements in range of motion than Leg cycling with functional electrical stimulation with linear patterns timing.	1	Shariat et al. 2021

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Electromyography-triggered Pedalling Training when compared to Pedalling Training for improving neurophysiological measures.	1	Lee 2022e
2	Therapist-supervised in home Cycle ergometer with 30min pedaling may not have a difference in efficacy when compared to No treatment for improving neurophysiological measures.	1	Kautz et al. 2005
1b	High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may produce greater improvements in neurophysiological measures than Sham repetitive transcranial magnetic stimulation during cycling.	1	Chieffo et al. 2021
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in neurophysiological measures than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer Training may not have a difference in efficacy when compared to Conventional Therapy for improving aerobic measures.	6	Horvath et al. 2022; Jin et al. 2013; Jin et al. 2012; Letombe et al. 2010; Katz-leurer et al. 2007; Katz-Leurer et al. 2003
1b	There is conflicting evidence about the effect of Cycle Ergometer Training when compared to Sham or No Treatment for improving aerobic measures.	3	Lund et al. 2018; Sandberg et al. 2016; Potempa et al. 1995
1b	Cycle Ergometer may produce greater improvements in aerobic measures than Stretching.	1	Quaney et al. 2009
1b	Active Cycling with Education and Coaching may not have a difference in efficacy when compared to Active Cycling with Education or Passive Mobilization for improving aerobic measures.	1	Vanroy et al. 2017
1b	Cycle Ergometer and Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving aerobic measures.	1	Toledano-Zarhi et al. 2011

1b	There is conflicting evidence about the effect of Progressive Resistance Training and Cycling when compared to Sham Progressive Resistance Training and Cycling for improving aerobic measures.	1	Lee et al. 2008
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in aerobic measures than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving aerobic measures.	1	Lund et al. 2018
1b	Active cycling with functional electrical stimulation may produce greater improvements in aerobic measures than Physiotherapy.	1	Peri et al. 2016
1b	Aerobic cycling with progressive resistance training (PRT) may not have a difference in efficacy when compared to Sham cycling with Sham PRT for improving aerobic measures.	1	Lee et al. 2008
2	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with Sham functional electrical stimulation for improving aerobic measures.	1	Janssen et al. 2008

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cycle Ergometer Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	6	Horvath et al. 2022; Wang et al. 2016a; Letombe et al. 2010; Katz-leurer et al. 2007; Katz-Leurer et al. 2006; Katz-Leurer et al. 2003
1b	In-Bed Cycling may not have a difference in efficacy when compared to Usual Care for improving activities of daily living.	1	Sandberg et al. 2020
1b	Interlimb Coupling Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Arya et al. 2020
1b	Aerobic cycling exercise training may not have a difference in efficacy when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training for improving activities of daily living.	1	Yeh et al. 2022
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in activities of daily living than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
1b	Cycling with functional electrical stimulation and conventional care may not have a difference in efficacy when compared to Conventional care for improving activities of daily living.	1	De Sousa et al. 2016
1b	Active cycling with functional electrical stimulation may not have a difference in efficacy when compared to Physiotherapy for improving activities of daily living.	1	Peri et al. 2016

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cycle Ergometer Training may produce greater improvements in gait speed than Conventional Therapy.	4	Hu et al. 2022; da Rosa Pinheiro et al. 2021; Kim et al. 2015e; Katz-Leurer et al. 2003

1b	There is conflicting evidence about the effect of Cycle Ergometer Training when compared to Sham or No Treatment for improving gait speed.	2	Lund et al. 2018; Sandberg et al. 2016
1b	Active Cycling with Education and Coaching may not have a difference in efficacy when compared to Active Cycling with Education or Passive Mobilization for improving gait speed.	1	Vanroy et al. 2017
1b	Cycle Ergometer Training may produce greater improvements in gait speed than Overground Walking.	1	Fujita et al. 2020
2	Aerobic training (Ergometer bicycle training) may not have a difference in efficacy when compared to Aerobic training (sliding machine) for improving gait speed.	1	Song et al. 2015
1b	There is conflicting evidence about the effect of Progressive Resistance Training and Cycling when compared to Sham Progressive Resistance Training and Cycling for improving gait speed.	1	Lee et al. 2008
1b	Cycle Ergometry with virtual reality may produce greater improvements in gait speed than Cycle Ergometry.	1	Lee 2019d
1b	Electromyography-triggered Pedalling Training may produce greater improvements in gait speed than Pedalling Training.	1	Lee 2022e
1b	Aerobic cycling exercise training may not have a difference in efficacy when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training for improving gait speed.	1	Yeh et al. 2022
1b	Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may produce greater improvements in gait speed than Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.	1	Wang et al. 2024b
1b	Circuit walking, balance, cycling and strength training (CBCS) may not have a difference in efficacy when compared to Sociocultural intervention (board games, cultural discourse and drama) for improving gait speed.	1	Nindorera et al. 2023
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in gait speed than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
1b	Leg cycling with functional electrical stimulation with interval patterns timing may not have a difference in efficacy when compared to Leg cycling with functional electrical stimulation with linear patterns timing for improving gait speed.	1	Shariat et al. 2021
1b	High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation during cycling for improving gait speed.	1	Chieffo et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait speed.	1	Koch et al. 2020
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving gait speed.	1	Lund et al. 2018
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	1	Bustamante Valles et al. 2016

1b	Active cycling with functional electrical stimulation may not have a difference in efficacy when compared to Physiotherapy for improving gait speed.	1	Peri et al. 2016
1b	Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may result in lesser improvements in gait speed when compared to Active Leg Cycling.	1	Bauer et al. 2015
1b	Conventional Rehabilitation with Cycling training and biofeedback may produce greater improvements in gait speed than Conventional Rehabilitation (CR).	1	Yang et al. 2014
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait speed.	1	Mayo et al. 2013
2	Functional electrical stimulation with cycling may not have a difference in efficacy when compared to Cycling for improving gait speed.	1	Lo et al. 2012
1b	Cycling induced by functional electrical stimulation with Conventional Rehabilitation may not have a difference in efficacy when compared to Cycling placebo functional electrical stimulation with Conventional Rehabilitation for improving gait speed.	1	Ambrosini et al. 2012
1b	Cycling with functional electrical stimulation may produce greater improvements in gait speed than Cycling with Sham functional electrical stimulation.	1	Ambrosini et al. 2011
1b	Aerobic cycling with progressive resistance training (PRT) may not have a difference in efficacy when compared to Sham cycling with Sham PRT for improving gait speed.	1	Lee et al. 2008
1b	Functional electrical stimulation with Cycling Ergometer and Conventional Care may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	1	Ferrante et al. 2008
1b	Body weight supported treadmill with upper extremity ergometry training may produce greater improvements in gait speed than Resistive leg cycling with upper extremity ergometry training.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving gait speed.	1	Sullivan et al. 2007

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer Training may produce greater improvements in gait endurance than Conventional Therapy.	5	Horvath et al. 2022; Jin et al. 2013; Jin et al. 2012; Katz-leurer et al. 2007; Katz-Leurer et al. 2003
1b	There is conflicting evidence about the effect of Cycle Ergometer Training when compared to Sham or No Treatment for improving gait endurance.	2	Lund et al. 2018; Sandberg et al. 2016
1b	In-Bed Cycling may not have a difference in efficacy when compared to Usual Care for improving gait endurance.	1	Sandberg et al. 2020
1b	Cycle Ergometer and Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving gait endurance.	1	Toledano-Zarhi et al. 2011
1b	Progressive Resistance Training and Cycling may produce greater improvements in gait endurance than Sham Progressive Resistance Training and Cycling.	1	Lee et al. 2008

1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in gait endurance than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation during cycling for improving gait endurance.	1	Chieffo et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait endurance.	1	Koch et al. 2020
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in gait endurance than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving gait endurance.	1	Lund et al. 2018
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving gait endurance.	1	Bustamante Valles et al. 2016
1b	Active cycling with functional electrical stimulation may not have a difference in efficacy when compared to Physiotherapy for improving gait endurance.	1	Peri et al. 2016
1b	Conventional Rehabilitation with Cycling training and biofeedback may produce greater improvements in gait endurance than Conventional Rehabilitation (CR).	1	Yang et al. 2014
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait endurance.	1	Mayo et al. 2013
1b	Aerobic cycling with progressive resistance training (PRT) may not have a difference in efficacy when compared to Sham cycling with Sham PRT for improving gait endurance.	1	Lee et al. 2008
2	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with Sham functional electrical stimulation for improving gait endurance.	1	Janssen et al. 2008
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to Resistive leg cycling with upper extremity ergometry training for improving gait endurance.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving gait endurance.	1	Sullivan et al. 2007

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cycle Ergometer Training may produce greater improvements in functional mobility than Conventional Therapy.	7	Bharti et al. 2022; Hu et al. 2022; da Rosa Pinheiro et al. 2021; Karthiga et al. 2020; Wang et al. 2016a; Kim et al. 2015e; Jin et al. 2012

1b	Cycle Ergometer Training may produce greater improvements in functional mobility than Sham or No Treatment.	1	Sandberg et al. 2016
1b	Cycle Ergometer may produce greater improvements in functional mobility than Stretching.	1	Quaney et al. 2009
1b	Active Cycling with Education and Coaching may not have a difference in efficacy when compared to Active Cycling with Education or Passive Mobilization for improving functional mobility.	1	Vanroy et al. 2017
1b	Cycle Ergometer and Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Toledano-Zarhi et al. 2011
1b	There is conflicting evidence about the effect of Progressive Resistance Training and Cycling when compared to Sham Progressive Resistance Training and Cycling for improving functional mobility.	1	Lee et al. 2008
1b	Interlimb Coupling Training may produce greater improvements in functional mobility than Conventional Therapy.	1	Arya et al. 2020
1b	Aerobic cycling exercise training may not have a difference in efficacy when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training for improving functional mobility.	1	Yeh et al. 2022
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in functional mobility than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
1b	There is conflicting evidence about the effect of Leg cycling with functional electrical stimulation with interval patterns timing when compared to Leg cycling with functional electrical stimulation with linear patterns timing for improving functional mobility.	1	Shariat et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving functional mobility.	1	Koch et al. 2020
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in functional mobility than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	1	Bustamante Valles et al. 2016
1b	Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may produce greater improvements in functional mobility than Active Leg Cycling.	1	Bauer et al. 2015
2	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with Sham functional electrical stimulation for improving functional mobility.	1	Janssen et al. 2008

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cycle Ergometer Training may produce greater improvements in balance than Conventional Therapy.	6	Bharti et al. 2022; da Rosa Pinheiro et al. 2021; Kim et al. 2015e; Jin et al. 2013; Jin et al. 2012; Katz-Leurer et al. 2006
1b	Cycle Ergometer Training may produce greater improvements in balance than Sham or No Treatment.	2	Lund et al. 2018; Sandberg et al. 2016

1b	Cycle Ergometer may not have a difference in efficacy when compared to Stretching for improving balance.	1	Quaney et al. 2009
1b	Cycle Ergometer and Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	1	Toledano-Zarhi et al. 2011
1b	Cycle Ergometry with virtual reality may produce greater improvements in balance than Cycle Ergometry.	1	Lee 2019d
1b	Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may produce greater improvements in balance than Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.	1	Wang et al. 2024b
1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in balance than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
2	There is conflicting evidence about the effect of ExoAtlet exoskeleton exercises with rehabilitation when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation for improving balance.	1	Kotov et al. 2021
1b	Leg cycling with functional electrical stimulation with interval patterns timing may not have a difference in efficacy when compared to Leg cycling with functional electrical stimulation with linear patterns timing for improving balance.	1	Shariat et al. 2021
1b	Protein supplement with Cycle ergometer exercise may produce greater improvements in balance than Carbohydrate supplement with Cycle ergometer exercise.	1	Cheng et al. 2020
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving balance.	1	Lund et al. 2018
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving balance.	1	Mayo et al. 2013
1b	There is conflicting evidence about the effect of Cycling with functional electrical stimulation when compared to Cycling with Sham functional electrical stimulation for improving balance.	2	Ambrosini et al. 2011; Janssen et al. 2008
1b	Functional electrical stimulation with Cycling Ergometer and Conventional Care may not have a difference in efficacy when compared to Conventional Care for improving balance.	1	Ferrante et al. 2008

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer Training may not have a difference in efficacy when compared to Sham or No Treatment for improving quality of life.	1	Sandberg et al. 2016
1b	Progressive Resistance Training and Cycling may not have a difference in efficacy when compared to Sham Progressive Resistance Training and Cycling for improving quality of life.	1	Lee et al. 2008
1b	Aerobic cycling exercise training may not have a difference in efficacy when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training for improving quality of life.	1	Yeh et al. 2022

1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in quality of life than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving quality of life.	1	Koch et al. 2020
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving quality of life.	1	Mayo et al. 2013
1b	Aerobic cycling with progressive resistance training (PRT) may not have a difference in efficacy when compared to Sham cycling with Sham PRT for improving quality of life.	1	Lee et al. 2008

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Circuit walking, balance, cycling and strength training (CBCS) may not have a difference in efficacy when compared to Sociocultural intervention (board games, cultural discourse and drama) for improving mood.	1	Nindorera et al. 2023

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer may not have a difference in efficacy when compared to Stretching for improving cognition.	1	Quaney et al. 2009
1b	Aerobic cycling exercise training may not have a difference in efficacy when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training for improving cognition.	1	Yeh et al. 2022
1b	Brain-computer interface- controlled pedaling training may not have a difference in efficacy when compared to Sham brain-computer interface-controlled pedaling training for improving cognition.	1	Yuan et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving cognition.	1	Koch et al. 2020

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cycle Ergometer may produce greater improvements in upper extremity function than Stretching.	1	Quaney et al. 2009
1b	Cycle Ergometer Training may not have a difference in efficacy when compared to Overground Walking for improving upper extremity function.	1	Fujita et al. 2020
1b	Interlimb Coupling Training may produce greater improvements in upper extremity function than Conventional Therapy.	1	Arya et al. 2020

1b	Electromyography-triggered Pedalling Training may not have a difference in efficacy when compared to Pedalling Training for improving upper extremity function.	1	Lee 2022e
2	Therapist-supervised in home Cycle ergometer with 30min pedaling may not have a difference in efficacy when compared to No treatment for improving upper extremity function.	1	Kautz et al. 2005
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving upper extremity function.	1	Koch et al. 2020

Key Points

- Cycle Ergometer Training may be beneficial for improving motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, and balance, but not spasticity, aerobic measures, and activities of daily living, after stroke when compared to Conventional Therapy.
- Cycle Ergometer Training may be beneficial for improving functional mobility and balance, but not motor recovery, muscle strength, and quality of life, after stroke when compared to Sham or No Treatment; the literature is mixed regarding aerobic measures, gait speed, and gait endurance.
- Cycle Ergometer may be beneficial for improving aerobic measures and functional mobility, but not motor recovery and balance, after stroke when compared to Stretching.
- In-Bed Cycling may not be beneficial for improving activities of daily living and gait endurance after stroke when compared to Usual Care.
- Active Cycling with Education and Coaching may not be beneficial for improving muscle strength, aerobic measures, gait speed, and functional mobility after stroke when compared to Active Cycling with Education or Passive Mobilization.
- Cycle Ergometer and Treadmill Training may not be beneficial for improving aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Conventional Therapy.
- Cycle Ergometer Training may be beneficial for improving gait speed, but not biomechanical gait measures, after stroke when compared to Overground Walking; Cycle Ergometer Training may result in lesser improvements in range of motion when compared to Overground Walking.
- Aerobic training (Ergometer bicycle training) may be beneficial for improving biomechanical balance measures, but not gait speed, after stroke when compared to Aerobic training (sliding machine).
- Sham progressive resistance training with Cycling may be beneficial for improving gait endurance after stroke when compared to Sham progressive resistance training with Sham cycling.
- Progressive Resistance Training and Cycling may be beneficial for improving muscle strength and gait endurance, but not quality of life, after stroke when compared to Sham Progressive Resistance Training and Cycling; the literature is mixed regarding aerobic measures, gait speed, and functional mobility.
- Interlimb Coupling Training may be beneficial for improving motor recovery and functional mobility, but not activities of daily living, after stroke when compared to Conventional Therapy.
- Cycle Ergometry with virtual reality may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Cycle Ergometry.
- Electromyography-triggered Pedalling Training may be beneficial for improving motor recovery, biomechanical gait measures, and gait speed after stroke when compared to Pedalling Training; the literature is mixed regarding neurophysiological measures.
- Aerobic cycling exercise training may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training.
- Therapist-supervised in home Cycle ergometer with 30min pedaling may not be beneficial for improving neurophysiological measures after stroke when compared to No treatment.
- Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.

- Circuit walking, balance, cycling and strength training (CBCS) may be beneficial for improving motor recovery, gait endurance, balance, and quality of life, but not gait speed, after stroke when compared to Sociocultural intervention (board games, cultural discourse and drama).
- Brain-computer interface- controlled pedaling training may be beneficial for improving motor recovery after stroke when compared to Sham brain-computer interface-controlled pedaling training.
- ExoAtlet exoskeleton exercises with rehabilitation may be beneficial for improving muscle strength, activities of daily living, gait speed, and functional mobility, but not spasticity, after stroke when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation; the literature is mixed regarding balance.
- Leg cycling with functional electrical stimulation with interval patterns timing may be beneficial for improving spasticity and range of motion, but not gait speed and balance, after stroke when compared to Leg cycling with functional electrical stimulation with linear patterns timing; the literature is mixed regarding functional mobility.
- High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not gait speed and gait endurance, after stroke when compared to Sham repetitive transcranial magnetic stimulation during cycling.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Protein supplement with Cycle ergometer exercise may be beneficial for improving motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Carbohydrate supplement with Cycle ergometer exercise.
- Aerobic training on cycle ergometer may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and balance after stroke when compared to Sham training of upper extremities.
- Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may be beneficial for improving motor recovery, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Conventional Care.
- Cycling with functional electrical stimulation and conventional care may not be beneficial for improving muscle strength, spasticity, and activities of daily living after stroke when compared to Conventional care.
- Active cycling with functional electrical stimulation may be beneficial for improving aerobic measures, but not biomechanical gait measures, activities of daily living, gait speed, and gait endurance, after stroke when compared to Physiotherapy.
- Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may be beneficial for improving functional mobility, but not muscle strength and spasticity, after stroke when compared to Active Leg Cycling; Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may result in lesser improvements in gait speed when compared to Active Leg Cycling.
- Conventional Rehabilitation with Cycling training and biofeedback may be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Conventional Rehabilitation (CR).
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Functional electrical stimulation with cycling may not be beneficial for improving biomechanical balance measures, spasticity, and gait speed after stroke when compared to Cycling.
- Cycling induced by functional electrical stimulation with Conventional Rehabilitation may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Cycling placebo functional electrical stimulation with Conventional Rehabilitation.
- Cycling with functional electrical stimulation may be beneficial for improving motor recovery and gait speed, but not aerobic measures, gait endurance, and functional mobility, after stroke when compared to Cycling with Sham functional electrical stimulation; the literature is mixed regarding muscle strength and balance.

- Aerobic cycling with progressive resistance training (PRT) may not be beneficial for improving aerobic measures, gait speed, gait endurance, and quality of life after stroke when compared to Sham cycling with Sham PRT.
- Functional electrical stimulation with Cycling Ergometer and Conventional Care may not be beneficial for improving motor recovery, gait speed, and balance after stroke when compared to Conventional Care; the literature is mixed regarding muscle strength.
- Body weight supported treadmill with upper extremity ergometry training may be beneficial for improving gait speed, but not muscle strength and gait endurance, after stroke when compared to Resistive leg cycling with upper extremity ergometry training.
- Body weight supported treadmill with upper extremity ergometry training may not be beneficial for improving muscle strength, gait speed, and gait endurance after stroke when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise.

Summary of Key Points: Cycle Ergometer Training

Intervention	Control(s)	Function domain(s)	Effect
Cycle Ergometer Training	Conventional Therapy	Motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, balance	+
Cycle Ergometer Training	Conventional Therapy	Spasticity, aerobic measures, activities of daily living	–
Cycle Ergometer Training	Sham or No Treatment	Functional mobility, balance	+
Cycle Ergometer Training	Sham or No Treatment	Motor recovery, muscle strength, quality of life	–
Cycle Ergometer Training	Sham or No Treatment	Aerobic measures, gait speed, gait endurance	=
Cycle Ergometer	Stretching	Aerobic measures, functional mobility	+
Cycle Ergometer	Stretching	Motor recovery, balance	–
In-Bed Cycling	Usual Care	Activities of daily living, gait endurance	–
Active Cycling with Education and Coaching	Active Cycling with Education or Passive Mobilization	Muscle strength, aerobic measures, gait speed, functional mobility	–
Cycle Ergometer and Treadmill Training	Conventional Therapy	Aerobic measures, gait endurance, functional mobility, balance	–
Cycle Ergometer Training	Overground Walking	Gait speed	+
Cycle Ergometer Training	Overground Walking	Biomechanical gait measures	–
Cycle Ergometer Training	Overground Walking	Range of motion	–
Aerobic training (Ergometer bicycle training)	Aerobic training (sliding machine)	Biomechanical balance measures	+
Aerobic training (Ergometer bicycle training)	Aerobic training (sliding machine)	Gait speed	–
Sham progressive resistance training with Cycling	Sham progressive resistance training with Sham cycling	Gait endurance	+
Progressive Resistance Training and Cycling	Sham Progressive Resistance Training and Cycling	Muscle strength, gait endurance	+

Progressive Resistance Training and Cycling	Sham Progressive Resistance Training and Cycling	Quality of life	–
Progressive Resistance Training and Cycling	Sham Progressive Resistance Training and Cycling	Aerobic measures, gait speed, functional mobility	=
Interlimb Coupling Training	Conventional Therapy	Motor recovery, functional mobility	+
Interlimb Coupling Training	Conventional Therapy	Activities of daily living	–
Cycle Ergometry with virtual reality	Cycle Ergometry	Motor recovery, biomechanical gait measures, gait speed, balance	+
Electromyography-triggered Pedalling Training	Pedalling Training	Motor recovery, biomechanical gait measures, gait speed	+
Electromyography-triggered Pedalling Training	Pedalling Training	Neurophysiological measures	=
Aerobic cycling exercise training	Computerized cognitive training or Aerobic exercise with computerized cognitive training	Activities of daily living, gait speed, functional mobility, quality of life	–
Therapist-supervised in home Cycle ergometer with 30min pedaling	No treatment	Neurophysiological measures	–
Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise	Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise	Motor recovery, biomechanical gait measures, gait speed, balance	+
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)	Motor recovery, gait endurance, balance, quality of life	+
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)	Gait speed	–
Brain-computer interface- controlled pedaling training	Sham brain-computer interface-controlled pedaling training	Motor recovery	+
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Muscle strength, activities of daily living, gait speed, functional mobility	+
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Spasticity	–
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Balance	=
Leg cycling with functional electrical stimulation with interval patterns timing	Leg cycling with functional electrical stimulation with linear patterns timing	Spasticity, range of motion	+
Leg cycling with functional electrical stimulation with interval patterns timing	Leg cycling with functional electrical stimulation with linear patterns timing	Gait speed, balance	–
Leg cycling with functional electrical stimulation with interval patterns timing	Leg cycling with functional electrical stimulation with linear patterns timing	Functional mobility	=
High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling	Sham repetitive transcranial magnetic stimulation during cycling	Motor recovery, spasticity, neurophysiological measures	+

High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling	Sham repetitive transcranial magnetic stimulation during cycling	Gait speed, gait endurance	–
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training	Gait speed, gait endurance, functional mobility, quality of life	–
Protein supplement with Cycle ergometer exercise	Carbohydrate supplement with Cycle ergometer exercise	Motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, balance	+
Aerobic training on cycle ergometer	Sham training of upper extremities	Muscle strength, aerobic measures, gait speed, gait endurance, balance	–
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care	Motor recovery	+
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care	Gait speed, gait endurance, functional mobility	–
Cycling with functional electrical stimulation and conventional care	Conventional care	Muscle strength, spasticity, activities of daily living	–
Active cycling with functional electrical stimulation	Physiotherapy	Aerobic measures	+
Active cycling with functional electrical stimulation	Physiotherapy	Biomechanical gait measures, activities of daily living, gait speed, gait endurance	–
Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb)	Active Leg Cycling	Functional mobility	+
Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb)	Active Leg Cycling	Muscle strength, spasticity	–
Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb)	Active Leg Cycling	Gait speed	–
Conventional Rehabilitation with Cycling training and biofeedback	Conventional Rehabilitation (CR)	Motor recovery, spasticity, gait speed, gait endurance	+
Home-based cycle ergometer exercise	Home-based overground walking exercise	Gait speed, gait endurance, balance, quality of life	–
Functional electrical stimulation with cycling	Cycling	Biomechanical balance measures, spasticity, gait speed	–
Cycling induced by functional electrical stimulation with Conventional Rehabilitation	Cycling placebo functional electrical stimulation with Conventional Rehabilitation	Muscle strength	+
Cycling induced by functional electrical stimulation with Conventional Rehabilitation	Cycling placebo functional electrical stimulation with Conventional Rehabilitation	Gait speed	–
Cycling with functional electrical stimulation	Cycling with Sham functional electrical stimulation	Motor recovery, gait speed	+
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT	Aerobic measures, gait speed, gait endurance, quality of life	–
Functional electrical stimulation with Cycling Ergometer and Conventional Care	Conventional Care	Motor recovery, gait speed, balance	–

Functional electrical stimulation with Cycling Ergometer and Conventional Care	Conventional Care	Muscle strength	=
Cycling with functional electrical stimulation	Cycling with Sham functional electrical stimulation	Aerobic measures, gait endurance, functional mobility	–
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training	Gait speed	+
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training	Muscle strength, gait endurance	–
Body weight supported treadmill with upper extremity ergometry training	body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise	Muscle strength, gait speed, gait endurance	–
Cycling with functional electrical stimulation	Cycling with Sham functional electrical stimulation	Muscle strength, balance	=

Treadmill Training



Adopted from: http://www.ptproductsonline.com/2016/01/accentuate-negative/

Treadmill walking is a common rehabilitation intervention used for patients with walking impairments after stroke. It has been shown to increase the total number of steps taken within a training session as compared to a conventional physiotherapy approach (Hesse et al., 2003). As such, treadmill training can be used to encourage intensive, repetitive, task-specific training, which is suggested to be an ideal form of gait training to optimize lower limb rehabilitation after stroke (French et al., 2016; Langhorne et al., 2009). Body weight support (BWS), provided through a harness above the treadmill, is an increasingly popular approach within rehabilitation programs that

attempts to optimize locomotor-related sensory inputs to all neural regions involved in walking (Charalambous et al., 2013; Hassid et al., 1997; Langhorne et al., 2009).

Treadmill training can also be administered with support from Nordic poles or handrails, and training can be modified through adding additional load, applying a horizontal force, encouraging walking sideways, backwards, or through changing the treadmill surface to make it unstable or inclined. Additionally, speed of the treadmill can be changed to increase or decrease intensity.

A total of 106 RCTs were found that evaluated treadmill training for lower extremity motor rehabilitation. Six RCTs compared Treadmill Training with Conventional Therapy (Hu et al. 2023; Baer et al. 2018; Globas et al. 2012; Kuys et al. 2011; Macko et al. 2005; Laufer et al. 2001). Seven RCTs compared Treadmill Training with Overground Training (Van Bladel et al. 2023; Brauer et al. 2022; Aguiar et al. 2020; Bonnyaud et al. 2014b; Bonnyaud et al. 2013b; Park et al. 2013; Langhammer & Stanghelle 2010). Fifteen RCTs compared BWS Treadmill Training with Conventional Therapy (Tarihci Cakmak et al. 2024; Duran et al. 2023; Banjara et al. 2022; Ramakrishna et al. 2021; Lura et al., 2019; Nave et al. 2019; Sukonthamarn et al. 2019; Mustafaoglu et al. 2018; Takao et al. 2015; Mackay-Lyons et al. 2013; Yang et al. 2010; Yen et al. 2008; Eich et al. 2004; Da Cunha et al. 2002; Teixeira da Cunha Filho et al. 2001). Thirteen RCTs compared BWS Treadmill Training with Overground Walking (Gangopadhyay et al. 2021; Gama et al. 2017; DePaul et al. 2015; Mao et al. 2015; Combs-Miller et al. 2014; Middleton et al. 2014; Hoyer et al. 2012; Ada et al. 2010; Dean et al. 2010; Franceschini et al. 2009; Suputtitada et al. 2004; Nilsson et al. 2001; Kosak & Reding 2000). Five RCTs compared BWS Treadmill Training with Treadmill Training (Calabro et al. 2020; Ullah et al. 2017; Srivastava et al. 2016; Lee et al. 2015f; Visintin et al. 1998). One RCT compared BWS Treadmill Training with Mobility Skills with BWS Treadmill Training (Graham et al. 2018). One RCT evaluated BWS Treadmill Training with Cycle Ergometry or Resistive Training (Sullivan et al. 2007). One RCT compared BWS Treadmill Training with Facilitation Technique with BWS Training with Mechanical Assistance (Yagura et al. 2006). One RCT compared BWS Treadmill Training for Different Durations with Home Exercise (Duncan et al. 2011). Two RCTs compared Treadmill Training with Nordic Poles with Treadmill Training (Kang et al. 2016; Shin et al. 2015). Four RCTs compared Treadmill Training with Load with Treadmill Training without Load or Conventional Therapy (Kim & Yim 2017c; de Lima Gomes et al. 2017; Ribeiro et al. 2017; Park et al. 2014c). Three RCTs compared Treadmill Training with Incline with Treadmill Training with Decline or Level Treadmill Training (Cheng et al. 2022; Gama et al. 2015; Carda et al. 2013). One RCT compared Treadmill Training with Increased Speed with Treadmill Training with Increased Incline (Alipsatici et al. 2020). One RCT compared Constraint Induced Movement with Home Exercise with Treadmill Training (Silva et al. 2017). One RCT compared Treadmill Training with Foot Drop Stimulator with Foot Drop Stimulator (Peishun et al. 2021). Two RCTs compared Perturbation Treadmill Training with Treadmill Training (Krause et al. 2024; Esmaeili et al. 2020). One RCT compared Turning Treadmill Training with Treadmill Training (Chen et al. 2014). One RCT compared Treadmill Training with Mirror Therapy with Treadmill Training (Broderick et al. 2019). One RCT compared Treadmill Training with Proprioceptive Neuromuscular Facilitation with Treadmill Training (Kim & Kang 2018c). One RCT compared BWS Treadmill Training with Proprioceptive Neuromuscular Facilitation (Ribeiro et al. 2013). One RCT compared Treadmill Training with Obstacles with Treadmill Training (Jeong et al. 2016). One RCT compared Treadmill Training on Unstable Surface with Treadmill Training (Bang et al. 2014). One RCT compared Treadmill Training with Handrails with Treadmill Training (Kang et al. 2015). One RCT compared Treadmill Training with Horizontal Force with Treadmill Training (Na et al. 2015). Three RCTs compared Treadmill Training with VR with Other Training (Timmermans et al. 2021; Cho et al. 2014; Cho et al. 2013c). One RCT compared Treadmill Training with Smartphone Application with Treadmill Training (Lee et al. 2017a). One RCT compared Treadmill Training with Visual Deprivation with Treadmill Training (Kim et al. 2014c). Six RCTs compared Backward Treadmill Training with Standard Treadmill or Conventional Rehabilitation (Bansal et al. 2023; Chang et al. 2021; Munari et al. 2020; Kim et al. 2017b; Kim et al. 2014c; Takami et al. 2010). Three RCTs compared Treadmill Training with Overground Training with Home Exercise/ no treatment (Ada et al. 2013; Moore et al. 2010; Ada et al. 2003). Four RCTs compared High Intensity Treadmill Training with Low Intensity Treadmill Training (Munari et al., 2018; Holleran et al. 2015; Ivey et al. 2015; Kuys et al. 2011). One RCT compared Fast Speed Treadmill Training with FES with Self-selected or Fast Speed Treadmill Training (Awad et al. 2016). Five RCTs compared Speed Dependent Treadmill Training with Other Treadmill Training (Van Bladel et al. 2022; Helm et al. 2019; Lau & Mak 2011; Pohl et al. 2002; Sullivan et al. 2002). One RCT compared Speed-dependent Treadmill Training with Task-oriented Training (Sharma et al. 2014). One RCT compared Error Augmentation Treadmill Training with Treadmill Training (Lewek et al. 2018). Two RCTs compared Treadmill Training with Stretching (Serra et al. 2022; Luft et al. 2008). Two RCTs compared Treadmill Training with Orthotic Devices with Treadmill Training (Park et al. 2024b; In et al. 2017). One RCT compared Electromechanical gait trainer with Body weight-supported treadmill training (Werner et al. 2002b). One RCT compared Treadmill Training with Action Observation with Treadmill Training (Bang et al. 2013).

In addition, 63 RCTs in which treadmill training formed part of a combined or comparative intervention are cross-referenced at the end of Table 9; their primary listings appear in other tables.

The methodological details and results of all 106 RCTs are presented in Table 9.

Table 9. RCTs Evaluating Treadmill Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Treadmill Training vs Conventional Therapy		
Hu et al. (2023) Feasibility/pilot RCT (7) Nstart=33 Nend=33 TPS=Chronic A1 vs A2 Also in Table 11 (Balance Training)	E: Treadmill gait and balance training + Traditional gait and balance training C: Traditional gait + balance training Duration: 90min/d, 5d/wk, 4wks	E vs C: 5MWT (-) Compensatory stepping test (no stat) TUG (-) FTSTS (-) ABC (-) RPE (no stat) HR (no stat)
Baer et al. (2018) RCT (7) Nstart=77 Nend=69 TPS=Subacute A + B vs B	E: Treadmill Training + normal gait re-education C: Normal gait re-education Duration: minimum of 1 session physiotherapy and 2 sessions gait training/wk for 8wks	E vs C: Rivermead Mobility Index(-) Functional Ambulation Category(-) 10-metre walk(-) 6-minute walk(-) Barthel Index(-) Motor Assessment Scale(-) Stroke Impact Scale(-) Vertical 10-cm Visual Analogue Scale (-) Timed Up and Go (-)
Globas et al. (2012) RCT (7) Nstart=38 Nend=36 TPS=Chronic A vs 0 vs B	E: High intensity Treadmill training C: Conventional therapy C: 1h/d, 1-3d/wk, for 13wks Duration: E: 30-50min, 3x/wk, 13wk; C: 1h/ 1-3x/wk, 13wk	E vs C: VO2 Peak (+exp) 6 minute walk (+exp) 10 metre walk test maximum walking speed (+exp) comfortable walking speed (-) Berg Balance Scale(+exp) 5 chair rise (-) SF-12 physical (-) mental (+exp) Rivermead Mobility Index(+exp)
Kuys et al. (2011) RCT (8) Nstart=30 Nend=28 TPS=Subacute A vs 0	E: High intensity treadmill training + usual physiotherapy C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 6wks	E vs C: 6-Minute Walk Test (+exp) 10-Metre Walk Test (+exp) Walking capacity (-) Walking speed (-) Cadence (-) Step length Paretic (-) Non paretic (-) Angular kinematics of knee (-)

		Angular kinematics of hip (-) Angular kinematics of ankle (-) Walking quality (-)
Macko et al. (2005) RCT (5) Nstart=61 Nend=45 TPS=Chronic A vs 0	E: Treadmill training C: Conventional rehabilitation Duration: 40min/d, 3d/wk for 24wks	E vs C: VO2 peak (+exp) Economy of gait (-) 6-Minute Walk Test (+exp) 30-ft timed walk (-) Walking Impairment Questionnaire Distance (+exp) Speed (-) Stair-climbing (-) Rivermead Mobility Index (-)
Laufer et al. (2001) RCT (6) Nstart=29 Nend=25 TPS=Subacute A vs B	E: Treadmill training + Conventional physical therapy C: Overground gait training + Conventional physical therapy Duration: 8-20min/d, 5d/wk for 3wks	E vs C: Functional Ambulation Category (+exp) Standing Balance Test (-) 10-Meter Walk Test (-) Stride length (+exp) Percentage of Swing (-) percentage of paretic single stance period (+exp) Double stance (-) AT muscular activity (-) gastrocnemius muscular activity (+exp)
Treadmill Training vs Overground Training		
Van Bladel et al. (2023) RCT crossover (4) Nstart=25 Nend=25 TPS=Chronic A vs B Also in Table 26 (Virtual Reality)	E: Selfpaced treadmill walking in VR environment C:Self Placed Overground Platform walking Duration: E: 9 minutes (6 min familrization time + 3 minutes of testing) C: NR	E vs C: Gait speed (+exp) cadence (-) Step Width (+exp) Step length paretic (+exp) non paretic (+exp) Stance phase paretic (+exp) non paretic (+exp) Swing phase paretic (+exp) non paretic (+exp) Double Limb Support (+exp) Single Limb Support paretic (+exp) non-paretic (+exp) Step length symmetry (-) Stance phase symmetry (-) Swing phase symmetry (-)
Brauer et al. (2022) RCT (8) Nstart=119 Nend=108 TPS=Acute A + B vs 0	E: Treadmill training + Self- management education C: Conventional gait training Duration: Experimental group: Treadmill + self management education (30 mins/d, 3ds/wk, 8wks) and usual gait training (30 mins/d, 2ds/wk, 8wks). Control group:	E vs C: 10 meter walk test preferred speed (-) fast speed (-) 6 minute walk test (-) VO2 peak(-) Lipid profile

	Usual gait training (30 mins/d, 2ds/wk, 8wks)	LDL (-) TC (-) HDL (-) C-Reactive protein (-) Hospital axiety and depression scale (-) Ambulatory self-confidence questionnaire (-) Physical activity scale for individuals with disabilities (-) Impact on participation and autonomy (-) EuroQual-5D (-)
Aguiar et al. (2020) RCT (7) Nstart=22 Nend=18 TPS=Chronic A vs B	E: Aerobic Treadmill Training (at 60-80% of heart rate reserve) C: Outdoor Overground Walking (below 40% of heart rate reserve) Duration: 40min, 3d/wk, for 12wks	E vs C: Physical Activity Levels Energy Expenditure (-) Human Activity Profile (-) Time Spent in Low-energy Expenditure Activities (-) Stroke-Specific Quality of Life Scale (-) Stroke Impact Scale (-) 10-Meter Walk Speed Test (-) Incremental Shuttle-Walk Test (-) 6-Minute Walk Distance Test (-) Patient Health Questionnaire 2 and 9 (-) VO2 Peak (-) VO2 Ventilatory Threshold (-)
Bonnyaud et al. (2014b) RCT (7) Nstart=56 Nend=56 TPS=Chronic A vs B	E: Treadmill training C: Overground gait training (on a 50-m-long corridor with turns) Duration: 20min single session	E vs C: Timed Up and Go (-)
Bonnyaud et al. (2013a) RCT (4) Nstart=26 Nend=26 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground gait training C: Treadmill gait training Duration: 20min, single session	E vs C: Gait Speed (-) Gait Cadence (-) Single limb support phase paretic (-) non-paretic (-) Step length paretic (-) non-paretic (-) Peak hip flexion/extension (-) Peak knee extension/flexion (-) Peak ankle dorsi/plantar flexion (-) Vertical ground reaction force Total support phase-both sides (-) single support phase-both sides (-) Peak propulsion-both sides (-) Peak braking-both sides (-)
Park et al. (2013b) RCT (4) Nstart=40 Nend=40 TPS=Chronic	E: Treadmill training C: Overground gait training Duration: 60min/d, 5d/wk, for 2wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Berg Balance Scale (-)

A vs B		
Langhammer & Stanghelle (2010) RCT (8) Nstart=40 Nend=34 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E1: Treadmill training + Rehabilitation program E2: Overground gait training + Rehabilitation program Duration: 30min/d, 5d/wk, treadmill or overground gait & 3hr & 50min/d, 5d/wk, rehabilitation program	E1 vs E2: 6-minute walk test (+exp) 10-meter walk test (+exp) Stride length right leg (+exp) Stride length left leg (+exp) step width (+exp) cadence (-) pulse at rest (-) pulse in activity (-)
BWS Treadmill Training vs Conventional Therapy		
Tarihci Cakmak et al. (2024) RCT (5) Nstart=33 Nend=30 TPS=Subacute A vs 0	E: Bodyweight-supported treadmill training + Conventional rehab C: Conventional rehab Duration: 60min (30min BWSTT + 30min CT)/d, 5d/wk, 3wks	E vs C: 10MWT comfortable speed (+exp) 10MWT fast (-) 6MWT (-) Tinetti balance (-) gait (-) total (-) TUG (+exp) Rivermead mobility index (-) SS-QOL (-)
Duran et al. (2023) RCT (7) Nstart=39 Nend=39 TPS=Chronic A vs B vs 0 Also in Table 20 (Aquatic Therapy)	E1: anti gravity treadmill E2: underwater walking therapy C: Conventional therapy Duration: 45min/d, 3d/wk, 4wks	E1 vs C vs E2: BI(-) BBS(-) 6MWT RestingHR(-) MaxHR(+exp1) Walking distance(+exp1) Borg scale(-) Cycle ergometer Resting HR(-) MaxHR(+exp1) test duration(+exp1) borg scale(-) MET level(+exp1) VO2 max(+exp1)
Banjara et al. (2022) RCT (5) Nstart=50 Nend=40 TPS=Chronic A vs 0	E: Body weight-supported treadmill training + Conventional gait therapy C: Conventional gait training Duration: 60min (30min treadmill + 30min gait training)/d, 5d/wk, 6wks	E vs C: FAC (+exp) step length paretic (-) non-paretic (+exp) 10MWT (-)
Ramakrishna et al. (2021) RCT (5) Nstart=20 Nend=20 TPS=Acute A vs 0	E: BWS treadmill training + conventional physiotherapy C: Conventional physiotherapy Duration: 30-45min/d, 3d/wk, for 4wks conventional PT & 30min/d, 3d/wk, for 4wks treadmill training	E vs C: 10-meter walk test (+exp)
Lura et al. (2019) RCT (5)	E: BWS treadmill training + regular physiotherapy	E vs C: Stride length (-)

Nstart=41 Nend=38 TPS=Acute A vs 0	C: Conventional gait training + regular physiotherapy Duration: Not reported	Step width (-) Step Asymmetry (-) Gait Speed (+exp) Functional Independence Measure (-)
Nave et al. (2019) RCT (6) Nstart=200 Nend=167 TPS=Acute A vs B	E: BWS treadmill training (Aerobic) + Standard care C: Standard care + Relaxation (sham) Duration: 50min/d, 5d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) Barthel Index (-) 6-Minute Walk Test (+exp) Rivermead Mobility Index (-) Modified Rankin Scale (-) Steps per day (-) Step length (-) Cadence (-) Box and block test (-) Medical Research Council Scale (-) Resistance to passive movement (-) Functional ambulation category (-) Gait energy cost (-) EQ-5D (-) Center for Epidemiologic Studies Depression Scale (-) Pittsburgh Sleep Quality Index (-) Montreal Cognitive Assessment (-) Trail Making Test (-)
Sukonthamarn et al. (2019) RCT (8) Nstart=31 Nend=29 TPS=Subacute A vs 0	E: Anti-gravity treadmill training + Conventional physiotherapy C: Conventional physiotherapy Duration: 2h 30min/d, 5d/wk, for 4wks	E vs C: 6-Minute Walk Test (-) Functional Ambulatory Category (-) Path length from computerized balance test Eyes closed (+exp) Eyes open (-) Maximum voluntary isometric contraction (-)
Mustafaoglu et al. (2018) RCT (7) Nstart=45 Nend=45 TPS=Chronic A1 vs A2 vs 0	E1: BWS treadmill training E2: BWS treadmill training + Conventional care C: Conventional training Duration: 45min/d, 2d/wk for 6wks BWS treadmill training & 45min/d, 5d/wk for 6wks Conventional training	E1 vs E2: Berg Balance Scale (+exp2) Affected side single leg stance test (+exp2) Non-affected side single leg stance test (+exp2) Timed Up and Go Test (+exp2) Falls Efficacy Scale-International (+exp2) Rivermead Mobility Index (-) Comfortable 10-m Walk Test (-) Stair Climbing Test (+exp2) E1/E2 vs C: Berg Balance Scale (+exp2) Affected side single leg stance test (+exp1, +exp2) Non-affected side single leg stance test (+exp1, +exp2) Timed Up and Go Test (+exp1, +exp2) Falls Efficacy Scale-International (+exp2) Rivermead Mobility Index (+exp2) Comfortable 10-m Walk Test (+exp2) Stair Climbing Test (+exp2)

Takao et al. (2015) RCT (4) Nstart=18 Nend=18 TPS=Chronic A + B vs 0	E: Treadmill training + BWS C: Conventional rehabilitation Duration: 20min/d, 3d/wk for 4wks	E vs C: Gait speed (+exp) Step length (-) Cadence (-) Timed Up and Go (-)
Mackay-Lyons et al. (2013) RCT (8) Nstart=50 Nend=45 TPS=Acute A vs 0	E: Bodyweight supported treadmill training C: Usual care Duration: 60min/d, 5d/wk for 6wks, then 60min/d, 3d/wk for 6wks	E vs C: VO2 Peak (+exp) 6-minute walk test (+exp) 10-m walk (-) Berg Balance Scale (-) Chedoke-McMaster Stages of Recovery Leg (-) Foot (+exp)
Yang et al. (2010) RCT (7) Nstart=18 Nend=18 TPS=Subacute A + B vs 0	E: Treadmill training + BWS C: Conventional rehabilitation Duration: E: 30min/d, 3d/wk, 4wks BWS treadmill training + 20min/d, 3d/wk, 4wks general exercise & C: 50min/d, 3d/wk, 4wks general exercise	E vs C: For subacute group motor threshold (+exp) Fugl-Meyer Assessment (+exp) Map Size of the abductor hallucis muscle in the ipsilesional hemisphere (+exp) For chronic group motor threshold (-) Fugl-Meyer Assessment (+exp) Map Size (+exp)
Yen et al. (2008) RCT (7) Nstart=14 Nend=14 TPS=Chronic A vs 0	E: Treadmill training with BWS + general physical therapy C: General physical therapy Duration: 50min/d, 2-5d/wk, for 4wks general physical therapy & 30 min/d, 3d/wk, for 4wks BWS	E vs C: Berg balance scale (-) Motor Threshold Tibialis Anterior- unaffected (+exp) Abductor Hallucis (-) Gait Parameters Speed (+exp) Cadence (-) Step length (+exp) Map size Tibialis Anterior (-) Abductor Hallucis-affected (+exp)
Eich et al. (2004) RCT (8) Nstart=50 Nend=50 TPS=Subacute A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: BWS Treadmill + Bobath physiotherapy C: Bobath physiotherapy Duration: 60min/d, 5d/wk for 6 wks	E vs C: Rivermead Motor Assessment (-) Walking Quality (-) 10-m Walk Test (Max Speed) (+exp) 6-m Walk Test (+exp)
Da Cunha et al. (2002) RCT (4) Nstart=15 Nend=13 TPS=Acute A vs 0	E: BWS treadmill training + Conventional rehabilitation C: Conventional rehabilitation Duration: 180min/d until discharge (about 3wks)	E vs C: Functional Ambulation category (-) 5m Walk test endurance (-) Speed (-) Gait energy (Vo2) expenditure (-) Gait energy cost (-)

Teixeira da Cunha Filho et al. (2001) RCT (4) Nstart=15 Nend=12 TPS=Acute A vs 0	E: Supported treadmill walking training + Regular rehabilitation C: Regular rehabilitation Duration: 180min/d, 5d/wk, for 2-3wks Regular rehabilitation, 20min/d, 5d/wk, for 2-3wks Treadmill training	E vs C: functional ambulatory category(-) O2 consumption (+exp) heart rate (-) systolic/diastolic blood pressure (-) workload (-) total time pedalling (-) functional independence measure (locomotor) (-)
BWS Treadmill Training vs Overground Walking		
Gangopadhyay et al. (2021) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs B	E: BWS treadmill training+ conventional rehabilitation C: Overground gait training + conventional rehabilitation Duration: 20min/d BWST/overground gait training & 40min/d conventional rehabilitation, 3d/wk for 4wks	E vs C: Timed Up and Go (+exp) Gait Cadence (+exp) 10-meter Walk test (+exp) Berg Balance scale (+exp)
Gama et al. (2017) RCT (6) Nstart=32 Nend=28 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground walking with BWS C: Treadmill training with BWS Duration: 45min/d, 3d/wk, for 6wks	E vs C: 10-Meter Walk Test (-) 6-Minute Walk Test (-) Functional Independence measure (-) Fugl-Meyer Assessment Lower Extremity (-) Step length (-) Step length symmetry ratio (+exp) Single limb support duration (-)
DePaul et al. (2015) RCT (8) Nstart=71 Nend=64 TPS=Chronic A vs B	E: Body-weight-supported Treadmill training C: Motor-learning-science- based Overground walking Duration: 60min/d, 3d/wk, for 5wks	E vs C: 5-m walk test comfortable (-) fast (-) 6-Minute Walk Test (-) Functional Balance Test (-) Activities-Specific Balance Confidence Scale (-) Life Space Assessment (-) Stroke Impact Scale ADL (-) Mobility (-) Participation (-) global recovery (-)
Mao et al. (2015) RCT (5) Nstart=29 Nend=24 TPS=Subacute A vs B	E: Body-weight-supported treadmill training C: Overground gait training Duration: 60min/d, 5d/wk for 3wks	E vs C: Fugl-Meyer assessment (-) Brunel balance assessment scale (-) Kinematic parameters Hip flexion (+exp) ankle dorsiflexion (-) hip extension (+exp) knee extension (-) ankle plantar flexion (-) Kinetic parameters Hip flexion (+exp) Knee flexion (-) Ankle dorsiflexion (-) Knee extension (-)

		Ankle plantar flexion (-) Spatiotemporal parameters cadence (+exp) stride length (-) stride time (-) step length (-) step time (-) gait speed (+exp)
Combs-Miller et al. (2014) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Body weight-supported treadmill training C: Overground walking training Duration: 30min/d, 5d/wk for 2wks	E vs C: 10m Walk test fast subscale (-) 10m Walk test comfortable subscale (+con) 6min Walk test (-) Step length (-) stance time symmetry (-) Swing time symmetry (-) ICF Measure of Participation and ACTivities activities (-) participation (-)
Middleton et al. (2014) RCT (6) Nstart=50 Nend=38 TPS=Chronic A + B vs C + B	E: Treadmill training with body- weight support + customized PT exercises (Balance, Strength, ROM) C: Overground gait training + customized PT exercises (Balance, Strength, ROM) Duration: 1hr gait training (treadmill/overground walking) + 2hr other exercises, 5d/wk, for 2wks	E vs C: Step length differential (-) 3m Walk test Self-selected (-) Fast walking speed (-) 6min Walk test (-) Berg Balance Scale (-) Dynamic gait index (-) Activities-specific Balance Confidence scale (-) Single limb stance (-) Timed Up & Go Test (-) Fugl-Meyer Assessment-lower extremity (-) Stroke Impact Scale (-)
Hoyer et al. (2012) RCT (7) Nstart=60 Nend=60 TPS=Subacute A + B vs C	E: Treadmill training + BWS + Conventional functional training C: Intensive gait training + conventional functional training Duration: 1h/d, 5d/wk for 4wks	E vs C: Functional Ambulation Category (-) EU walking (-) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Functional Independence Measure Shorter transfer (-) Stairs (-)
Ada et al. (2010) RCT (8) Nstart=126 Nend=120 TPS=Acute A + B vs C	E: Treadmill training + BWS via overhead harness C: Overground gait training Duration: 30min/d, 5d/wk until independent walking or discharge	E vs C: Walking 15 meters independently (-)
Dean et al. (2010) RCT (8) Nstart=126 Nend=119 TPS=Acute A vs B	E: BWS treadmill training + Conventional rehabilitation C: Assisted overground walking + Conventional rehabilitation Duration: 30min/d, 5d/wk, until discharge or independent walking	E vs C: 10-metre Walk Test (-) 6-min Walk Test (+exp) Walking Perception (+exp) Adelaide Activities Profile (-) Number of Falls (-)

Franceschini et al. (2009) RCT (6) Nstart=102 Nend=85 TPS=Acute A vs B	E: Treadmill training with BWS + Conventional care C: Overground gait training + Conventional care Duration: E: 1h/d (20min treadmill training + 40min conventional care), 5x/wk, 4 wk C: 1h/d conventional care, 5x/wk, 4 wk	E vs C: Motricity index (-) Trunk Control test (-) Barthel index (-) Functional Ambulation category (-) Ashworth scale (-) Token test (-) Albert test (-) Proprioception of lower limb (-) 10m Walk test (-) 6-minute walk test (-) Borg scale (-)
Suputtitada et al. (2004) RCT (5) Nstart=48 Nend=48 TPS=Chronic A + B vs C	E: Treadmill training + Partial BWS C: Overground gait training Duration: 25min/d, 5d/wk for 4wks	E vs C: 10-Meter Walk Test (-) Berg Balance Scale (-)
Nilsson et al. (2001) RCT (7) Nstart=73 Nend=66 TPS=Acute A + B vs C	E: Treadmill training + BWS + Physical therapy C: Overground gait training + Physical therapy Duration: 30min/d, 5d/wk, during inpatient stay (3-19wks) Physical therapy 30min/d, 5d/wk during inpatient stay (3- 19wks) Treadmill training/Overground training	E vs C: 10-Metre Walk Test (-) Berg Balance Scale (-) Functional Ambulation Categories (-) Fugl-Meyer Assessment (-) Functional Independence Measure (-)
Kosak & Reding (2000) RCT (4) Nstart=56 Nend=56 TPS=Subacute A vs B	E: Treadmill training with partial BWS + Conventional physical therapy C: Overground bracing-assisted gait training + Conventional physical therapy Duration: 45min/d, 5d/wk, for upto 6wks Conventional care, 45min/d, 5d/wk, for upto 6wks treadmill/overground training	E vs C: 2-min Walk Test (-) Overground and Gait Endurance (-)
BWS Treadmill Training vs Treadmill Training		
Calabro et al. (2020) RCT (7) Nstart=50 Nend=50 TPS=Chronic A vs B	E: Treadmill training using lower body positive pressure support system (AlterG) C: Treadmill gait training Duration: 40min/d, 6d/wk for 4wks	E vs C: Functional Ambulatory Category (-) Step time (+exp) Stance/ swing ratio (+exp) Gait cadence (+exp) Gait Quality Index (+exp) Root-mean-square (RMS) amplitude of LE muscles (+exp)
Ullah et al. (2017) RCT (3) Nstart=50 Nend=50 TPS=Not reported A1 vs A2	E: Treadmill training with BWS C: Treadmill Training Duration: 15min/d, 4d/wk, for 6wks	E vs C: 10-Meter Walk Test (+exp) Dynamic Gait Index (+exp) Timed Get Up and Go Test (+exp)
Srivastava et al. (2016) RCT (6) Nstart=45 Nend=41 TPS=Chronic	E1: Treadmill training + BWS + conventional care E2: Treadmill training + conventional care C: Conventional gait training + conventional care	E1 v E2 v C: 10-Meter Walk Speed (-) Walking Endurance (-) Scandinavian Stroke Scale (-) Functional Ambulation category (-)

A + B vs A vs 0	Duration: 40min/d, 5d/wk for 4wks routine rehabilitation & 30min/d, 5d/wk for 4wks treadmill/Gait training	
Lee et al. (2015f) RCT (6) Nstart=72 Nend=61 TPS=Subacute A vs B	E: High-speed treadmill training with partial BWS + conventional intervention C: Progressive treadmill training + conventional intervention Duration: 60min/d, 3d/wk, for 5wks (20 sessions total)	E vs C: Timed up and go test (+exp) 10-m walk test (+exp) 6-minute walk test (+exp) Step length (+exp) Step width (-) Cadence (+exp)
Visintin et al. (1998) RCT (5) Nstart=100 Nend=79 TPS=Subacute A1 vs A2	E: Treadmill training with BWS C: Treadmill training Duration: 20min/d, 4d/wk, for 6wks	E vs C: Berg Balance Scale (+exp) Stroke Rehabilitation Assessment of Movement (+exp) 10-m walk test (+exp) Walking endurance (+exp)
BWS Treadmill Training with Mobility Skills vs BWS Treadmill Training		
Graham et al. (2018) RCT (5) Nstart=39 Nend=29 TPS=Chronic A vs B	E: BWS treadmill training with challenging mobility skills C: BWS treadmill training without challenge Duration: 30min/d, 3d/wk, for 6wks	E vs C: 10-m walk Comfortable walking speed (-) Fast walk speed (-) Six-minute walk distance (-) Berg Balance Scale (-) Activities Specific Balance Confidence scores (-)
BWS Treadmill Training with Cycle Ergometry or Resistive Training		
Sullivan et al. (2007) RCT (7) Nstart=80 Nend=71 TPS=Chronic A vs B vs C vs D Also in Table 8 (Cycle Ergometer Training)	E1: BWS treadmill with upper extremity ergometry training E2: Resistive leg cycling with upper extremity ergometry training. E3: BWS treadmill with resistive leg cycling training. E4: BWS treadmill with lower extremity progressive resistive exercise. Duration: 60min/d, 4d/wk for 6wks	E1 vs E2: Self-selected walking speed (+exp1) Fast walking speed (+exp1) 6-minute walk test (-) Peak torque (-) E1 vs E3 vs E4: Self-selected walking speed (-) Fasting walking speed (-) 6-minute walk test (-) Composite torque (-)
BWS Treadmill Training with Facilitation Technique vs BWS Training with Mechanical Assistance		
Yagura et al. (2006) RCT (6) Nstart=49 Nend=47 TPS=Subacute A1 vs A2	E: BWS treadmill training with facilitation technique + physical therapy C: BWS treadmill training with mechanical assistance + physical therapy Duration: 20min/d, 3d/wk, for 6wks BWSTT, 20min/d, 5d/wk, for 6wks PT	E vs C: Fugl-Meyer Assessment (-) 10m Gait speed (-) stride (-) Cadence (-) Functional Independence Measure total (-) gait (-) motor (-)
BWS Treadmill Training for Different Durations vs Home Exercise		
Duncan et al. (2011) RCT (7) Nstart=408 Nend=362	E1: Early Treadmill training with BWS (2mo post-stroke) E2: Late Treadmill training with BWS (6mo post-stroke)	E vs C: 10 metre walk test (No stats) 6 minute walk test (No stats)

TPS=Chronic A1 vs A2 vs B	C: Home-based exercise program (2mo post-stroke) Duration: 90min/d, 3d/wk for 12- 16wks	Step Activity Monitor/ Number of steps per day(No stats) Fugl-Meyer Assessment (No stats) Berg Balance Scale (No stats) Stroke Impact Scale ADL-IADL (No stats) Participation (No stats) Mobility (No stats) Activities Specific Balance Confidence Scale (No stats)
Treadmill Training with Nordic Poles vs Treadmill Training		
Kang et al. (2016) RCT (4) Nstart=30 Nend=30 TPS=Chronic A + B vs A	E: Treadmill training + Nordic poles C: Treadmill training Duration: 30min/d, 5d/wk, for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go (+exp) Static standing balance (+exp) 10-Metre Walk Test (-) 6-Minute Walk Test (+exp) Modified Barthel Index (+exp)
Shin et al. (2015) RCT (5) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Treadmill training with arm swings using Nordic poles C: Treadmill training with arms fixed Duration: 30min/d, 3d/wk for 4wks	E vs C: 6-Minute Walk Test (+exp) Dynamic Gait Index (+exp) Timed Up & Go Test (-)
Treadmill Training with Load vs Treadmill Training without Load or Conventional Therapy		
Kim & Yim (2017c) RCT (5) Nstart=30 Nend=29 TPS=Chronic A + B vs 0 vs C	E: Power web hand exerciser + treadmill-based weight loading C: Conventional therapy Duration: E: 60min/d conventional care + 90min/d handgrip and treadmill training, 3d/wk, for 6wks C: 60min/d conventional care, 3d/wk, for 6wks	E vs C: Montreal Cognitive Assessment-Korean version (+exp) Trail making test-A (-) B (-) Stroop test Simple (-) Interference (-) Handgrip strength: Unaffected side (-) Affected side (-) 10m Walk test (+exp) Timed Up and Go (+exp)
de Lima Gomes et al. (2017) RCT (5) Nstart=13 Nend=13 TPS=Chronic A vs 0	E: Treadmill gait training with load placement C: Conventional treatment Duration: 20min/d, 2d/wk, for 6wks	E vs C: Modified Ashworth scale (No stats) Fugl-Meyer assessment (-) Timed Up and Go (No stats) Postural stroke scale (-) Barthel index (No stats) 10 MWT (-) Number of steps (-) Activity-specific balance confidence (-)
Ribeiro et al. (2017) RCT (7) Nstart=38 Nend=36 TPS=Subacute A vs B	E: Treadmill training with load on the non-paretic ankle and home exercises C: Treadmill training without load and home exercises Duration: 30min/d, 9sessions/2wks	E vs C: Gait speed (-) Symmetry ratio of swing time (-) Range of motion nonparetic ankle (-) paretic ankle (-)

		nonparetic hip (-) paretic hip (-) nonparetic knee (-) paretic knee (-) Step length paretic (-) nonparetic (-)
Park et al. (2014c) RCT (4) Nstart=30 Nend=30 TPS=Chronic A + B vs A	E: Treadmill training + Incremental leg loading C: Treadmill training Duration: 30min/d, 5d/wk, for 8wks	E vs C: Centre of pressure (-) Sway Length (-)
Treadmill Training with Incline vs Treadmill Training with Decline or Level Treadmill Training		
Cheng et al. (2022) Feasibility/pilot RCT (8) Nstart=18 Nend=17 TPS=Chronic A + B vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Inclined treadmill training + overground walking C: Regular treadmill training + overground walking Duration: 35 mins/d (30 mins of treadmill therapy + 5 minutes of overground gait training); 2-3ds/wk, 4-6 wks (TOTAL 12 SESSIONS)	E vs C: Ankle movement during gait Dorsiflexion angle at inital contact changes (+exp) Coefficient of variation of dorsiflexion at initial contact (-) Muscle activities during gait tibialis anterior at initial contact (+exp) tibialis anterio in swing phase (+exp) medial gastrocnemius in stance phase (+exp) Spasticity index changes (-) Muscle strength hip extensors (-) knee extensors (+exp) Ankle dorsiflexors (-) Ankle plantarflexors (-) gait velocity (-) cadence (+exp) stride length (-) stair climbing unaffected leg leading (-) affected leg leading (+exp)
Gama et al. (2015) RCT (6) Nstart=28 Nend=28 TPS=Chronic A1 vs A2	E: Partial BWS treadmill training at 10% of inclination C: Partial BWS treadmill gait training with no inclination Duration: 20min/d, 3d/wk, for 4wks	E vs C: Gait speed (+exp) Cadence (-) Stride length (-) Step length paretic (+exp) non paretic (-) Stance time paretic (-) non paretic (-) Double stance time (-) Swing time paretic (-) non paretic (-) Symmetry ratio (-) Fugl-Meyer Assessment (-)

		Berg Balance Scale (-) Functional Independence Measure (-)
Carda et al. (2013) RCT (5) Nstart=38 Nend=38 TPS=Chronic A1 vs A2	E: Treadmill training on incline + Physical therapy C: Treadmill training on decline + Physical therapy Duration: 45min PT + 30min treadmill/d, 5d/wk for 6wks	E vs C: 6-min Walk Test (+con) 10m Walk Test (+con) Timed Up and Go (-)
Treadmill Training with Increased Speed vs Treadmill Training with Increased Incline		
Alipsatici et al. (2020) RCT (5) Nstart=30 Nend=28 TPS=Chronic A1 vs A2	E: Treadmill Training with Increased Speed + Conventional Treatment C: Treadmill Training with Increased Incline + Conventional Treatment Duration: 30min/d conventional exercise + 15min/d conventional stimulation + 30min/d treadmill, 3d/wk, for 8wks	E vs C: 6-M Walk Test (+exp) 10-M Walk Test (+exp) Stride Length (+exp) Cadence (+exp) Berg Balance Scale (-) Beck Depression Inventory (-)
Constraint Induced Movement with Home Exercise vs Treadmill Training		
Silva et al. (2017) RCT (8) Nstart=38 Nend=36 TPS=Subacute A + B vs A Also in Table 6 (Constraint-Induced Movement Therapy (CIMT))	E: Constraint induced movement training on treadmill + home exercises C: Treadmill training Duration: 30min/d for 9d Treadmill training (constraint/ no constraint)	E vs C: Berg Balance Scale (-) Timed Up and Go Test (-) Turn Speed (-) Stride Length (-) Stride Time (-) Stride Width (-) Symmetry Ratio of Swing Time (-)
Treadmill Training with Foot Drop Stimulator vs Foot Drop Stimulator		
Peishun et al. (2021) RCT (4) Nstart=60 Nend=60 TPS=Subacute A + B vs A Also in Table 28 (Functional Electrical Stimulation)	E: Foot drop stimulator + treadmill training + Basic rehabilitation training C: Foot drop stimulator training + Basic rehabilitation training Duration: 30min/d, 5d/wk, for 3wks	E vs C: Hip flexion (+exp) Knee flexion (+exp) Ankle flexion (+exp) EMG (+exp) Pace (+exp) Step length asymmetry (+exp) Modified Ashworth Scale (+exp) Functional Ambulation Classification (+exp)
Perturbation Treadmill Training vs Treadmill Training		
Krause et al. (2024) RCT (5) Nstart=54 Nend=46 TPS=Chronic A1 vs A2 vs A3	E1: Treadmill (pertubative forces); E2: Treadmill (assisitive forces) C: Treadmill (minimal force) Duration: 30min/d, 2d/wk, 12 wks (24 sessions)	E1 vs E2 vs C: Paretic step width paretic foot placement and pelvis displacement functional gait assessment Activities-Specific Balance Confidence scale Self-selected overground walking speed Self-selected treadmill walking speed
Esmaeili et al. (2020) RCT (6) Nstart=21 Nend=18 TPS=Chronic A vs B	E: Perturbation treadmill training group C: Non-perturbation treadmill training group Duration: 35-70min, 3d/wk, for 3wks	E vs C: Mini-BESTest (+exp) 10m Walk test Comfortable speed (-) Fast speed (-) Knee extensors maximal strength

Also in Table 11 (Balance Training)		Non paretic (-) Paretic (-) Activities-specific Balance Confidence scale (-) Reintegration to Normal Living Index (-)
Turning Treadmill Training vs Treadmill Training		
Chen et al. (2014) RCT (7) Nstart=32 Nend=30 TPS=Chronic A vs 0	E: Turning-based treadmill training + general exercise C: Regular treadmill training + general exercise Duration: 30min/d, 3d/wk for 4wks treadmill & 10min/d, 3d/wk for 4wks general exercise	E vs C: Turning speed Affected side (+exp) Unaffected side (+exp) Walking speed (+exp) Stride length (-) Cadence (-) Temporal asymmetry ratio (+exp) Spatial asymmetry ratio (-) Berg Balance Scale (+exp) Limits of stability reaction time Forward (+exp) Backward (-) Affected side (-) Unaffected side (-) Limits of stability endpoint excursion Forward (+exp) Backward (-) Affected side (-) Unaffected side (-) Sensory Organization Test Condition 1 (-) Condition 2 (-) Condition 3 (-) Condition 4 (-) Condition 5 (+exp) Condition 6 (-) Muscle strength Hip flexors (+exp) Hip extensors (+exp) Hip abductors (+exp) Knee flexors (-) Knee extensors (-) Ankle dorsiflexors (+exp) Ankle plantarflexors (-)
Treadmill Training with Mirror Therapy vs Treadmill Training		
Broderick et al. (2019) RCT (6) Nstart=30 Nend=23 TPS=Chronic A + B vs A Also in Table 19 (Mirror Therapy)	E: Treadmill Training + Mirror Therapy C: Treadmill Training + Sham Duration: 30min, 3d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Ashworth Scale Hip flexion (-) Hip extension (-) Hip abduction (-) Hip adduction (-) Knee flexion (-) Knee extension (-) Ankle dorsiflexion (+exp)

		Ankle plantarflexion (+exp) Fugl-Meyer Assessment (-)
Treadmill Training with Proprioceptive Neuromuscular Facilitation vs Treadmill Training		
Kim & Kang (2018c) RCT (4) Nstart=27 Nend=27 TPS=Chronic A + B vs A Also in Table 12 (Stretching or Mobilization Exercises); Table 13 (Orthotic Devices)	E: Treadmill training + Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) C: Sham taping + treadmill training Duration: 50min/d, 5d/wk, 6wks	E vs C: 6-minute walk test (+exp) 10-metre walking test (+exp) Timed up and go test (+exp)
BWS Treadmill Training vs Proprioceptive Neuromuscular Facilitation		
Ribeiro et al. (2013) RCT (5) Nstart=25 Nend=20 TPS=Chronic A + B vs C	E: Treadmill training + BWS C: Proprioceptive neuromuscular facilitation training Duration: 30min/d, 3d/wk for 4wks	E vs C: STREAM (-) Functional Independence Measure - motor (-) Stride length (-) Speed (-) Double-support time (-) Symmetry ratio (-) Max. hip extension (-) Max. hip flexion (-) Max. Knee flexion (-) Plantarflexion push off (-) Max. dorsiflexion (-) Ankle dorsiflexion during the swing phase (+exp1)
Treadmill Training with Obstacles vs Treadmill Training		
Jeong et al. (2016) RCT (7) Nstart=30 Nend=29 TPS=Chronic A1 vs A2	E: Treadmill walking training with obstacle-crossing C: Treadmill walking training Duration: 60 min/d, 5d/wk, for 4wks	E vs C: 10-Meter Walk Test (-) 6-Minute Walk Test (+exp) Berg Balance scale (+exp) Timed Up-and-Go (-) Activity-specific Balance Confidence (-)
Treadmill Training on Unstable Surface vs Treadmill Training		
Bang et al. (2014) RCT (5) Nstart=12 Nend=12 TPS=Chronic A + B vs A	E: Treadmill training + Unstable surface training C: Treadmill training Duration: 10min/d, 5d/wk, for 4wks Unstable Surface Training & 30min/d, 5d/wk Treadmill Training	E vs C: 6-Minute Walk Test (+exp) Timed Up & Go Test (+exp) 10-Meter Walk Test (-)
Treadmill Training with Handrails vs Treadmill Training		
Kang et al. (2015) RCT (4) Nstart=30 Nend=30 TPS=Chronic A + B vs A + C vs A	E1: Treadmill training + Front handrail E2: Treadmill training + Bilateral handrail C: Treadmill training (no handrail) Duration: 30min/d, 5d/wk for 8wks	E1 vs C: Plantar Foot Pressure Heel-lateral (+exp1) E2 vs C: Plantar Foot Pressure Heel-lateral (+exp2) Heel-medial (+exp2) Contact Area of Foot

		Rear Foot (+exp2)
Treadmill Training with Horizontal Force vs Treadmill Training		
Na et al. (2015) RCT (4) Nstart=24 Nend=24 TPS=Subacute A + B vs A	E: Treadmill training + Horizontal force C: Treadmill training Duration: 20min/d, 3d/wk for 8wks	E vs C: Gait Speed (+exp) Stride (+exp) step length (+exp) Cadence (+exp) Timed Up and Go Test (+exp) Berg Balance Scale (+exp) Functional Reach Test (-)
Treadmill Training with VR vs Other Training		
Timmermans et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training); Table 26 (Virtual Reality)	E1: Treadmill-based C-Mill (using gait-dependent augmented reality) E2: Overground walking therapy (walking-adaptability exercises with physical obstacles) Duration: 90min/d, 2d/wk for 5wks	E1 vs E2: 10m Walk test (-) Context (+exp) Context and Cognitive (-) Cognitive (-) Interactive walkway assessment Obstacles (-) Obstacles and cognitive (-) Cognitive dual-task performance (-)
Cho et al. (2014) RCT (7) Nstart=32 Nend=30 TPS=Chronic A1 vs A2	E: Treadmill training based real- world video recording + standard rehabilitation C: Treadmill training + Standard rehabilitation Duration: 30min/d, 3d/wk for 6wks treadmill trainings; 80min/d, 5d/wk, for 6wks standard rehabilitation program	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Postural sway velocity (-) Gait speed (+exp) Cadence (+exp) Stride length (+exp) Paretic side-step length (+exp) Single time support (+exp) Double time support (+exp)
Cho et al. (2013c) RCT (7) Nstart=16 Nend=14 TPS=Chronic A vs B Also in Table 26 (Virtual Reality)	E: Virtual walking training (VR) + standard rehabilitation program C: Treadmill gait training + standard rehabilitation Duration: 140mins/d, 5d/wk, 6 wks standard rehabilitation & 30mins/d, 3d/wk, 6 wks Treadmill gait training with/without VR	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Gait velocity (+exp) Gait cadence (+exp) Step length (-) Stride length (-) Single limb support (-)
Treadmill Training with Smartphone Application vs Treadmill Training		
Lee et al. (2017a) RCT (6) Nstart=36 Nend=34 TPS=Chronic A vs B	E: Treadmill training using Virtual Active, a smartphone application used for speed-interactive training C: Standard treadmill training Duration: 35min/d, 3d/wk, for 6wks	E vs C: Velocity (+exp) Cadence (+exp) Stride time (+exp) Step Time (+exp) double-limb support (+exp) single-limb support total (+exp) Stride length (+exp Step length(+exp) step width (-) Gait symmetry (-)

Treadmill Training with Visual Deprivation vs Treadmill Training		
Kim et al. (2014a) RCT (5) Nstart=24 Nend=24 TPS=Chronic A1 vs A2	E: Treadmill training sideways with visual deprivation + Conventional Rehabilitation C: Treadmill training sideways + Conventional Rehabilitation Duration: 20min/d, 3d/wk for 6wks	E vs C: Gait speed (+exp) Stance time (+exp) Walking distance (-) Step length (-) Timed Up & Go (-) Five Times Sit-to-Stand Test (-)
Backward Treadmill Training vs Standard Treadmill or Conventional Rehabilitation		
Bansal et al. (2023) RCT (6) Nstart=18 Nend=18 TPS=Chronic A1 vs A2	E: Backwards treadmill walking C: Forwards treadmill walking Duration: 40min/d, 3d/wk, 6wks	E vs C: 10MWT(-) 3MBWT(-) FGA(-) ABC(-) FMA-LE(-)
Chang et al. (2021) RCT (6) Nstart=16 Nend=16 TPS=Chronic A vs 0	E: Walking backward on a treadmill + Physical therapy C: Conventional physical therapy Duration: 30 min PT, 30min treadmill, 3d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go (+exp) 6 minute walk test (-) 10 meter walk test (+exp) Pulmonary function test: -Forced vital capacity (-) Forced expiratory volume in one second (+exp)
Munari et al. (2020) RCT (8) Nstart=18 Nend=18 TPS=Chronic A + B vs B Also in Table 46 (Botulinum Toxin)	E: Backward treadmill training + botulinum toxin type A therapy C: Standard forward treadmill training + botulinum toxin type A therapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: 10-meter walking test (+exp1) Modified Ashworth scale (-) Step length (-) Stride length (-) Cadence (-) Stabilometric assessment Length CoP eyes open (+exp1) Sway area eyes open (+exp1) Length CoP eyes closed (+exp1) Sway area eyes closed (+exp1)
Kim et al. (2017b) RCT (7) Nstart=35 Nend=30 TPS=Chronic A1 vs A2	E: Progressive Backward BWS Treadmill Training C: Treadmill training Duration: 30min/d, 5d/wk for 4wks	E vs C: Paretic step length (+exp) Stride length paretic (+exp) Single support (-) Total double support (-) Paretic step time (+exp) Gait cycle (+exp) Cadence (+exp) Gait speed (-) Dynamic gait index (+exp) 6 min walk test (+exp)
Kim et al. (2014c) RCT (5) Nstart=36 Nend=36 TPS=Chronic A1 vs A2 vs A3	E1: BWS, backward and forward treadmill training E2: BWS, forward treadmill training E3: BWS, backward treadmill training Duration: 30min/d, 6d/wk for 3wks	E1 vs E2/E3: Symmetry Index (-) Step time (+exp1) Step length (+exp1) Stance phase (-) Swing phase (-)

		Single support (-)
Takami et al. (2010) RCT (4) Nstart=36 Nend=33 TPS=Acute A1 vs A2 vs 0	E1: Backward treadmill with partial BWS E2: Forward treadmill with partial BWS treadmill C: Conventional rehabilitation Duration: 40min, 6d/wk for 3wks	E1 vs C: Berg Balance Scale (-) Rivermead Mobility Index (+exp1) 10-Metre Walk Test (+exp1) Cadence (-) Step length (+exp1) E2 vs C: Berg Balance Scale (-) Rivermead Mobility Index (+exp2) 10-Metre Walk Test (-) Cadence (-) Step length (-) E1 vs E2: Berg Balance Scale (-) Rivermead Mobility Index (+exp1) 10-Metre Walk Test (-) Cadence (-) Step length (-)
Treadmill Training with Overground Training vs Home Exercise/ no treatment		
Ada et al. (2013) RCT (9) Nstart=102 Nend=98 TPS=Chronic A1 vs A2 vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E1: Long-term Treadmill and Overground Walking E2: Short-term Treadmill and Overground Walking C: No Intervention Duration: 30 min/d, 3d/wk, 8wks for short-term training and 16wks for long-term training	E1 vs C: 6-minute Walk Test (+exp1) 10-m Walk Test at comfortable speed Speed (+exp1) Step Length (-) Cadence (+exp1) 10-m Walk Test at Fast speed Speed (+exp1) Step Length (+exp) Cadence (-) EuroQol EQ-5D (+exp) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (-) Falls Rate (-) E2 vs C: 6-minute Walk Test (+exp2) 10-m Walk Test at comfortable speed Speed (-) Step Length (-) Cadence (-) 10-m Walk Test at Fast speed Speed (-) Step Length (-) Cadence (-) EuroQol EQ-5D (-) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (-) Falls Rate (-) E1 vs E2: 6-minute Walk Test (+exp1) 10-m Walk Test at comfortable speed Speed (-) Step Length (-)

		Cadence (-) 10-m Walk Test at Fast speed; - Speed (-) Step Length (+exp1) Cadence (-) EuroQol EQ-5D (+exp1) Adelaide Activities Profile (-) Walking Self-Efficacy Scale (+exp1)
Moore et al. (2010) RCT crossover (5) Nstart=30 Nend=20 TPS=Chronic A + B vs C Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Intensive locomotor training (BWS treadmill + overground walking) C: No training Duration: 2-5d/wk, for 4wks	E vs C: Fastest velocity (+exp) Self-selected velocity (-) 12-m walk test (-) VO2 Peak (-) peak treadmill speed (+exp) O2 Cost (+exp) Berg Balance Scale (-) Timed Up and Go (-)
Ada et al. (2003) RCT (7) Nstart=29 Nend=27 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training); Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Treadmill training and overground gait training C: Placebo program of low- intensity home exercise program + Telerehabilitation Duration: 30min/d, 3d/wk, for 4wks Treadmill and overground walking, 3d/wk, for 4wks Placebo program	E vs C: 6-Minute Walk Distance Test (+exp) 10-Metre Walk Speed Test (+exp) Stroke-adapted Sickness Impact Profile (SA-SIP30) (-) Step Length Affected Leg (+exp) Intact Leg (+exp) Step Width (-) Cadence (-)
High vs Low Intensity Treadmill Training		
Munari et al. (2018) RCT (8) Nstart=16 Nend=15 TPS=Chronic A1 vs A2	E: High intensity Aerobic treadmill training C: Low intensity Aerobic treadmill training Duration: 50-60min/d, 3d/wk, for 12wks	E vs C: 6-Minute Walk Test (+exp) 10-Metre Walk Test (+exp) Timed Up & Go (-) SF-36 (-) Stroke Impact Scale (-) Gait analysis Stride length (+exp) Step length non-paretic (+exp) Step length paretic (+exp) Cadence (+exp) Symmetry ratio (+exp) VO2 peak (+exp) Walking energy cost 50% of speed (-) 60% of speed (-) 80% of speed (-) 100% of speed (+exp)
Holleran et al. (2015) RCT crossover (4) Nstart=14 Nend=12 TPS=Chronic A1 vs A2	E: Aerobic training (treadmill, high intensity) C: Aerobic training (treadmill, low intensity) Duration: 45min/d, 3d/wk, for 4wks Washout: 4wk	E vs C: Self Selected Velocity (-) Fastest possible Velocity (-) 6-minute Walk Test (+exp) Peak Treadmill speed using modified graded treadmill (-) O2 cost per unit distance (-)

		Average Heart rate (-) VO2 Peak (-) Match (-)
Ivey et al. (2015) RCT (4) Nstart=51 Nend=34 TPS=Chronic A1 vs A2	E: High-intensity Aerobic treadmill training C: Low-intensity Aerobic treadmill training Duration: 30min/d - High- intensity, 50min/d - Low- intensity for 6mo	E vs C: VO2 peak (+exp) 6-minute walk distance (-) 30-ft walk times (-) 48-hour step counts(-)
Fast Speed Treadmill Training with FES vs Self-selected or Fast Speed Treadmill Training		
Awad et al. (2016) RCT (6) Nstart=50 Nend=45 TPS=Chronic A + B vs A1 vs A2 Also in Table 28 (Functional Electrical Stimulation)	E: Fast speed treadmill training + FES C1: Self-Selected Speed Treadmill Training C2: Fast Speed Treadmill Training Duration: 36 min (30min on treadmill + 6min overground walking)/session, 3d/wk, for 12wks	E vs C1/C2: 6-Minute Walk Test (-) Energy Cost at Comfortable Walking Speed (+exp) Energy Cost at Fast Walking Speed (+exp)
Speed Dependent Treadmill Training vs Other Treadmill Training		
Van Bladel et al. (2022) RCT crossover (7) Nstart=25 Nend=25 TPS=Chronic A1 vs A2 Also in Table 26 (Virtual Reality)	E: Self paced treadmill walking in VR environment C: Fixed speed treadmill walking in VR environment Duration: E: Total 9 min: 6 min for familirization + 3 min for self paced condition C: Total 9 min: 6 min for familirization + 3 min for fixed speed condition	E vs C: Velocity (+exp) Cadence (+exp) Step width (-) step length paretic (+exp) nonparetic (+exp) stance phase paretic (+exp) nonparetic (+exp) swing phase paretic (+exp), nonparetic (+exp) double limb support (+exp) single limb support (paretic (+exp) non paretic (+exp) step length symmetry (+exp) stance phase symmetry (-) swing phase symmetry (-)
Helm et al. (2019) RCT (7) Nstart=32 Nend=32 TPS=Chronic A1 vs A2	E: Variable speed treadmill training C: Constant speed treadmill training Duration: 15min/d, for 2d	E vs C: Step length asymmetry (-) Limb phase asymmetry (-)
Lau & Mak (2011) RCT (6) Nstart=30 Nend=26 TPS=Acute A1 vs A2	E: Speed Dependent Treadmill training + Conventional rehabilitation C: Steady speed treadmill training + conventional rehabilitation Duration: 30 treadmill training+ 90min conventional therapy/session, 5d/wk, 2wks	E vs C: Gait speed (+exp) Stride length (+exp) Cadence (-) Berg Balance Score (-)
Pohl et al. (2002) RCT (6) Nstart=69	E1: Structured speed- dependent treadmill training + Conventional therapy	E1 vs E2/C: 10-meter Walking test (+exp1) Cadence (+exp1)

Nend=60 TPS=Subacute A vs B vs 0	E2: Limited progressive treadmill training + Conventional therapy C: Conventional gait therapy + Conventional therapy Duration: 30min/d, 12d Limited progressive or Speed- dependent treadmill training, 45min/d, 8d Conventional therapy, 45min/d, 12d Gait training	Stride Length (+exp1) Functional Ambulation Category (+exp1) E2 vs C: 10-meter Walking test (+exp2) Cadence (+exp2) Stride Length (-) Functional Ambulation Category (+exp2)
Sullivan et al. (2002) RCT (5) Nstart=24 Nend=24 TPS=Chronic A1 vs A2 vs A3	E1: BWS treadmill training (slow speed) E2: BWS treadmill training (fast speed) E3: BWS treadmill training (variable speed) Duration: 20min/d, 3d/wk, for 4wks	E1 vs E2 vs E3: Self-selected overground 10-m walking speed (+exp2)
Speed-dependent Treadmill Training vs Task-oriented Training		
Sharma et al. (2014) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs B Also in Table 5 (Task-Specific Training)	E: Task-oriented training C: Speed-dependent treadmill training Duration: 30min/d, 3d/wk, 4wks	E vs C: Berg Balance Scale (-) Rivermead Mobility Index (-)
Error Augmentation Treadmill Training vs Treadmill Training		
Lewek et al. (2018) RCT (4) Nstart=48 Nend=37 TPS=Chronic A1 + B vs A2 + B vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E1: Error Augmentation treadmill training + Overground walking E2: Error Minimization treadmill training + Overground walking C: Conventional treadmill training + Overground walking Duration: 30-35min/session, for 18 sessions	E vs C: Step length asymmetry (-) stance time asymmetry (-) Step length (-) Gait speed (-)
Treadmill Training vs Stretching		
Serra et al. (2022) RCT (4) Nstart=51 Nend=39 TPS=Chronic A vs B	E: Aerobic treadmill rehabilitation C: Stretching and balance Duration: Experimental: 15-50 mins, 3ds/wk, 26 wks; Control: 50 mins/d, 2ds/wk, 26 wks	E vs C: VO2 peak (+exp) 6 minute walk test (+exp) Berg balance scale (+exp) dynamic gait index (-) TUG (-) gait speed usual (-) fast (-) Fatigue severity scale (-) Fasting plasma insulin (+exp) Homeostatic Model Assessment of Insulin Resistance (-) hs-CRP (-) IL-6 (-) nitrotyrosine (+exp) protein carbonyls (-) oxLDL (+exp)

		MDA (-) HNE Adducts (-)
Luft et al. (2008) RCT (5) Nstart=113 Nend=71 TPS=Chronic A vs B	E: Progressive task-repetitive Aerobic treadmill exercise C: Stretching program Duration: 40min, 3d/wk for 24wks	E vs C: Peak effort treadmill walking velocity (+exp) 6-minute walk test Overground (-) 10-metre walk test Overground (-) V02 peak (+exp) fMRI Brain activation Paretic limb Cerebellum anterior lobe (-) Cerebellum posterior lobe (+exp) Midbrain (+exp) Central gyrus (-) Supplementary motor area (-) Supramarginal gyrus (-) fMRI Brain activation Non Paretic limb Cerebellum anterior lobe (-) Cerebellum posterior lobe (-) Midbrain (-) Central gyrus (-) Supplementary motor area (-) Supramarginal gyrus (-) fMRI Voxel based (No stats)
Treadmill Training with Orthotic Devices vs Treadmill Training		
Park et al. (2024b) Feasibility/pilot RCT (7) Nstart=22 Nend=22 TPS=Chronic A vs B Also in Table 13 (Orthotic Devices)	E: Shoulder brace during treadmill training C: conventional treadmill training Duration: 40min/d(10min treadmill, 30min conventional), 5d/wk, 4wks	E vs C: Arm swing angle(+exp) Gait speed(+exp) Cadence(+exp) stride length(+exp)
In et al. (2017) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs A	E: Treadmill training + Thera- band C: Treadmill training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Fugl-meyer Assessment (+exp) Timed Up-and-Go (+exp) 10-Metre Walk Test (+exp) Performance-Oriented Mobility Assessment (+exp) Balance (-) Gait (+exp)
Electromechanical gait trainer vs Body weight-supported treadmill training		
Werner et al. (2002b) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E1: Electromechanical gait trainer therapy + Conventional rehabilitation E2: Body weight-supported treadmill training + Conventional rehabilitation Duration: 15-20min/d, 5d/wk for 6wks Interventions, 45min/d, 7d/wk, Conventional rehabilitation	E1 vs E2: Functional Ambulation Category (+exp) 10-m Gait velocity (-) Rivermead Motor Assessment (-) Modified Ashworth Score (-)
Treadmill Training with Action Observation vs Treadmill Training		
Bang et al. (2013) RCT (7) Nstart=30	E: Action observational training + Treadmill training	E vs C: Timed Up and Go test (+exp) 10m Walk test (+exp)

Nend=30 TPS=Chronic A + B vs B Also in Table 18 (Action Observation)	C: Sham action observational training + Treadmill training Duration: 40min/d, 5d/wk for 4wks	6min Walk test (+exp) Max Knee Angle in Swing Phase (+exp)
Additional Comparisons from the Source Dataset		
Chen et al. (2019b) RCT (7) Nstart=18 Nend=18 TPS=Chronic A1 vs A2	E: Circular treadmill training + ambulation training C: Regular treadmill training+ ambulation training Duration: 30min treadmill+ 10 min ambulation/session, 3x/d, 4wks	E vs C: Walking speed(+exp) temporal gait symmetry (+exp) EEG- EEG connectivity (+exp) EEG-EMG connectivity (+exp)
Hollands et al. (2015) RCT (5) Nstart=56 Nend=34 TPS=Chronic A + B vs X	E1: Overground gait training + visual cue feedback ; E2: Treadmill training + Visual cue feedback C: Standard physiotherapy Duration: 60min/d, 2d/wk, 8wks	E vs C: Walking speed (No stats) Symmetry ratio: Step length (No stats) time to turn 180° (No stats) Symmetry ratio: Single support duration (No stats) Fugl-Meyer lower limb motor assessment (No stats) Falls Efficacy Scale (No stats) SF-12 (No stats) Functional Ambulation Category (No stats) Timed Up and Go (No stats) Berg-Balance Scale (No stats)
Olawale et al. (2011) RCT (4) Nstart=67 Nend=60 TPS=Chronic A vs 0	E1: treadmill walking training + conventional PT; E2: overground walking training + conventional PT C: conventional PT Duration: C: 60min/d, 3d/wk, 12wks conventional PT ; E1/E2: 25min/d, 3d/wk, 12wks treadmill/overground training + 35min/d, 3d/wk, 12wks conventional PT	E1 vs E2 vs C: 10-metre walk test (No stats) Six-minute walk test (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Yang et al. (2024a) RCT (7) Nstart=40 Nend=40 TPS=Subacute A vs B + C Primary listing: Table 26 (Virtual Reality)	E: Augmented reality treadmill-based gait adaptation training C: Treadmill training + overground walking Duration: 35min/d, 3d/wk, 5wks	E vs C: 10MWT (-) Obstacle avoidance ROA (+exp) BBS (+exp) C-TUGT sit-to-stand (-) linear walking (-) turning around (+exp) stand-to-sit (+exp) total time (+exp)
Ahmed et al. (2023) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B + C vs B + C Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Rhythmic Auditory Stimulation + Custom Physiotherapy program + Treadmill gait training C: Custom physiotherapy program + Treadmill gait training Duration: 30 mins/d, 3ds/wk, 6 wks	E vs C: Walking speed improvement (+exp) Step cycle improvement (+exp) Step length improvement affected side (+exp) non-affected (-) Percent of time on improvement affected side (+exp)

		non-affected side (-) Ambulation index improvement (+exp)
Yoo et al. (2023a) Feasibility/pilot RCT (5) Nstart=30 Nend=29 TPS=Chronic A1 vs A2 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Treadmill training with HEALBOT exoskeleton C: Treadmill training Duration: 30min/d, 2-3d/wk, 4wks(10 sessions total)	E vs C: fNIRS Cortical activity(+exp) FAC(+exp) 10MWT(-) MI-LE(+exp) BBS(-) Spatial step symmetry(+exp) Temporal step symmetry(-)
Dantas et al. (2023) RCT crossover (5) Nstart=28 Nend=28 TPS=Chronic A + B vs B Primary listing: Table 28 (Functional Electrical Stimulation)	E: FES + treadmill training C: Treadmill training Duration: 30min/d, 2d/wk, 3wks, washout	E vs C: (E->C) v (C->E) FMA(no stat) BBS(no stat) LEMOCOT non paretic(no stat) LEMOCOT paretic(+exp) 10MWT(-) TUG(+exp) 6MWT(+exp)
Dumont et al. (2023) RCT (6) Nstart=28 Nend=28 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Anodal tDCS + Treadmill training C: Sham tDCS + Treadmill training Duration: 20min/d, 5d/wk, 2wks	E vs C: stance phase (-) double support phase (-) step length (-) velocity (-) step width (-) pelvic tilt initial contact (+exp) tilt max (-) tilt min (-) tilt ROM (-) obliquity max (-) obliquity min (-) obliquity ROM (-) rotation max (-) rotation min (-) rotation ROM (-) hip flexion initial contact (-) max flexion/extension in stance (-) min flexion/extension in stance (-) ROM in stance (-) abduction/adduction ROM (+exp) rotation initial contact (-) rotation mean (-) knee flexion initial contact (-) flexion in swing phase (-) minimum flexion in stance (-) ROM (+exp) ankle dorsiflexion/plantarflexion initial contact (-) max dorsiflexion in stance phase (-)

		ROM in stance phase (-) max dorsiflexion in swing phase (-) min plantarflexion in stance phase (-) foot progression angle initial contact (-) mean progression (-)
Wong et al. (2023) RCT (9) Nstart=45 Nend=42 TPS=Chronic A1 vs A2 vs A3 Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Bilateral tDCS and Treadmill E2: Cathodal tDCS and Treadmill C: Sham tDCS + Treadmill Duration: 50min/d, 3d/wk, 4wks	E1 vs C: Cognitive DTW(-) Motor DTW(-) Gait speed(-) Cadence(-) Step time(-) Step Length(-) Resting Motor Threshold MEPS(-) FMA-LE(-) E2 vs C: Cognitive DTW(-) Motor DTW(-) Gait speed(+exp2) Cadence(+exp2) Step time(+exp2) Step Length(-) Resting Motor Threshold MEPS(+exp2) FMA-LE(+exp) E1 vs E2: Cognitive DTW(-) Motor DTW(-) Gait speed(+exp) Cadence(+exp) Step time(-) Step Length(-) Resting Motor Threshold MEPS(+exp2) FMA-LE(-)
Wang et al. (2022c) RCT (6) Nstart=21 Nend=19 TPS=Chronic A vs 0 Primary listing: Table 13 (Orthotic Devices)	E: Non-elastic taping + Exercise training (progressive resistance exercise, balance training and treadmill training) C: Sham taping + exercise training Duration: 50min/d, 2d/wk, for 6wks	E vs C: double support time (+exp) spatial symmetry index (-) temporal symmetry index (-) velocity (-) BBS (-) 6MWT (-) FES-I (-)
Kim et al. (2022a) RCT (7) Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 20 (Aquatic Therapy)	E: Underwater Treadmill gait training + conventional rehabilitation C: Overground gait training + conventional rehabilitation Duration: 60min/d, 5d/wk, 12 wks conventional rehabilitation & 30min/d, 2d/wk, 12 wks gait training	E vs C: Step length (-) Step length difference (-) Stance time (-) Swing time (-) Step time difference (+exp) Walking velocity (-) Maximal Voluntary Volume (+exp)
Lee et al. (2022d) RCT (7) Nstart=38 Nend=34	E: Functional electrical stimulation + treadmill gait training C: Sham Functional electrical stimulation + treadmill gait training	E vs C: FMA (+exp) Performance-oriented mobility assessment balance (+exp)

TPS=Chronic A + B vs B Primary listing: Table 28 (Functional Electrical Stimulation)	Duration: 30 mins/d, 5ds/wk, 4wks	gait (+exp) total (+exp) stride length (+exp) Gait cycle (+exp) cadence (+exp) Total double support (+exp) affected step length (+exp) Affected single support (+exp) Affected speed (+exp) Affected step time (+exp) Average speed (+exp)
da Cunha et al. (2022) RCT (9) Nstart=32 Nend=30 TPS=Chronic A + B + C vs B + C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Bicephalic Transcranial direct-current stimulation + Footdrop stimulator +Treadmill gait training C: Sham transcranial direct-current stimulation + Footdrop stimulator +treadmill gait training Duration: 30 mins/d (10 mins of tDCS/sham + 20 mins of treadmill gait training), 5ds/wk, 2wks	E vs C: TUG (-) MAS (-) Stroke-Specific Quality of Life Scale (-) Total Distance Walked (-)
Gangopadhyay et al. (2021) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs B Primary listing: Table 7 (Non-Technological Overground Walking and Gait Training)	E: Body weight supported treadmill training (BWST) + conventional rehabilitation C: Overground gait training + conventional rehabilitation Duration: 20min/d BWST/overground gait training & 40min/d conventional rehabilitation, 3d/wk for 4wks	E vs C: Timed Up-and-Go (+exp) Gait Cadence (+exp) 10-meter Walk test (+exp) Berg Balance scale (+exp)
Baek et al. (2021) RCT (7) Nstart=34 Nend=31 TPS=Chronic A1 vs A2 Primary listing: Table 16 (Dual-Task Training)	E: Dual-task gait training with treadmill C: Single-task gait training with treadmill Duration: 30min, 2d/wk, 6wks	E vs C: Gait Measures in Single-task Condition Speed (-) Stride Length (-) Stance Phase Variability (-) Cadence (-) Correct response rate (-) Gait Measures in Dual-task Condition Speed (+exp) Stride Length (+exp) Stance Phase Variability (+exp) Cadence (-) Correct response rate (-) Dual-task Cost-motor task Speed (+exp) Stride Length (-) Stance Phase Variability (+exp) Cadence (-) Dual-task Cost-cognition task (-) Fall Efficacy Scale (-)
Koch et al. (2020) RCT (5) Nstart=131 Nend=94	E: Aerobic training (Stationary treadmill or bicycle ergometer) + resistance training + cognitive training	E vs C: Adverse Events (-) Feasibility (+exp) Montreal Cognitive Assessment (-)

TPS=Subacute A + B + C vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	C: Sham Combined aerobic and resistance training + Sham Cognitive training Duration: 80-100min/d, 3d/wk, 12wks	Hopkins Verbal Learning Test Revised (-) Hopkins Verbal Learning Test Revised Delayed Recall (-) Grooved Pegboard (-) Stroop delis Kaplan Executive function test (-) WAIS-IV Coding Digit Symbol Substitution Test (-) Brief Visuospatial Memory Test-R (-) Brief Visuospatial Memory Test-R Delayed Recall Digit Span Backwards (-) CogState Brief Battery (-) Center for Epidemiological Studies Depression Scale (-) Stroke Impact Scale (-) Timed Up and Go Test (-) 15 Meters Walk Speed (-) 6-minute walk test (-) 30-second chair stand repetition test (-) single repetition maximal leg (-) single repetition maximal chest press (-) grip strength affected grip strength non-affected (-)
An et al. (2020) RCT (5) Nstart=36 Nend=36 TPS=Chronic A1 vs A2 Primary listing: Table 13 (Orthotic Devices)	E: Treadmill training using insole on less affected side C: Treadmill training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Functional Gait Assessment (+exp) Figure-of-Eight Walk Test Step (+exp) Time (+exp) 6-Minute Walk Test (+exp) 10-m Walk Test (+exp) Gait Cadence (+exp) Stride Length/ Heigh Ratio (+exp) Stride Length (+exp) Stance Phase Duration (-) Swing Phase Duration (-) Double Support Duration (+exp) Single Support Duration (+exp)
Ogino et al. (2020) RCT (6) Nstart=20 Nend=19 TPS=Chronic A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Gait training with Gait Exercise Assist Robot (GEAR) E2: Gait training with treadmill Duration: 60min/d, 5d/wk, for 4wks	E1 vs E2: Timed Up and Go Test (+exp1) 6-min walk test (+exp1) SF-8 (-) Global rating of change scale (-) 10-m walk test Gait speed (-) Cadence (-) Stride length (-) Gait distance (+exp2)
Lee et al. (2020a) RCT (8) Nstart=13 Nend=13 TPS=Chronic A + B vs B	E: High frequency rTMS + Treadmill Training C: Sham rTMS + Treadmill Training Duration: 15min/d rTMS or sham + 20min/d treadmill training, 5d/wk, for 4wks	E vs C: 10-Meter Walk Test (+exp) 6-Minute Walk Test (+exp) Timed Up and Go Test (+exp)

Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))		
Kumari et al. (2020) RCT (8) Nstart=4 Nend=4 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Cerebellar transcranial direct current stimulation (ctDCS) + split-belt treadmill training C: Sham ctDCS + split-belt treadmill training Duration: 20min/d, 3d/wk, for 1wk	E vs C: Treadmill step length symmetry (No stats) Over-ground step length symmetry (No stats) Change in step length symmetry (No stats) 10-Metre Walk Test (No stats)
Madhavan et al. (2020) RCT (8) Nstart=81 Nend=72 TPS=Chronic A + B vs C + B vs A + C + B vs D + E Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: tDCS priming only (Transcranial Direct Current Stimulation + High-intensity speed-based treadmill training) E2: AMT priming only (Ankle motor tracking + Sham Transcranial Direct Current Stimulation+ High-intensity speed-based treadmill training) E3: tDCS & AMT priming (Transcranial Direct Current Stimulation + Ankle motor tracking + High-intensity speed-based treadmill training) C: 15min rest + High- intensity speed-based treadmill training Duration: 15mins/d, 3d/wk, for 4wks + 40mins/d, 3d/wk, for 4wks High-intensity speed-based treadmill training	E1 vs E2: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E2 vs E3: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E1 vs E3: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-)

		slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E1 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (+exp1) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E2 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E3 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-)

		Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-)
Munari et al. (2020) RCT (8) Nstart=18 Nend=18 TPS=Chronic A + B vs B Primary listing: Table 46 (Botulinum Toxin)	E: Backward treadmill training + botulinum toxin type A therapy C: Standard forward treadmill training + botulinum toxin type A therapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: 10-meter walking test (+exp1) Modified Ashworth scale (-) Gait analysis Step length (-) Stride length (-) Cadence (-) Stabilometric assessment length CoP eyes open (+exp1) sway area eyes open (+exp1) length CoP eyes closed (+exp1) sway area eyes closed (+exp1)
Boyne et al. (2019) RCT crossover (5) Nstart=16 Nend=16 TPS=Chronic A vs B vs C Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E1: High-Intensity Interval Training – Treadmill E2: High-Intensity Interval Training – Seated Stepper C: Moderate-intensity Continuous Exercise - Treadmill Duration: 20min Single session/Condition, ~ 1wk washout	E1/E2 vs C: Gait Speed (-) Brain-derived neurotrophic factor (+exp1) Active motor threshold response (+exp1) VO2 peak (+exp1/2)
Fishbein et al. (2019) RCT (6) Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Dual-task (VR-based UL training while walking on treadmill) C: Single task treadmill walking	E vs C: 10 m walk test Time (+exp) Steps (+exp) Timed Up and Go (-) Functional Reach Test (+exp) Lateral Reach Test (+exp) Activities Specific Balance confidence (+exp) Berg Balance Scale (+exp)
Broderick et al. (2019) RCT (6) Nstart=30 Nend=23 TPS=Chronic A + B vs A Primary listing: Table 19 (Mirror Therapy)	E: Treadmill Training + Mirror Therapy C: Treadmill Training + Sham Duration: 30min, 3d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Ashworth Scale Hip flexion (-) Hip extension (-) Hip abduction (-) Hip adduction (-) Knee flexion (-) Knee extension (-) Ankle dorsiflexion (+exp) Ankle plantarflexion (+exp) Fugl-Meyer Assessment (-)
Lee et al. (2019a) RCT (5) Nstart=28 Nend=26	E: Gait training program (treadmill + overground walking) wearing a hip-assist robot	E vs C: Gait speed (+exp) cadence (+exp1) stride length (+exp)

TPS=Chronic A + B vs A + C Primary listing: Table 27 (Electromechanical and Robotic Devices)	C: Gait training (treadmill training + over ground walking) Duration: 45min/session, 10x for 4wks.	Fugl-Meyer Assessment scale(+exp) Temporal symmetry ratio (+exp) Spatial step symmetry ratio (+exp) Muscle maximum voluntary contraction rectus femoris (+exp) tibialis anterior (+exp) biceps femoris (+exp) medial of gastrocnemius (+exp) metabolic energy cost (+exp) Korean- Fall Efficacy Scale (+exp) Berg Balance Scale (No stats) Motricity Index (+exp)
Sczesny-Kaiser et al. (2019) RCT crossover (4) Nstart=18 Nend=18 TPS=Chronic A vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training C: Conventional Physical therapy Duration: 30min/d, 5d/wk, for 6wks HAL exoskeleton training & 30-45min/d, 5d/wk, for 6wks Conventional care, 1wk washout.	E vs C: 10m Walk test (-) Timed Up and Go (-) 6min Walk test (-) Functional Ambulation category (-) Berg balance scale (-)
Wang et al. (2019b) RCT (7) Nstart=14 Nend=14 TPS=Chronic A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: High Frequency rTMS (5Hz) + Treadmill Training C: Sham rTMS + Treadmill Training Duration: 15min/d, 3d/wk, for 3wks rTMS 30min, 3d/wk, for 3wks treadmill training	E vs C: Walking speed (+exp) Spatial asymmetry ratio (+exp) Temporal asymmetry ratio (-) MEP Unaffected (-) Affected (-) Brain asymmetry ratio (-) EMG for TA and RA muscles (-) Fugl-Meyer assessment (+exp)
Druzbicki et al. (2018) RCT (7) Nstart=30 Nend=30 TPS=Acute A + B vs A Primary listing: Table 15 (Biofeedback)	E: Body weight support treadmill training + visual biofeedback C: Body weight support treadmill training Duration: 30min/d, 5d/wk for 3wks	E vs C: Stance phase Paretic (-) Non paretic (-) Symmetry Index Stance Phase (-) Swing Phase (-) Step Length (+exp) Swing phase Paretic (-) Non paretic (-) Cadence (-) Gait speed (-) Step length Paretic (-) Non paretic (-) 10-metre walk test (+exp) 2-minute walk test (+exp) Timed Up and Go (-)
Lee et al. (2018d) RCT (7) Nstart=37	E: Water-based aerobic exercise on a motorized aquatic treadmill + Conventional rehabilitation therapy	E vs C: Fugl Meyer Assessment (-) LE (-)

Nend=32 TPS=Subacute A1 vs A2 Primary listing: Table 20 (Aquatic Therapy)	C: Aerobic Exercise (by upper and lower body ergometers) + Conventional rehabilitation therapy Duration: 60min/d, 5d/wk, for 4wks conventional therapy (30min PT + 30min OT) & 30 min/d, 5d/wk, for 4wks Water-based aerobic exercise / Land- based aerobic exercise	Berg Balance Scale (-) Korean- Modified Barthel Index (-) Maximal Isometric strength (torque) of Knee Flexors Paretic (+exp) Non Paretic (-) Maximal Isometric strength (torque) of Knee Extensors Paretic (+exp) Non Paretic (-) EQ-5D (-) Cardiovascular parameters-stress test (-) baPWV test for arterial stiffness (-)
Han et al. (2018) RCT (6) Nstart=20 Nend=20 TPS=Subacute A vs B Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic-based treadmill aerobic training + conventional care C: Land-based aerobic exercises on cycle ergometer + conventional care Duration: 50min aerobic exercise (aquatic or land)/d + conventional care (duration/d not specified), 5d/wk, for 6wks	E vs C: Modified Barthel index (-) 6min Walk test (-) V02 peak (+exp) Rate Pressure product (-) Heart rate Peak (+exp) Resting (-) Age predicted Maximum heart rate (+exp) Exercise tolerance test (+exp) Respiratory exchange ratio (-)
Mainka et al. (2018) RCT (6) Nstart=45 Nend=35 TPS=Subacute A + B vs B vs C Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E1: Rhythmic auditory stimulation + treadmill training + conventional PT E2: Treadmill training + conventional PT C: Neurodevelopmental treatment + conventional PT Duration: 15-20min/d, 5d/wk, for 4wks treadmill training with or without the Rhythmic auditory stimulation & 30min/d, 5d/wk, for 4wks Neurodevelopmental treatment & 30-60min/wk conventional PT	E1 vs E2: Fast gait speed test gait velocity(+exp1) cadence (+exp1) stride length(-) Gait analysis with the locometre gait velocity(-) cadence (-) stride length(-) 3-min walking test (+exp1) instrumental evaluation of balance (-) E1/E2 vs C: Fast gait speed test gait velocity(+exp1) cadence (+exp1) stride length(-) Gait analysis with the locometre gait velocity(-) cadence (+exp1) stride length(-) 3-min walking test (-) instrumental evaluation of balance (-)
Park et al. (2018a) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B vs D	E1: Virtual reality + robot- assisted gait training (Treadmill)+ conventional physical therapy E2: Auditory stimulation + robot- assisted gait training (Treadmill) + conventional physical therapy C: Conventional physical therapy + treadmill training	E1 vs E2: Medical Research Council (+exp1) Berg Balance Scale (-) Timed Up & Go Test (-) 10 Meter Walk test (-) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-)

Primary listing: Table 22 (Rhythmic Auditory Stimulation)	Duration: 45min/d, 3d/wk, for 6wks trainings & 30min/d, 5d/wk, for 6wks Conventional therapy	E1/ E2 vs C: Medical Research Council (+exp1+exp2) Berg Balance Scale (+exp1, +exp2) Timed Up & Go Test (+exp1, +exp2) 10 Meter Walk test (+exp1) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-)
Manji et al. (2018) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A + B vs 0 Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Body weight supported treadmill training + anodal tDCS C: Body weight supported treadmill training with sham tDCS Duration: 20min/d, 7d/wk for 1wk; 3d washout	E vs C: 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp) Fugl-Meyer Assessment (-) Performed Oriented Mobility Assessment (-) Trunk Control Test (-)
Choi et al. (2017b) RCT (8) Nstart=30 Nend=26 TPS=Chronic A + B vs C + B Primary listing: Table 31 (Muscle Vibration)	E: Whole body vibration + Treadmill training C: Exercises on platform without vibration + Treadmill training Duration: 4.5min whole body vibration/ exercises on platform without vibration + 20min treadmill training, 3x/wk, for 6wks	E vs C: 6-minute walk test (-) Walking speed (+exp) Cadence (-) Step length Affected side (+exp) Less affected side (+exp) Stride length (+exp) Single limb support Affected side (-) Less affected side (-) Double limb support (+exp)
Hornby et al. (2016) RCT (7) Nstart=33 Nend=32 TPS=Subacute A vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) C: Conventional physical therapy care Duration: 60min/d, 4-5d/wk, for 10wks for 40 sessions	E vs C: 10-metre walk test Self-selected speed (+exp) Fastest speed (+exp) 6-minute walk test (+exp) Steps/day (-) Single limb stance Self-selected speed (+exp) Fastest speed (+exp) Step symmetry Self-selected speed (-) Fastest speed (-) Berg Balance Scale (-) 5 times sit to stand (-) SF36 Physical (+exp) Activities specific balance confidence (-)
Druzbicki et al. (2016a) RCT (8) Nstart=30 Nend=30 TPS=Chronic A + B vs A Primary listing: Table 15 (Biofeedback)	E: Treadmill training + visual biofeedback + physiotherapy exercises C: Treadmill training + physiotherapy exercises Duration: 90min/d, 5d/wk for 2wk	E vs C: Step length Paretic side (-) Non paretic side (-) Stance phase Paretic side (-) Non paretic side (-) Swing phase Paretic side (-)

		Non paretic side (-) Range of motion Hip Paretic side (-) Non paretic side (-) Range of motion Knee Paretic side (-) Non paretic side (-)
Druzbicki et al. (2016b) RCT (7) Nstart=46 Nend=46 TPS=Chronic A vs B Primary listing: Table 15 (Biofeedback)	E: Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) + Conventional individual exercises C: Treadmill training without biofeedback + Conventional individual exercises Duration: 70min/d (30-45min/d treadmill training + individual exercises), 5d/wk, 12d	E vs C: Static balance (-) Timed Up and Go (-) Center of Pressure Length Eyes Open (-) Eyes Closed (-) Sway Area Eyes Open (-) Eyes Closed (-) Center of Pressure in Mediolateral Range Scalar with Eyes Open (-) Eyes Closed (-) Center of Pressure in Anterioposterior Range Scalar with Eyes Open (-) Eyes Closed (-) Symmetry ratio of lowerlimb load ()
Zhang et al. (2016) RCT (7) Nstart=36 Nend=33 TPS=Subacute A vs B Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic therapy (PT exercises) + aquatic treadmill C: Conventional PT exercise + land-based treadmill Duration: 40min/d, 5d/wk, for 8wks	E vs C: Maximum isometric voluntary contraction and Co-contraction Ratio Knee Extension Torque (+exp) Knee Flexion Torque (-) Knee Extension co-contraction Ratio (+exp) Knee Flexion co-contraction Ratio (-) Anke dorsiflexion Torque (-) Ankle plantarfelxion Torque (+exp) Ankle dosifelxion co-contraction Ratio (-) Ankle plantarlfexion co-contraction Ratio (-) Modified Ashworth Knee (-) Ankle (-) Functional ambulation category (+exp) Barthel Index (+exp)
Song & Ryu (2016) RCT (5) Nstart=40 Nend=40 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Treadmill training + Rhythmic auditory stimulation C: Treadmill training Duration: 30min/d, 5d/wk for 4wks	E vs C: 10-Metre Walk Test (+exp) Dynamic Gait Index (+exp) Cadence (+exp) Step length (+exp)
Yang et al. (2016) RCT (6) Nstart=24	E: Treadmill training + Rhythmic auditory feedback C: Treadmill training Duration: 30min/d, 3d/wk for 4wks	E vs C: Gait speed (+exp) Cadence (+exp)

Nend=22 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)		Stride length (+exp) Step length (+exp) Limb support (+exp) Gait asymmetry (+exp) Timed Up & Go Test (+exp)
Yoon & Kang (2016) RCT (5) Nstart=30 Nend=28 TPS=Chronic A + B vs A1 vs A2 Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E1: Inclined treadmill training + Rhythmic auditory stimulation E2: Inclined treadmill training C: Treadmill training Duration: 30min/d, 5d/wk for 4wks	E vs C: E1 Vs C Timed Up and Go Test (+exp1) Berg Balance Scale (+exp1) Gait Speed (+exp1) Cadence (+exp1) Single Limb Support (+exp1) Symmetric Index (+exp1) 6-minute Walking Test (+exp1) E1 vs E2: Timed Up and Go Test (+exp1) Berg Balance Scale (+exp1) Gait Speed (+exp1) Cadence (+exp1) Single Limb Support (+exp1) Symmetric Index (+exp1) 6-minute Walking Test (+exp1) E2 vs C: Timed Up and Go Test (+exp2) Berg Balance Scale (+exp2) Gait Speed (+exp2) Cadence (-) Single Limb Support (-) Symmetric Index (+exp2) 6-minute Walking Test (+exp2)
Kim et al. (2016c) RCT (7) Nstart=30 Nend=27 TPS=Chronic A1 vs A2 vs 0 Primary listing: Table 26 (Virtual Reality)	E1: VR treadmill training-based community ambulation E2: Community ambulation training C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 4wks Treadmill training and community ambulation & 30min/session, 10sessions/wk for 4wks general exercise program control.	E1 vs E2: Timed Up and Go Test (-) Activities-specific Balance Confidence Scales (-) 6-minute Walking Test (-) Gait Speed (-) Cadence (-) Step Length (-) Stride Length (-) E1 vs C: Timed Up and Go Test (+exp1) Activities-specific Balance Confidence Scales (+exp1) 6-minute Walking Test (-) Gait Speed (-) Cadence (-) Step Length (-) Stride Length (-) E2 vs C: Timed Up and Go Test (-) Activities-specific Balance Confidence Scales (+exp2) 6-minute Walking Test (+exp2) Gait Speed (-)

		Cadence (-) Step Length (-) Stride Length (-)
Forrester et al. (2016) RCT (4) Nstart=35 Nend=28 TPS=Chronic A + B + C vs D + B + C Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality + Ankle robotics C: Seated training + Virtual reality + Ankle robotics Duration: 45min/d, 5d/wk for 6wks	E vs C: Overground gait velocity (-) paretic single limb support duration (-) Paretic Anterior posterior propulsive impulses (-) Paretic foot center of pressure length (-) Center of pressure symmetry (-) Ankle targeting speed (-) ankle targeting accuracy (+exp) dorsiflexion active Range of motion (-) Paretic peak swing angle (No stats) heel-first strikes (No stats)
Kwon et al. (2015) RCT (5) Nstart=40 Nend=40 TPS=Chronic A1 vs A2 Primary listing: Table 5 (Task-Specific Training)	E: Task-oriented treadmill training + conventional therapy C: Treadmill training + conventional therapy Duration: 30min/d, 5d/wk, 8wks conventional therapy, task-oriented treadmill training or conventional treadmill	E vs C: Timed Up & Go Test (+exp) 6-Minute Walk Test (+exp) Gait Stride length (+exp) Gait cycle (+exp) Cadence (+exp) Affected step length (+exp) Average speed (+exp) Affected single support (+exp) Affected step Affected speed (+exp)
Brasileiro et al. (2015) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs A + C vs A Primary listing: Table 15 (Biofeedback)	E1: Partial body-weight support treadmill training + Visual biofeedback E2: Partial body-weight support treadmill training + Auditory biofeedback C: Partial body-weight support treadmill training Duration: 20min/1session	E vs C: Speed Stride Length (-) Cadence (-) Stance Time (-) Symmetry Ratio (-) Max hip extension during stance (-) Max hip flexion during swing (-) Hip range of motion (-) Knee angle at initial contact (-) Max knee flexion during swing (-) Knee range of motion (-) Ankle angle at initial contact (-) ankle angle at toe-off (-) ankle range of motion (-)
Druzbicki et al. (2015) RCT (7) Nstart=50 Nend=50 TPS=Chronic A + B vs A Primary listing: Table 15 (Biofeedback)	E: Treadmill training + visual biofeedback + basic physiotherapy C: Treadmill training + basic physiotherapy Duration: 150min/d, 5d/wk, 2wks	E vs C: 10-Metre Walk Test (-) 2-Minute Walk Test (-) Timed Up & Go Test (-) Cadence (-) Gait velocity (-) Swing phase Paretic (-) Non paretic (+exp) Stance phase

		Paretic (-) Non paretic (+exp) Length of gait cycle Paretic (-) Non paretic (+exp) Barthel Index (-)
Choi et al. (2015a) RCT (7) Nstart=37 Nend=37 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Cognitive-motor dual task training while treadmill walking + Conventional rehabilitation C: Single task training on Treadmill walking + Conventional rehabilitation Duration: 15min/d, 3d/wk, 4wk task training & 5d/wk, 4wk conventional rehabilitation	E vs C: Static Balance Anteroposterior sway velocity with eyes open (-) Mediolateral sway velocity with eyes open (+exp) Anteroposterior sway velocity with eyes closed (+exp) Mediolateral sway velocity with eyes closed (+exp) Timed Up & Go Test (-)
Park et al. (2015a) RCT (5) Nstart=19 Nend=19 TPS=Chronic A + B vs C + B Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Treadmill training + Rhythmic auditory stimulation C: Overground training + Rhythmic auditory stimulation Duration: 30min/d, 5d/wk for 3wks	E vs C: Gait speed (+exp) 6-Minute Walk Test (+exp) Functional Gait Assessment (+exp) Step cycle (+exp) Step length Paretic side (-) Nonparetic side (+exp) Timed Up & Go Test (-)
Kim et al. (2015a) RCT (4) Nstart=20 Nend=17 TPS=Chronic A + B vs 0 Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality C: Conventional rehabilitation Duration: 30min/d, 3d/wk, 4wks interventions + 60min/d, 5d/wk, 4wks Conventional PT	E vs C: Postural sway path length (+exp) Postural sway speed (+exp)
Cho et al. (2015c) RCT (6) Nstart=34 Nend=31 TPS=Chronic A1 + B vs A2 + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Treadmill training + FES on gluteus medius and tibialis anterior E2: Treadmill training + FES on tibialis anterior C: Treadmill training Duration: 30min, 5d/wk for 4wks treadmill training; 1hr, 5d/wk, for 4wks regular physical therapy	E1 vs E2/C: Medical research council scale (+exp1) 6-min walk test (+exp1) Berg Balance Scale (+exp1) Cadence (+exp1) Gait velocity (+exp1) manual Muscle strength testing TA (+exp1) GM (+exp1) Temporal asymmetry (+exp1) Spatial asymmetry (+exp1) Single support time (+exp1) Double support time (-) Stride length (-) E2 vs C: Medical research council scale(+exp2) 6-min walk test(-) Berg Balance Scale(-) Cadence(+exp2)

		Gait velocity(+exp2) Muscle strength TA (-) GM (-) Temporal asymmetry (-) Spatial asymmetry (-) Single support time (-) Double support time (-) Stride length (-)
Hwang et al. (2015) RCT (7) Nstart=32 Nend=30 TPS=Chronic A vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: Treadmill training with Tilt sensor FES + conventional physical therapy C: Treadmill training with Placebo Tilt sensor FES + conventional physical therapy Duration: 30min/d treadmill training with FES or placebo FES + 1hr/d conventional care, for 4wks	E vs C: 10m Walk Test (+exp) Timed Up-and-Go Test (+exp) Berg Balance Scale (+exp) Muscle architecture Resting phase Pennation angle paretic side (-) Pennation angle non paretic side (-) Muscle thickness paretic side (+exp) Muscle thickness non paretic side (-) Muscle architecture Contraction phase Pennation angle paretic side (+exp) Pennation angle non paretic side (-) Muscle thickness paretic side (+exp) Muscle thickness non paretic side (-)
Bonnyaud et al. (2013b) RCT (4) Nstart=60 Nend=60 TPS=Chronic A1 vs A2 vs A3 vs B Primary listing: Table 7 (Non-Technological Overground Walking and Gait Training)	E1: Overground gait training with ankle mass E2: Treadmill gait training with ankle mass C1: Overground gait training without mass C2: Treadmill gait training without mass Duration: 20min/d, 1 session	E1 vs C1: Speed (-) Cadence (-) Step Length (Paretic/Non-paretic) (-) Peak Hip Flexion (Paretic/Non-paretic) (-) Peak Knee Flexion (Paretic/Non-paretic) (-) Peak Ankle Dorsiflexion (Paretic/Non-paretic) (-) Vertical GRF (Paretic/Non-paretic) (-) Peak Propulsion (Paretic/Non-paretic) (-) Peak Breaking (Paretic/Non-paretic) (-) E2 vs C2: Speed (-) Cadence (-) Step Length (Paretic/Non-paretic) (-) Peak Hip Flexion (Paretic/Non-paretic) (-) Peak Knee Flexion (Paretic/Non-paretic) (-) Peak Ankle Dorsiflexion Paretic (-) Non-paretic (+con) Vertical GRF (Paretic/Non-paretic) (-) Peak Propulsion (Paretic/Non-paretic) (-) Peak Breaking Paretic (-) Nonparetic (+con)
Lee et al. (2013g) RCT (6) Nstart=30 Nend=30 TPS=Subacute	E: Body Weight-Supported Treadmill Training + functional electrical stimulation C: Body Weight Supported Treadmill Training Duration: 30mins/d, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Stroke Rehabilitation Assessment of Movement (+exp)

A + B vs C Primary listing: Table 28 (Functional Electrical Stimulation)		Gait velocity (+exp) cadence (+exp) paretic step length (+exp) stride length (+exp)
Park et al. (2012) RCT (4) Nstart=20 Nend=20 TPS=Chronic A1 vs A2 Primary listing: Table 20 (Aquatic Therapy)	E: Underwater treadmill walking C: Overground treadmill walking Duration: 30min/d, 4d/wk for 6wks	E vs C: Body weight on foot (+exp) Short Physical Performance Battery (-) Joint flex Hip (+exp) Knee (+exp) Ankle (-)
Jung et al. (2012) RCT (5) Nstart=25 Nend=21 TPS=Chronic A + B vs A Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality C: Treadmill training Duration: 30min/d, 5d/wk for 3wks	E vs C: Timed Up & Go Test (+exp) Activities-Specific Balance Confidence Scale (+exp)
Kang et al. (2012) RCT (7) Nstart=32 Nend=30 TPS=Chronic A1 vs A2 vs 0 Primary listing: Table 26 (Virtual Reality)	E1: Treadmill with optic flow + conventional physical therapy E2: Treadmill + conventional physical therapy C: Conventional therapy Duration: 30min/session, 3d/wk, 4wks + conventional physical therapy 5d/wk, for 4wks	E1 vs E2: 10-Metre Walk Test (+exp1) 6-Minute Walk Test (+exp1) Timed Up & Go Test (+exp1) Functional Reach Test (-) E2 vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Timed Up & Go Test (-) Functional Reach Test (+exp2) E1 vs C: 10-Metre Walk Test (+exp1) 6-Minute Walk Test (+exp1) Timed Up & Go Test (+exp1) Functional Reach Test (+exp1)
Toledano-Zarhi et al. (2011) RCT (6) Nstart=28 Nend=27 TPS=Acute A vs 0 Primary listing: Table 8 (Cycle Ergometer Training)	E: Aerobic training (treadmill and cycle ergometer) C: Conventional rehabilitation Duration: 35-55min/d, 3d/wk for 6wks	E vs C: 6min Walk test (-) Stair Climb test ascending (-) descending (-) Four Square step test (-) Physiological parameters blood pressure (-) heart rate (-) metabolic equivalents (-)
Yang et al. (2011) RCT (4) Nstart=14 Nend=14 TPS=Chronic A + B vs A Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality + Conventional rehabilitation C: Treadmill training + Conventional rehabilitation Duration : 20min/d, 3x/wk for 3wks - Treadmill training & 40min/d, 7x/wk for 3wks - Conventional rehabilitation	E vs C: Quiet stance Center of pressure anterior-posterior (-) mediolateral (+exp) excursion (-) sway area (-) Sit to stand anterior-posterior (-)

		mediolateral (-) excursion (-) sway area (-) symmetric index (+exp) Level walking Stance time (-) contact area (-) number of steps (-)
Letombe et al. (2010) RCT (3) Nstart=18 Nend=18 TPS=Acute A vs 0 Primary listing: Table 8 (Cycle Ergometer Training)	E: Aerobic training (cycle ergometer, treadmill, balance) C: Conventional rehabilitation Duration: 40-60min/d, 4d/wk for 4wks	E vs C: Maximal Aerobic Power (+exp) VO2peak (+exp) Test Duration (+exp) Barthel Scale (+exp) Katz ADL Scale (+exp)
Yang et al. (2008) RCT (6) Nstart=24 Nend=20 TPS=Chronic A + B vs A Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality C: Treadmill training Duration: 20min/d, 3d/wk for 3wks	E vs C: Gait speed (+exp) Community walk test (+exp) Walking Ability Questionnaire (-) Activities Specific Balance Confidence Scale (-)
Richards et al. (2004) RCT (6) Nstart=63 Nend=60 TPS=Subacute A vs 0 Primary listing: Table 5 (Task-Specific Training)	E: Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) + Conventional physiotherapy C: Conventional physiotherapy Duration: 60min/d, 5d/wk for 8wks	E vs C: Gait speed (-) Fugl-Meyer Assessment Leg (-) Arm (-) Timed Up and Go test (-) Barthel Index (-) Berg Balance Scale (-)
Jaffe et al. (2004) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs C Primary listing: Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality C: Stepping over real objects on 10m walkway Duration: 60min/d, 6d/2wks	E vs C: Performance-Oriented Assessment of Mobility (-) Physical Performance Test (-) Fast Walk Test (+exp) Self-Selected Walk Test (-) Cadence (-) Stride Length (-) Step Length (-) 6-Minute Walk Test (-) Obstacle Clearance (-)
Werner et al. (2002a) RCT (7) Nstart=28 Nend=28 TPS=Subacute A + B + C vs A + B Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Baseline conventional therapy + Treadmill training with partial BWS + Individual physical therapy C: Baseline conventional therapy + Treadmill training with partial BWS Duration: 3wks Baseline conventional therapy, 30min/d, 5d/wk, for 3wks BWS-treadmill, 40min/d, 5d/wk, for 3wks Individual physical therapy	E vs C: Functional Ambulation Category (+exp) Rivermead Motor Assessment (-) Gait Velocity (-)

Werner et al. (2002b) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Electromechanical gait trainer therapy + Conventional rehabilitation E2: Body weight-supported treadmill training + Conventional rehabilitation Duration: 15-20min/d, 5d/wk for 6wks Interventions, 45min/d, 7d/wk, Conventional rehabilitation	E1 vs E2: Functional Ambulation Category (+exp) 10-m Gait velocity (-) Rivermead Motor Assessment (-) Modified Ashworth Score (-)
Richards et al. (1993) RCT (6) Nstart=27 Nend=27 TPS=Acute A vs B vs 0 vs C Primary listing: Table 5 (Task-Specific Training)	E: Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) + conventional hospital care C1: Early, intensive traditional PT approach + conventional hospital care C2: Conventional PT + conventional hospital care Duration: E/C1: 60min, 2sessions/d, 5d/wk, 5wks & C2: 60min/d, 5d/wk, 5wks	E vs C1 vs C2: 6m gait velocity (-) Fugle-Meyer Balance (-) Leg(-) Arm(No stats) Barthel index(-) Berg balance scale (No stats)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Body weight supported Treadmill Training may produce greater improvements in motor recovery than Conventional Therapy.	2	Yang et al. 2010; Eich et al. 2004
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving motor recovery.	4	Gama et al. 2017; Mao et al. 2015; Middleton et al. 2014; Nilsson et al. 2001
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving motor recovery.	1	Srivastava et al. 2016
1b	Body weight supported Treadmill Training with Facilitation Technique may not have a difference in efficacy when compared to body weight supported Training with Mechanical Assistance for improving motor recovery.	1	Yagura et al. 2006
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving motor recovery.	1	Duncan et al. 2011
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving motor recovery.	1	de Lima Gomes et al. 2017
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving motor recovery.	1	Gama et al. 2015

1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving motor recovery.	1	Broderick et al. 2019
1b	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving motor recovery.	1	Bansal et al. 2023
1b	Treadmill Training with Orthotic Devices may produce greater improvements in motor recovery than Treadmill Training.	1	In et al. 2017
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving motor recovery.	1	Werner et al. 2002b
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving motor recovery.	1	Hollands et al. 2015
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill for improving motor recovery.	1	Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may produce greater improvements in motor recovery than Cathodal transcranial direct current stimulation and Treadmill.	1	Wong et al. 2023
1b	Functional electrical stimulation with treadmill gait training may produce greater improvements in motor recovery than Sham Functional electrical stimulation with treadmill gait training.	1	Lee et al. 2022d
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving motor recovery.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving motor recovery.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving motor recovery.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving motor recovery.	1	Madhavan et al. 2020
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving motor recovery.	1	Broderick et al. 2019

2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in motor recovery than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training may produce greater improvements in motor recovery than Sham repetitive transcranial magnetic stimulation with Treadmill Training.	1	Wang et al. 2019b
1b	Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not have a difference in efficacy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving motor recovery.	1	Lee et al. 2018d
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in motor recovery than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in motor recovery than Conventional physical therapy with treadmill training.	1	Park et al. 2018a
1b	Body weight supported treadmill training with anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Body weight supported treadmill training with sham transcranial direct current stimulation for improving motor recovery.	1	Manji et al. 2018
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving motor recovery.	1	Richards et al. 2004
2	Treadmill training with Virtual reality may not have a difference in efficacy when compared to Stepping over real objects on 10m walkway for improving motor recovery.	1	Jaffe et al. 2004
1b	Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy may not have a difference in efficacy when compared to Baseline conventional therapy with Treadmill training with partial body weight supported for improving motor recovery.	1	Werner et al. 2002a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	2	Kuys et al. 2011; Laufer et al. 2001
2	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving biomechanical gait measures.	2	Van Bladel et al. 2023; Bonnyaud et al. 2013a
1b	There is conflicting evidence about the effect of Treadmill training with Rehabilitation program when compared to Overground gait training with Rehabilitation program for improving biomechanical gait measures.	1	Langhammer & Stanghelle 2010
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	5	Banjara et al. 2022; Lura et al. 2019; Nave et al. 2019; Takao et al. 2015; Yen et al. 2008

1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving biomechanical gait measures.	5	Gangopadhyay et al. 2021; Gama et al. 2017; Mao et al. 2015; Combs-Miller et al. 2014; Middleton et al. 2014
1a	Body weight supported Treadmill Training may produce greater improvements in biomechanical gait measures than Treadmill Training.	2	Calabro et al. 2020; Lee et al. 2015f
1b	Body weight supported Treadmill Training with Facilitation Technique may not have a difference in efficacy when compared to body weight supported Training with Mechanical Assistance for improving biomechanical gait measures.	1	Yagura et al. 2006
1b	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving biomechanical gait measures.	1	Ribeiro et al. 2017
1a	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving biomechanical gait measures.	2	Cheng et al. 2022; Gama et al. 2015
2	Treadmill Training with Increased Speed may produce greater improvements in biomechanical gait measures than Treadmill Training with Increased Incline.	1	Alipsatici et al. 2020
1b	Constraint Induced Movement with Home Exercise may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	1	Silva et al. 2017
2	Treadmill Training with Foot Drop Stimulator may produce greater improvements in biomechanical gait measures than Foot Drop Stimulator.	1	Peishun et al. 2021
1b	Turning Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	1	Chen et al. 2014
2	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving biomechanical gait measures.	1	Ribeiro et al. 2013
2	Treadmill Training with Handrails may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Kang et al. 2015
2	Treadmill Training with Horizontal Force may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Na et al. 2015
1a	Treadmill Training with virtual reality may produce greater improvements in biomechanical gait measures than Other Training.	2	Cho et al. 2014; Cho et al. 2013c
1b	Treadmill Training with Smartphone Application may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Lee et al. 2017a
2	There is conflicting evidence about the effect of Treadmill Training with Visual Deprivation when compared to Treadmill Training for improving biomechanical gait measures.	1	Kim et al. 2014a
1a	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving biomechanical gait measures.	3	Munari et al. 2020; Kim et al. 2017b; Takami et al. 2010
2	Body weight supported, backward and forward treadmill training may not have a difference in efficacy when compared to body weight supported, forward treadmill training or body weight supported, backward treadmill training for improving biomechanical gait measures.	1	Kim et al. 2014c

2	Backward treadmill with partial body weight supported may not have a difference in efficacy when compared to Forward treadmill with partial body weight supported treadmill for improving biomechanical gait measures.	1	Takami et al. 2010
2	Forward treadmill with partial BWS treadmill may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Takami et al. 2010
1a	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving biomechanical gait measures.	2	Ada et al. 2013; Ada et al. 2003
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving biomechanical gait measures.	1	Ada et al. 2013
1b	High Intensity Treadmill Training may produce greater improvements in biomechanical gait measures than Low Intensity Treadmill Training.	1	Munari et al. 2018
1a	Speed Dependent Treadmill Training may produce greater improvements in biomechanical gait measures than Other Treadmill Training.	4	Van Bladel et al. 2022; Helm et al. 2019; Lau & Mak 2011; Pohl et al. 2002
2	Error Augmentation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	1	Lewek et al. 2018
1b	Treadmill Training with Orthotic Devices may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Park et al. 2024b
1b	Treadmill Training with Action Observation may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Bang et al. 2013
1b	Circular treadmill training with ambulation training may produce greater improvements in biomechanical gait measures than Regular treadmill training+ ambulation training.	1	Chen et al. 2019b
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving biomechanical gait measures.	1	Hollands et al. 2015
1b	There is conflicting evidence about the effect of Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training when compared to Custom physiotherapy program with Treadmill gait training for improving biomechanical gait measures.	1	Ahmed et al. 2023
2	There is conflicting evidence about the effect of Treadmill training with HEALBOT exoskeleton when compared to Treadmill training for improving biomechanical gait measures.	1	Yoo et al. 2023a
1b	Anodal transcranial direct current stimulation with Treadmill training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill training for improving biomechanical gait measures.	1	Dumont et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill for improving biomechanical gait measures.	1	Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may produce greater improvements in biomechanical gait measures than Cathodal transcranial direct current stimulation and Treadmill.	1	Wong et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a	1	Wang et al. 2022c

	difference in efficacy when compared to Sham taping with exercise training for improving biomechanical gait measures.		
1b	Underwater Treadmill gait training with conventional rehabilitation may not have a difference in efficacy when compared to Overground gait training with conventional rehabilitation for improving biomechanical gait measures.	1	Kim et al. 2022a
1b	Functional electrical stimulation with treadmill gait training may produce greater improvements in biomechanical gait measures than Sham Functional electrical stimulation with treadmill gait training.	1	Lee et al. 2022d
1b	Body weight supported treadmill training (BWST) with conventional rehabilitation may produce greater improvements in biomechanical gait measures than Overground gait training with conventional rehabilitation.	1	Gangopadhyay et al. 2021
1b	Dual-task gait training with treadmill may not have a difference in efficacy when compared to Single-task gait training with treadmill for improving biomechanical gait measures.	1	Baek et al. 2021
2	Treadmill training using insole on less affected side may produce greater improvements in biomechanical gait measures than Treadmill training.	1	An et al. 2020
1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving biomechanical gait measures.	1	Ogino et al. 2020
1b	Cerebellar transcranial direct current stimulation with split-belt treadmill training may not have a difference in efficacy when compared to Sham cerebellar transcranial direct current stimulation with split-belt treadmill training for improving biomechanical gait measures.	1	Kumari et al. 2020
1b	Backward treadmill training with botulinum toxin type A therapy may not have a difference in efficacy when compared to forward treadmill training with botulinum toxin type A therapy for improving biomechanical gait measures.	1	Munari et al. 2020
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in biomechanical gait measures than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	Body weight support treadmill training with visual biofeedback may not have a difference in efficacy when compared to Body weight support treadmill training for improving biomechanical gait measures.	1	Druzbicki et al. 2018
1b	Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not have a difference in efficacy when compared to Treadmill training with conventional physical therapy for improving biomechanical gait measures.	1	Mainka et al. 2018
1b	There is conflicting evidence about the effect of Rhythmic auditory stimulation with treadmill training and conventional physical therapy when compared to Neurodevelopmental treatment with conventional physical therapy for improving biomechanical gait measures.	1	Mainka et al. 2018
1b	Whole body vibration with Treadmill training may produce greater improvements in biomechanical gait measures than Exercises on platform without vibration with Treadmill training.	1	Choi et al. 2017b
1b	There is conflicting evidence about the effect of High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) when compared to Conventional physical therapy care for improving biomechanical gait measures.	1	Hornby et al. 2016

1b	Treadmill training with visual biofeedback and physiotherapy exercises may not have a difference in efficacy when compared to Treadmill training with physiotherapy exercises for improving biomechanical gait measures.	1	Druzbicki et al. 2016a
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in biomechanical gait measures than Treadmill training.	1	Song & Ryu 2016
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in biomechanical gait measures than Treadmill training.	1	Yang et al. 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in biomechanical gait measures than Treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in biomechanical gait measures than Inclined treadmill training.	1	Yoon & Kang 2016
2	There is conflicting evidence about the effect of Inclined treadmill training when compared to Treadmill training for improving biomechanical gait measures.	1	Yoon & Kang 2016
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving biomechanical gait measures.	1	Kim et al. 2016c
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Kim et al. 2016c
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving biomechanical gait measures.	1	Forrester et al. 2016
2	Task-oriented treadmill training with conventional therapy may produce greater improvements in biomechanical gait measures than Treadmill training with conventional therapy.	1	Kwon et al. 2015
1b	Partial body-weight support treadmill training with Visual biofeedback may not have a difference in efficacy when compared to Partial body-weight support treadmill training for improving biomechanical gait measures.	1	Brasileiro et al. 2015
1b	Treadmill training with visual biofeedback and basic physiotherapy may not have a difference in efficacy when compared to Treadmill training with basic physiotherapy for improving biomechanical gait measures.	1	Druzbicki et al. 2015
2	There is conflicting evidence about the effect of Treadmill training with Rhythmic auditory stimulation when compared to Overground training with Rhythmic auditory stimulation for improving biomechanical gait measures.	1	Park et al. 2015a
1b	There is conflicting evidence about the effect of Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior when compared to Treadmill training for improving biomechanical gait measures.	1	Cho et al. 2015c
2	Overground gait training with ankle mass may not have a difference in efficacy when compared to Overground gait training without mass or Treadmill gait training without mass for improving biomechanical gait measures.	1	Bonnyaud et al. 2013b
1b	Body Weight-Supported Treadmill Training with functional electrical stimulation may produce greater improvements in biomechanical gait measures than Body Weight Supported Treadmill Training.	1	Lee et al. 2013g

2	Underwater treadmill walking may produce greater improvements in biomechanical gait measures than Overground treadmill walking.	1	Park et al. 2012
2	Treadmill training with Virtual reality and Conventional rehabilitation may not have a difference in efficacy when compared to Treadmill training with Conventional rehabilitation for improving biomechanical gait measures.	1	Yang et al. 2011
2	Treadmill training with Virtual reality may not have a difference in efficacy when compared to Stepping over real objects on 10m walkway for improving biomechanical gait measures.	1	Jaffe et al. 2004
1b	There is conflicting evidence about the effect of Treadmill training and overground gait training when compared to Placebo program of low- intensity home exercise program with Telerehabilitation for improving biomechanical gait measures.	1	Ada et al. 2003

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving biomechanical balance measures.	1	Park et al. 2014c
1b	Turning Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical balance measures.	1	Chen et al. 2014
1b	Treadmill Training with virtual reality may not have a difference in efficacy when compared to Other Training for improving biomechanical balance measures.	1	Cho et al. 2014
1b	Backward Treadmill Training may produce greater improvements in biomechanical balance measures than Treadmill or Conventional Rehabilitation.	1	Munari et al. 2020
1b	Backward treadmill training with botulinum toxin type A therapy may produce greater improvements in biomechanical balance measures than forward treadmill training with botulinum toxin type A therapy.	1	Munari et al. 2020
1b	Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not have a difference in efficacy when compared to Treadmill training with conventional physical therapy for improving biomechanical balance measures.	1	Mainka et al. 2018
1b	Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not have a difference in efficacy when compared to Neurodevelopmental treatment with conventional physical therapy for improving biomechanical balance measures.	1	Mainka et al. 2018
1b	Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises may not have a difference in efficacy when compared to Treadmill training without biofeedback with Conventional individual exercises for improving biomechanical balance measures.	1	Druzbicki et al. 2016b
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving biomechanical balance measures.	1	Forrester et al. 2016
2	Treadmill training with Virtual reality may produce greater improvements in biomechanical balance measures than Conventional rehabilitation.	1	Kim et al. 2015a
2	Treadmill training with Virtual reality and Conventional rehabilitation may not have a difference in efficacy when compared to Treadmill	1	Yang et al. 2011

	training with Conventional rehabilitation for improving biomechanical balance measures.		

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	2	Nave et al. 2019; Sukonthamarn et al. 2019
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving muscle strength.	1	Franceschini et al. 2009
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to Resistive leg cycling with upper extremity ergometry training for improving muscle strength.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving muscle strength.	1	Sullivan et al. 2007
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving muscle strength.	1	Cheng et al. 2022
1b	Perturbation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving muscle strength.	1	Esmaeili et al. 2020
1b	Turning Treadmill Training may produce greater improvements in muscle strength than Treadmill Training.	1	Chen et al. 2014
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in muscle strength than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	There is conflicting evidence about the effect of Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving muscle strength.	1	Lee et al. 2018d
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in muscle strength than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy or Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy may produce greater improvements in muscle strength than Conventional physical therapy with treadmill training.	1	Park et al. 2018a
1b	There is conflicting evidence about the effect of Aquatic therapy (physical therapy exercises) with aquatic treadmill when compared to Conventional physical therapy exercise with land-based treadmill for improving muscle strength.	1	Zhang et al. 2016
1b	There is conflicting evidence about the effect of Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior when compared to Treadmill training for improving muscle strength.	1	Cho et al. 2015c
1b	Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may not have a difference in	1	Hwang et al. 2015

	efficacy when compared to Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy for improving muscle strength.		

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving spasticity.	1	Franceschini et al. 2009
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving spasticity.	1	de Lima Gomes et al. 2017
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving spasticity.	1	Cheng et al. 2022
2	Treadmill Training with Foot Drop Stimulator may produce greater improvements in spasticity than Foot Drop Stimulator.	1	Peishun et al. 2021
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving spasticity.	1	Broderick et al. 2019
1b	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving spasticity.	1	Munari et al. 2020
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving spasticity.	1	Werner et al. 2002b
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving spasticity.	1	da Cunha et al. 2022
1b	Backward treadmill training with botulinum toxin type A therapy may not have a difference in efficacy when compared to forward treadmill training with botulinum toxin type A therapy for improving spasticity.	1	Munari et al. 2020
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving spasticity.	1	Broderick et al. 2019
1b	Aquatic therapy (physical therapy exercises) with aquatic treadmill may not have a difference in efficacy when compared to Conventional physical therapy exercise with land-based treadmill for improving spasticity.	1	Zhang et al. 2016

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving range of motion.	1	Bonnyaud et al. 2013a
2	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving range of motion.	1	Mao et al. 2015
1b	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving range of motion.	1	Ribeiro et al. 2017

1b	There is conflicting evidence about the effect of Treadmill Training with Incline when compared to Treadmill Training with Decline or Level Treadmill Training for improving range of motion.	1	Cheng et al. 2022
2	Treadmill Training with Foot Drop Stimulator may produce greater improvements in range of motion than Foot Drop Stimulator.	1	Peishun et al. 2021
2	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving range of motion.	1	Ribeiro et al. 2013
1b	Anodal transcranial direct current stimulation with Treadmill training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill training for improving range of motion.	1	Dumont et al. 2023
1b	Treadmill training with visual biofeedback and physiotherapy exercises may not have a difference in efficacy when compared to Treadmill training with physiotherapy exercises for improving range of motion.	1	Druzbicki et al. 2016a
1b	There is conflicting evidence about the effect of Aquatic therapy (physical therapy exercises) with aquatic treadmill when compared to Conventional physical therapy exercise with land-based treadmill for improving range of motion.	1	Zhang et al. 2016
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving range of motion.	1	Forrester et al. 2016
1b	Partial body-weight support treadmill training with Visual biofeedback may not have a difference in efficacy when compared to Partial body-weight support treadmill training for improving range of motion.	1	Brasileiro et al. 2015
2	Overground gait training with ankle mass may not have a difference in efficacy when compared to Overground gait training without mass or Treadmill gait training without mass for improving range of motion.	1	Bonnyaud et al. 2013b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Body weight supported Treadmill Training when compared to Conventional Therapy for improving neurophysiological measures.	2	Yang et al. 2010; Yen et al. 2008
1b	Body weight supported Treadmill Training may produce greater improvements in neurophysiological measures than Treadmill Training.	1	Calabro et al. 2020
2	Treadmill Training with Foot Drop Stimulator may produce greater improvements in neurophysiological measures than Foot Drop Stimulator.	1	Peishun et al. 2021
2	Treadmill Training may not have a difference in efficacy when compared to Stretching for improving neurophysiological measures.	2	Serra et al. 2022; Luft et al. 2008
1b	Circular treadmill training with ambulation training may produce greater improvements in neurophysiological measures than Regular treadmill training+ ambulation training.	1	Chen et al. 2019b
2	Treadmill training with HEALBOT exoskeleton may produce greater improvements in neurophysiological measures than Treadmill training.	1	Yoo et al. 2023a
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill for improving neurophysiological measures.	1	Wong et al. 2023

1b	Bilateral transcranial direct current stimulation and Treadmill may produce greater improvements in neurophysiological measures than Cathodal transcranial direct current stimulation and Treadmill.	1	Wong et al. 2023
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving neurophysiological measures.	1	Madhavan et al. 2020
2	High-Intensity Interval Training – Treadmill may produce greater improvements in neurophysiological measures than Moderate-intensity Continuous Exercise - Treadmill.	1	Boyne et al. 2019
1b	High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation with Treadmill Training for improving neurophysiological measures.	1	Wang et al. 2019b
1b	Aquatic therapy (physical therapy exercises) with aquatic treadmill may not have a difference in efficacy when compared to Conventional physical therapy exercise with land-based treadmill for improving neurophysiological measures.	1	Zhang et al. 2016
2	Underwater treadmill walking may produce greater improvements in neurophysiological measures than Overground treadmill walking.	1	Park et al. 2012

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training may produce greater improvements in aerobic measures than Conventional Therapy.	2	Globas et al. 2012; Macko et al. 2005
1a	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving aerobic measures.	2	Brauer et al. 2022; Aguiar et al. 2020
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving aerobic measures.	5	Duran et al. 2023; Nave et al. 2019; Mackay-Lyons et al. 2013; Da Cunha et al. 2002; Teixeira da Cunha Filho et al. 2001

1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving aerobic measures.	1	Franceschini et al. 2009
1b	There is conflicting evidence about the effect of Backward Treadmill Training when compared to Treadmill or Conventional Rehabilitation for improving aerobic measures.	1	Chang et al. 2021
2	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving aerobic measures.	1	Moore et al. 2010
1b	High Intensity Treadmill Training may not have a difference in efficacy when compared to Low Intensity Treadmill Training for improving aerobic measures.	3	Munari et al. 2018; Holleran et al. 2015; Ivey et al. 2015
2	Treadmill Training may produce greater improvements in aerobic measures than Stretching.	1	Serra et al. 2022
1b	Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not have a difference in efficacy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving aerobic measures.	1	Lee et al. 2018d
1b	Aquatic-based treadmill aerobic training with conventional care may produce greater improvements in aerobic measures than Land-based aerobic exercises on cycle ergometer with conventional care.	1	Han et al. 2018
1b	Aerobic training (treadmill and cycle ergometer) may not have a difference in efficacy when compared to Conventional rehabilitation for improving aerobic measures.	1	Toledano-Zarhi et al. 2011
2	Aerobic training (cycle ergometer, treadmill, balance) may produce greater improvements in aerobic measures than Conventional rehabilitation.	1	Letombe et al. 2010

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving sensory and proprioceptive function.	1	Franceschini et al. 2009

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Baer et al. 2018
1b	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving activities of daily living.	1	Aguiar et al. 2020
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	4	Duran et al. 2023; Lura et al. 2019; Nave et al. 2019; Teixeira da Cunha Filho et al. 2001
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving activities of daily living.	5	Gama et al. 2017; Hoyer et al. 2012; Dean et al. 2010; Franceschini et al. 2009; Nilsson et al. 2001

1b	Body weight supported Treadmill Training with Facilitation Technique may not have a difference in efficacy when compared to body weight supported Training with Mechanical Assistance for improving activities of daily living.	1	Yagura et al. 2006
2	Treadmill Training with Nordic Poles may produce greater improvements in activities of daily living than Treadmill Training.	1	Kang et al. 2016
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving activities of daily living.	1	de Lima Gomes et al. 2017
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving activities of daily living.	1	Gama et al. 2015
1b	Perturbation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving activities of daily living.	1	Esmaeili et al. 2020
2	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving activities of daily living.	1	Ribeiro et al. 2013
2	Treadmill-based C-Mill (using gait-dependent augmented reality) may not have a difference in efficacy when compared to Overground walking therapy (walking-adaptability exercises with physical obstacles) for improving activities of daily living.	1	Timmermans et al. 2021
1b	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving activities of daily living.	1	Ada et al. 2013
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving activities of daily living.	1	Ada et al. 2013
1b	Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not have a difference in efficacy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving activities of daily living.	1	Lee et al. 2018d
1b	Aquatic-based treadmill aerobic training with conventional care may not have a difference in efficacy when compared to Land-based aerobic exercises on cycle ergometer with conventional care for improving activities of daily living.	1	Han et al. 2018
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving activities of daily living.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Conventional physical therapy with treadmill training for improving activities of daily living.	1	Park et al. 2018a
1b	Aquatic therapy (physical therapy exercises) with aquatic treadmill may produce greater improvements in activities of daily living than Conventional physical therapy exercise with land-based treadmill.	1	Zhang et al. 2016
1b	Treadmill training with visual biofeedback and basic physiotherapy may not have a difference in efficacy when compared to Treadmill training with basic physiotherapy for improving activities of daily living.	1	Druzbicki et al. 2015

2	Aerobic training (cycle ergometer, treadmill, balance) may produce greater improvements in activities of daily living than Conventional rehabilitation.	1	Letombe et al. 2010
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving activities of daily living.	1	Richards et al. 2004
1b	Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care may not have a difference in efficacy when compared to Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks for improving activities of daily living.	1	Richards et al. 1993

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	6	Hu et al. 2023; Baer et al. 2018; Globas et al. 2012; Kuys et al. 2011; Macko et al. 2005; Laufer et al. 2001
1a	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving gait speed.	5	Van Bladel et al. 2023; Brauer et al. 2022; Aguiar et al. 2020; Bonnyaud et al. 2013a; Park et al. 2013b
1b	Treadmill training with Rehabilitation program may produce greater improvements in gait speed than Overground gait training with Rehabilitation program.	1	Langhammer & Stanghelle 2010
1a	Body weight supported Treadmill Training may produce greater improvements in gait speed than Conventional Therapy.	10	Tarihci Cakmak et al. 2024; Banjara et al. 2022; Ramakrishna et al. 2021; Lura et al. 2019; Nave et al. 2019; Mustafaoglu et al. 2018; Takao et al. 2015; Yen et al. 2008; Eich et al. 2004; Da Cunha et al. 2002
1b	Body weight supported treadmill training may not have a difference in efficacy when compared to body weight supported treadmill training with Conventional care for improving gait speed.	1	Mustafaoglu et al. 2018
1b	BWS treadmill training with Conventional care may produce greater improvements in gait speed than Conventional training.	1	Mustafaoglu et al. 2018
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving gait speed.	11	Gangopadhyay et al. 2021; Gama et al. 2017; DePaul et al. 2015; Mao et al. 2015; Combs-Miller et al. 2014; Middleton et al. 2014; Hoyer et al. 2012; Dean et al. 2010; Franceschini et al. 2009; Suputtitada et al. 2004; Nilsson et al. 2001
1a	There is conflicting evidence about the effect of Body weight supported Treadmill Training when compared to Treadmill Training for improving gait speed.	4	Ullah et al. 2017; Srivastava et al. 2016; Lee et al. 2015f; Visintin et al. 1998
2	Body weight supported Treadmill Training with Mobility Skills may not have a difference in efficacy when compared to body weight supported Treadmill Training for improving gait speed.	1	Graham et al. 2018

1b	Body weight supported treadmill with upper extremity ergometry training may produce greater improvements in gait speed than Resistive leg cycling with upper extremity ergometry training.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving gait speed.	1	Sullivan et al. 2007
1b	Body weight supported Treadmill Training with Facilitation Technique may not have a difference in efficacy when compared to body weight supported Training with Mechanical Assistance for improving gait speed.	1	Yagura et al. 2006
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving gait speed.	1	Duncan et al. 2011
2	Treadmill Training with Nordic Poles may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Kang et al. 2016
1b	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving gait speed.	3	Kim & Yim 2017c; de Lima Gomes et al. 2017; Ribeiro et al. 2017
1a	There is conflicting evidence about the effect of Treadmill Training with Incline when compared to Treadmill Training with Decline or Level Treadmill Training for improving gait speed.	3	Cheng et al. 2022; Gama et al. 2015; Carda et al. 2013
2	Treadmill Training with Increased Speed may produce greater improvements in gait speed than Treadmill Training with Increased Incline.	1	Alipsatici et al. 2020
1b	Perturbation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Esmaeili et al. 2020
1b	Turning Treadmill Training may produce greater improvements in gait speed than Treadmill Training.	1	Chen et al. 2014
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Broderick et al. 2019
2	Treadmill Training with Proprioceptive Neuromuscular Facilitation may produce greater improvements in gait speed than Treadmill Training.	1	Kim & Kang 2018c
2	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving gait speed.	1	Ribeiro et al. 2013
1b	Treadmill Training with Obstacles may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Jeong et al. 2016
2	Treadmill Training on Unstable Surface may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Bang et al. 2014
2	Treadmill Training with Horizontal Force may produce greater improvements in gait speed than Treadmill Training.	1	Na et al. 2015
2	Treadmill-based C-Mill (using gait-dependent augmented reality) may not have a difference in efficacy when compared to Overground walking therapy (walking-adaptability exercises with physical obstacles) for improving gait speed.	1	Timmermans et al. 2021
1a	Treadmill Training with virtual reality may produce greater improvements in gait speed than Other Training.	2	Cho et al. 2014; Cho et al. 2013c

1b	Treadmill Training with Smartphone Application may produce greater improvements in gait speed than Treadmill Training.	1	Lee et al. 2017a
2	Treadmill Training with Visual Deprivation may produce greater improvements in gait speed than Treadmill Training.	1	Kim et al. 2014a
1a	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving gait speed.	5	Bansal et al. 2023; Chang et al. 2021; Munari et al. 2020; Kim et al. 2017b; Takami et al. 2010
2	Backward treadmill with partial body weight supported may not have a difference in efficacy when compared to Forward treadmill with partial body weight supported treadmill for improving gait speed.	1	Takami et al. 2010
2	Forward treadmill with partial BWS treadmill may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait speed.	1	Takami et al. 2010
1a	Treadmill Training with Overground Training may produce greater improvements in gait speed than Home Exercise/ no treatment.	3	Ada et al. 2013; Moore et al. 2010; Ada et al. 2003
1b	Long-term Treadmill and Overground Walking may not have a difference in efficacy when compared to Short-term Treadmill and Overground Walking for improving gait speed.	1	Ada et al. 2013
1b	High Intensity Treadmill Training may not have a difference in efficacy when compared to Low Intensity Treadmill Training for improving gait speed.	2	Munari et al. 2018; Holleran et al. 2015
1b	Fast Speed Treadmill Training with functional electrical stimulation may produce greater improvements in gait speed than Self-selected or Fast Speed Treadmill Training.	1	Awad et al. 2016
1a	Speed Dependent Treadmill Training may produce greater improvements in gait speed than Other Treadmill Training.	3	Van Bladel et al. 2022; Lau & Mak 2011; Pohl et al. 2002
2	Body weight supported treadmill training (fast speed) may result in lesser improvements in gait speed when compared to body weight supported treadmill training (slow speed) or body weight supported treadmill training (variable speed).	1	Sullivan et al. 2002
2	Error Augmentation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Lewek et al. 2018
2	Treadmill Training may not have a difference in efficacy when compared to Stretching for improving gait speed.	2	Serra et al. 2022; Luft et al. 2008
1a	Treadmill Training with Orthotic Devices may produce greater improvements in gait speed than Treadmill Training.	2	Park et al. 2024b; In et al. 2017
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving gait speed.	1	Werner et al. 2002b
1b	Treadmill Training with Action Observation may produce greater improvements in gait speed than Treadmill Training.	1	Bang et al. 2013
1b	Circular treadmill training with ambulation training may produce greater improvements in gait speed than Regular treadmill training+ ambulation training.	1	Chen et al. 2019b
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving gait speed.	1	Hollands et al. 2015
2	Treadmill walking training + conventional PT may not have a difference in efficacy when compared to conventional PT for improving gait speed.	1	Olawale et al. 2011

1b	There is conflicting evidence about the effect of Augmented reality treadmill-based gait adaptation training when compared to Treadmill training with overground walking for improving gait speed.	1	Yang et al. 2024a
1b	Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training may produce greater improvements in gait speed than Custom physiotherapy program with Treadmill gait training.	1	Ahmed et al. 2023
2	There is conflicting evidence about the effect of Treadmill training with HEALBOT exoskeleton when compared to Treadmill training for improving gait speed.	1	Yoo et al. 2023a
2	Functional electrical stimulation with treadmill training may not have a difference in efficacy when compared to Treadmill training for improving gait speed.	1	Dantas et al. 2023
1b	Anodal transcranial direct current stimulation with Treadmill training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill training for improving gait speed.	1	Dumont et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill for improving gait speed.	1	Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may produce greater improvements in gait speed than Cathodal transcranial direct current stimulation and Treadmill.	1	Wong et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving gait speed.	1	Wang et al. 2022c
1b	There is conflicting evidence about the effect of Underwater Treadmill gait training with conventional rehabilitation when compared to Overground gait training with conventional rehabilitation for improving gait speed.	1	Kim et al. 2022a
1b	Functional electrical stimulation with treadmill gait training may produce greater improvements in gait speed than Sham Functional electrical stimulation with treadmill gait training.	1	Lee et al. 2022d
1b	Body weight supported treadmill training (BWST) with conventional rehabilitation may produce greater improvements in gait speed than Overground gait training with conventional rehabilitation.	1	Gangopadhyay et al. 2021
1b	Dual-task gait training with treadmill may produce greater improvements in gait speed than Single-task gait training with treadmill.	1	Baek et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait speed.	1	Koch et al. 2020
2	Treadmill training using insole on less affected side may produce greater improvements in gait speed than Treadmill training.	1	An et al. 2020
1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving gait speed.	1	Ogino et al. 2020
1b	High frequency repetitive transcranial magnetic stimulation with Treadmill Training may produce greater improvements in gait speed than Sham repetitive transcranial magnetic stimulation with Treadmill Training.	1	Lee et al. 2020a

1b	Cerebellar transcranial direct current stimulation with split-belt treadmill training may not have a difference in efficacy when compared to Sham cerebellar transcranial direct current stimulation with split-belt treadmill training for improving gait speed.	1	Kumari et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait speed.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait speed.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving gait speed.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait speed.	1	Madhavan et al. 2020
1b	Backward treadmill training with botulinum toxin type A therapy may produce greater improvements in gait speed than forward treadmill training with botulinum toxin type A therapy.	1	Munari et al. 2020
2	There is conflicting evidence about the effect of High-Intensity Interval Training – Treadmill when compared to Moderate-intensity Continuous Exercise - Treadmill for improving gait speed.	1	Boyne et al. 2019
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in gait speed than Single task treadmill walking.	1	Fishbein et al. 2019
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving gait speed.	1	Broderick et al. 2019
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in gait speed than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
2	Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not have a difference in efficacy when compared to Conventional Physical therapy for improving gait speed.	1	Sczesny-Kaiser et al. 2019
1b	High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training may produce greater improvements in gait speed than Sham repetitive transcranial magnetic stimulation with Treadmill Training.	1	Wang et al. 2019b
1b	There is conflicting evidence about the effect of Body weight support treadmill training with visual biofeedback when compared to Body weight support treadmill training for improving gait speed.	1	Druzbicki et al. 2018

1b	There is conflicting evidence about the effect of Rhythmic auditory stimulation with treadmill training and conventional physical therapy when compared to Treadmill training with conventional physical therapy for improving gait speed.	1	Mainka et al. 2018
1b	There is conflicting evidence about the effect of Rhythmic auditory stimulation with treadmill training and conventional physical therapy when compared to Neurodevelopmental treatment with conventional physical therapy for improving gait speed.	1	Mainka et al. 2018
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving gait speed.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in gait speed than Conventional physical therapy with treadmill training.	1	Park et al. 2018a
1b	Body weight supported treadmill training with anodal transcranial direct current stimulation may produce greater improvements in gait speed than Body weight supported treadmill training with sham transcranial direct current stimulation.	1	Manji et al. 2018
1b	Whole body vibration with Treadmill training may produce greater improvements in gait speed than Exercises on platform without vibration with Treadmill training.	1	Choi et al. 2017b
1b	High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may produce greater improvements in gait speed than Conventional physical therapy care.	1	Hornby et al. 2016
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait speed than Treadmill training.	1	Song & Ryu 2016
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in gait speed than Treadmill training.	1	Yang et al. 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait speed than Treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait speed than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in gait speed than Treadmill training.	1	Yoon & Kang 2016
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving gait speed.	1	Kim et al. 2016c
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait speed.	1	Kim et al. 2016c
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving gait speed.	1	Forrester et al. 2016
2	Task-oriented treadmill training with conventional therapy may produce greater improvements in gait speed than Treadmill training with conventional therapy.	1	Kwon et al. 2015
1b	Treadmill training with visual biofeedback and basic physiotherapy may not have a difference in efficacy when compared to Treadmill training with basic physiotherapy for improving gait speed.	1	Druzbicki et al. 2015

1b	Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation may produce greater improvements in gait speed than Single task training on Treadmill walking with Conventional rehabilitation.	1	Choi et al. 2015a
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait speed than Overground training with Rhythmic auditory stimulation.	1	Park et al. 2015a
1b	Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior may produce greater improvements in gait speed than Treadmill training.	1	Cho et al. 2015c
1b	Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may produce greater improvements in gait speed than Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy.	1	Hwang et al. 2015
2	Overground gait training with ankle mass may not have a difference in efficacy when compared to Overground gait training without mass or Treadmill gait training without mass for improving gait speed.	1	Bonnyaud et al. 2013b
1b	Body Weight-Supported Treadmill Training with functional electrical stimulation may produce greater improvements in gait speed than Body Weight Supported Treadmill Training.	1	Lee et al. 2013g
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in gait speed than Treadmill with conventional physical therapy.	1	Kang et al. 2012
1b	There is conflicting evidence about the effect of Treadmill with optic flow with conventional physical therapy when compared to Conventional therapy for improving gait speed.	1	Kang et al. 2012
1b	Treadmill training with Virtual reality may produce greater improvements in gait speed than Treadmill training.	1	Yang et al. 2008
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving gait speed.	1	Richards et al. 2004
1b	Treadmill training and overground gait training may produce greater improvements in gait speed than Placebo program of low- intensity home exercise program with Telerehabilitation.	1	Ada et al. 2003
1b	Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy may not have a difference in efficacy when compared to Baseline conventional therapy with Treadmill training with partial body weight supported for improving gait speed.	1	Werner et al. 2002a
1b	Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care may not have a difference in efficacy when compared to Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks for improving gait speed.	1	Richards et al. 1993

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may produce greater improvements in gait endurance than Conventional Therapy.	4	Baer et al. 2018; Globas et al. 2012; Kuys et al. 2011; Macko et al. 2005

1a	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving gait endurance.	3	Brauer et al. 2022; Aguiar et al. 2020; Park et al. 2013b
1b	Treadmill training with Rehabilitation program may produce greater improvements in gait endurance than Overground gait training with Rehabilitation program.	1	Langhammer & Stanghelle 2010
1a	There is conflicting evidence about the effect of Body weight supported Treadmill Training when compared to Conventional Therapy for improving gait endurance.	6	Tarihci Cakmak et al. 2024; Duran et al. 2023; Nave et al. 2019; Sukonthamarn et al. 2019; Mackay-Lyons et al. 2013; Eich et al. 2004
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving gait endurance.	8	Gama et al. 2017; DePaul et al. 2015; Combs-Miller et al. 2014; Middleton et al. 2014; Hoyer et al. 2012; Dean et al. 2010; Franceschini et al. 2009; Kosak & Reding 2000
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	3	Srivastava et al. 2016; Lee et al. 2015f; Visintin et al. 1998
2	Body weight supported Treadmill Training with Mobility Skills may not have a difference in efficacy when compared to body weight supported Treadmill Training for improving gait endurance.	1	Graham et al. 2018
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to Resistive leg cycling with upper extremity ergometry training for improving gait endurance.	1	Sullivan et al. 2007
1b	Body weight supported treadmill with upper extremity ergometry training may not have a difference in efficacy when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise for improving gait endurance.	1	Sullivan et al. 2007
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving gait endurance.	1	Duncan et al. 2011
2	Treadmill Training with Nordic Poles may produce greater improvements in gait endurance than Treadmill Training.	2	Kang et al. 2016; Shin et al. 2015
2	Treadmill Training with Incline may result in lesser improvements in gait endurance when compared to Treadmill Training with Decline or Level Treadmill Training.	1	Carda et al. 2013
2	Treadmill Training with Increased Speed may produce greater improvements in gait endurance than Treadmill Training with Increased Incline.	1	Alipsatici et al. 2020
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Broderick et al. 2019
2	Treadmill Training with Proprioceptive Neuromuscular Facilitation may produce greater improvements in gait endurance than Treadmill Training.	1	Kim & Kang 2018c
1b	Treadmill Training with Obstacles may produce greater improvements in gait endurance than Treadmill Training.	1	Jeong et al. 2016
2	Treadmill Training on Unstable Surface may produce greater improvements in gait endurance than Treadmill Training.	1	Bang et al. 2014

2	Treadmill Training with Visual Deprivation may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Kim et al. 2014a
1a	There is conflicting evidence about the effect of Backward Treadmill Training when compared to Treadmill or Conventional Rehabilitation for improving gait endurance.	2	Chang et al. 2021; Kim et al. 2017b
1a	Treadmill Training with Overground Training may produce greater improvements in gait endurance than Home Exercise/ no treatment.	2	Ada et al. 2013; Ada et al. 2003
1b	Long-term Treadmill and Overground Walking may produce greater improvements in gait endurance than Short-term Treadmill and Overground Walking.	1	Ada et al. 2013
1b	High Intensity Treadmill Training may not have a difference in efficacy when compared to Low Intensity Treadmill Training for improving gait endurance.	3	Munari et al. 2018; Holleran et al. 2015; Ivey et al. 2015
1b	Fast Speed Treadmill Training with functional electrical stimulation may not have a difference in efficacy when compared to Self-selected or Fast Speed Treadmill Training for improving gait endurance.	1	Awad et al. 2016
2	There is conflicting evidence about the effect of Treadmill Training when compared to Stretching for improving gait endurance.	2	Serra et al. 2022; Luft et al. 2008
1b	Treadmill Training with Action Observation may produce greater improvements in gait endurance than Treadmill Training.	1	Bang et al. 2013
2	Treadmill walking training + conventional PT may not have a difference in efficacy when compared to conventional PT for improving gait endurance.	1	Olawale et al. 2011
2	Functional electrical stimulation with treadmill training may produce greater improvements in gait endurance than Treadmill training.	1	Dantas et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving gait endurance.	1	Wang et al. 2022c
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving gait endurance.	1	da Cunha et al. 2022
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait endurance.	1	Koch et al. 2020
2	Treadmill training using insole on less affected side may produce greater improvements in gait endurance than Treadmill training.	1	An et al. 2020
1b	There is conflicting evidence about the effect of Gait training with Gait Exercise Assist Robot (GEAR) when compared to Gait training with treadmill for improving gait endurance.	1	Ogino et al. 2020
1b	High frequency repetitive transcranial magnetic stimulation with Treadmill Training may produce greater improvements in gait endurance than Sham repetitive transcranial magnetic stimulation with Treadmill Training.	1	Lee et al. 2020a
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill	1	Madhavan et al. 2020

	training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait endurance.		
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait endurance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving gait endurance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait endurance.	1	Madhavan et al. 2020
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving gait endurance.	1	Broderick et al. 2019
2	Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not have a difference in efficacy when compared to Conventional Physical therapy for improving gait endurance.	1	Sczesny-Kaiser et al. 2019
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in gait endurance than Sham taping with treadmill training.	1	Kim & Kang 2018c
1b	Body weight support treadmill training with visual biofeedback may produce greater improvements in gait endurance than Body weight support treadmill training.	1	Druzbicki et al. 2018
1b	Aquatic-based treadmill aerobic training with conventional care may not have a difference in efficacy when compared to Land-based aerobic exercises on cycle ergometer with conventional care for improving gait endurance.	1	Han et al. 2018
1b	Rhythmic auditory stimulation with treadmill training and conventional physical therapy may produce greater improvements in gait endurance than Treadmill training with conventional physical therapy.	1	Mainka et al. 2018
1b	Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not have a difference in efficacy when compared to Neurodevelopmental treatment with conventional physical therapy for improving gait endurance.	1	Mainka et al. 2018
1b	Whole body vibration with Treadmill training may not have a difference in efficacy when compared to Exercises on platform without vibration with Treadmill training for improving gait endurance.	1	Choi et al. 2017b
1b	There is conflicting evidence about the effect of High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) when compared to Conventional physical therapy care for improving gait endurance.	1	Hornby et al. 2016

2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait endurance than Treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait endurance than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in gait endurance than Treadmill training.	1	Yoon & Kang 2016
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving gait endurance.	1	Kim et al. 2016c
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait endurance.	1	Kim et al. 2016c
2	Task-oriented treadmill training with conventional therapy may produce greater improvements in gait endurance than Treadmill training with conventional therapy.	1	Kwon et al. 2015
1b	Treadmill training with visual biofeedback and basic physiotherapy may not have a difference in efficacy when compared to Treadmill training with basic physiotherapy for improving gait endurance.	1	Druzbicki et al. 2015
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait endurance than Overground training with Rhythmic auditory stimulation.	1	Park et al. 2015a
1b	Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior may not have a difference in efficacy when compared to Treadmill training for improving gait endurance.	1	Cho et al. 2015c
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in gait endurance than Treadmill with conventional physical therapy.	1	Kang et al. 2012
1b	There is conflicting evidence about the effect of Treadmill with optic flow with conventional physical therapy when compared to Conventional therapy for improving gait endurance.	1	Kang et al. 2012
1b	Aerobic training (treadmill and cycle ergometer) may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait endurance.	1	Toledano-Zarhi et al. 2011
2	Treadmill training with Virtual reality may not have a difference in efficacy when compared to Stepping over real objects on 10m walkway for improving gait endurance.	1	Jaffe et al. 2004
1b	Treadmill training and overground gait training may produce greater improvements in gait endurance than Placebo program of low-intensity home exercise program with Telerehabilitation.	1	Ada et al. 2003

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	6	Hu et al. 2023; Baer et al. 2018; Globas et al. 2012; Kuys et al. 2011; Macko et al. 2005; Laufer et al. 2001
1b	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving functional mobility.	1	Bonnyaud et al. 2014b
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	9	Tarihci Cakmak et al. 2024; Banjara et al. 2022; Nave et al. 2019; Sukonthamarn et al. 2019;

			Mustafaoglu et al. 2018; Takao et al. 2015; Eich et al. 2004; Da Cunha et al. 2002; Teixeira da Cunha Filho et al. 2001
1b	Body weight supported treadmill training may result in lesser improvements in functional mobility when compared to body weight supported treadmill training with Conventional care.	1	Mustafaoglu et al. 2018
1b	BWS treadmill training with Conventional care may produce greater improvements in functional mobility than Conventional training.	1	Mustafaoglu et al. 2018
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving functional mobility.	6	Gangopadhyay et al. 2021; DePaul et al. 2015; Middleton et al. 2014; Hoyer et al. 2012; Franceschini et al. 2009; Nilsson et al. 2001
1a	Body weight supported Treadmill Training may produce greater improvements in functional mobility than Treadmill Training.	5	Calabro et al. 2020; Ullah et al. 2017; Srivastava et al. 2016; Lee et al. 2015f; Visintin et al. 1998
2	Treadmill Training with Nordic Poles may produce greater improvements in functional mobility than Treadmill Training.	2	Kang et al. 2016; Shin et al. 2015
2	There is conflicting evidence about the effect of Treadmill Training with Load when compared to Treadmill Training without Load or Conventional Therapy for improving functional mobility.	2	Kim & Yim 2017c; de Lima Gomes et al. 2017
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving functional mobility.	2	Cheng et al. 2022; Carda et al. 2013
1b	Constraint Induced Movement with Home Exercise may not have a difference in efficacy when compared to Treadmill Training for improving functional mobility.	1	Silva et al. 2017
2	Treadmill Training with Foot Drop Stimulator may produce greater improvements in functional mobility than Foot Drop Stimulator.	1	Peishun et al. 2021
2	Treadmill Training with Proprioceptive Neuromuscular Facilitation may produce greater improvements in functional mobility than Treadmill Training.	1	Kim & Kang 2018c
1b	Treadmill Training with Obstacles may not have a difference in efficacy when compared to Treadmill Training for improving functional mobility.	1	Jeong et al. 2016
2	Treadmill Training on Unstable Surface may produce greater improvements in functional mobility than Treadmill Training.	1	Bang et al. 2014
2	Treadmill Training with Horizontal Force may produce greater improvements in functional mobility than Treadmill Training.	1	Na et al. 2015
2	Treadmill-based C-Mill (using gait-dependent augmented reality) may not have a difference in efficacy when compared to Overground walking therapy (walking-adaptability exercises with physical obstacles) for improving functional mobility.	1	Timmermans et al. 2021
1a	Treadmill Training with virtual reality may produce greater improvements in functional mobility than Other Training.	2	Cho et al. 2014; Cho et al. 2013c
2	Treadmill Training with Visual Deprivation may not have a difference in efficacy when compared to Treadmill Training for improving functional mobility.	1	Kim et al. 2014a
1a	Backward Treadmill Training may produce greater improvements in functional mobility than Treadmill or Conventional Rehabilitation.	3	Chang et al. 2021; Kim et al. 2017b; Takami et al. 2010

2	Backward treadmill with partial body weight supported may produce greater improvements in functional mobility than Forward treadmill with partial body weight supported treadmill.	1	Takami et al. 2010
2	Forward treadmill with partial BWS treadmill may produce greater improvements in functional mobility than Conventional rehabilitation.	1	Takami et al. 2010
1b	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving functional mobility.	2	Ada et al. 2013; Moore et al. 2010
1b	Long-term Treadmill and Overground Walking may produce greater improvements in functional mobility than Short-term Treadmill and Overground Walking.	1	Ada et al. 2013
1b	High Intensity Treadmill Training may not have a difference in efficacy when compared to Low Intensity Treadmill Training for improving functional mobility.	1	Munari et al. 2018
1b	Speed Dependent Treadmill Training may produce greater improvements in functional mobility than Other Treadmill Training.	1	Pohl et al. 2002
2	Speed-dependent Treadmill Training may not have a difference in efficacy when compared to Task-oriented Training for improving functional mobility.	1	Sharma et al. 2014
2	Treadmill Training may not have a difference in efficacy when compared to Stretching for improving functional mobility.	1	Serra et al. 2022
1b	Treadmill Training with Orthotic Devices may produce greater improvements in functional mobility than Treadmill Training.	1	In et al. 2017
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may produce greater improvements in functional mobility than Body weight-supported treadmill training with Conventional rehabilitation.	1	Werner et al. 2002b
1b	Treadmill Training with Action Observation may produce greater improvements in functional mobility than Treadmill Training.	1	Bang et al. 2013
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving functional mobility.	1	Hollands et al. 2015
1b	Augmented reality treadmill-based gait adaptation training may produce greater improvements in functional mobility than Treadmill training with overground walking.	1	Yang et al. 2024a
1b	Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training may produce greater improvements in functional mobility than Custom physiotherapy program with Treadmill gait training.	1	Ahmed et al. 2023
2	Treadmill training with HEALBOT exoskeleton may produce greater improvements in functional mobility than Treadmill training.	1	Yoo et al. 2023a
2	Functional electrical stimulation with treadmill training may produce greater improvements in functional mobility than Treadmill training.	1	Dantas et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill for improving functional mobility.	1	Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation and Treadmill for improving functional mobility.	1	Wong et al. 2023

1b	Functional electrical stimulation with treadmill gait training may produce greater improvements in functional mobility than Sham Functional electrical stimulation with treadmill gait training.	1	Lee et al. 2022d
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving functional mobility.	1	da Cunha et al. 2022
1b	Body weight supported treadmill training (BWST) with conventional rehabilitation may produce greater improvements in functional mobility than Overground gait training with conventional rehabilitation.	1	Gangopadhyay et al. 2021
1b	Dual-task gait training with treadmill may not have a difference in efficacy when compared to Single-task gait training with treadmill for improving functional mobility.	1	Baek et al. 2021
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving functional mobility.	1	Koch et al. 2020
2	Treadmill training using insole on less affected side may produce greater improvements in functional mobility than Treadmill training.	1	An et al. 2020
1b	Gait training with Gait Exercise Assist Robot (GEAR) may produce greater improvements in functional mobility than Gait training with treadmill.	1	Ogino et al. 2020
1b	High frequency repetitive transcranial magnetic stimulation with Treadmill Training may produce greater improvements in functional mobility than Sham repetitive transcranial magnetic stimulation with Treadmill Training.	1	Lee et al. 2020a
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving functional mobility.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving functional mobility.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving functional mobility.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving functional mobility.	1	Madhavan et al. 2020

1b	Dual-task (virtual reality-based UL training while walking on treadmill) may not have a difference in efficacy when compared to Single task treadmill walking for improving functional mobility.	1	Fishbein et al. 2019
2	Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not have a difference in efficacy when compared to Conventional Physical therapy for improving functional mobility.	1	Sczesny-Kaiser et al. 2019
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in functional mobility than Sham taping with treadmill training.	1	Kim & Kang 2018c
1b	Body weight support treadmill training with visual biofeedback may not have a difference in efficacy when compared to Body weight support treadmill training for improving functional mobility.	1	Druzbicki et al. 2018
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving functional mobility.	1	Park et al. 2018a
1b	There is conflicting evidence about the effect of Body weight supported treadmill training with anodal transcranial direct current stimulation when compared to Body weight supported treadmill training with sham transcranial direct current stimulation for improving functional mobility.	1	Manji et al. 2018
1b	High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may not have a difference in efficacy when compared to Conventional physical therapy care for improving functional mobility.	1	Hornby et al. 2016
1b	Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises may not have a difference in efficacy when compared to Treadmill training without biofeedback with Conventional individual exercises for improving functional mobility.	1	Druzbicki et al. 2016b
1b	Aquatic therapy (physical therapy exercises) with aquatic treadmill may produce greater improvements in functional mobility than Conventional physical therapy exercise with land-based treadmill.	1	Zhang et al. 2016
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in functional mobility than Treadmill training.	1	Song & Ryu 2016
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in functional mobility than Treadmill training.	1	Yang et al. 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in functional mobility than Treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in functional mobility than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in functional mobility than Treadmill training.	1	Yoon & Kang 2016
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving functional mobility.	1	Kim et al. 2016c
1b	Virtual reality treadmill training-based community ambulation may produce greater improvements in functional mobility than Conventional rehabilitation.	1	Kim et al. 2016c

2	Task-oriented treadmill training with conventional therapy may produce greater improvements in functional mobility than Treadmill training with conventional therapy.	1	Kwon et al. 2015
1b	Treadmill training with visual biofeedback and basic physiotherapy may not have a difference in efficacy when compared to Treadmill training with basic physiotherapy for improving functional mobility.	1	Druzbicki et al. 2015
1b	Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation may not have a difference in efficacy when compared to Single task training on Treadmill walking with Conventional rehabilitation for improving functional mobility.	1	Choi et al. 2015a
2	Treadmill training with Rhythmic auditory stimulation may produce greater improvements in functional mobility than Overground training with Rhythmic auditory stimulation.	1	Park et al. 2015a
1b	Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may produce greater improvements in functional mobility than Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy.	1	Hwang et al. 2015
1b	Body Weight-Supported Treadmill Training with functional electrical stimulation may produce greater improvements in functional mobility than Body Weight Supported Treadmill Training.	1	Lee et al. 2013g
2	Underwater treadmill walking may not have a difference in efficacy when compared to Overground treadmill walking for improving functional mobility.	1	Park et al. 2012
1b	There is conflicting evidence about the effect of Treadmill training with Virtual reality when compared to Treadmill training for improving functional mobility.	2	Jung et al. 2012; Yang et al. 2008
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in functional mobility than Treadmill with conventional physical therapy.	1	Kang et al. 2012
1b	There is conflicting evidence about the effect of Treadmill with optic flow with conventional physical therapy when compared to Conventional therapy for improving functional mobility.	1	Kang et al. 2012
1b	Aerobic training (treadmill and cycle ergometer) may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Toledano-Zarhi et al. 2011
2	Treadmill training with Virtual reality and Conventional rehabilitation may not have a difference in efficacy when compared to Treadmill training with Conventional rehabilitation for improving functional mobility.	1	Yang et al. 2011
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving functional mobility.	1	Richards et al. 2004
2	Treadmill training with Virtual reality may not have a difference in efficacy when compared to Stepping over real objects on 10m walkway for improving functional mobility.	1	Jaffe et al. 2004
1b	Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy may produce greater improvements in functional mobility than Baseline conventional therapy with Treadmill training with partial body weight supported.	1	Werner et al. 2002a

1b	Treadmill training with BWS via overhead harness may not have a difference in efficacy when compared to Overground gait training for improving functional mobility.	1	Ada et al. 2010

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	2	Globas et al. 2012; Laufer et al. 2001
2	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving balance.	1	Park et al. 2013b
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	5	Duran et al. 2023; Sukonthamarn et al. 2019; Mustafaoglu et al. 2018; Mackay-Lyons et al. 2013; Yen et al. 2008
1b	Body weight supported treadmill training may result in lesser improvements in balance when compared to body weight supported treadmill training with Conventional care.	1	Mustafaoglu et al. 2018
1b	BWS treadmill training with Conventional care may produce greater improvements in balance than Conventional training.	1	Mustafaoglu et al. 2018
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving balance.	7	Gangopadhyay et al. 2021; DePaul et al. 2015; Mao et al. 2015; Middleton et al. 2014; Franceschini et al. 2009; Suputtitada et al. 2004; Nilsson et al. 2001
2	There is conflicting evidence about the effect of Body weight supported Treadmill Training when compared to Treadmill Training for improving balance.	1	Visintin et al. 1998
2	Body weight supported Treadmill Training with Mobility Skills may not have a difference in efficacy when compared to body weight supported Treadmill Training for improving balance.	1	Graham et al. 2018
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving balance.	1	Duncan et al. 2011
2	Treadmill Training with Nordic Poles may produce greater improvements in balance than Treadmill Training.	1	Kang et al. 2016
1b	Treadmill Training with Incline may not have a difference in efficacy when compared to Treadmill Training with Decline or Level Treadmill Training for improving balance.	1	Gama et al. 2015
2	Treadmill Training with Increased Speed may not have a difference in efficacy when compared to Treadmill Training with Increased Incline for improving balance.	1	Alipsatici et al. 2020
1b	Constraint Induced Movement with Home Exercise may not have a difference in efficacy when compared to Treadmill Training for improving balance.	1	Silva et al. 2017
1b	Perturbation Treadmill Training may produce greater improvements in balance than Treadmill Training.	1	Esmaeili et al. 2020
1b	Turning Treadmill Training may produce greater improvements in balance than Treadmill Training.	1	Chen et al. 2014
1b	Treadmill Training with Obstacles may produce greater improvements in balance than Treadmill Training.	1	Jeong et al. 2016

2	There is conflicting evidence about the effect of Treadmill Training with Horizontal Force when compared to Treadmill Training for improving balance.	1	Na et al. 2015
1a	Treadmill Training with virtual reality may produce greater improvements in balance than Other Training.	2	Cho et al. 2014; Cho et al. 2013c
1b	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving balance.	2	Chang et al. 2021; Takami et al. 2010
2	Backward treadmill with partial body weight supported may not have a difference in efficacy when compared to Forward treadmill with partial body weight supported treadmill for improving balance.	1	Takami et al. 2010
2	Forward treadmill with partial BWS treadmill may not have a difference in efficacy when compared to Conventional rehabilitation for improving balance.	1	Takami et al. 2010
2	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving balance.	1	Moore et al. 2010
1b	Speed Dependent Treadmill Training may not have a difference in efficacy when compared to Other Treadmill Training for improving balance.	1	Lau & Mak 2011
2	Speed-dependent Treadmill Training may not have a difference in efficacy when compared to Task-oriented Training for improving balance.	1	Sharma et al. 2014
2	Treadmill Training may produce greater improvements in balance than Stretching.	1	Serra et al. 2022
1b	There is conflicting evidence about the effect of Treadmill Training with Orthotic Devices when compared to Treadmill Training for improving balance.	1	In et al. 2017
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving balance.	1	Hollands et al. 2015
1b	Augmented reality treadmill-based gait adaptation training may produce greater improvements in balance than Treadmill training with overground walking.	1	Yang et al. 2024a
2	Treadmill training with HEALBOT exoskeleton may not have a difference in efficacy when compared to Treadmill training for improving balance.	1	Yoo et al. 2023a
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving balance.	1	Wang et al. 2022c
1b	Body weight supported treadmill training (BWST) with conventional rehabilitation may produce greater improvements in balance than Overground gait training with conventional rehabilitation.	1	Gangopadhyay et al. 2021
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving balance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to	1	Madhavan et al. 2020

	15min rest with High- intensity speed-based treadmill training for improving balance.		
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving balance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving balance.	1	Madhavan et al. 2020
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in balance than Single task treadmill walking.	1	Fishbein et al. 2019
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may not have a difference in efficacy when compared to Gait training (treadmill training + over ground walking) for improving balance.	1	Lee et al. 2019a
2	Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not have a difference in efficacy when compared to Conventional Physical therapy for improving balance.	1	Sczesny-Kaiser et al. 2019
1b	Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not have a difference in efficacy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving balance.	1	Lee et al. 2018d
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving balance.	1	Park et al. 2018a
1b	Body weight supported treadmill training with anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Body weight supported treadmill training with sham transcranial direct current stimulation for improving balance.	1	Manji et al. 2018
1b	High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may not have a difference in efficacy when compared to Conventional physical therapy care for improving balance.	1	Hornby et al. 2016
1b	Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises may not have a difference in efficacy when compared to Treadmill training without biofeedback with Conventional individual exercises for improving balance.	1	Druzbicki et al. 2016b
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in balance than Treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in balance than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in balance than Treadmill training.	1	Yoon & Kang 2016

1b	Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior may not have a difference in efficacy when compared to Treadmill training for improving balance.	1	Cho et al. 2015c
1b	Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may produce greater improvements in balance than Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy.	1	Hwang et al. 2015
1b	Body Weight-Supported Treadmill Training with functional electrical stimulation may produce greater improvements in balance than Body Weight Supported Treadmill Training.	1	Lee et al. 2013g
1b	Treadmill with optic flow with conventional physical therapy may not have a difference in efficacy when compared to Treadmill with conventional physical therapy for improving balance.	1	Kang et al. 2012
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in balance than Conventional therapy.	1	Kang et al. 2012
1b	Aerobic training (treadmill and cycle ergometer) may not have a difference in efficacy when compared to Conventional rehabilitation for improving balance.	1	Toledano-Zarhi et al. 2011
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving balance.	1	Richards et al. 2004
1b	Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care may not have a difference in efficacy when compared to Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks for improving balance.	1	Richards et al. 1993

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	1	Hu et al. 2023
1b	Body weight supported Treadmill Training may produce greater improvements in falls and fear of falling than Conventional Therapy.	1	Mustafaoglu et al. 2018
1b	Body weight supported treadmill training may result in lesser improvements in falls and fear of falling when compared to body weight supported treadmill training with Conventional care.	1	Mustafaoglu et al. 2018
1b	BWS treadmill training with Conventional care may produce greater improvements in falls and fear of falling than Conventional training.	1	Mustafaoglu et al. 2018
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving falls and fear of falling.	3	DePaul et al. 2015; Middleton et al. 2014; Dean et al. 2010
2	Body weight supported Treadmill Training with Mobility Skills may not have a difference in efficacy when compared to body weight supported Treadmill Training for improving falls and fear of falling.	1	Graham et al. 2018
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving falls and fear of falling.	1	Duncan et al. 2011

2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving falls and fear of falling.	1	de Lima Gomes et al. 2017
1b	Perturbation Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving falls and fear of falling.	1	Esmaeili et al. 2020
1b	Treadmill Training with Obstacles may not have a difference in efficacy when compared to Treadmill Training for improving falls and fear of falling.	1	Jeong et al. 2016
1b	Backward Treadmill Training may not have a difference in efficacy when compared to Treadmill or Conventional Rehabilitation for improving falls and fear of falling.	1	Bansal et al. 2023
1b	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving falls and fear of falling.	1	Ada et al. 2013
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving falls and fear of falling.	1	Hollands et al. 2015
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving falls and fear of falling.	1	Wang et al. 2022c
1b	Dual-task gait training with treadmill may not have a difference in efficacy when compared to Single-task gait training with treadmill for improving falls and fear of falling.	1	Baek et al. 2021
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in falls and fear of falling than Single task treadmill walking.	1	Fishbein et al. 2019

2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in falls and fear of falling than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may not have a difference in efficacy when compared to Conventional physical therapy care for improving falls and fear of falling.	1	Hornby et al. 2016
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving falls and fear of falling.	1	Kim et al. 2016c
1b	Virtual reality treadmill training-based community ambulation may produce greater improvements in falls and fear of falling than Conventional rehabilitation.	1	Kim et al. 2016c
1b	There is conflicting evidence about the effect of Treadmill training with Virtual reality when compared to Treadmill training for improving falls and fear of falling.	2	Jung et al. 2012; Yang et al. 2008

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	3	Baer et al. 2018; Globas et al. 2012; Macko et al. 2005
1a	Treadmill Training may not have a difference in efficacy when compared to Overground Training for improving quality of life.	2	Brauer et al. 2022; Aguiar et al. 2020
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	2	Tarihci Cakmak et al. 2024; Nave et al. 2019
1a	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Overground Walking for improving quality of life.	3	DePaul et al. 2015; Combs-Miller et al. 2014; Middleton et al. 2014
1b	Body weight supported Treadmill Training for Different Durations may not have a difference in efficacy when compared to Home Exercise for improving quality of life.	1	Duncan et al. 2011
1a	Treadmill Training with Overground Training may not have a difference in efficacy when compared to Home Exercise/ no treatment for improving quality of life.	2	Ada et al. 2013; Ada et al. 2003
1b	Long-term Treadmill and Overground Walking may produce greater improvements in quality of life than Short-term Treadmill and Overground Walking.	1	Ada et al. 2013
1b	High Intensity Treadmill Training may not have a difference in efficacy when compared to Low Intensity Treadmill Training for improving quality of life.	1	Munari et al. 2018
2	Overground gait training + visual cue feedback may not have a difference in efficacy when compared to Standard physiotherapy for improving quality of life.	1	Hollands et al. 2015
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving quality of life.	1	da Cunha et al. 2022

2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving quality of life.	1	Koch et al. 2020
1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving quality of life.	1	Ogino et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving quality of life.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may produce greater improvements in quality of life than 15min rest with High- intensity speed-based treadmill training.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High-intensity speed-based treadmill training for improving quality of life.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving quality of life.	1	Madhavan et al. 2020
1b	Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not have a difference in efficacy when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy for improving quality of life.	1	Lee et al. 2018d
1b	High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may produce greater improvements in quality of life than Conventional physical therapy care.	1	Hornby et al. 2016
1b	Treadmill training and overground gait training may not have a difference in efficacy when compared to Placebo program of low-intensity home exercise program with Telerehabilitation for improving quality of life.	1	Ada et al. 2003

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Treadmill Training with Increased Speed may not have a difference in efficacy when compared to Treadmill Training with Increased Incline for improving mood.	1	Alipsatici et al. 2020

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving fatigue and sleep.	1	Nave et al. 2019
2	Treadmill Training may not have a difference in efficacy when compared to Stretching for improving fatigue and sleep.	1	Serra et al. 2022

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving cognition.	1	Nave et al. 2019
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving cognition.	1	Kim & Yim 2017c
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving cognition.	1	Koch et al. 2020

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body weight supported Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy for improving upper extremity function.	1	Nave et al. 2019
2	Treadmill Training with Load may not have a difference in efficacy when compared to Treadmill Training without Load or Conventional Therapy for improving upper extremity function.	1	Kim & Yim 2017c
1b	Treadmill Training with Orthotic Devices may produce greater improvements in upper extremity function than Treadmill Training.	1	Park et al. 2024b
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving upper extremity function.	1	Koch et al. 2020
2	Gait training program (treadmill + overground walking) wearing a hip-assist robot may produce greater improvements in upper extremity function than Gait training (treadmill training + over ground walking).	1	Lee et al. 2019a
1b	Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving upper extremity function.	1	Richards et al. 2004

Key Points

- Treadmill Training may be beneficial for improving aerobic measures and gait endurance, but not biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.

- Treadmill Training may not be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Overground Training.
- Treadmill training with Rehabilitation program may be beneficial for improving gait speed and gait endurance after stroke when compared to Overground gait training with Rehabilitation program; the literature is mixed regarding biomechanical gait measures.
- Body weight supported Treadmill Training may be beneficial for improving motor recovery, gait speed, and falls and fear of falling, but not biomechanical gait measures, muscle strength, aerobic measures, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding neurophysiological measures and gait endurance.
- Body weight supported treadmill training may not be beneficial for improving gait speed after stroke when compared to body weight supported treadmill training with Conventional care; Body weight supported treadmill training may result in lesser improvements in functional mobility, balance, and falls and fear of falling when compared to body weight supported treadmill training with Conventional care.
- Body weight supported Treadmill Training may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Overground Walking.
- Body weight supported Treadmill Training may be beneficial for improving biomechanical gait measures, neurophysiological measures, and functional mobility, but not motor recovery and gait endurance, after stroke when compared to Treadmill Training; the literature is mixed regarding gait speed and balance.
- Body weight supported Treadmill Training with Mobility Skills may not be beneficial for improving gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to body weight supported Treadmill Training.
- Body weight supported treadmill with upper extremity ergometry training may be beneficial for improving gait speed, but not muscle strength and gait endurance, after stroke when compared to Resistive leg cycling with upper extremity ergometry training.
- Body weight supported treadmill with upper extremity ergometry training may not be beneficial for improving muscle strength, gait speed, and gait endurance after stroke when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise.
- Body weight supported Treadmill Training with Facilitation Technique may not be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, and gait speed after stroke when compared to body weight supported Training with Mechanical Assistance.
- Body weight supported Treadmill Training for Different Durations may not be beneficial for improving motor recovery, gait speed, gait endurance, balance, falls and fear of falling, and quality of life after stroke when compared to Home Exercise.
- Treadmill Training with Nordic Poles may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not gait speed, after stroke when compared to Treadmill Training.
- Treadmill Training with Load may not be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, activities of daily living, gait speed, and falls and fear of falling after stroke when compared to Treadmill Training without Load or Conventional Therapy; the literature is mixed regarding functional mobility.
- Treadmill Training with Incline may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, activities of daily living, functional mobility, and balance after stroke when compared to Treadmill Training with Decline or Level Treadmill Training; Treadmill Training with Incline may result in lesser improvements in gait endurance when compared to Treadmill Training with Decline or Level Treadmill Training; the literature is mixed regarding range of motion and gait speed.
- Treadmill Training with Increased Speed may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not balance, after stroke when compared to Treadmill Training with Increased Incline.
- Constraint Induced Movement with Home Exercise may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Treadmill Training.

- Treadmill Training with Foot Drop Stimulator may be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Foot Drop Stimulator.
- Perturbation Treadmill Training may be beneficial for improving balance, but not muscle strength, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Treadmill Training.
- Turning Treadmill Training may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Treadmill Training.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training.
- Treadmill Training with Proprioceptive Neuromuscular Facilitation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Body weight supported Treadmill Training may not be beneficial for improving biomechanical gait measures, range of motion, activities of daily living, and gait speed after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Treadmill Training with Obstacles may be beneficial for improving gait endurance and balance, but not gait speed, functional mobility, and falls and fear of falling, after stroke when compared to Treadmill Training.
- Treadmill Training on Unstable Surface may be beneficial for improving gait endurance and functional mobility, but not gait speed, after stroke when compared to Treadmill Training.
- Treadmill Training with Handrails may be beneficial for improving biomechanical gait measures after stroke when compared to Treadmill Training.
- Treadmill Training with Horizontal Force may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding balance.
- Treadmill-based C-Mill (using gait-dependent augmented reality) may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking therapy (walking-adaptability exercises with physical obstacles).
- Treadmill Training with virtual reality may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Other Training.
- Treadmill Training with Smartphone Application may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Treadmill Training.
- Treadmill Training with Visual Deprivation may be beneficial for improving gait speed, but not gait endurance and functional mobility, after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical gait measures.
- Backward Treadmill Training may be beneficial for improving biomechanical balance measures and functional mobility, but not motor recovery, biomechanical gait measures, spasticity, gait speed, balance, and falls and fear of falling, after stroke when compared to Treadmill or Conventional Rehabilitation; the literature is mixed regarding aerobic measures and gait endurance.
- Body weight supported, backward and forward treadmill training may not be beneficial for improving biomechanical gait measures after stroke when compared to body weight supported, forward treadmill training or body weight supported, backward treadmill training.
- Backward treadmill with partial body weight supported may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and balance, after stroke when compared to Forward treadmill with partial body weight supported treadmill.
- Treadmill Training with Overground Training may be beneficial for improving gait speed and gait endurance, but not biomechanical gait measures, aerobic measures, activities of daily living, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Home Exercise/ no treatment.

- Long-term Treadmill and Overground Walking may be beneficial for improving gait endurance, functional mobility, and quality of life, but not biomechanical gait measures, activities of daily living, and gait speed, after stroke when compared to Short-term Treadmill and Overground Walking.
- High Intensity Treadmill Training may be beneficial for improving biomechanical gait measures, but not aerobic measures, gait speed, gait endurance, functional mobility, and quality of life, after stroke when compared to Low Intensity Treadmill Training.
- Fast Speed Treadmill Training with functional electrical stimulation may be beneficial for improving gait speed, but not gait endurance, after stroke when compared to Self-selected or Fast Speed Treadmill Training.
- Speed Dependent Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not balance, after stroke when compared to Other Treadmill Training.
- Body weight supported treadmill training (fast speed) may result in lesser improvements in gait speed when compared to body weight supported treadmill training (slow speed) or body weight supported treadmill training (variable speed).
- Speed-dependent Treadmill Training may not be beneficial for improving functional mobility and balance after stroke when compared to Task-oriented Training.
- Error Augmentation Treadmill Training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Treadmill Training.
- Treadmill Training may be beneficial for improving aerobic measures and balance, but not neurophysiological measures, gait speed, and functional mobility, after stroke when compared to Stretching; the literature is mixed regarding gait endurance.
- Treadmill Training with Orthotic Devices may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding balance.
- Electromechanical gait trainer therapy with Conventional rehabilitation may be beneficial for improving functional mobility, but not motor recovery, spasticity, and gait speed, after stroke when compared to Body weight-supported treadmill training with Conventional rehabilitation.
- Treadmill Training with Action Observation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Circular treadmill training with ambulation training may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Regular treadmill training+ ambulation training.
- Overground gait training + visual cue feedback may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Standard physiotherapy.
- Treadmill walking training + conventional PT may not be beneficial for improving gait speed and gait endurance after stroke when compared to conventional PT.
- Augmented reality treadmill-based gait adaptation training may be beneficial for improving functional mobility and balance after stroke when compared to Treadmill training with overground walking; the literature is mixed regarding gait speed.
- Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training may be beneficial for improving gait speed and functional mobility after stroke when compared to Custom physiotherapy program with Treadmill gait training; the literature is mixed regarding biomechanical gait measures.
- Treadmill training with HEALBOT exoskeleton may be beneficial for improving neurophysiological measures and functional mobility, but not balance, after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Functional electrical stimulation with treadmill training may be beneficial for improving gait endurance and functional mobility, but not gait speed, after stroke when compared to Treadmill training.
- Anodal transcranial direct current stimulation with Treadmill training may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Sham transcranial direct current stimulation with Treadmill training.

- Bilateral transcranial direct current stimulation and Treadmill may not be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, gait speed, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Treadmill.
- Bilateral transcranial direct current stimulation and Treadmill may be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, and gait speed, but not functional mobility, after stroke when compared to Cathodal transcranial direct current stimulation and Treadmill.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Underwater Treadmill gait training with conventional rehabilitation may not be beneficial for improving biomechanical gait measures after stroke when compared to Overground gait training with conventional rehabilitation; the literature is mixed regarding gait speed.
- Functional electrical stimulation with treadmill gait training may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Sham Functional electrical stimulation with treadmill gait training.
- Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training.
- Body weight supported treadmill training (BWST) with conventional rehabilitation may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Overground gait training with conventional rehabilitation.
- Dual-task gait training with treadmill may be beneficial for improving gait speed, but not biomechanical gait measures, functional mobility, and falls and fear of falling, after stroke when compared to Single-task gait training with treadmill.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Treadmill training using insole on less affected side may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training.
- Gait training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and quality of life, after stroke when compared to Gait training with treadmill; the literature is mixed regarding gait endurance.
- High frequency repetitive transcranial magnetic stimulation with Treadmill Training may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Sham repetitive transcranial magnetic stimulation with Treadmill Training.
- Cerebellar transcranial direct current stimulation with split-belt treadmill training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Sham cerebellar transcranial direct current stimulation with split-belt treadmill training.
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may be beneficial for improving quality of life, but not motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to 15min rest with High- intensity speed-based treadmill training.

- Backward treadmill training with botulinum toxin type A therapy may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to forward treadmill training with botulinum toxin type A therapy.
- High-Intensity Interval Training – Treadmill may be beneficial for improving neurophysiological measures after stroke when compared to Moderate-intensity Continuous Exercise - Treadmill; the literature is mixed regarding gait speed.
- Dual-task (virtual reality-based UL training while walking on treadmill) may be beneficial for improving gait speed, balance, and falls and fear of falling, but not functional mobility, after stroke when compared to Single task treadmill walking.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training with Sham.
- Gait training program (treadmill + overground walking) wearing a hip-assist robot may be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, gait speed, and falls and fear of falling, but not balance, after stroke when compared to Gait training (treadmill training + over ground walking).
- Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional Physical therapy.
- High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training may be beneficial for improving motor recovery and gait speed, but not neurophysiological measures, after stroke when compared to Sham repetitive transcranial magnetic stimulation with Treadmill Training.
- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait endurance and functional mobility after stroke when compared to Sham taping with treadmill training.
- Body weight support treadmill training with visual biofeedback may be beneficial for improving gait endurance, but not biomechanical gait measures and functional mobility, after stroke when compared to Body weight support treadmill training; the literature is mixed regarding gait speed.
- Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not be beneficial for improving motor recovery, aerobic measures, activities of daily living, balance, and quality of life after stroke when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy; the literature is mixed regarding muscle strength.
- Aquatic-based treadmill aerobic training with conventional care may be beneficial for improving aerobic measures, but not activities of daily living and gait endurance, after stroke when compared to Land-based aerobic exercises on cycle ergometer with conventional care.
- Rhythmic auditory stimulation with treadmill training and conventional physical therapy may be beneficial for improving gait endurance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Treadmill training with conventional physical therapy; the literature is mixed regarding gait speed.
- Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not be beneficial for improving biomechanical balance measures and gait endurance after stroke when compared to Neurodevelopmental treatment with conventional physical therapy; the literature is mixed regarding biomechanical gait measures and gait speed.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery, gait speed, and muscle strength, but not activities of daily living, after stroke when compared to Conventional physical therapy with treadmill training.
- Body weight supported treadmill training with anodal transcranial direct current stimulation may be beneficial for improving gait speed, but not motor recovery and balance, after stroke when compared to Body weight supported treadmill training with sham transcranial direct current stimulation; the literature is mixed regarding functional mobility.

- Whole body vibration with Treadmill training may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Exercises on platform without vibration with Treadmill training.
- High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may be beneficial for improving gait speed and quality of life, but not functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional physical therapy care; the literature is mixed regarding biomechanical gait measures and gait endurance.
- Treadmill training with visual biofeedback and physiotherapy exercises may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to Treadmill training with physiotherapy exercises.
- Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises may not be beneficial for improving biomechanical balance measures, functional mobility, and balance after stroke when compared to Treadmill training without biofeedback with Conventional individual exercises.
- Aquatic therapy (physical therapy exercises) with aquatic treadmill may be beneficial for improving activities of daily living and functional mobility, but not spasticity and neurophysiological measures, after stroke when compared to Conventional physical therapy exercise with land-based treadmill; the literature is mixed regarding muscle strength and range of motion.
- Treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Treadmill training with Rhythmic auditory feedback may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training.
- Virtual reality treadmill training-based community ambulation may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Community ambulation training.
- Virtual reality treadmill training-based community ambulation may be beneficial for improving functional mobility and falls and fear of falling, but not biomechanical gait measures, gait speed, and gait endurance, after stroke when compared to Conventional rehabilitation.
- Treadmill training with Virtual reality and Ankle robotics may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed after stroke when compared to Seated training with Virtual reality and Ankle robotics.
- Task-oriented treadmill training with conventional therapy may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training with conventional therapy.
- Partial body-weight support treadmill training with Visual biofeedback may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to Partial body-weight support treadmill training.
- Treadmill training with visual biofeedback and basic physiotherapy may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training with basic physiotherapy.
- Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation may be beneficial for improving gait speed, but not functional mobility, after stroke when compared to Single task training on Treadmill walking with Conventional rehabilitation.
- Treadmill training with Rhythmic auditory stimulation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Overground training with Rhythmic auditory stimulation; the literature is mixed regarding biomechanical gait measures.
- Treadmill training with Virtual reality may be beneficial for improving biomechanical balance measures after stroke when compared to Conventional rehabilitation.

- Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior may be beneficial for improving gait speed, but not gait endurance and balance, after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures and muscle strength.
- Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may be beneficial for improving gait speed, functional mobility, and balance, but not muscle strength, after stroke when compared to Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy.
- Overground gait training with ankle mass may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Overground gait training without mass or Treadmill gait training without mass.
- Body Weight-Supported Treadmill Training with functional electrical stimulation may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Body Weight Supported Treadmill Training.
- Underwater treadmill walking may be beneficial for improving biomechanical gait measures and neurophysiological measures, but not functional mobility, after stroke when compared to Overground treadmill walking.
- Treadmill training with Virtual reality may be beneficial for improving gait speed after stroke when compared to Treadmill training; the literature is mixed regarding functional mobility and falls and fear of falling.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Treadmill with conventional physical therapy.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving balance after stroke when compared to Conventional therapy; the literature is mixed regarding gait speed, gait endurance, and functional mobility.
- Aerobic training (treadmill and cycle ergometer) may not be beneficial for improving aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Conventional rehabilitation.
- Treadmill training with Virtual reality and Conventional rehabilitation may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, and functional mobility after stroke when compared to Treadmill training with Conventional rehabilitation.
- Aerobic training (cycle ergometer, treadmill, balance) may be beneficial for improving aerobic measures and activities of daily living after stroke when compared to Conventional rehabilitation.
- Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional physiotherapy.
- Treadmill training with Virtual reality may not be beneficial for improving motor recovery, biomechanical gait measures, gait endurance, and functional mobility after stroke when compared to Stepping over real objects on 10m walkway.
- Treadmill training and overground gait training may be beneficial for improving gait speed and gait endurance, but not quality of life, after stroke when compared to Placebo program of low- intensity home exercise program with Telerehabilitation; the literature is mixed regarding biomechanical gait measures.
- Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy may be beneficial for improving functional mobility, but not motor recovery and gait speed, after stroke when compared to Baseline conventional therapy with Treadmill training with partial body weight supported.
- Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care may not be beneficial for improving activities of daily living, gait speed, and balance after stroke when compared to Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks.
- BWS treadmill training with Conventional care may be beneficial for improving gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional training.

- Forward treadmill with partial BWS treadmill may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and balance, after stroke when compared to Conventional rehabilitation.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Inclined treadmill training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Inclined treadmill training.
- Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- Treadmill training with BWS via overhead harness may not be beneficial for improving functional mobility after stroke when compared to Overground gait training.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.

Summary of Key Points: Treadmill Training

Intervention	Control(s)	Function domain(s)	Effect
Treadmill Training	Conventional Therapy	Aerobic measures, gait endurance	+
Treadmill Training	Conventional Therapy	Biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, quality of life	–
Treadmill Training	Overground Training	Biomechanical gait measures, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	–
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program	Gait speed, gait endurance	+
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program	Biomechanical gait measures	=
Body weight supported Treadmill Training	Conventional Therapy	Motor recovery, gait speed, falls and fear of falling	+
Body weight supported Treadmill Training	Conventional Therapy	Biomechanical gait measures, muscle strength, aerobic measures, activities	–

		of daily living, functional mobility, balance, quality of life	
Body weight supported Treadmill Training	Conventional Therapy	Neurophysiological measures, gait endurance	=
Body weight supported treadmill training	body weight supported treadmill training with Conventional care	Gait speed	–
Body weight supported treadmill training	body weight supported treadmill training with Conventional care	Functional mobility, balance, falls and fear of falling	–
Body weight supported Treadmill Training	Overground Walking	Motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Body weight supported Treadmill Training	Treadmill Training	Biomechanical gait measures, neurophysiological measures, functional mobility	+
Body weight supported Treadmill Training	Treadmill Training	Motor recovery, gait endurance	–
Body weight supported Treadmill Training	Treadmill Training	Gait speed, balance	=
Body weight supported Treadmill Training with Mobility Skills	body weight supported Treadmill Training	Gait speed, gait endurance, balance, falls and fear of falling	–
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training	Gait speed	+
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training	Muscle strength, gait endurance	–
Body weight supported treadmill with upper extremity ergometry training	body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise	Muscle strength, gait speed, gait endurance	–
Body weight supported Treadmill Training with Facilitation Technique	body weight supported Training with Mechanical Assistance	Motor recovery, biomechanical gait measures, activities of daily living, gait speed	–
Body weight supported Treadmill Training for Different Durations	Home Exercise	Motor recovery, gait speed, gait endurance, balance, falls and fear of falling, quality of life	–
Treadmill Training with Nordic Poles	Treadmill Training	Activities of daily living, gait endurance, functional mobility, balance	+
Treadmill Training with Nordic Poles	Treadmill Training	Gait speed	–
Treadmill Training with Load	Treadmill Training without Load or Conventional Therapy	Motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, activities of daily living, gait speed, falls and fear of falling	–
Treadmill Training with Load	Treadmill Training without Load or Conventional Therapy	Functional mobility	=
Treadmill Training with Incline	Treadmill Training with Decline or Level Treadmill Training	Motor recovery, biomechanical gait measures, muscle strength, spasticity,	–

		activities of daily living, functional mobility, balance	
Treadmill Training with Incline	Treadmill Training with Decline or Level Treadmill Training	Gait endurance	–
Treadmill Training with Incline	Treadmill Training with Decline or Level Treadmill Training	Range of motion, gait speed	=
Treadmill Training with Increased Speed	Treadmill Training with Increased Incline	Biomechanical gait measures, gait speed, gait endurance	+
Treadmill Training with Increased Speed	Treadmill Training with Increased Incline	Balance	–
Constraint Induced Movement with Home Exercise	Treadmill Training	Biomechanical gait measures, functional mobility, balance	–
Treadmill Training with Foot Drop Stimulator	Foot Drop Stimulator	Biomechanical gait measures, spasticity, range of motion, neurophysiological measures, functional mobility	+
Perturbation Treadmill Training	Treadmill Training	Balance	+
Perturbation Treadmill Training	Treadmill Training	Muscle strength, activities of daily living, gait speed, falls and fear of falling	–
Turning Treadmill Training	Treadmill Training	Muscle strength, gait speed, balance	+
Turning Treadmill Training	Treadmill Training	Biomechanical gait measures, biomechanical balance measures	–
Treadmill Training with Mirror Therapy	Treadmill Training	Motor recovery, spasticity, gait speed, gait endurance	–
Treadmill Training with Proprioceptive Neuromuscular Facilitation	Treadmill Training	Gait speed, gait endurance, functional mobility	+
Body weight supported Treadmill Training	Proprioceptive Neuromuscular Facilitation	Biomechanical gait measures, range of motion, activities of daily living, gait speed	–
Treadmill Training with Obstacles	Treadmill Training	Gait endurance, balance	+
Treadmill Training with Obstacles	Treadmill Training	Gait speed, functional mobility, falls and fear of falling	–
Treadmill Training on Unstable Surface	Treadmill Training	Gait endurance, functional mobility	+
Treadmill Training on Unstable Surface	Treadmill Training	Gait speed	–
Treadmill Training with Handrails	Treadmill Training	Biomechanical gait measures	+
Treadmill Training with Horizontal Force	Treadmill Training	Biomechanical gait measures, gait speed, functional mobility	+
Treadmill Training with Horizontal Force	Treadmill Training	Balance	=
Treadmill-based C-Mill (using gait-dependent augmented reality)	Overground walking therapy (walking-adaptability exercises with physical obstacles)	Activities of daily living, gait speed, functional mobility	–
Treadmill Training with virtual reality	Other Training	Biomechanical gait measures, gait speed, functional mobility, balance	+

Treadmill Training with virtual reality	Other Training	Biomechanical balance measures	–
Treadmill Training with Smartphone Application	Treadmill Training	Biomechanical gait measures, gait speed	+
Treadmill Training with Visual Deprivation	Treadmill Training	Gait speed	+
Treadmill Training with Visual Deprivation	Treadmill Training	Gait endurance, functional mobility	–
Treadmill Training with Visual Deprivation	Treadmill Training	Biomechanical gait measures	=
Backward Treadmill Training	Treadmill or Conventional Rehabilitation	Biomechanical balance measures, functional mobility	+
Backward Treadmill Training	Treadmill or Conventional Rehabilitation	Motor recovery, biomechanical gait measures, spasticity, gait speed, balance, falls and fear of falling	–
Backward Treadmill Training	Treadmill or Conventional Rehabilitation	Aerobic measures, gait endurance	=
Body weight supported, backward and forward treadmill training	body weight supported, forward treadmill training or body weight supported, backward treadmill training	Biomechanical gait measures	–
Backward treadmill with partial body weight supported	Forward treadmill with partial body weight supported treadmill	Functional mobility	+
Backward treadmill with partial body weight supported	Forward treadmill with partial body weight supported treadmill	Biomechanical gait measures, gait speed, balance	–
Treadmill Training with Overground Training	Home Exercise/ no treatment	Gait speed, gait endurance	+
Treadmill Training with Overground Training	Home Exercise/ no treatment	Biomechanical gait measures, aerobic measures, activities of daily living, functional mobility, balance, falls and fear of falling, quality of life	–
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Gait endurance, functional mobility, quality of life	+
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking	Biomechanical gait measures, activities of daily living, gait speed	–
High Intensity Treadmill Training	Low Intensity Treadmill Training	Biomechanical gait measures	+
High Intensity Treadmill Training	Low Intensity Treadmill Training	Aerobic measures, gait speed, gait endurance, functional mobility, quality of life	–
Fast Speed Treadmill Training with functional electrical stimulation	Self-selected or Fast Speed Treadmill Training	Gait speed	+
Fast Speed Treadmill Training with functional electrical stimulation	Self-selected or Fast Speed Treadmill Training	Gait endurance	–
Speed Dependent Treadmill Training	Other Treadmill Training	Biomechanical gait measures, gait speed, functional mobility	+
Speed Dependent Treadmill Training	Other Treadmill Training	Balance	–
Body weight supported treadmill training (fast speed)	body weight supported treadmill training (slow speed) or body weight supported treadmill training (variable speed)	Gait speed	–

Speed-dependent Treadmill Training	Task-oriented Training	Functional mobility, balance	–
Error Augmentation Treadmill Training	Treadmill Training	Biomechanical gait measures, gait speed	–
Treadmill Training	Stretching	Aerobic measures, balance	+
Treadmill Training	Stretching	Neurophysiological measures, gait speed, functional mobility	–
Treadmill Training	Stretching	Gait endurance	=
Treadmill Training with Orthotic Devices	Treadmill Training	Motor recovery, biomechanical gait measures, gait speed, functional mobility	+
Treadmill Training with Orthotic Devices	Treadmill Training	Balance	=
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation	Functional mobility	+
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation	Motor recovery, spasticity, gait speed	–
Treadmill Training with Action Observation	Treadmill Training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Circular treadmill training with ambulation training	Regular treadmill training+ ambulation training	Biomechanical gait measures, neurophysiological measures, gait speed	+
Overground gait training + visual cue feedback	Standard physiotherapy	Motor recovery, biomechanical gait measures, gait speed, functional mobility, balance, falls and fear of falling, quality of life	–
Treadmill walking training + conventional PT	conventional PT	Gait speed, gait endurance	–
Augmented reality treadmill-based gait adaptation training	Treadmill training with overground walking	Functional mobility, balance	+
Augmented reality treadmill-based gait adaptation training	Treadmill training with overground walking	Gait speed	=
Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training	Custom physiotherapy program with Treadmill gait training	Gait speed, functional mobility	+
Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training	Custom physiotherapy program with Treadmill gait training	Biomechanical gait measures	=
Treadmill training with HEALBOT exoskeleton	Treadmill training	Neurophysiological measures, functional mobility	+
Treadmill training with HEALBOT exoskeleton	Treadmill training	Balance	–
Treadmill training with HEALBOT exoskeleton	Treadmill training	Biomechanical gait measures, gait speed	=
Functional electrical stimulation with treadmill training	Treadmill training	Gait endurance, functional mobility	+

Functional electrical stimulation with treadmill training	Treadmill training	Gait speed	–
Anodal transcranial direct current stimulation with Treadmill training	Sham transcranial direct current stimulation with Treadmill training	Biomechanical gait measures, range of motion, gait speed	–
Bilateral transcranial direct current stimulation and Treadmill	Sham transcranial direct current stimulation with Treadmill	Motor recovery, biomechanical gait measures, neurophysiological measures, gait speed, functional mobility	–
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill	Motor recovery, biomechanical gait measures, neurophysiological measures, gait speed	+
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill	Functional mobility	–
Bilateral transcranial direct current stimulation and Treadmill	Sham transcranial direct current stimulation with Treadmill	Motor recovery, biomechanical gait measures, functional mobility	–
Bilateral transcranial direct current stimulation and Treadmill	Sham transcranial direct current stimulation with Treadmill	Neurophysiological measures, gait speed	–
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training	Biomechanical gait measures, gait speed, gait endurance, balance, falls and fear of falling	–
Underwater Treadmill gait training with conventional rehabilitation	Overground gait training with conventional rehabilitation	Biomechanical gait measures	–
Underwater Treadmill gait training with conventional rehabilitation	Overground gait training with conventional rehabilitation	Gait speed	=
Functional electrical stimulation with treadmill gait training	Sham Functional electrical stimulation with treadmill gait training	Motor recovery, biomechanical gait measures, gait speed, functional mobility	+
Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training	Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training	Spasticity, gait endurance, functional mobility, quality of life	–
Body weight supported treadmill training (BWST) with conventional rehabilitation	Overground gait training with conventional rehabilitation	Biomechanical gait measures, gait speed, functional mobility, balance	+
Dual-task gait training with treadmill	Single-task gait training with treadmill	Gait speed	+
Dual-task gait training with treadmill	Single-task gait training with treadmill	Biomechanical gait measures, functional mobility, falls and fear of falling	–
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training	Gait speed, gait endurance, functional mobility, quality of life	–
Treadmill training using insole on less affected side	Treadmill training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Functional mobility	+
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Biomechanical gait measures, gait speed, quality of life	–
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Gait endurance	=

High frequency repetitive transcranial magnetic stimulation with Treadmill Training	Sham repetitive transcranial magnetic stimulation with Treadmill Training	Gait speed, gait endurance, functional mobility	+
Cerebellar transcranial direct current stimulation with split-belt treadmill training	Sham cerebellar transcranial direct current stimulation with split-belt treadmill training	Biomechanical gait measures, gait speed	–
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling	–
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy	Biomechanical balance measures, gait speed	+
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy	Biomechanical gait measures, spasticity	–
High-Intensity Interval Training – Treadmill	Moderate-intensity Continuous Exercise - Treadmill	Neurophysiological measures	+
High-Intensity Interval Training – Treadmill	Moderate-intensity Continuous Exercise - Treadmill	Gait speed	=
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking	Gait speed, balance, falls and fear of falling	+
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking	Functional mobility	–
Treadmill Training with Mirror Therapy	Treadmill Training with Sham	Motor recovery, spasticity, gait speed, gait endurance	–
Gait training program (treadmill + overground walking) wearing a hip-assist robot	Gait training (treadmill training + over ground walking)	Motor recovery, biomechanical gait measures, muscle strength, gait speed, falls and fear of falling	+
Gait training program (treadmill + overground walking) wearing a hip-assist robot	Gait training (treadmill training + over ground walking)	Balance	–
Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training	Conventional Physical therapy	Gait speed, gait endurance, functional mobility, balance	–
High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training	Sham repetitive transcranial magnetic stimulation with Treadmill Training	Motor recovery, gait speed	+
High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training	Sham repetitive transcranial magnetic stimulation with Treadmill Training	Neurophysiological measures	–
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training	Gait endurance, functional mobility	+
Body weight support treadmill training with visual biofeedback	Body weight support treadmill training	Gait endurance	+

Body weight support treadmill training with visual biofeedback	Body weight support treadmill training	Biomechanical gait measures, functional mobility	–
Body weight support treadmill training with visual biofeedback	Body weight support treadmill training	Gait speed	=
Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy	Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy	Motor recovery, aerobic measures, activities of daily living, balance, quality of life	–
Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy	Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy	Muscle strength	=
Aquatic-based treadmill aerobic training with conventional care	Land-based aerobic exercises on cycle ergometer with conventional care	Aerobic measures	+
Aquatic-based treadmill aerobic training with conventional care	Land-based aerobic exercises on cycle ergometer with conventional care	Activities of daily living, gait endurance	–
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Treadmill training with conventional physical therapy	Gait endurance	+
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Treadmill training with conventional physical therapy	Biomechanical gait measures, biomechanical balance measures	–
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Treadmill training with conventional physical therapy	Gait speed	=
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Neurodevelopmental treatment with conventional physical therapy	Biomechanical balance measures, gait endurance	–
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Neurodevelopmental treatment with conventional physical therapy	Biomechanical gait measures, gait speed	=
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Motor recovery, muscle strength	+
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Activities of daily living, gait speed, functional mobility, balance	–
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Conventional physical therapy with treadmill training	Motor recovery, gait speed, muscle strength	+
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Conventional physical therapy with treadmill training	Activities of daily living	–
Body weight supported treadmill training with anodal transcranial direct current stimulation	Body weight supported treadmill training with sham transcranial direct current stimulation	Gait speed	+
Body weight supported treadmill training with anodal transcranial direct current stimulation	Body weight supported treadmill training with sham transcranial direct current stimulation	Motor recovery, balance	–
Body weight supported treadmill training with anodal transcranial direct current stimulation	Body weight supported treadmill training with sham transcranial direct current stimulation	Functional mobility	=

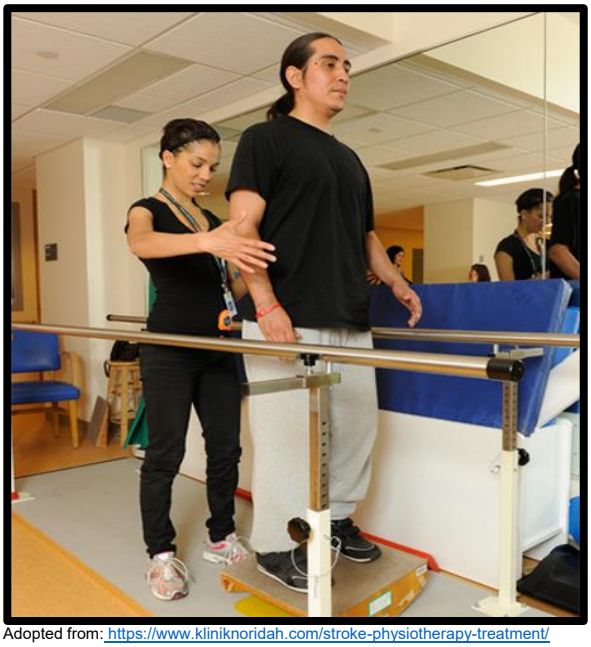
Whole body vibration with Treadmill training	Exercises on platform without vibration with Treadmill training	Biomechanical gait measures, gait speed	+
Whole body vibration with Treadmill training	Exercises on platform without vibration with Treadmill training	Gait endurance	–
High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc)	Conventional physical therapy care	Gait speed, quality of life	+
High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc)	Conventional physical therapy care	Functional mobility, balance, falls and fear of falling	–
High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc)	Conventional physical therapy care	Biomechanical gait measures, gait endurance	=
Treadmill training with visual biofeedback and physiotherapy exercises	Treadmill training with physiotherapy exercises	Biomechanical gait measures, range of motion	–
Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises	Treadmill training without biofeedback with Conventional individual exercises	Biomechanical balance measures, functional mobility, balance	–
Aquatic therapy (physical therapy exercises) with aquatic treadmill	Conventional physical therapy exercise with land-based treadmill	Activities of daily living, functional mobility	+
Aquatic therapy (physical therapy exercises) with aquatic treadmill	Conventional physical therapy exercise with land-based treadmill	Spasticity, neurophysiological measures	–
Aquatic therapy (physical therapy exercises) with aquatic treadmill	Conventional physical therapy exercise with land-based treadmill	Muscle strength, range of motion	=
Treadmill training with Rhythmic auditory stimulation	Treadmill training	Biomechanical gait measures, gait speed, functional mobility, gait endurance, balance	+
Treadmill training with Rhythmic auditory feedback	Treadmill training	Biomechanical gait measures, gait speed, functional mobility	+
Inclined treadmill training with Rhythmic auditory stimulation	Treadmill training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, balance	+
Virtual reality treadmill training-based community ambulation	Community ambulation training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, falls and fear of falling	–
Virtual reality treadmill training-based community ambulation	Conventional rehabilitation	Functional mobility, falls and fear of falling	+
Virtual reality treadmill training-based community ambulation	Conventional rehabilitation	Biomechanical gait measures, gait speed, gait endurance	–
Treadmill training with Virtual reality and Ankle robotics	Seated training with Virtual reality and Ankle robotics	Biomechanical gait measures, biomechanical balance measures, range of motion, gait speed	–
Task-oriented treadmill training with conventional therapy	Treadmill training with conventional therapy	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Partial body-weight support treadmill training with Visual biofeedback	Partial body-weight support treadmill training	Biomechanical gait measures, range of motion	–

Treadmill training with visual biofeedback and basic physiotherapy	Treadmill training with basic physiotherapy	Biomechanical gait measures, activities of daily living, gait speed, gait endurance, functional mobility	–
Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation	Single task training on Treadmill walking with Conventional rehabilitation	Gait speed	+
Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation	Single task training on Treadmill walking with Conventional rehabilitation	Functional mobility	–
Treadmill training with Rhythmic auditory stimulation	Overground training with Rhythmic auditory stimulation	Gait speed, gait endurance, functional mobility	+
Treadmill training with Rhythmic auditory stimulation	Overground training with Rhythmic auditory stimulation	Biomechanical gait measures	=
Treadmill training with Virtual reality	Conventional rehabilitation	Biomechanical balance measures	+
Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior	Treadmill training	Gait speed	+
Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior	Treadmill training	Biomechanical gait measures, muscle strength	=
Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior	Treadmill training	Gait endurance, balance	–
Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy	Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy	Gait speed, functional mobility, balance	+
Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy	Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy	Muscle strength	–
Overground gait training with ankle mass	Overground gait training without mass or Treadmill gait training without mass	Biomechanical gait measures, range of motion, gait speed	–
Body Weight-Supported Treadmill Training with functional electrical stimulation	Body Weight Supported Treadmill Training	Biomechanical gait measures, gait speed, functional mobility, balance	+
Underwater treadmill walking	Overground treadmill walking	Biomechanical gait measures, neurophysiological measures	+
Underwater treadmill walking	Overground treadmill walking	Functional mobility	–
Treadmill training with Virtual reality	Treadmill training	Gait speed	+
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy	Gait speed, gait endurance, functional mobility	+
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy	Balance	–
Treadmill with optic flow with conventional physical therapy	Conventional therapy	Balance	+
Aerobic training (treadmill and cycle ergometer)	Conventional rehabilitation	Aerobic measures, gait endurance, functional mobility, balance	–

Treadmill training with Virtual reality and Conventional rehabilitation	Treadmill training with Conventional rehabilitation	Biomechanical gait measures, biomechanical balance measures, functional mobility	–
Aerobic training (cycle ergometer, treadmill, balance)	Conventional rehabilitation	Aerobic measures, activities of daily living	+
Treadmill training with Virtual reality	Treadmill training	Functional mobility, falls and fear of falling	=
Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy	Conventional physiotherapy	Motor recovery, activities of daily living, gait speed, functional mobility, balance	–
Treadmill training with Virtual reality	Stepping over real objects on 10m walkway	Motor recovery, biomechanical gait measures, gait endurance, functional mobility	–
Treadmill training and overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Gait speed, gait endurance	+
Treadmill training and overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Quality of life	–
Treadmill training and overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation	Biomechanical gait measures	=
Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy	Baseline conventional therapy with Treadmill training with partial body weight supported	Functional mobility	+
Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy	Baseline conventional therapy with Treadmill training with partial body weight supported	Motor recovery, gait speed	–
Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care	Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks	Activities of daily living, gait speed, balance	–
BWS treadmill training with Conventional care	Conventional training	Gait speed, functional mobility, balance, falls and fear of falling	+
Forward treadmill with partial BWS treadmill	Conventional rehabilitation	Functional mobility	+
Forward treadmill with partial BWS treadmill	Conventional rehabilitation	Biomechanical gait measures, gait speed, balance	–
Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Treadmill with optic flow with conventional physical therapy	Conventional therapy	Gait speed, gait endurance, functional mobility	=
AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–

AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training)	Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	−
Inclined treadmill training	Treadmill training	Biomechanical gait measures	=
Inclined treadmill training	Treadmill training	Gait speed, gait endurance, functional mobility, balance	+
Inclined treadmill training with Rhythmic auditory stimulation	Inclined treadmill training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, balance	+
Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	−
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Quality of life	+
Treadmill training with BWS via overhead harness	Overground gait training	Functional mobility	−
Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+

Physiotherapy and Exercise Programs



Adopted from: https://www.kliniknoridah.com/stroke-physiotherapy-treatment/

Exercise can be defined as planned physical activity that is structured and repetitive and is performed deliberately with the intention of improving physical fitness. Major factors of physical fitness are cardiovascular fitness, strength and power. After a stroke, individuals are impaired in all three of these attributes, to significant but varying degrees (Saunders et al., 2014). Physiotherapy and exercise are the primary method for regaining any of these deficits

experienced after the injury. Although it is well known that physiotherapy and exercise are effective for rehabilitation, it is still not clear as to what type is most effective (Cho & Cha, 2016; Langhorne et al., 1996). Therefore, there is always an effort to identify when, where and how physiotherapy should be applied to maximize its benefit to the patient's recovery. Besides the more obvious physical benefits associated with exercise, psycho-social benefits also exist, and attempts are made to maximize these residual benefits as well (Saunders et al., 2014).

A total of 84 RCTs were found that evaluated physiotherapy and exercise programs for lower extremity motor rehabilitation. One RCT compared Body Weight Shift Technique with Conventional Therapy (Krishna et al. 2018). One RCT compared Neurorestoration Protocol Physiotherapy with Conventional Physiotherapy (Rahayu et al. 2020). One RCT compared Leisure-time Physical Activity with Nonleisure-time Physical Activity (Ashizawa et al. 2021). One RCT compared Self-regulation Rehabilitation with Conventional Therapy (Liu et al. 2014). One RCT compared Range of Motion / mobilization Exercise with Conventional Therapy (Tseng et al. 2007). One RCT compared Agility Exercise with Stretching (Marigold et al. 2005). Two RCTs compared Physio equipment with Conventional Therapy (Huang et al. 2022a; Gul et al. 2021). One RCT compared Cross-training Physiotherapy with Conventional Physiotherapy (Park et al. 2021b). Seventeen RCTs compared Early Rehabilitation Programs with Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke (Garcia-Perez et al. 2024; Xu 2022; Ning et al. 2022; Wang et al. 2022b; Liu et al. 2021b; Yen et al. 2020; Wu et al. 2020a; Wu et al. 2020b; Yu et al. 2020b; Rahayu et al. 2019; Pan 2018; Langhorne et al. 2017; Yelnik et al. 2017; Bernhardt et al. 2015; Bai et al. 2012; Fang et al. 2003; Wade et al. 1992). Two RCTs compared Physical Therapy with No Treatment (Hoseinabadi et al. 2013; Werner et al. 1996). One RCT compared Occupational Therapy with No Treatment (Logan et al. 2004). Eight RCTs compared Custom Exercise Programs with Conventional Therapy (Swank et al. 2020; Xia et al. 2020; Medina-Rincon et al. 2019; Askim et al. 2018; Sackley et al. 2015; Askim et al. 2010; Allen et al. 2009; Werner et al. 2002a). One RCT compared Aerobic and Resistance Training with Aerobic Training (Marzolini et al. 2018). Two RCTs compared Aerobic and Resistance Training with Conventional Care (Rizvi et al. 2023; Lee et al. 2015d). Two RCTs compared Closed Chain Exercise with Open Chain Exercise or Standard Rehabilitation (Krawczyk et al. 2014; Lee et al. 2013f). Three RCTs compared Sling Exercise Therapy with Conventional Therapy (Wang et al. 2022a; Liu et al. 2020; Lou et al. 2019). Two RCTs compared Aerobic Exercise with Cognitive Training with Nonaerobic Exercise with Unstructured Mental Activities or Sham (Koch et al. 2020; Yeh et al. 2019). One RCT compared Virtual Reality Exercise Program with Customized Physiotherapy or Conventional Physiotherapy (Cannell et al. 2018). One RCT compared High-intensity Functional Exercise Program with Education (Holmgren et al. 2010). One RCT compared High Repetitive Weight Bearing Exercises with Low Repetitive Weight Bearing Exercises (Agarwal et al. 2008). Eleven RCTs compared Higher Intensity Training with Lower Intensity Training or Conventional Care (Chen et al. 2024a; Moncion et al. 2024; Marzolini et al. 2023; Reynolds et al. 2021; Gjellesvik et al. 2021; Boyne et al. 2019; Hornby et al. 2019; Hornby et al. 2016; Boyne et al. 2016; Langhammer et al. 2008; Sivenius et al. 1985). Four RCTs compared Increased Duration of Exercise with Conventional Care/Exercise (Klassen et al. 2020; Hesse et al. 2011; Glasgow Augmented Physiotherapy Study GAPS group 2004; Partridge et al. 2000). Four RCTs compared Community-based Physical Activity with No Intervention (Kang et al. 2023; Aravind et al. 2022; Marsden et al. 2010; Green et al. 2002). Four RCTs compared Community-based Exercise Program with Other Care (Nindorera et al. 2023; Stuart et al. 2019; Harrington et al. 2010; Olney et al. 2006). Two RCTs compared Community-based Exercise Program with Upper Extremity Exercise Program (Dean et al. 2012; Pang et al. 2005). One RCT compared Non-Paretic Side Training with Conventional Therapy (Pandian et al. 2014). One RCT compared Falls Prevention Program with Usual Care (Batchelor et al. 2012). One RCT compared Skating Exercise with Treadmill Training (Soh et al. 2020). One RCT compared High-Intensity Training with Acute Intermittent Hypoxia with High-Intensity Training Alone (Hornby et al. 2024). One RCT compared Implicit Motor Learning with Conventional Therapy (Johnson et al. 2024). One RCT compared Aerobic Exercise with Task-Specific Training with Task-Specific Training Alone (Linder et al. 2024). One RCT compared Motivational Interviewing with Occupational Therapy with Occupational Therapy Alone (Gholipour et al. 2024).

The methodological details and results of all 84 RCTs are presented in Table 10.

Table 10. RCTs Evaluating Physiotherapy and Exercise Programs for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Body Weight Shift Technique vs Conventional Therapy		
Krishna et al. (2018) RCT (8) Nstart=30 Nend=30 TPS=Not reported A vs B	E: Body weight shift technique induced by shoe lift on unaffected side C: No shoe lift technique Duration: 2wks	E vs C: Fugl Meyer Assessment (-) Weight Bearing on affected side (+exp) 10-Meter Walk Test (+exp) Berg Balance Scale (+exp) Lower extremity functional performance (+exp)
Neurorestoration Protocol Physiotherapy vs Conventional Physiotherapy		
Rahayu et al. (2020) RCT (8) Nstart=67 Nend=64 TPS=Acute A vs 0	E: Neurorestoration protocol Physiotherapy C: Conventional Physiotherapy Duration: 60min/d, 7d/wk, for 1wk	E vs C: Brain-derived neurotropic factor (BDNF) biomarker (-) Berg Balance Scale (+exp) Barthel Index (+exp)
Leisure-time Physical Activity vs Nonleisure-time Physical Activity		
Ashizawa et al. (2021) RCT (4) Nstart=45 Nend=33 TPS=Acute A1 vs A2	E: Nonleisure-time physical activity guidance (NLTPAG) C: Leisure-time physical activity guidance Duration: 20min/d, 2d/wk guidance program during hospitalization, 30-40min/d at- home activity for 3mo after discharge	E vs C: Physical activity level (-) Low intensity (-) Moderate Intensity (-) Sedentary Behavior Time (-) 6-min walking distance (-) 30s chair stand test (-) Self-Efficacy for Physical Activity (-)
Self-regulation Rehabilitation vs Conventional Therapy		
Liu et al. (2014) RCT (7) Nstart=46 Nend=44 TPS=Acute A vs 0	E: Self-regulation rehabilitation + physical therapy C: Conventional occupational + physical therapy Duration: 60min/d, 5d/wk, for 1wk intervention sessions & 60min/d physical therapy	E vs C: Functional Independence Measure Motor (+exp) Cognitive (-) Fugl-Meyer Assessment Lower extremity (-) Upper extremity (-) Color Trails Test (-)
Range of Motion / mobilization Exercise vs Conventional Therapy		
Tseng et al. (2007) RCT (6) Nstart=65 Nend=59 TPS=Chronic A vs B vs 0	E1: Range of Motion exercise program by themselves E2: Range of Motion exercise program with physical help C: Usual care Duration: 20-40min/d, 6d/wk, for 4wks ROM exercise	E1/E2 vs C: functional independence (+exp1, +exp2) joint angle (+exp1, +exp2) self-reported pain (+exp1, +exp2) Geriatric Depression Scale -Short Form (+exp1, +exp2) E1 vs E2: functional independence (-) joint angle Shoulder-all directions (exp2) Elbow flexion (+exp2) Elbow Extension (-) Wrist (+exp2) Hip- all directions (+exp2) knee (flexion) (+exp2) knee (Extension) (-) Ankle Dorsal flexion (-)

		Ankle Plantar flexion/eversion/inversion (+exp2) self-reported pain (-) Geriatric Depression Scale -Short Form (-)
Agility Exercise vs Stretching		
Marigold et al. (2005) RCT (6) Nstart=61 Nend=48 TPS=Chronic A vs B	E: Agility exercises C: Stretching and weight-shifting Duration: 60min/d, 3d/wk for 10wks	E vs C: Berg Balance Scale (-) Timed Up and Go(-) step reaction time (+exp) Activity-specific balance confidence (-) Nottingham Health profile (-) Posural reflex onset latency Paretic tibialis anterior (-) paretic rectus femoris (+exp) paretic medial head of gastrocnemius (-) paretic biceps femoris (-) Non-Paretic tibialis anterior (-) Non-paretic rectus femoris (-) Non-paretic medial head of gastrocnemius (+exp) Non-paretic biceps femoris (-)
Physio equipment vs Conventional Therapy		
Huang et al. (2022a) RCT (4) Nstart=38 Nend=32 TPS=Chronic A vs 0	E: Stepper-based training C: Conventional therapy Duration: 35 mins/d, 2-4ds/wk, 36 sessions	E vs C: VO2 peak (+exp) Peak work rate (+exp) Expiratory volume peak (+exp) Heart rate peak (-) Heart rate at rest (-) Oxygen uptake efficiency slope (-) Peak RER (-) Resting systolic blood pressure (+exp) Resting diastolic blood pressure (+exp) Peak systolic blood pressure (-) Peak diastolic blood pressure (-)
Gul et al. (2021) RCT (3) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: Swiss ball exercises + Conventional Treatment C: Conventional training Duration: 60mins/d, 4d/wk, for 3wks	E vs C: Berg Balance Scale (+exp) Trunk Impairment Scale (+exp)
Early Rehabilitation Programs vs Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke		
Garcia-Perez et al. (2024) RCT (8) Nstart=62 Nend=60 TPS=Acute A vs 0	E: Early Occupational Therapy Program (EOTIPS) + conventional rehabilitation C: Conventional rehabilitation Duration: E: 60min inpatient OT + 120min OT at home, then 60min after 1mo; C: 30min/d inpatient physiotherapy + 45min/d, 2-3d/wk outpatient physiotherapy	E vs C: Spanish stroke and aphasia quality of life (+exp) Barthel Index (-) Modified Rankin Scale (-) MOCA (+exp) BBS (-) TUG(-) FMA-UE (-) SIS (-)

		Communicative Activity Log (-) Beck Depression Inventory (+exp) Hamilton anxiety scale (-)
Xu (2022) RCT (4) Nstart=160 Nend=160 TPS=Acute A vs B	E: Conventional stroke medication + Early rehabilitation exercise training (48-72h after stroke) C: Conventional stroke medication Duration: 30-45min/d, 4-6d/wk, for 4wks	E vs C: Fugl-Meyer score (+exp) Barthel Index score (+exp)
Ning et al. (2022) RCT (6) Nstart=70 Nend=70 TPS=Acute A vs 0	E: Early rehabilitation (language, motor, cognitive, daily life nursing) C: Conventional therapy Duration: NR	E vs C: Rehabilitation enthusiasm (+exp) NIH Stroke Scale (+exp) Barthel index (+exp) Berg Balance scale (+exp) Fugl-Meyer assessment (+exp) Nursing satisfaction (+exp)
Wang et al. (2022b) RCT (7) Nstart=120 Nend=115 TPS=Acute A vs B	E1: Early Conventional therapy (after 24-48 hours); E2: Late Conventional therapy (72-96 hours post stroke) Duration: 40 mins/d, 7ds/wk, 12wks (Control group loses 2 days in the first week)	E1 vs E2: modified Rankin Scale (+exp) FMA-UE (-) FMA-LE (+exp) Simple effects of therapeutic interventions (+exp)
Liu et al. (2021b) RCT (5) Nstart=90 Nend=88 TPS=Acute A1 vs A2	E: Ultra early rehabilitation program (started within 72 hours of onset) C: Early rehabilitation program (started from 72 hours to 7 days after onset) Duration: 20-30min/d, 2- 3sessions/d, 4-5d/wk, for 12wks	E vs C: National Institutes of Health Stroke Scale (+exp) Modified Barthel Index (+exp) Fugl-Meyer Assessment (+exp)
Yen et al. (2020) RCT (8) Nstart=60 Nend=60 TPS=Acute A vs B	E: Early Mobilization C: Standard Early Rehabilitation Duration: 30min/wk, 5d/wk till discharge	E vs C: FIM Motor (+exp) Self-care (+exp) Transfers and locomotion (+exp) PASS (-) FAC (+exp)
Yu et al. (2020b) RCT (3) Nstart=82 Nend=82 TPS=Acute A vs B	E: Early Interventional Rehabilitation (2-7 days Post Stroke) C: Late interventional Rehabilitation (3-4 wks Post Stroke) Duration: 45min/d, patient- dependant	E vs C: Fugl-Meyer Assessment (+exp) Barthel Index (+exp) Neurological deficit score (+exp)
Rahayu et al. (2019) RCT (6) Nstart=40 Nend=40 TPS=Acute A1 vs A2	E: Early mobilization training starting at 24h poststroke diagnosis C: Early mobilization training starting at 48h poststroke diagnosis Duration: 30-60min/d for 7d - 24h mobilization, 30-60min/d for 6d - 48h mobilization	E vs C: Berg Balance scale (+exp) Barthel index (+exp)
Pan (2018) RCT (5) Nstart=86 Nend=86	E: Early rehabilitation therapy + routine primary therapy C: Routine Primary Therapy	E vs C: Fugl-Meyer Assessment (+exp) Neurologic Deficit Scale (+exp) Barthel Index (+exp)

TPS=Acute A vs B	Duration: 30 - 60 min/d, 2sessions/d, for 50 days	Clinical Efficacy (+exp) Satisfaction (+exp)
Langhorne et al. (2017) RCT (8) Nstart=2104 Nend=2083 TPS=Acute A vs 0	E: Very early mobilization C: Conventional rehabilitation Duration: 3mo	E vs C: Modified Rankin Scale (+con) 50 Meter Walking (-)
Yelnik et al. (2017) RCT (7) Nstart=104 Nend=82 TPS=Acute A vs B	E: Early and intensive Physiotherapy C: Soft (passive) Physiotherapy Duration: 15 - 20min/d, 5d/wk Soft PT & 45min/d, 5d/wk Intensive PT for 3mo	E vs C: Fugl-Meyer Assessment (-) Postural Assessment Scale for Stroke (-) Days (no) to walk 10 m (-) Modified Rankin Scale (-) Functional Independence Measurement (-) Stroke impact scale (-)
Bernhardt et al. (2015) RCT (8) Nstart=2104 Nend=2083 TPS=Acute A vs 0	E: Early mobilization after stroke C: Conventional rehabilitation Duration: 14d or until discharge	E vs C: Mortality (-) Adverse Effect (-) Favourable Outcome (+con) Modified Rankin Scale (-) Walk 50m Unassisted (-)
Bai et al. (2012) RCT (5) Nstart=364 Nend=345 TPS=Acute A vs 0	E: Early 3-stage ADL-focused rehabilitation plan + Conventional Care C: Conventional care Duration: First stage: 45min/d, 5d/wk, 1mo, Second stage: 2mo, Third stage: 3 mo; Total of 6mo	E vs C: Fugl-Meyer Assessment (+exp) Modified Barthel Index (+exp)
Fang et al. (2003) RCT (6) Nstart=156 Nend=128 TPS=Acute A vs B	E: Early physical therapy during hospitalization C: Conventional hospitalization care Duration: 45min/d, 5d/wk, for 4wks physical therapy	E vs C: Glasgow Coma Scale (-) Mini-Mental State Examination (-) Clinical Neurological Deficit Scale (-) Fugl-Meyer Assessment (-) Modified Barthel Index (+exp)
Wade et al. (1992) RCT crossover (6) Nstart=94 Nend=89 TPS=Chronic A1 vs A2	E: Early individualized physiotherapy program (education and exercise) C: Late individualized physiotherapy program (education and exercise) Duration: 1-11session/12wks	E vs C: 10 m walk time at crossover time (+exp) at the end of 2 phases (+con) Rivermead motor assessment (-) Barthel index (-) Frenchay activities index (-) Rivermead mobility index (-) Nottingham extended activities of daily living index (-) Hospital anxiety depression scale (-) Nine hole peg test (-)
Physical Therapy vs No Treatment		
Hoseinabadi et al. (2013) RCT (4) Nstart=24 Nend=24 TPS=Chronic	E: Practical Physical therapy C: No treatment Duration 60min/d, 3d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Barthel Index (+exp) Modified Ashworth Scale (+exp)

A vs 0		
Werner et al. (1996) RCT (4) Nstart=49 Nend=40 TPS=Chronic A vs 0	E: Intensive outpatient rehabilitation program (physical + occupational therapy) C: No treatment Duration: 120min/d, 4d/wk, for 12wks	E vs C: Functional Independence Measure (+exp) Jepsen hand function evaluation (-) Brunnstrom's motor rating (-) timed evaluation of stair climbing (-) walking speed (-) Sickness Index Profile (+exp) Beck's Depression Scale (-)
Occupational Therapy vs No Treatment		
Logan et al. (2004) RCT (7) Nstart=168 Nend=168 TPS=Chronic A1 vs A2	E: Occupational Therapy + Leaflets for local transport C: Leaflets for local transport Duration: 7 sessions over 3mth	E vs C: Nottingham Extended Activities of Daily Living (+exp) General Health Questionnaire-12 (-)
Custom Exercise Programs vs Conventional Therapy		
Swank et al. (2020) RCT (7) Nstart=73 Nend=73 TPS=Acute A vs 0	E: Patient Directed Activity Program (PDAP) + Conventional Care C: Conventional Care A Duration: 3h/d, 7d/wk for 1mo (on average) Usual care & 60min/d, 7d/wk Patient-directed Activity	E vs C: steps/day (+exp) Stroke Rehabilitation Assessment of Movement Measure (-) Functional Independence measure (-) Stroke Impact scale memory and thinking (+exp) communication (+exp) recovery from stroke (+exp) physical problems (+exp) mobility in home and community (+exp) Mood (-) Daily activities (-) Use of hand (-)
Xia et al. (2020) RCT (8) Nstart=285 Nend=259 TPS=Acute A vs 0	E: Customized Tiered Conventional Therapy C: Conventional rehabilitation Duration: 3wks	E vs C: Modified Barthel Index (+exp) Fugl-Meyer Assessment (-) Stroke-Specific Quality-of-life Scale (-)
Medina-Rincon et al. (2019) RCT (8) Nstart=14 Nend=14 TPS=Subacute A vs 0 vs B	E: Custom exercise program + Usual care C: Usual Care C: 60 min/d, 5d/wk, for 4wks usual care Duration: E: 45 mins /d , 5d/wk, 4 wks + 15mins/d, 5d/wk, 4 wks ; C: 60 mins/d, 5d/wk, 4 wks	E vs C: Total Mini BESTest (+exp) Anticipatory postural adjustments (+exp) Postural responses (-) Sensory orientation (+exp) Balance during gait (+exp)
Askim et al. (2018) RCT (6) Nstart=380 Nend=329 TPS=Subacute A vs 0	E: Individualized Regular Coaching (on physical activity and exercise) + Standard Physiotherapy C: Standard Physiotherapy Duration: 45min/wk standard physiotherapy; 1d/mo coaching to schedule 45-60min/wk exercise & 30min/d, 7d/wk physical activity as intervention, for 18mo	E vs C: Motor Assessment Scale (-) Barthel Index (-) Modified Rankin Scale (-) Berg Balance scale-item 14 (-) Timed Up and Go Test (+con) Gait Speed (-) 6-minute walk test (-)

		Stroke Impact Scale (-) MMSE (-) Trailmaking A and B (-) Hospital Anxiety and Depression Scale (-) EQ-5D-5L (-) Fatigue Severity Scale (-) Caregiver Strain Index (-)
Sackley et al. (2015) RCT (8) Nstart=1042 Nend=908 TPS=Chronic A + B vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Custom Occupational therapy + Caregiver training workshop C: Usual care alone Duration: 3mo program, frequency and duration of visits depended on patient and therapist	E vs C: Barthel index (-) Rivermead Mobility index (-) Geriatric depression scale-15 (-) EuroQOL-5D-3L questionnaire (-)
Askim et al. (2010) RCT (7) Nstart=62 Nend=59 TPS=Acute A + B vs 0	E: Intensive Motor Training + Home Exercise + Standard Treatment C: Standard Treatment Duration: 30min, 2x/d, 5d/wk, 12wks, Standard Treatment & 30-50min IMT, 3d/wk for first 4wks, and 1d/wk for the next 8wks & 2x/d, 6d/wk Home Exercise	E vs C: Berg Balance Scale (-) Barthel Index (-) Motor Assessment Scale (-) Step Test (-) 5-meter Walk Test (-) Stroke Impact Scale Recovery (-) Mobility (-)
Allen et al. (2009) RCT (7) Nstart=380 Nend=319 TPS=Subacute A vs B	E: Individualized post-discharge care plan (Home visits, Education, Medication, Social Support, Regular telephone assessment) C: Usual post-discharge Care Duration: Total of 6-mo protocol for both groups. 1x/wk, 4wks, then 1x/mo for 5mo periodic calls.	E vs C: NIHSS (-) Timed Up and Go Test (-) Physical Performance Test (-) Stroke-specific QOL scale (-) Risk Management Outcomes SBP (-) DBP (-) HBA1c(-) Fall rate (-) Incontinency (-) Center for Epidemiological Studies of Depression (-) medication appropriateness (-) Stroke Knowledge and Lifestyle Modification (+exp)
Werner et al. (2002a) RCT (7) Nstart=28 Nend=28 TPS=Subacute A + B + C vs A + B Also in Table 9 (Treadmill Training)	E: Baseline conventional therapy + Treadmill training with partial BWS + Individual physical therapy C: Baseline conventional therapy + Treadmill training with partial BWS Duration: 3wks Baseline conventional therapy, 30min/d, 5d/wk, for 3wks BWS-treadmill, 40min/d, 5d/wk, for 3wks Individual physical therapy	E vs C: Functional Ambulation Category (+exp) Rivermead Motor Assessment (-) Gait Velocity (-)
Aerobic and Resistance Training vs Aerobic Training		
Marzolini et al. (2018) RCT (6) Nstart=73 Nend=68	E: Aerobic training (over ground walking) + Resistance training C: Aerobic Training Duration: 20-60mins/d, 5d/wk for 24wks	E vs C: 6 minute walking distance (-) stair climb (-) sit-to-stand (-)

TPS=Chronic A + B vs A Also in Table 21 (Strength and Resistance Training)		cardiopulmonary assessment (-) resting heart rate (-) resting systolic BP (-) resting diastolic BP (-) VO2 peak (-) Peak RER (-) VO2 VT (+exp) Body composition Body mass index (-) Total body lean mass (+exp) Trunk (+exp) Appendicular Nonaffected-side limbs Affected-side limbs (+exp) Total body percentage fat (-) Trunk (-) Appendicular (-) Nonaffected-side limbs (-) Affected-side limbs (-) Muscular strength Elbow flexion, affected side (+exp) elbow flexion nonaffected side (+exp) knee extension, affected side knee extension nonaffected side (+exp) Dietary Analysis (-) kilocalories (-) protein (-)
Aerobic and Resistance Training vs Conventional Care		
Rizvi et al. (2023) RCT (7) Nstart=32 Nend=32 TPS=Subacute A vs B Also in Table 21 (Strength and Resistance Training)	E: Individualized cardio rehabilitation (aerobic & resistance training) + Conventional stroke rehab C: Conventional Stroke Rehabilitation Duration: 30-45min/d aerobic exercise, 4d/wk, +2d/wk body resistance training, for 12 wks	E vs C: BBS (-) TUG (+exp) mean NN (+exp) RMSSD (+exp) LF/HR ratio (-) SDNN (-) pNN50 (-) LF power (-) HF power (-) VLF power (-) total power (-) normalized LF (-) normalized HF (-) resting HR (+exp) peak HR (+exp) SBP (-) DBP (-) VE peak (+exp) RR peak (-) PETCOT2 rest (-) PETCO2 peak (+exp) VE/CO2 slope (+exp) VE/O2 slope (+exp) RER (+exp)

		workload (-) RPE (-) exercise duration (no stat)
Lee et al. (2015d) RCT (7) Nstart=30 Nend=26 TPS=Chronic A + B vs 0 Also in Table 21 (Strength and Resistance Training)	E: Aerobic Training (fast walking and walking up-stairs) + Resistance Training C: Conventional care Duration: 60min/d, 3d/wk, 16wks	E vs C: BP peripheral systolic/diastolic blood pressure (-) central systolic blood pressure (-) central diastolic blood pressure (+exp) augmentation index (+exp) Pulse wave velocity (+exp) 6-min walk test (+exp) 10-m walk test (+exp) Timed Up-and-Go Test (-) grip strength (+exp) flexibility (+exp) Functional Reach test (-) 30-sec chair stand test (+exp) chair sit and reach (+exp)
Closed Chain Exercise vs Open Chain Exercise or Standard Rehabilitation		
Krawczyk et al. (2014) RCT (4) Nstart=51 Nend=51 TPS=Subacute A vs 0	E: Closed chain rehabilitation program C: Standard rehabilitation program Duration: 120 min/d, for 12wks	E vs C: Berg-Balance Scale (-) Rivermead Motor Assessment-Trunk and LE (-) Fugl-Meyer Assessment-LE (-) Gait speed (-) Cadence (-) Stance phase (-) Step length (-) Step width (-) Hip range of motion (-) Range of pelvic tilt (-) Gillette Gait Index (-) Knee range of motion (-)
Lee et al. (2013f) RCT (3) Nstart=33 Nend=33 TPS=Chronic A1 vs A2 vs 0	E1: Closed Chain Kinetic exercise E2: Open Chain Kinetic exercise C: No Treatment Duration: 5d/wk, for 6wks	E1 v C: Muscle activity (+exp) Sway velocity (+exp) E2 v C: Muscle activity Rectus femoris (+exp) Biceps femoris (+exp) Gastrocnemius (-) Tibialis anterior (-) Sway velocity (-) E1 v E2: Muscle activity Rectus femoris (-) Biceps femoris (-) Gastrocnemius (+exp1) Tibialis anterior (+exp1) Sway velocity (+exp1)

Sling Exercise Therapy vs Conventional Therapy		
Wang et al. (2022a) RCT (4) Nstart=100 Nend=100 TPS=Subacute A vs B vs A + B vs 0	E1: Muscle energy technique + conventional therapy E2: Neurac + conventional therapy E3: Muscle energy technique + Neurac + conventional therapy C: Conventional therapy Duration: E: 4wks; C:40 mins/d, 5d/wk, 4wks	E1/E2/E3 vs C: Barthel Index (+exp1/2/3) VAS-pain (+exp1/2/3) BBS (+exp3) Tinetti score (+exp3) FMA (+exp1/2/3) WHO Quality of Life Measurements Short Form (+exp1/2/3) E1/E2 vs E3: BBS (+exp3) Tinetti scale (+exp3) Barthel Index (+exp3) VAS-pain (+exp3) FMA (+exp3) WHO Quality of Life Measurements Short Form (+exp3)
Liu et al. (2020) RCT (7) Nstart=50 Nend=50 TPS=Subacute A vs 0	E: Sling Exercise Therapy on Lower Limbs C: Conventional Therapy Duration: 30min/d, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Fugl-Meyer Assessment Upper limb (+exp) Lower limb (-) Barthel index (-) Short Form 36 (-) General health (+exp) Pain Visual Analogue Scale (VAS) (+exp)
Lou et al. (2019) RCT (6) Nstart=56 Nend=56 TPS=Subacute A vs 0	E: TheraSling Therapy with Neuromuscular Facilitation C: Conventional Care Duration: 45min/d, 6d/wk, for 6wks	E vs C: Functional Ambulation Category (+exp) Barthel Index (+exp) Fugl Meyer Assessment (+exp) Berg Balance Scale (+exp) 10-Meter Walk Test (+exp) Step Length (+exp)
Aerobic Exercise with Cognitive Training vs Nonaerobic Exercise with Unstructured Mental Activities or Sham		
Koch et al. (2020) RCT (5) Nstart=131 Nend=94 TPS=Subacute A + B + C vs 0 Also in Table 8 (Cycle Ergometer Training); Table 9 (Treadmill Training); Table 21 (Strength and Resistance Training)	E: Aerobic training (Stationary treadmill or bicycle ergometer) + resistance training + cognitive training C: Sham Combined aerobic and resistance training + Sham Cognitive training Duration: 80-100min/d, 3d/wk, 12wks	E vs C: Adverse Events (-) Feasibility (+exp) Montreal Cognitive Assessment (-) Hopkins Verbal Learning Test Revised (-) Hopkins Verbal Learning Test Revised Delayed Recall (-) Grooved Pegboard (-) Stroop delis Kaplan Executive function test (-) WAIS-IV Coding Digit Symbol Substitution Test (-) Brief Visuospatial Memory Test-R (-) Brief Visuospatial Memory Test-R Delayed Recall Digit Span Backwards (-) CogState Brief Battery (-) Center for Epidemiological Studies Depression Scale (-) Stroke Impact Scale (-)

		Timed Up and Go Test (-) 15 Meters Walk Speed (-) 6-minute walk test (-) 30-second chair stand repetition test (-) single repetition maximal leg (-) single repetition maximal chest press (-) grip strength affected grip strength non-affected (-)
Yeh et al. (2019) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C + D	E: Aerobic exercise (stationary bicycle training) + computerized cognitive training C: Nonaerobic exercise + unstructured mental activities Duration: 60min/d, 2-3d/wk, 12- 18wks (36 sessions in total)	E vs C: 6-minute walk test (+exp) Community Integration Questionnaire (-) EuroQoL-5D questionnaire (-) International Physical Activity Questionnaires (-) Montreal Cognitive Assessment (+exp) Wechsler Memory Scale-Third Edition Spatial Span (+exp) Verbal Pair (-)
Virtual Reality Exercise Program vs Customized Physiotherapy or Conventional Physiotherapy		
Cannell et al. (2018) RCT (8) Nstart=81 Nend=73 TPS=Subacute A1 vs A2 Also in Table 26 (Virtual Reality)	E: Customized Physiotherapy plan using interactive Motion Capture Rehabilitation (VR- based) C: Customized Physiotherapy plan Duration: Maximum of 1hr/d, 5d/wk, for 8wks or up to discharge (whichever comes first)	E vs C: Functional reach Test (-) Lateral reach Test (-) Sitting balance Test (-) Modified Motor assessment scale (-) Box and Block (-) Step test (-) Timed Up and Go (-) Gait Velocity (-)
High-intensity Functional Exercise Program vs Education		
Holmgren et al. (2010) RCT (8) Nstart=34 Nend=33 TPS=Subacute A + B vs B	E: High Intensity Functional Exercise (HIFE) program + education C: Education group Duration: Experimental - 45min/d 6d/wk, 5wks HIFE + 1h/wk, for 5wks Education Control - Education 1h/wk, for 5wks	E vs C: Berg Balance Scale (-) Barthel Index (-) Falls Efficacy Scale International (+exp) Frenchay Activities Index (-)
High Repetitive Weight Bearing Exercises vs Low Repetitive Weight Bearing Exercises		
Agarwal et al. (2008) RCT (5) Nstart=30 Nend=30 TPS=Subacute A1 vs A2	E1: Repetitive weight bearing exercises repeated 40 times. E2: Repetitive weight bearing exercises repeated 20 times. Duration: 1mo	E1 vs E2: Cadence (+exp1) Step length (+exp1) Stride length (+exp1) Step width (+exp1)
Higher Intensity Training vs Lower Intensity Training or Conventional Care		
Chen et al. (2024a) RCT (6) Nstart=42 Nend=38 TPS=Subacute A vs B vs C vs 0	E1: Low-to-Moderate Intensity Continuous Training, E2: Moderate Intensity Interval Training, E3: Reduced-Exertion High-Intensity Interval Training C: Conventional rehab Duration: 70min/d (1 training sessions/day, two days off after 5 consecutive training days; LMICT 30min,	E1/E2 vs C: BI(-) FMA (-) E3 vs C: BI(+exp) FMA (+exp) E1 vs E2: BI (-)

	MIIT 30min, REHIT 10min), 28 days, 28 sessions total	FMA (-) E1 vs E3: BI(+exp3) FMA(-) E2 vs E3: BI (+exp3) FMA (-)
Moncion et al. (2024) RCT (7) Nstart=82 Nend=60 TPS=Chronic A vs B	E: Aerobic exercise (HIIT) C: Moderate Intensity Continuous Training (MICT) Duration: HIIT group: 24 min/d, 3d/wk, 12 wks (10x1 minute intervals of high intensity exercise + 9x1 minute low intensity intervals + 3min warm-up + 2min cooldown); MICT group: ~35min/d, 3d/wk, 12wks (weeks 1-4: 20 min; weeks 5-8: 25min, weeks 9-12: 30mins + 3min warm-up + 2min cooldown).	E vs C: Blood pressure (-) Heart rate (-) VO2 peak (+exp) VO2 ventilatory (-) 6MWT (-) 10 m gait speed (-)
Marzolini et al. (2023) RCT (8) Nstart=47 Nend=45 TPS=Chronic A + B vs B	E: HIIT + moderate intensity continous exercise C: Moderate intensity continous exercise Duration: HIIT30min or MICT60min/d, HIIT3d/wk+MICT2d/wk, 24wks	E vs C: VO2 PEAK(+exp) 6MWT(-) VO2 threshold(+exp) 10MWT(-) Gait economy(-) Dual task Gait test(-) MOCA(-) BBS(-) Stair climb(-) Muscle strength(-) Steps(-) SF-12(-) SIS(-) Stroop test(-) KEFS(-) Erickson task(-)
Reynolds et al. (2021) RCT (7) Nstart=20 Nend=19 TPS=Subacute A vs B	E: Progressive moderate-intensity cardiovascular training C: Low-intensity conventional exercise program Duration: 30min/d, 5d/wk, for 12wks	E vs C: VO2 peak (-) 6-minute walk test (-) 10-m walk test (-) SF-36 (-) Patient health questionnaire-9 (-)
Gjellesvik et al. (2021) RCT (7) Nstart=70 Nend=64 TPS=Chronic A vs 0	E: High Intensity Interval Training (HIIT) + Conventional care C: Conventional care Duration: 35min/d, 3d/wk, for 8wks HIIT	E vs C: 6 Minute Walk Test (+exp) 10 Meter Walk Test (-) Berg Balance Scale (+exp) Timed Up & Go Test (-) Hospital Anxiety and Depression Scale Anxiety (-) Depression (-) Montreal Cognitive Assessment Test (-) Trail Making Test Part A (-) Part B (+exp) Stroke Impact Scale (-)

		Functional Independence Measure (-)
Boyne et al. (2019) RCT crossover (5) Nstart=16 Nend=16 TPS=Chronic A vs B vs C Also in Table 9 (Treadmill Training)	E1: High-Intensity Interval Training – Treadmill E2: High-Intensity Interval Training – Seated Stepper C: Moderate-intensity Continuous Exercise - Treadmill Duration: 20min Single session/Condition, ~ 1wk washout	E1/E2 vs C: Gait Speed (-) Brain-derived neurotrophic factor (+exp1) Active motor threshold response (+exp1) VO2 peak (+exp1/2)
Hornby et al. (2019) RCT (8) Nstart=97 Nend=90 TPS=Chronic A1 vs A2 vs A3 vs 0	E1: High-intensity variable stepping training E2: High-intensity forward stepping training E3: Low-intensity variable stepping training C: N/A Duration: E1: 33-35 min/session, 26-29 sessions ; E2: 32-35 min/session, 25-28 sessions ; E3: 36-38 min/session, 25-29 sessions vs ≤30 1hr training sessions for 2 mo (3–5 sessions/wk), with ≤40 minutes of stepping practice each session	E1/E2 vs E3: Self-selected speed (+exp1, +exp2) fastest-possible speed (+exp1, +exp2) 6-minute walk test (+exp1, +exp2) Step-length symmetry (-) Paretic single-limb stance (+exp1, +exp2) Functional Gait Assessment (-) 5-times sit-to-stand (-) Activities-Specific Balance Confidence Scale (-) Physical function/mobility score of Patient-Reported Outcomes Measurement Information System (-) peak treadmill speed (+exp1, +exp2) peak VO2 (-) E1 vs E2: (No stats)
Hornby et al. (2016) RCT (7) Nstart=33 Nend=32 TPS=Subacute A vs 0 Also in Table 9 (Treadmill Training)	E: High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) C: Conventional physical therapy care Duration: 60min/d, 4-5d/wk, for 10wks for 40 sessions	E vs C: 10-metre walk test Self-selected speed (+exp) Fastest speed (+exp) 6-minute walk test (+exp) Steps/day (-) Single limb stance Self-selected speed (+exp) Fastest speed (+exp) Step symmetry Self-selected speed (-) Fastest speed (-) Berg Balance Scale (-) 5 times sit to stand (-) SF36 Physical (+exp) Activities specific balance confidence (-)
Boyne et al. (2016) RCT (8) Nstart=18 Nend=16 TPS=Chronic A vs B	E1: High-Intensity Interval Training C: Moderate-intensity aerobic training Duration: 25min/d, 3d/wk, for 4wks	E1 vs C: Peak oxygen uptake (-) Ventilatory threshold (+exp) Metabolic cost of gait (-) Fractional utilization (-) Fastest treadmill speed (+exp) 10-Meter Walk Test (-) Six-Minute Walk Test (-)
Langhammer et al. (2008) RCT (8) Nstart=75	E: Intensive physiotherapy schedule C: Regular physiotherapy Duration: 40-60min/d, 2-3d/wk, min of 80h over 1yr intensive PT	E vs C: Nottingham Health Profile (+con) physical mobility (+con)

Nend=63 TPS=Acute A vs B		Social isolation (-) sleep (-) pain (-) energy (-) emotional reaction (-) Motor Assessment Scale (No stats) Berg Balance Scale (No stats) 6-minute walk test (No stats) Barthel Index (No stats)
Sivenius et al. (1985) RCT (5) Nstart=95 Nend=95 TPS=Acute A vs 0	E: Intensive physiotherapy program C: Normal physiotherapy Duration: 30min/session, 2sessions/d	E vs C: ADL score (+exp) Motor function (+exp)
Increased Duration of Exercise vs Conventional Care/Exercise		
Klassen et al. (2020) RCT (7) Nstart=74 Nend=73 TPS=Acute A1 vs A2 vs B1 vs 0 vs B2	E1: Therapeutic exercise more than double the intensity of usual care. E2: Therapeutic exercise more than quadruple the intensity of usual care. C: Usual care physical therapy E2: 120min/d, 5d/wk, for 4wks C: 60min/d, 5d/wk, for 4wks Duration: E1: 60min/d, 5d/wk, 4wks ; E2: 120min/d, 5d/wk, 4wks ; C: 60min/d, 5d/wk, 4wks	E1/E2 vs C: 6-minute walk test (+exp1, +exp2) 5meter walk test (+exp2) EQ-5D-5 L (+exp1, +exp2) Berg Balance Scale (-) Patient Health Questionnaire-9 (-) Maximal Isometric Paretic Quadriceps (knee) strength (-)
Hesse et al. (2011) RCT (8) Nstart=50 Nend=50 TPS=Subacute A vs B	E: Intermittent High-Intensity Physiotherapy C: Continuous Low-Intensity physiotherapy Duration: 30-45min/d, 4d/wk, 8wks for 3blocks/12month Intermittent PT & 30-45min/d, 2d/wk, 12month Continuous PT	E vs C: Rivermead Mobility index (-) Rivermead motor assessment (-) 10-m Walk (-) Stair climbing velocity (-) Timed Up and Go (-) Modified Ashworth scale (-) Rivermead Activities of Daily Living scale (-) Fell seriously (+exp)
Wellwood et al. (2004) RCT (7) Nstart=70 Nend=69 TPS=Acute A vs 0	E: Augmented conventional physiotherapy C: Conventional physiotherapy Duration: 30-4-min/d, 5d/wk, 4wks Standard Physiotherapy & 60-80min/d, 5d/wk, 4wks Augmented Physiotherapy	E vs C: Rivermead Mobility Index (-) 10-Meter Walking Test (-) Motricity Index (-) Barthel Index (-) Nottingham Extended Activities of Daily Living Index (-) Trunk Control Test (-)
Partridge et al. (2000) RCT (7) Nstart=114 Nend=108 TPS=Not reported A vs 0	E: Standard plus physiotherapy (longer duration) C: Standard physiotherapy Duration: 30min/d, for 6wks Standard physiotherapy, 60min/d, for 6wks Standard plus physiotherapy	E vs C: Profiles of Recovery (-) Sit to stand (-) 5 metre timed walk (-) Functional Reach Test (-) Hospital Anxiety and Depression Scale (-) Recovery Locus of Control Scale (-)

Community-based Physical Activity vs No Intervention		
Kang et al. (2023) RCT (9) Nstart=20 Nend=16 TPS=Chronic A vs 0	E: Community-based exercise program C: No treatment Duration: 60min/d, 3d/wk, 8wks	E vs C: irisin (+exp) knee P-extension (-) NP-extension (+exp) P-flexion (+exp) NP-flexion (+exp) trunk extension (+exp) flexion (+exp) VO2 peak (+exp) 6MWT (+exp) skeletal muscle mass (+exp) body fat (-)
Aravind et al. (2022) Feasibility/pilot RCT (6) Nstart=33 Nend=21 TPS=Chronic A vs 0	E: Community Exercise Program C: Waitlist Duration: 60min, 2x/wk, for 12wk	E vs C: Subjective Index of Physical and Social Outcome (SISPO) Physical (+exp) Social (-) Nottingham Extended Activities of Daily Living (NEADL) Lifespace Assessment (LSA) Stroke Impact Scale (SIS) SIS Physical SIS Memory SIS Mood SIS Communication SIS ADL SIS Mobility SIS Hand Function SIS Participation SIS Recovery Barthel Index (BI) EuroQoL-5D five level (EQ-5D-5L) Health Utility VAS Caregiver Assessment Scale (CAS) Research and Development 36 (RAND-36) Emotion Fatigue Berg Balance Scale (BBS) Activities-specific Balance Confidence (ABC - Scale) Sit-to-Stand 10-Metre Walk Test (10MWT) 6-Minute Walk Test (6MWT) Trail Making Test A (TMT-A) Trail Making Test B (TMT-B) Geriatric Depression Scale (GDS)
Marsden et al. (2010) RCT crossover (7) Nstart=43	E: Multidisciplinary group programme (combining physical activity, education, self- management principles) C: No treatment	E vs C: stroke survivors Stroke Impact Scale (-)

Nend=41 TPS=Chronic A vs 0	Duration: 150min/d, 1d/wk, for 7wks - 1wk washout	Six Minute Walk Test(-) Timed Up and Go(-) perceived overall recovery (-) Carers Caregiver Strain Index (-) Health Impact Scale (-) Six Minute Walk Test(-) Timed Up and Go(-)
Green et al. (2002) RCT (8) Nstart=170 Nend=161 TPS=Chronic A vs B	E: Community physiotherapy C: No intervention Duration: 13 wks	E vs C: Rivermead Mobility Index (+exp) 10m walk speed (+exp) Barthel Index (-) Frenchay Activities Index (-) Hospital Anxiety and Depression Scale (-) General health questionnaire 28 (-) Number of patients who had falls (-)
Community-based Exercise Program vs Other Care		
Nindorera et al. (2023) RCT crossover (8) Nstart=46 Nend=46 TPS=Chronic A vs B Also in Table 8 (Cycle Ergometer Training); Table 21 (Strength and Resistance Training)	E: Circuit walking, balance, cycling and strength training (CBCS) C: Sociocultural intervention (board games, cultural discourse and drama) Duration: 120min/d, 3x/wk for 12wk	E vs C: ACTIVLIM Stroke Scale(+exp) Stroke Impairment Assessment Scale (SIAS) (+exp) Berg Balance Scale (BBS) (+exp) Hospital Anxiety and Depression Scale (HADS) (-) 6-Minute Walk Test (6MWT) (+exp) 10-Metre Walk Test (10MWT) (-) Participation Measurement Scale (PMscale) (+exp)
Stuart et al. (2019) RCT (6) Nstart=76 Nend=48 TPS=Chronic A vs B	E: Community-based progressive Adaptive Physical Activity exercise program with homework component C: Non-progressive seated exercise (sham) Duration: 60min/d, 3d/wk, for 24wks	E vs C: Six-minute walk (-) Berg Balance scale (-) Short Physical Performance Battery (-) 30-foot timed walk (-) Stroke Impact Scale (-) Mobility (-) Total (-)
Harrington et al. (2010) RCT (7) Nstart=243 Nend=228 TPS=Chronic A + B vs 0	E: Community-based exercise + Education C: Standard care Duration: 2hr/d, 2d/wk for 8wks	E vs C: Subjective Index of Physical and Social Outcomes (-) physical (+exp) social (-) Frenchay Activities Index (-) Rivermead mobility index (-) Carer Strain index (-) Functional reach test (-) Timed Up and Go (-) WHOQoL-Bref Physical (-) Psychological (-) Social (-) Environmental (-) Hospital Anxiety and Depression scale (-)

Olney et al. (2006) RCT (7) Nstart=74 Nend=66 TPS=Chronic A vs B	E: Supervised group exercise program C: Unsupervised (home-based) exercise program Duration: 90min/d, 3d/wk for 10wks	E vs C: 6-Minute Walk Test (-) Human Activity Profile (-) Short Form-36 Mental (+exp) Physical (-) Physiological Cost Index (-) Muscle Strength Sum (-)
Community-based Exercise Program vs Upper Extremity Exercise Program		
Dean et al. (2012) RCT (8) Nstart=151 Nend=133 TPS=Chronic A vs B	E: Community-based mobility, balance, and fall prevention program C: Upper extremity and cognitive exercise program Duration: 45-60min weekly exercise & 45-60min, 3d/wk home exercise for 40wks	E vs C: 6min Walk test (+exp) 10m Walk test Comfort (-) Fast (+exp) Short form Physiological Profile Assessment (-) Short form 12 Physical (-) Mental (-) Timed Up and Go (-) Step Test (-) Physical activity-steps/d (-) Adelaide Activities Profile Domestic Chores (-) Household Maintenance (-) Service to Others (+exp) Social Activities (+exp) Choice stepping reaction time (+exp) Affected knee strength (-) Intact knee strength (+exp) Maximal balance range (-) Coordinated stability (-) Single leg stance time (-) Sit-to-stand (-)
Pang et al. (2005) RCT (8) Nstart=63 Nend=60 TPS=Chronic A vs B	E: Community-based fitness and mobility exercises for lower limb C: Seated upper extremity exercises Duration: 60min/d, 3d/wk, for 19wks	E vs C: VO2 max (+exp) 6-Minute Walk Test (+exp) Maximal Knee Contraction Paretic Leg (+exp) Nonparetic Leg (-) Berg Balance Scale (-) Physical Activity Scale for Individuals with Physical Disabilities (-) Femoral Neck Bone Mineral Density Paretic (+exp) Nonparetic (-) Respiratory Exchange Ratio (-)
Non-Paretic Side Training vs Conventional Therapy		
Pandian et al. (2014) RCT (7) Nstart=39 Nend=37 TPS=Chronic	E: Motor training non-paretic side + conventional therapy C: Conventional therapy Duration: 60min/d, 3d/wk, for 8wks	E vs C: Berg Balance Scale (+exp) Functional reach test (-) Barthel index (+exp)

A vs 0		
Falls Prevention Program vs Usual Care		
Batchelor et al. (2012) RCT (8) Nstart=156 Nend=132 TPS=Subacute A vs 0	E: Usual Care + Falls prevention program (including individualized home exercise, implementation of falls and injury risk minimization strategies and education) C: Usual care Duration: 30-40min, 3-5d/wk, for 12mo home exercise	E vs C: Falls rate (-) Falls Risk for Older People-Community setting (-) Falls Efficacy Scale (-) Human Activity Profile (-) Sit-to-Stand (-) Step Test (-) Functional Independence Measure (-)
Skating Exercise vs Treadmill Training		
Soh et al. (2020) RCT (5) Nstart=45 Nend=36 TPS=Chronic A vs B	E: Skating-like motion exercises C: Conventional treadmill exercise Duration: 30min/d, 3d/wk for 12wks	E vs C: EuroQoL-5D (+exp) Cardiorespiratory function VO2 peak (+exp) Resting Systolic blood pressure (-) Resting diastolic blood pressure (-) Resting Heart Rate (-) Peak systolic blood pressure (-) Peak Diastolic blood pressure (-) peak heart rate (-) Peak Oxygen pulse (+exp) Ventilator peak (+exp) Peak tidal volume (-) Peak ventilatory efficiency (-) Dynamic Gait index (+exp) Berg Balance scale (+exp)
High-Intensity Training with Acute Intermittent Hypoxia vs High-Intensity Training Alone		
Hornby et al. (2024) RCT crossover (8) Nstart=35 Nend=28 TPS=Chronic A + B + C vs A + C	E: HIT + Acute intermittent hypoxia (AIH; Hypoxia + Normoxia) C: HIT + Normoxia Duration: 90 min (30min AIH+ 60min HIT)/d, 4-5 wks (15 training sessions)	E vs C: self -selected speed (+exp) fastest speed (+exp) 6MWT (-) peak treadmill speed (+exp) SSS-single limb stance time (+exp) FS-single limb stance time (+exp) SSS-step length symmetry (-) FS-step length symmetry(-) BBS (-) FTSTS (-) Activities-Specific Balance Confidence Scale (-) SF36 (-) VO2 peak (-) VO2 match (-) VO2 gain (-)
Implicit Motor Learning vs Conventional Therapy		
Johnson et al. (2024) Feasibility/pilot RCT (5) Nstart=51 Nend=41	E: Implicit Motor Learning C: Conventional rehab Duration: 30min/d, 3d/wk, 4 wks	E vs C: FMA (no stat) Swedish Postural Adjustment in Stroke Scale (no stat) Modified Rivermead Mobility Index (no stat)

TPS=Acute A vs 0		MRS (no stat) Movement Specific Reinvestment Scale (no stat) EQ-5D VAS (no stat) EQ-5D Index Score (no stat)
Aerobic Exercise with Task-Specific Training vs Task-Specific Training Alone		
Linder et al. (2024) RCT (8) Nstart=60 Nend=56 TPS=Chronic A + B vs B	E: Forced-rate aerobic exercise + Upper extremity repititve task practice C: Upper extremity repetitive task practice Duration: Experimental: 90 mins/d (45 mins of RTP + 45 mins of FE), 3ds/wk, 8wks; Control: 90 mins/d of RTP, 3ds/wk, 8wks	E vs C: FMA-UE (-) Action Research Arm Test (-) Wolf Motor Function Test (-) log performance time (-) Functional ability score (-) Number of incomplete tasks in 120s (no stat) Grip strength (-) weight to box (-) 6-min walk test to distance (+exp) Peak VO2 (+exp)
Motivational Interviewing with Occupational Therapy vs Occupational Therapy Alone		
Gholipour et al. (2024) RCT (7) Nstart=34 Nend=34 TPS=Chronic A vs 0	E: Motivational Interviewing + Conventional occupational therapy C: Conventional occupational therapy Duration: Experimental: 45 mins/d of Occupational therapy, 6ds/wk, 4wks); 30-45 mins of motivational interviewing, 1d/wk, 4wks; Control: 45 mins/d, 6ds/wk, 4wks	E vs C: General Self-efficacy Scale (-) Stroke impact scale-16 (-) FIM (+exp) Brunnstrom recovery stages upper (-) lower (+exp)
Additional Comparisons from the Source Dataset		
Sánchez-Sánchez et al. (2018) RCT (6) Nstart=30 Nend=20 TPS=Subacute A vs 0	E: Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level) C: Conventional PT protocol Duration: Not specified, Inpatient and outpatient program (Data was recorded from time able to stand post stroke to 6-months post stroke)	E vs C: Romberg Test of Balance (No stats) Limit of Stability (No stats) Intrinsic Motivation Inventory (No stats)
Kersten et al. (2015) RCT (6) Nstart=20 Nend=20 TPS=Chronic A1 vs A2	E: If-Then goal setting for exercise C: Goal setting Duration: 60min in-person session + up to 30 min telephone appointment after 3wks	E vs C: 10-m walk test (No stats) Rivermead Mobility Index (No stats) Patient Activation Measure (No stats) General Self-Efficacy (No stats) Self-efficacy for Chronic Diseases Scales (No stats) SF-36 (No stats) World Health Organization Quality of Life questionnaire (No stats)
Zedlitz et al. (2012) RCT (7) Nstart=83 Nend=73 TPS=Chronic A + B vs X	E: Cognitive therapy with graded activity training C: Cognitive therapy Duration: 120min/d, 1d/wk cognitive therapy & 120min/d, 2d/wk graded activity training, 12wks	E vs C: Checklist Individual Strength-Fatigue Severity Scale (-) Fatigue self-observation list (-) Hospital Anxiety and Depression Scale Anxiety (-) Depression (-)

		Stroke-Adapted Sickness Impact Profile (+exp) Pain self-observation list (-) Sleep self-observation list (-) 6-minute walk test (+exp)
Wood-Dauphinee et al. (1984) RCT (6) Nstart=130 Nend=126 TPS=Acute A vs 0	E: Team Care C: conventional care Duration: 5wks	E vs C: Brunnstrum Evaluation form (No stats) Barthel Index (No stats)
Wu et al. (2020a) RCT (7) Nstart=31 Nend=31 TPS=Acute A + B vs 0 Also in Table 21 (Strength and Resistance Training)	E: Early conventional PT + intensive strength exercises C: Conventional physiotherapy Duration: 20-30min/d, 5d/wk conventional PT & 30min/d, 5d/wk, for 2wks strength exercises	E vs C: Fugl-Meyer Assessment (+exp) Functional Independence Measure - Ability to walk 50m (-) Berg Balance Scale (-) Barthel Index (-) Modified Rankin Scale (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Park et al. (2021b) RCT (6) Nstart=60 Nend=52 TPS=Chronic A1 vs A2 vs 0	E1: Cross-training on affected side + conventional physiotherapy E2: Cross-training on unaffected side + conventional physiotherapy C: Conventional physiotherapy Duration: C: 60min/d, 5d/wk, for 4wks physiotherapy, E: 30min/d, 3d/wk cross training & 30- 60min/d, 5d/wk physiotherapy, for 4wks	E1 vs E2 vs C: Timed Up & Go (-) 10-Metre Walk Test (-) Limit of Stability (-) Paretic side (-) Non-paretic side (-) Forward (-) Backward (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body Weight Shift Technique may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Krishna et al. 2018
1b	Self-regulation Rehabilitation may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Liu et al. 2014
1a	Early Rehabilitation Programs may produce greater improvements in motor recovery than Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke.	11	Xu 2022; Ning et al. 2022; Liu et al. 2021b; Wang et al. 2022b; Yu et al. 2020b; Wu et al. 2020a; Pan 2018; Yelnik et al. 2017; Bai et al. 2012; Fang et al. 2003; Wade et al. 1992

1b	Early Conventional therapy (after 24-48 hours) may produce greater improvements in motor recovery than Late Conventional therapy (72-96 hours post stroke).	1	Wang et al. 2022b
2	Physical Therapy may not have a difference in efficacy when compared to No Treatment for improving motor recovery.	1	Werner et al. 1996
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	3	Xia et al. 2020; Allen et al. 2009; Werner et al. 2002a
2	Closed Chain Exercise may not have a difference in efficacy when compared to Open Chain Exercise or Rehabilitation for improving motor recovery.	1	Krawczyk et al. 2014
1a	There is conflicting evidence about the effect of Sling Exercise Therapy when compared to Conventional Therapy for improving motor recovery.	2	Liu et al. 2020; Lou et al. 2019
2	Muscle energy technique with conventional therapy may result in lesser improvements in motor recovery when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
1b	Higher Intensity Training may produce greater improvements in motor recovery than Lower Intensity Training or Conventional Care.	2	Chen et al. 2024a; Sivenius et al. 1985
1b	Low-to-Moderate Intensity Continuous Training may not have a difference in efficacy when compared to Moderate Intensity Interval Training for improving motor recovery.	1	Chen et al. 2024a
1b	Low-to-Moderate Intensity Continuous Training may not have a difference in efficacy when compared to Reduced-Exertion High-Intensity Interval Training for improving motor recovery.	1	Chen et al. 2024a
1b	Low-to-Moderate Intensity Continuous Training or Moderate Intensity Interval Training may not have a difference in efficacy when compared to Conventional rehab for improving motor recovery.	1	Chen et al. 2024a
1b	Moderate Intensity Interval Training may not have a difference in efficacy when compared to Reduced-Exertion High-Intensity Interval Training for improving motor recovery.	1	Chen et al. 2024a
1b	Reduced-Exertion High-Intensity Interval Training may produce greater improvements in motor recovery than Conventional rehab.	1	Chen et al. 2024a
1b	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving motor recovery.	1	Hesse et al. 2011
1b	Community-based Exercise Program may produce greater improvements in motor recovery than Other Care.	1	Nindorera et al. 2023
1b	There is conflicting evidence about the effect of Motivational Interviewing with Occupational Therapy when compared to Occupational Therapy Alone for improving motor recovery.	1	Gholipour et al. 2024

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Agility Exercise may produce greater improvements in biomechanical gait measures than Stretching.	1	Marigold et al. 2005
2	Closed Chain Exercise may not have a difference in efficacy when compared to Open Chain Exercise or Rehabilitation for improving biomechanical gait measures.	1	Krawczyk et al. 2014
1b	Sling Exercise Therapy may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Lou et al. 2019

2	Repetitive weight bearing exercises repeated 40 times may produce greater improvements in biomechanical gait measures than Repetitive weight bearing exercises repeated 20 times.	1	Agarwal et al. 2008
1b	There is conflicting evidence about the effect of Higher Intensity Training when compared to Lower Intensity Training or Conventional Care for improving biomechanical gait measures.	1	Hornby et al. 2016
1b	There is conflicting evidence about the effect of High-Intensity Training with Acute Intermittent Hypoxia when compared to High-Intensity Training Alone for improving biomechanical gait measures.	1	Hornby et al. 2024
1b	There is conflicting evidence about the effect of High-intensity variable stepping training or High-intensity forward stepping training when compared to Low-intensity variable stepping training for improving biomechanical gait measures.	1	Hornby et al. 2019

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body Weight Shift Technique may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Krishna et al. 2018
1b	Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level) may not have a difference in efficacy when compared to Conventional PT protocol for improving biomechanical balance measures.	1	Sánchez-Sánchez et al. 2018
1b	Cross-training Physiotherapy may not have a difference in efficacy when compared to Conventional Physiotherapy for improving biomechanical balance measures.	1	Park et al. 2021b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving muscle strength.	1	Marzolini et al. 2023
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving muscle strength.	2	Klassen et al. 2020; Wellwood et al. 2004
1b	There is conflicting evidence about the effect of Community-based Physical Activity when compared to No Intervention for improving muscle strength.	1	Kang et al. 2023
1b	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving muscle strength.	1	Olney et al. 2006
1b	Community-based Exercise Program may not have a difference in efficacy when compared to Upper Extremity Exercise Program for improving muscle strength.	1	Dean et al. 2012

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Physical Therapy may produce greater improvements in spasticity than No Treatment.	1	Hoseinabadi et al. 2013
1b	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving spasticity.	1	Hesse et al. 2011

1b	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving spasticity.	1	Harrington et al. 2010

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Range of Motion exercise program by themselves may not have a difference in efficacy when compared to Range of Motion exercise program with physical help for improving range of motion.	1	Tseng et al. 2007
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Aerobic Training for improving range of motion.	1	Marzolini et al. 2018
2	Closed Chain Exercise may not have a difference in efficacy when compared to Open Chain Exercise or Rehabilitation for improving range of motion.	1	Krawczyk et al. 2014
1b	Community-based Physical Activity may produce greater improvements in range of motion than No Intervention.	1	Kang et al. 2023

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Neurorestoration Protocol Physiotherapy may not have a difference in efficacy when compared to Conventional Physiotherapy for improving neurophysiological measures.	1	Rahayu et al. 2020
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving neurophysiological measures.	1	Marigold et al. 2005
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Aerobic Training for improving neurophysiological measures.	1	Marzolini et al. 2018
2	Closed Chain Exercise may produce greater improvements in neurophysiological measures than Open Chain Exercise or Rehabilitation.	1	Lee et al. 2013f
2	Higher Intensity Training may produce greater improvements in neurophysiological measures than Lower Intensity Training or Conventional Care.	1	Boyne et al. 2019

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Physio equipment may not have a difference in efficacy when compared to Conventional Therapy for improving aerobic measures.	1	Huang et al. 2022a
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Aerobic Training for improving aerobic measures.	1	Marzolini et al. 2018
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Care for improving aerobic measures.	2	Rizvi et al. 2023; Lee et al. 2015d
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving aerobic measures.	4	Moncion et al. 2024; Marzolini et al. 2023; Reynolds et al. 2021; Boyne et al. 2016
1b	Community-based Physical Activity may produce greater improvements in aerobic measures than No Intervention.	1	Kang et al. 2023

1b	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving aerobic measures.	1	Olney et al. 2006
1b	There is conflicting evidence about the effect of Community-based Exercise Program when compared to Upper Extremity Exercise Program for improving aerobic measures.	1	Pang et al. 2005
2	Skating Exercise may not have a difference in efficacy when compared to Treadmill Training for improving aerobic measures.	1	Soh et al. 2020
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving aerobic measures.	1	Hornby et al. 2024
1b	Aerobic Exercise with Task-Specific Training may produce greater improvements in aerobic measures than Task-Specific Training Alone.	1	Linder et al. 2024
1b	High-intensity variable stepping training or High-intensity forward stepping training may not have a difference in efficacy when compared to Low-intensity variable stepping training for improving aerobic measures.	1	Hornby et al. 2019

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Custom Exercise Programs may produce greater improvements in sensory and proprioceptive function than Conventional Therapy.	1	Medina-Rincon et al. 2019

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Range of Motion exercise program by themselves may not have a difference in efficacy when compared to Range of Motion exercise program with physical help for improving pain.	1	Tseng et al. 2007
1b	Range of Motion exercise program by themselves or Range of Motion exercise program with physical help may produce greater improvements in pain than Usual care.	1	Tseng et al. 2007
1b	Sling Exercise Therapy may produce greater improvements in pain than Conventional Therapy.	1	Liu et al. 2020
2	Muscle energy technique with conventional therapy may result in lesser improvements in pain when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
2	Muscle energy technique with conventional therapy or Neurac with conventional therapy or Muscle energy technique with Neurac with conventional therapy may produce greater improvements in pain than Conventional therapy.	1	Wang et al. 2022a
1b	Cognitive therapy with graded activity training may not have a difference in efficacy when compared to Cognitive therapy for improving pain.	1	Zedlitz et al. 2012

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Neurorestoration Protocol Physiotherapy may produce greater improvements in activities of daily living than Conventional Physiotherapy.	1	Rahayu et al. 2020
2	Leisure-time Physical Activity may not have a difference in efficacy when compared to Nonleisure-time Physical Activity for improving activities of daily living.	1	Ashizawa et al. 2021
1b	There is conflicting evidence about the effect of Self-regulation Rehabilitation when compared to Conventional Therapy for improving activities of daily living.	1	Liu et al. 2014
1b	Range of Motion exercise program by themselves may not have a difference in efficacy when compared to Range of Motion exercise program with physical help for improving activities of daily living.	1	Tseng et al. 2007
1a	There is conflicting evidence about the effect of Early Rehabilitation Programs when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving activities of daily living.	16	Garcia-Perez et al. 2024; Xu 2022; Ning et al. 2022; Wang et al. 2022b; Liu et al. 2021b; Yen et al. 2020; Yu et al. 2020b; Wu et al. 2020a; Rahayu et al. 2019; Pan 2018; Langhorne et al. 2017; Yelnik et al. 2017; Bernhardt et al. 2015; Bai et al. 2012; Fang et al. 2003; Wade et al. 1992
1b	Early Conventional therapy (after 24-48 hours) may produce greater improvements in activities of daily living than Late Conventional therapy (72-96 hours post stroke).	1	Wang et al. 2022b
2	Physical Therapy may produce greater improvements in activities of daily living than No Treatment.	2	Hoseinabadi et al. 2013; Werner et al. 1996
1b	Occupational Therapy may produce greater improvements in activities of daily living than No Treatment.	1	Logan et al. 2004
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	5	Swank et al. 2020; Xia et al. 2020; Askim et al. 2018; Sackley et al. 2015; Askim et al. 2010
1a	There is conflicting evidence about the effect of Sling Exercise Therapy when compared to Conventional Therapy for improving activities of daily living.	2	Liu et al. 2020; Lou et al. 2019
2	Muscle energy technique with conventional therapy may result in lesser improvements in activities of daily living when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
1b	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving activities of daily living.	1	Yeh et al. 2019
1b	High-intensity Functional Exercise Program may not have a difference in efficacy when compared to Education for improving activities of daily living.	1	Holmgren et al. 2010
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving activities of daily living.	4	Chen et al. 2024a; Gjellesvik et al. 2021; Langhammer et al. 2008; Sivenius et al. 1985

1b	Low-to-Moderate Intensity Continuous Training may not have a difference in efficacy when compared to Moderate Intensity Interval Training for improving activities of daily living.	1	Chen et al. 2024a
1b	Low-to-Moderate Intensity Continuous Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.	1	Chen et al. 2024a
1b	Moderate Intensity Interval Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.	1	Chen et al. 2024a
1b	Low-to-Moderate Intensity Continuous Training or Moderate Intensity Interval Training may not have a difference in efficacy when compared to Conventional rehab for improving activities of daily living.	1	Chen et al. 2024a
1b	Reduced-Exertion High-Intensity Interval Training may produce greater improvements in activities of daily living than Conventional rehab.	1	Chen et al. 2024a
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving activities of daily living.	2	Hesse et al. 2011; Wellwood et al. 2004
1a	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving activities of daily living.	2	Aravind et al. 2022; Green et al. 2002
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving activities of daily living.	2	Harrington et al. 2010; Olney et al. 2006
1a	Community-based Exercise Program may produce greater improvements in activities of daily living than Upper Extremity Exercise Program.	2	Dean et al. 2012; Pang et al. 2005
1b	Non-Paretic Side Training may produce greater improvements in activities of daily living than Conventional Therapy.	1	Pandian et al. 2014
1b	Falls Prevention Program may not have a difference in efficacy when compared to Usual Care for improving activities of daily living.	1	Batchelor et al. 2012
1b	Motivational Interviewing with Occupational Therapy may produce greater improvements in activities of daily living than Occupational Therapy Alone.	1	Gholipour et al. 2024
1b	Team Care may not have a difference in efficacy when compared to conventional care for improving activities of daily living.	1	Wood-Dauphinee et al. 1984

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body Weight Shift Technique may produce greater improvements in gait speed than Conventional Therapy.	1	Krishna et al. 2018
2	Physical Therapy may not have a difference in efficacy when compared to No Treatment for improving gait speed.	1	Werner et al. 1996
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	3	Askim et al. 2018; Askim et al. 2010; Werner et al. 2002a
1b	Aerobic and Resistance Training may produce greater improvements in gait speed than Conventional Care.	1	Lee et al. 2015d
2	There is conflicting evidence about the effect of Closed Chain Exercise when compared to Open Chain Exercise or Rehabilitation for improving gait speed.	2	Krawczyk et al. 2014; Lee et al. 2013f

1b	Sling Exercise Therapy may produce greater improvements in gait speed than Conventional Therapy.	1	Lou et al. 2019
2	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving gait speed.	1	Koch et al. 2020
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Customized Physiotherapy or Conventional Physiotherapy for improving gait speed.	1	Cannell et al. 2018
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving gait speed.	7	Moncion et al. 2024; Marzolini et al. 2023; Reynolds et al. 2021; Gjellesvik et al. 2021; Boyne et al. 2019; Hornby et al. 2016; Boyne et al. 2016
1b	High-intensity variable stepping training or High-intensity forward stepping training may produce greater improvements in gait speed than Low-intensity variable stepping training.	1	Hornby et al. 2019
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving gait speed.	3	Klassen et al. 2020; Hesse et al. 2011; Wellwood et al. 2004
1b	Community-based Physical Activity may produce greater improvements in gait speed than No Intervention.	1	Green et al. 2002
1b	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving gait speed.	1	Nindorera et al. 2023
1b	There is conflicting evidence about the effect of Community-based Exercise Program when compared to Upper Extremity Exercise Program for improving gait speed.	1	Dean et al. 2012
1b	High-Intensity Training with Acute Intermittent Hypoxia may produce greater improvements in gait speed than High-Intensity Training Alone.	1	Hornby et al. 2024
1b	If-Then goal setting for exercise may not have a difference in efficacy when compared to Goal setting for improving gait speed.	1	Kersten et al. 2015
1b	Cross-training Physiotherapy may not have a difference in efficacy when compared to Conventional Physiotherapy for improving gait speed.	1	Park et al. 2021b

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Leisure-time Physical Activity may not have a difference in efficacy when compared to Nonleisure-time Physical Activity for improving gait endurance.	1	Ashizawa et al. 2021
1b	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving gait endurance.	1	Askim et al. 2018
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Aerobic Training for improving gait endurance.	1	Marzolini et al. 2018
1b	Aerobic and Resistance Training may produce greater improvements in gait endurance than Conventional Care.	1	Lee et al. 2015d
1b	There is conflicting evidence about the effect of Aerobic Exercise with Cognitive Training when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving gait endurance.	2	Koch et al. 2020; Yeh et al. 2019

1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving gait endurance.	7	Moncion et al. 2024; Marzolini et al. 2023; Reynolds et al. 2021; Gjellesvik et al. 2021; Hornby et al. 2016; Boyne et al. 2016; Langhammer et al. 2008
1b	High-intensity variable stepping training or High-intensity forward stepping training may produce greater improvements in gait endurance than Low-intensity variable stepping training.	1	Hornby et al. 2019
1a	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving gait endurance.	2	Kang et al. 2023; Marsden et al. 2010
1a	There is conflicting evidence about the effect of Community-based Exercise Program when compared to Other Care for improving gait endurance.	2	Nindorera et al. 2023; Olney et al. 2006
1a	Community-based Exercise Program may produce greater improvements in gait endurance than Upper Extremity Exercise Program.	2	Dean et al. 2012; Pang et al. 2005
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving gait endurance.	1	Hornby et al. 2024
1b	Aerobic Exercise with Task-Specific Training may produce greater improvements in gait endurance than Task-Specific Training Alone.	1	Linder et al. 2024
1b	Cognitive therapy with graded activity training may produce greater improvements in gait endurance than Cognitive therapy.	1	Zedlitz et al. 2012

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Leisure-time Physical Activity may not have a difference in efficacy when compared to Nonleisure-time Physical Activity for improving functional mobility.	1	Ashizawa et al. 2021
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving functional mobility.	1	Marigold et al. 2005
1a	Early Rehabilitation Programs may not have a difference in efficacy when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving functional mobility.	3	Garcia-Perez et al. 2024; Yen et al. 2020; Wade et al. 1992
2	Physical Therapy may not have a difference in efficacy when compared to No Treatment for improving functional mobility.	1	Werner et al. 1996
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	5	Swank et al. 2020; Askim et al. 2018; Sackley et al. 2015; Askim et al. 2010; Werner et al. 2002a
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Aerobic Training for improving functional mobility.	1	Marzolini et al. 2018
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	2	Rizvi et al. 2023; Lee et al. 2015d
2	Closed Chain Exercise may not have a difference in efficacy when compared to Open Chain Exercise or Rehabilitation for improving functional mobility.	1	Krawczyk et al. 2014
1b	Sling Exercise Therapy may produce greater improvements in functional mobility than Conventional Therapy.	2	Wang et al. 2022a; Lou et al. 2019

2	Muscle energy technique with conventional therapy may result in lesser improvements in functional mobility when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
2	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving functional mobility.	1	Koch et al. 2020
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Customized Physiotherapy or Conventional Physiotherapy for improving functional mobility.	1	Cannell et al. 2018
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving functional mobility.	4	Marzolini et al. 2023; Gjellesvik et al. 2021; Hornby et al. 2016; Langhammer et al. 2008
1b	High-intensity variable stepping training or High-intensity forward stepping training may not have a difference in efficacy when compared to Low-intensity variable stepping training for improving functional mobility.	1	Hornby et al. 2019
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving functional mobility.	3	Hesse et al. 2011; Wellwood et al. 2004; Partridge et al. 2000
1a	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving functional mobility.	2	Marsden et al. 2010; Green et al. 2002
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving functional mobility.	2	Stuart et al. 2019; Harrington et al. 2010
1b	Community-based Exercise Program may not have a difference in efficacy when compared to Upper Extremity Exercise Program for improving functional mobility.	1	Dean et al. 2012
1b	Falls Prevention Program may not have a difference in efficacy when compared to Usual Care for improving functional mobility.	1	Batchelor et al. 2012
2	Skating Exercise may produce greater improvements in functional mobility than Treadmill Training.	1	Soh et al. 2020
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving functional mobility.	1	Hornby et al. 2024
1b	If-Then goal setting for exercise may not have a difference in efficacy when compared to Goal setting for improving functional mobility.	1	Kersten et al. 2015
1b	Cross-training Physiotherapy may not have a difference in efficacy when compared to Conventional Physiotherapy for improving functional mobility.	1	Park et al. 2021b

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Body Weight Shift Technique may produce greater improvements in balance than Conventional Therapy.	1	Krishna et al. 2018
1b	Neurorestoration Protocol Physiotherapy may produce greater improvements in balance than Conventional Physiotherapy.	1	Rahayu et al. 2020
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving balance.	1	Marigold et al. 2005

2	Physio equipment may produce greater improvements in balance than Conventional Therapy.	1	Gul et al. 2021
1a	Early Rehabilitation Programs may not have a difference in efficacy when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving balance.	6	Garcia-Perez et al. 2024; Ning et al. 2022; Yen et al. 2020; Wu et al. 2020a; Rahayu et al. 2019; Yelnik et al. 2017
2	Physical Therapy may produce greater improvements in balance than No Treatment.	1	Hoseinabadi et al. 2013
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	3	Medina-Rincon et al. 2019; Askim et al. 2018; Askim et al. 2010
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Care for improving balance.	2	Rizvi et al. 2023; Lee et al. 2015d
2	Closed Chain Exercise may not have a difference in efficacy when compared to Open Chain Exercise or Rehabilitation for improving balance.	1	Krawczyk et al. 2014
1a	Sling Exercise Therapy may produce greater improvements in balance than Conventional Therapy.	3	Wang et al. 2022a; Liu et al. 2020; Lou et al. 2019
2	Muscle energy technique with conventional therapy may result in lesser improvements in balance when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Customized Physiotherapy or Conventional Physiotherapy for improving balance.	1	Cannell et al. 2018
1b	High-intensity Functional Exercise Program may not have a difference in efficacy when compared to Education for improving balance.	1	Holmgren et al. 2010
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving balance.	4	Marzolini et al. 2023; Gjellesvik et al. 2021; Hornby et al. 2016; Langhammer et al. 2008
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving balance.	3	Klassen et al. 2020; Wellwood et al. 2004; Partridge et al. 2000
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving balance.	3	Nindorera et al. 2023; Stuart et al. 2019; Harrington et al. 2010
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Upper Extremity Exercise Program for improving balance.	2	Dean et al. 2012; Pang et al. 2005
1b	There is conflicting evidence about the effect of Non-Paretic Side Training when compared to Conventional Therapy for improving balance.	1	Pandian et al. 2014
2	Skating Exercise may produce greater improvements in balance than Treadmill Training.	1	Soh et al. 2020
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving balance.	1	Hornby et al. 2024
1b	Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level) may not have a difference in efficacy when compared to Conventional PT protocol for improving balance.	1	Sánchez-Sánchez et al. 2018

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving falls and fear of falling.	1	Marigold et al. 2005
1b	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	1	Allen et al. 2009
1b	High-intensity Functional Exercise Program may produce greater improvements in falls and fear of falling than Education.	1	Holmgren et al. 2010
1b	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving falls and fear of falling.	1	Hornby et al. 2016
1b	High-intensity variable stepping training or High-intensity forward stepping training may not have a difference in efficacy when compared to Low-intensity variable stepping training for improving falls and fear of falling.	1	Hornby et al. 2019
1b	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving falls and fear of falling.	1	Green et al. 2002
1b	Community-based Exercise Program may not have a difference in efficacy when compared to Upper Extremity Exercise Program for improving falls and fear of falling.	1	Dean et al. 2012
1b	Falls Prevention Program may not have a difference in efficacy when compared to Usual Care for improving falls and fear of falling.	1	Batchelor et al. 2012
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving falls and fear of falling.	1	Hornby et al. 2024

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving quality of life.	1	Marigold et al. 2005
1a	Early Rehabilitation Programs may not have a difference in efficacy when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving quality of life.	2	Garcia-Perez et al. 2024; Yelnik et al. 2017
1b	Occupational Therapy may not have a difference in efficacy when compared to No Treatment for improving quality of life.	1	Logan et al. 2004
1a	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	4	Swank et al. 2020; Askim et al. 2018; Sackley et al. 2015; Askim et al. 2010
2	Muscle energy technique with conventional therapy may result in lesser improvements in quality of life when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.	1	Wang et al. 2022a
1b	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving quality of life.	2	Koch et al. 2020; Yeh et al. 2019
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving quality of life.	5	Marzolini et al. 2023; Reynolds et al. 2021; Gjellesvik et al. 2021;

			Hornby et al. 2016; Langhammer et al. 2008
1a	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving quality of life.	2	Marsden et al. 2010; Green et al. 2002
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving quality of life.	4	Nindorera et al. 2023; Stuart et al. 2019; Harrington et al. 2010; Olney et al. 2006
2	Skating Exercise may produce greater improvements in quality of life than Treadmill Training.	1	Soh et al. 2020
1b	High-Intensity Training with Acute Intermittent Hypoxia may not have a difference in efficacy when compared to High-Intensity Training Alone for improving quality of life.	1	Hornby et al. 2024
1b	Motivational Interviewing with Occupational Therapy may not have a difference in efficacy when compared to Occupational Therapy Alone for improving quality of life.	1	Gholipour et al. 2024
1b	If-Then goal setting for exercise may not have a difference in efficacy when compared to Goal setting for improving quality of life.	1	Kersten et al. 2015
1b	Cognitive therapy with graded activity training may produce greater improvements in quality of life than Cognitive therapy.	1	Zedlitz et al. 2012

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Early Rehabilitation Programs may not have a difference in efficacy when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving mood.	2	Garcia-Perez et al. 2024; Wade et al. 1992
1b	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving mood.	1	Askim et al. 2018
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving mood.	2	Reynolds et al. 2021; Gjellesvik et al. 2021
1a	Increased Duration of Exercise may not have a difference in efficacy when compared to Conventional Care/Exercise for improving mood.	2	Klassen et al. 2020; Partridge et al. 2000
1b	Community-based Physical Activity may not have a difference in efficacy when compared to No Intervention for improving mood.	1	Green et al. 2002
1a	Community-based Exercise Program may not have a difference in efficacy when compared to Other Care for improving mood.	2	Nindorera et al. 2023; Harrington et al. 2010
1b	Motivational Interviewing with Occupational Therapy may not have a difference in efficacy when compared to Occupational Therapy Alone for improving mood.	1	Gholipour et al. 2024
1b	Cognitive therapy with graded activity training may not have a difference in efficacy when compared to Cognitive therapy for improving mood.	1	Zedlitz et al. 2012

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving fatigue and sleep.	1	Askim et al. 2018

1b	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving fatigue and sleep.	1	Langhammer et al. 2008
1b	Cognitive therapy with graded activity training may not have a difference in efficacy when compared to Cognitive therapy for improving fatigue and sleep.	1	Zedlitz et al. 2012

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Early Rehabilitation Programs when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving cognition.	2	Garcia-Perez et al. 2024; Fang et al. 2003
1b	Custom Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy for improving cognition.	1	Askim et al. 2018
1b	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving cognition.	2	Koch et al. 2020; Yeh et al. 2019
1a	Higher Intensity Training may not have a difference in efficacy when compared to Lower Intensity Training or Conventional Care for improving cognition.	2	Marzolini et al. 2023; Gjellesvik et al. 2021

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Self-regulation Rehabilitation may not have a difference in efficacy when compared to Conventional Therapy for improving upper extremity function.	1	Liu et al. 2014
1b	Range of Motion exercise program by themselves may result in lesser improvements in upper extremity function when compared to Range of Motion exercise program with physical help.	1	Tseng et al. 2007
1b	Agility Exercise may not have a difference in efficacy when compared to Stretching for improving upper extremity function.	1	Marigold et al. 2005
1a	Early Rehabilitation Programs may not have a difference in efficacy when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke for improving upper extremity function.	2	Garcia-Perez et al. 2024; Wang et al. 2022b
1b	Early Conventional therapy (after 24-48 hours) may not have a difference in efficacy when compared to Late Conventional therapy (72-96 hours post stroke) for improving upper extremity function.	1	Wang et al. 2022b
1b	Aerobic and Resistance Training may produce greater improvements in upper extremity function than Aerobic Training.	1	Marzolini et al. 2018
1b	Aerobic and Resistance Training may produce greater improvements in upper extremity function than Conventional Care.	1	Lee et al. 2015d
2	There is conflicting evidence about the effect of Closed Chain Exercise when compared to Open Chain Exercise or Rehabilitation for improving upper extremity function.	1	Lee et al. 2013f
1b	Sling Exercise Therapy may produce greater improvements in upper extremity function than Conventional Therapy.	1	Liu et al. 2020
2	Aerobic Exercise with Cognitive Training may not have a difference in efficacy when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham for improving upper extremity function.	1	Koch et al. 2020

1b	Aerobic Exercise with Task-Specific Training may not have a difference in efficacy when compared to Task-Specific Training Alone for improving upper extremity function.	1	Linder et al. 2024

Key Points

- Body Weight Shift Technique may be beneficial for improving biomechanical balance measures, gait speed, and balance, but not motor recovery, after stroke when compared to Conventional Therapy.
- Neurorestoration Protocol Physiotherapy may be beneficial for improving activities of daily living and balance, but not neurophysiological measures, after stroke when compared to Conventional Physiotherapy.
- Leisure-time Physical Activity may not be beneficial for improving activities of daily living, gait endurance, and functional mobility after stroke when compared to Nonleisure-time Physical Activity.
- Self-regulation Rehabilitation may not be beneficial for improving motor recovery after stroke when compared to Conventional Therapy; the literature is mixed regarding activities of daily living.
- Range of Motion exercise program by themselves may not be beneficial for improving range of motion, pain, and activities of daily living after stroke when compared to Range of Motion exercise program with physical help.
- Agility Exercise may be beneficial for improving biomechanical gait measures, but not neurophysiological measures, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Stretching.
- Physio equipment may be beneficial for improving balance, but not aerobic measures, after stroke when compared to Conventional Therapy.
- Early Rehabilitation Programs may be beneficial for improving motor recovery, but not functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke; the literature is mixed regarding activities of daily living.
- Early Conventional therapy (after 24-48 hours) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Late Conventional therapy (72-96 hours post stroke).
- Physical Therapy may be beneficial for improving spasticity, activities of daily living, and balance, but not motor recovery, gait speed, and functional mobility, after stroke when compared to No Treatment.
- Occupational Therapy may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to No Treatment.
- Custom Exercise Programs may be beneficial for improving sensory and proprioceptive function, but not motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Aerobic and Resistance Training may not be beneficial for improving range of motion, neurophysiological measures, aerobic measures, gait endurance, and functional mobility after stroke when compared to Aerobic Training.
- Aerobic and Resistance Training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and balance, after stroke when compared to Conventional Care.
- Closed Chain Exercise may be beneficial for improving neurophysiological measures, but not motor recovery, biomechanical gait measures, range of motion, functional mobility, and balance, after stroke when compared to Open Chain Exercise or Rehabilitation; the literature is mixed regarding gait speed.
- Sling Exercise Therapy may be beneficial for improving biomechanical gait measures, pain, gait speed, functional mobility, and balance after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery and activities of daily living.
- Muscle energy technique with conventional therapy may result in lesser improvements in motor recovery, pain, activities of daily living, functional mobility, balance, and quality of life when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.
- Aerobic Exercise with Cognitive Training may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham; the literature is mixed regarding gait endurance.

- Virtual Reality Exercise Program may not be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Customized Physiotherapy or Conventional Physiotherapy.
- High-intensity Functional Exercise Program may be beneficial for improving falls and fear of falling, but not activities of daily living and balance, after stroke when compared to Education.
- Repetitive weight bearing exercises repeated 40 times may be beneficial for improving biomechanical gait measures after stroke when compared to Repetitive weight bearing exercises repeated 20 times.
- Higher Intensity Training may be beneficial for improving motor recovery and neurophysiological measures, but not muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Lower Intensity Training or Conventional Care; the literature is mixed regarding biomechanical gait measures.
- Low-to-Moderate Intensity Continuous Training may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Moderate Intensity Interval Training.
- Low-to-Moderate Intensity Continuous Training may not be beneficial for improving motor recovery after stroke when compared to Reduced-Exertion High-Intensity Interval Training; Low-to-Moderate Intensity Continuous Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.
- Increased Duration of Exercise may not be beneficial for improving motor recovery, muscle strength, spasticity, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional Care/Exercise.
- Community-based Physical Activity may be beneficial for improving range of motion, aerobic measures, and gait speed, but not activities of daily living, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to No Intervention; the literature is mixed regarding muscle strength.
- Community-based Exercise Program may be beneficial for improving motor recovery, but not muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, functional mobility, balance, and quality of life, after stroke when compared to Other Care; the literature is mixed regarding gait endurance.
- Community-based Exercise Program may be beneficial for improving activities of daily living and gait endurance, but not muscle strength, functional mobility, balance, and falls and fear of falling, after stroke when compared to Upper Extremity Exercise Program; the literature is mixed regarding aerobic measures and gait speed.
- Non-Paretic Side Training may be beneficial for improving activities of daily living after stroke when compared to Conventional Therapy; the literature is mixed regarding balance.
- Falls Prevention Program may not be beneficial for improving activities of daily living, functional mobility, and falls and fear of falling after stroke when compared to Usual Care.
- Skating Exercise may be beneficial for improving functional mobility, balance, and quality of life, but not aerobic measures, after stroke when compared to Treadmill Training.
- High-Intensity Training with Acute Intermittent Hypoxia may be beneficial for improving gait speed, but not aerobic measures, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to High-Intensity Training Alone; the literature is mixed regarding biomechanical gait measures.
- Aerobic Exercise with Task-Specific Training may be beneficial for improving aerobic measures and gait endurance after stroke when compared to Task-Specific Training Alone.
- Motivational Interviewing with Occupational Therapy may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to Occupational Therapy Alone; the literature is mixed regarding motor recovery.
- Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level) may not be beneficial for improving biomechanical balance measures and balance after stroke when compared to Conventional PT protocol.
- If-Then goal setting for exercise may not be beneficial for improving gait speed, functional mobility, and quality of life after stroke when compared to Goal setting.

- Cognitive therapy with graded activity training may be beneficial for improving gait endurance and quality of life, but not pain, after stroke when compared to Cognitive therapy.
- Team Care may not be beneficial for improving activities of daily living after stroke when compared to conventional care.
- Cross-training Physiotherapy may not be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Conventional Physiotherapy.
- Range of Motion exercise program by themselves may be beneficial for improving pain after stroke when compared to Usual care.
- Range of Motion exercise program with physical help may be beneficial for improving pain after stroke when compared to Usual care.
- Muscle energy technique with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Neurac with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Moderate Intensity Interval Training may not be beneficial for improving motor recovery after stroke when compared to Reduced-Exertion High-Intensity Interval Training; Moderate Intensity Interval Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.
- High-intensity forward stepping training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and falls and fear of falling, after stroke when compared to Low-intensity variable stepping training; the literature is mixed regarding biomechanical gait measures.
- High-intensity variable stepping training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and falls and fear of falling, after stroke when compared to Low-intensity variable stepping training; the literature is mixed regarding biomechanical gait measures.
- Muscle energy technique with Neurac with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Low-to-Moderate Intensity Continuous Training or Moderate Intensity Interval Training may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.
- Reduced-Exertion High-Intensity Interval Training may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.

Summary of Key Points: Physiotherapy and Exercise Programs

Intervention	Control(s)	Function domain(s)	Effect
Body Weight Shift Technique	Conventional Therapy	Biomechanical balance measures, gait speed, balance	+
Body Weight Shift Technique	Conventional Therapy	Motor recovery	–
Neurorestoration Protocol Physiotherapy	Conventional Physiotherapy	Activities of daily living, balance	+
Neurorestoration Protocol Physiotherapy	Conventional Physiotherapy	Neurophysiological measures	–
Leisure-time Physical Activity	Nonleisure-time Physical Activity	Activities of daily living, gait endurance, functional mobility	–
Self-regulation Rehabilitation	Conventional Therapy	Motor recovery	–
Self-regulation Rehabilitation	Conventional Therapy	Activities of daily living	=
Range of Motion exercise program by themselves	Range of Motion exercise program with physical help	Range of motion, pain, activities of daily living	–

Agility Exercise	Stretching	Biomechanical gait measures	+
Agility Exercise	Stretching	Neurophysiological measures, functional mobility, balance, falls and fear of falling, quality of life	–
Physio equipment	Conventional Therapy	Balance	+
Physio equipment	Conventional Therapy	Aerobic measures	–
Early Rehabilitation Programs	Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke	Motor recovery	+
Early Rehabilitation Programs	Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke	Functional mobility, balance, quality of life	–
Early Conventional therapy (after 24-48 hours)	Late Conventional therapy (72-96 hours post stroke)	Motor recovery, activities of daily living	+
Physical Therapy	No Treatment	Spasticity, activities of daily living, balance	+
Physical Therapy	No Treatment	Motor recovery, gait speed, functional mobility	–
Occupational Therapy	No Treatment	Activities of daily living	+
Occupational Therapy	No Treatment	Quality of life	–
Custom Exercise Programs	Conventional Therapy	Sensory and proprioceptive function	+
Custom Exercise Programs	Conventional Therapy	Motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Aerobic and Resistance Training	Aerobic Training	Range of motion, neurophysiological measures, aerobic measures, gait endurance, functional mobility	–
Aerobic and Resistance Training	Conventional Care	Gait speed, gait endurance	+
Aerobic and Resistance Training	Conventional Care	Aerobic measures, functional mobility, balance	–
Closed Chain Exercise	Open Chain Exercise or Rehabilitation	Neurophysiological measures	+
Closed Chain Exercise	Open Chain Exercise or Rehabilitation	Motor recovery, biomechanical gait measures, range of motion, functional mobility, balance	–
Closed Chain Exercise	Open Chain Exercise or Rehabilitation	Gait speed	=
Sling Exercise Therapy	Conventional Therapy	Biomechanical gait measures, pain, gait speed, functional mobility, balance	+
Sling Exercise Therapy	Conventional Therapy	Motor recovery, activities of daily living	=
Muscle energy technique with conventional therapy	Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy	Motor recovery, pain, activities of daily living, functional mobility, balance, quality of life	–

Aerobic Exercise with Cognitive Training	Nonaerobic Exercise with Unstructured Mental Activities or Sham	Activities of daily living, gait speed, functional mobility, quality of life	–
Aerobic Exercise with Cognitive Training	Nonaerobic Exercise with Unstructured Mental Activities or Sham	Gait endurance	=
Virtual Reality Exercise Program	Customized Physiotherapy or Conventional Physiotherapy	Gait speed, functional mobility, balance	–
High-intensity Functional Exercise Program	Education	Falls and fear of falling	+
High-intensity Functional Exercise Program	Education	Activities of daily living, balance	–
Repetitive weight bearing exercises repeated 40 times	Repetitive weight bearing exercises repeated 20 times	Biomechanical gait measures	+
Higher Intensity Training	Lower Intensity Training or Conventional Care	Motor recovery, neurophysiological measures	+
Higher Intensity Training	Lower Intensity Training or Conventional Care	Muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Higher Intensity Training	Lower Intensity Training or Conventional Care	Biomechanical gait measures	=
Low-to-Moderate Intensity Continuous Training	Moderate Intensity Interval Training	Motor recovery, activities of daily living	–
Low-to-Moderate Intensity Continuous Training	Reduced-Exertion High-Intensity Interval Training	Motor recovery, activities of daily living	–
Low-to-Moderate Intensity Continuous Training	Reduced-Exertion High-Intensity Interval Training	Activities of daily living	–
Increased Duration of Exercise	Conventional Care/Exercise	Motor recovery, muscle strength, spasticity, activities of daily living, gait speed, functional mobility, balance	–
Community-based Physical Activity	No Intervention	Range of motion, aerobic measures, gait speed	+
Community-based Physical Activity	No Intervention	Activities of daily living, gait endurance, functional mobility, falls and fear of falling, quality of life	–
Community-based Physical Activity	No Intervention	Muscle strength	=
Community-based Exercise Program	Other Care	Motor recovery	+
Community-based Exercise Program	Other Care	Muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, functional mobility, balance, quality of life	–
Community-based Exercise Program	Other Care	Gait endurance	=
Community-based Exercise Program	Upper Extremity Exercise Program	Activities of daily living, gait endurance	+
Community-based Exercise Program	Upper Extremity Exercise Program	Muscle strength, functional mobility, balance, falls and fear of falling	–

Community-based Exercise Program	Upper Extremity Exercise Program	Aerobic measures, gait speed	=
Non-Paretic Side Training	Conventional Therapy	Activities of daily living	+
Non-Paretic Side Training	Conventional Therapy	Balance	=
Falls Prevention Program	Usual Care	Activities of daily living, functional mobility, falls and fear of falling	−
Skating Exercise	Treadmill Training	Functional mobility, balance, quality of life	+
Skating Exercise	Treadmill Training	Aerobic measures	−
High-Intensity Training with Acute Intermittent Hypoxia	High-Intensity Training Alone	Gait speed	+
High-Intensity Training with Acute Intermittent Hypoxia	High-Intensity Training Alone	Aerobic measures, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	−
High-Intensity Training with Acute Intermittent Hypoxia	High-Intensity Training Alone	Biomechanical gait measures	=
Aerobic Exercise with Task-Specific Training	Task-Specific Training Alone	Aerobic measures, gait endurance	+
Motivational Interviewing with Occupational Therapy	Occupational Therapy Alone	Activities of daily living	+
Motivational Interviewing with Occupational Therapy	Occupational Therapy Alone	Quality of life	−
Motivational Interviewing with Occupational Therapy	Occupational Therapy Alone	Motor recovery	=
Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level)	Conventional PT protocol	Biomechanical balance measures, balance	−
If-Then goal setting for exercise	Goal setting	Gait speed, functional mobility, quality of life	−
Cognitive therapy with graded activity training	Cognitive therapy	Gait endurance, quality of life	+
Cognitive therapy with graded activity training	Cognitive therapy	Pain	−
Team Care	conventional care	Activities of daily living	−
Cross-training Physiotherapy	Conventional Physiotherapy	Biomechanical balance measures, gait speed, functional mobility	−
Early Rehabilitation Programs	Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke	Balance	−
Range of Motion exercise program by themselves	Usual care	Pain	+
Range of Motion exercise program with physical help	Usual care	Pain	+
Muscle energy technique with conventional therapy	Conventional therapy	Pain	+

Neurac with conventional therapy	Conventional therapy	Pain	+
Moderate Intensity Interval Training	Reduced-Exertion High-Intensity Interval Training	Motor recovery, activities of daily living	–
Low-to-Moderate Intensity Continuous Training or Moderate Intensity Interval Training	Conventional rehab	Motor recovery, activities of daily living	–
Early Rehabilitation Programs	Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke	Activities of daily living	=
High-intensity forward stepping training	Low-intensity variable stepping training	Biomechanical gait measures	=
High-intensity forward stepping training	Low-intensity variable stepping training	Aerobic measures, functional mobility, falls and fear of falling	–
High-intensity forward stepping training	Low-intensity variable stepping training	Gait speed, gait endurance	+
High-intensity variable stepping training	Low-intensity variable stepping training	Biomechanical gait measures	=
High-intensity variable stepping training	Low-intensity variable stepping training	Aerobic measures, functional mobility, falls and fear of falling	–
High-intensity variable stepping training	Low-intensity variable stepping training	Gait speed, gait endurance	+
Muscle energy technique with Neurac with conventional therapy	Conventional therapy	Pain	+
Reduced-Exertion High-Intensity Interval Training	Conventional rehab	Motor recovery, activities of daily living	+

Balance Training



Adapted from: https://www.flintrehab.com/regaining-balance-after-stroke/

Balance impairment is a common early symptom after stroke and is strongly associated with future recovery. Likewise, balance problems are the strongest predictors for future falls and related injuries (Lubetzky-Vilnai & Kartin, 2010). Multiple interventions have aimed to improve balance in multi-faceted approaches. Many balance-

focused rehabilitation strategies employ visual feedback to facilitate improvements in symmetrical weight bearing and posture. Recently, technological approaches have expanded the quantity and quality of real-time feedback on balance performance. Feedback driven interventions for balance training include bodyweight supported training, fixed, supportive and perturbation-based balance platforms and trunk training.

A total of 94 RCTs were found that evaluated balance training for lower extremity motor rehabilitation. Six RCTs compared Balance-Focused Exercise Programs with Conventional Rehabilitation (Rauf et al. 2024; Tan et al. 2023; Battesha et al. 2022; Puckree et al. 2014; Alptekin et al. 2008; Pollock et al. 2002). One RCT compared Task Specific Balance Training with Upper Limb Exercise (Pang et al. 2018). One RCT compared Balance Training with Posture Changes with Balance Training (Jiang et al. 2021). Three RCTs compared Wobble Board Training with Conventional Physiotherapy (Nagai et al. 2024; Madhuranga et al. 2019; Onigbinde et al. 2009). One RCT compared Balance-Focused Exercise Programs with At-home Exercises (Curuk & Aruin 2022). Four RCTs compared Balance Training Using SMART Balance Master with Conventional Rehabilitation (Rao et al. 2013; Chen et al. 2002; Geiger et al. 2001; Walker et al. 2000). Four RCTs compared Non-Supportive Balance Trainers with Feedback with Conventional Therapy or Balance Training (Komiya et al. 2021; Brunelli et al. 2020; Zhang et al. 2020; Maciaszek. 2018). Twelve RCTs compared Balance Training with Visual Biofeedback with Conventional Therapy or Balance Training (Aphiphaksakul et al. 2022; Noh et al. 2019; James et al. 2017; Ghomashchi 2016; Ordahan et al. 2015; Ko et al. 2015; De Nunzio et al. 2014; Lee et al. 2013e; Yoon et al. 2013; Varoqui et al. 2011; Yavuzer et al. 2006a; Sackley & Lincoln 1997). Three RCTs compared Standing Practice with Conventional Therapy (Inoue et al. 2021; Allison et al. 2007; Wong et al. 1997). Three RCTs compared Perturbation Balance Trainers with Feedback with Conventional Therapy or Balance Training (An et al. 2021; Jung et al. 2021; Thijs et al. 2021). Ten RCTs compared Perturbation Balance Trainers with Conventional Therapy or Balance Training (Lanza et al. 2024; Shen et al. 2023; Dusane & Bhatt 2022; Chayasit et al. 2022; Schinkel-Ivy et al. 2019; Handelzalts et al. 2019; Yadav et al. 2020; Mansfield et al. 2018; Yadav et al. 2018; Goljar et al. 2010). Five RCTs compared Balance Training with Visual Deprivation with Balance Training with Visual Cues (Jeong et al. 2024; Nam et al. 2022a; Narendra et al. 2013; Yelnik et al. 2008; Bonan et al. 2004). One RCT compared Balance Training with Kinesthetic Ability Training Device with Conventional Rehabilitation (Alptekin et al. 2008). One RCT compared Balance Training with Full Rest Periods with Balance Training with Short Rest Periods (Elsner et al. 2018). One RCT compared Balance Training with Muscle Vibration with Conventional Rehabilitation (Merkert et al. 2011). Five RCTs compared Balance Training with Biofeedback with Balance Training (Martino Cinnera et al. 2024; Kim et al. 2022e; Lupo et al. 2018; Hung et al. 2017; Eser et al. 2008). Six RCTs compared Vestibular Training with Conventional Therapy (Calisgan et al. 2024; Cui et al. 2024; Son et al. 2024; Zhao et al. 2022b; Ekvall Hansson et al. 2020; Tramontano et al. 2018). Three RCTs compared Robotic Balance Training with Conventional Therapy (Inoue et al. 2022b; De Luca et al. 2020; Kumar et al. 2020). One RCT compared Trampoline Balance Training with Stable Surface Balance Training (Miklitsch et al. 2013). One RCT compared Ankle-Foot orthosis + Balance Training Shoes with Ankle-Foot Orthosis + Regular Shoes (Farmani et al. 2016). One RCT compared Balance Training + TENS with Balance Training + Conventional Care (Jung et al. 2016). One RCT compared Balance Training with Shoe Lift with Balance Training (Sheikh & Hosseini 2021). Three RCTs compared Strength or Resistance Training with Balance Training with Conventional Therapy (Vahlberg et al. 2017a; Vahlberg et al. 2017b; Sekhar et al. 2013). One RCT compared Structured Balance Awareness with Health Awareness Program (Shaik et al. 2021). One RCT compared Balance Training with Fresnel Prism Glasses with Balance and Walking Training (Ha & Sung 2020). One RCT compared Sensory Balance Training with Robot-assisted Stair Climbing (Gandolfi et al. 2019). One RCT compared Sitting Balance Training with Sensory Input with Sitting Balance (Ibrahimi et al. 2010). One RCT compared External focus on Balance Board with Internal focus on Balance Board (Kal et al. 2019). One RCT compared Balance Training with No Training (Lisinski et al. 2012). Two RCTs compared Vestibular rehabilitation with Convectional treatment (Balci et al. 2013; Dai et al. 2013). One RCT compared Progressive Balance Training with Standard Balance Training (Memon et al. 2022). One RCT compared Perturbation Balance Training with Proprioceptive Neuromuscular Facilitation (Adhikari et al. 2024). One RCT compared Class-Based Body Awareness Training with Home-Based Body Awareness Training (Serrada et al. 2022). One RCT compared Visual Scanning Training with Task-Specific Activities with Task-Specific Activities Alone (Batool et al. 2022). One RCT compared Vestibular Training with Virtual Reality Training (Sana et al. 2023).

In addition, 39 RCTs in which balance training formed part of a combined or comparative intervention are cross-referenced at the end of Table 11; their primary listings appear in other tables.

The methodological details and results of all 94 RCTs are presented in Table 11.

Table 11. RCTs Evaluating Balance Training for Lower Extremity Motor Rehabilitation

Authors (Year)	Interventions	Outcome Measures

Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Duration: Session length, frequency per week for total number of weeks	Result (direction of effect)
Balance-Focused Exercise Programs vs Conventional Rehabilitation		
Rauf et al. (2024) RCT (5) Nstart=52 Nend=52 TPS=Chronic A vs 0	E: Postural and kinesthetic awareness + routine physical therapy C: Conventional rehab Duration: 60min/d, 5d/wk, 6 wks	E vs C: Berg Balance Scale (+exp) Static Plantar Pressure Evaluation (+exp)
Tan et al. (2023) RCT (7) Nstart=112 Nend=112 TPS=Subacute A + B vs B + C + D	E: Balance training + Auxiliary activity C: Auxiliary activity (mobility aid + stretching + sensory stimulation) Duration: 15min balance training + 5-6hr/d auxiliary activity, 7d/wk, 8wks	E vs C: BBA (+exp) TUG (+exp) FMA-LE (+exp) Morse fall scale (+exp) FAC (+exp) falls during hospitalization (-)
Battesha et al. (2022) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Conventional Physical Rehabilitation + Maze Control C: Conventional Physical Rehabilitation Duration: 60min (20min maze +40min CT)/d, 3d/wk, 8wks	E vs C: Sway Index open eyes-firm surface(+exp) closed eyes-firm surface (+exp) open eyes-foam surface (+exp) closed eyes-foam surface (+exp) Risk of Fall(+exp) Knee Proprioception 15 deg(-) 30 deg (-) 75 deg (+exp)
Puckree et al. (2014) RCT (5) Nstart=50 Nend=50 TPS=Chronic A vs 0	E: Outpatient community-based Balance and Stability focused rehabilitation C: Regular physiotherapy Duration: 30min/d, 1d/2wks, for 24wks	E vs C: Postural assessment scale for stroke patients (+exp) Berg balance scale (+exp)
Pollock et al. (2002) RCT (3) Nstart=28 Nend=16 TPS=Subacute A vs 0	E: Independent balance practice + conventional therapy C: Conventional therapy Duration: 5d/wk, 4wks	E vs C: Weight Distribution (-) Balance (-)
Task Specific Balance Training vs Upper Limb Exercise		
Pang et al. (2018) RCT (8) Nstart=84 Nend=78 TPS=Chronic A1 vs A2 vs B Also in Table 16 (Dual-Task Training)	E1: Dual-task balance/mobility E2: Single-task balance/mobility C: Upper limb exercise Duration: 60min/d, 3d/wk, for 8wks	E1 vs E2/C: Percent dual-task effect(%DTE) in walking time when forward walking+ verbal fluency (+exp1) when forward walking+ serial-3-subtractions (+exp1) when TUG+ verbal fluency (+exp1) when TUG + serial-3-subtractions (-) %DTE in correct response rate

		when forward walking+ verbal fluency (-) when forward walking+ serial-3-subtractions (-) when TUG+ verbal fluency (-) when TUG + serial-3-subtractions (-) Activities-specific Balance Confidence Scale (-) Frenchay Activities Index (-) Stroke-specific Quality of Life Scale (-) E2 vs C: DTE%-all tasks (-) DTE% in correct response rate-all tasks (-) Activities-specific Balance Confidence Scale (-) Frenchay Activities Index (-) Stroke-specific Quality of Life Scale (-)
Balance Training with Posture Changes vs Balance Training		
Jiang et al. (2021) RCT (9) Nstart=60 Nend=57 TPS=Chronic A + B vs C + B vs B	E1: Shoulder elevation posture change + balance training + Conventional training E2: Back posture change + balance training + Conventional training C: Conventional training + Balance training Duration: 30min/d, 5d/wk for 4wks	E1 vs C: EMG Test (+exp1) Fugl-Meyer assessment (+exp1) 10m Walk (+exp1) Barthel index (-) E2 vs C: EMG Test (+exp2) Fugl-Meyer assessment (-) 10m Walk (-) Barthel index (-) E1 vs E2: EMG Test (+exp1) Fugl-Meyer assessment (+exp1) 10m Walk (+exp1) Barthel index (-)
Wobble Board Training vs Conventional Physiotherapy		
Nagai et al. (2024) RCT (6) Nstart=43 Nend=42 TPS=Subacute A + B vs 0 Also in Table 13 (Orthotic Devices)	E: Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg + Knee ankle foot orthosis (KAFO) on paralyzed leg + Usual physical therapy C: Usual Physical Therapy Duration: 40min/d, for 3d	E vs C: angle of RR in paralyzed side tilt condition neck (-) trunk (+exp) paralyzed lower leg (-) non-paralyzed lower leg (-) angle of RR in non-paralyzed side tilt condition neck (-) trunk (+exp) paralyzed lower leg (-) non-paralyzed lower leg (-) Movement distance of COP of the RR paralyzed side tilted (+exp) non-paralyzed side tilted (+exp)
Madhuranga et al. (2019) RCT (6) Nstart=30 Nend=29 TPS=Chronic	E: Wobble board training + Conventional physiotherapy C: Conventional physiotherapy Duration: 50min/d, 2d/wk, for 6wks	E vs C: Four-Square Step Test (+exp) Berg balance scale (+exp)

A vs 0		
Onigbinde et al. (2009) RCT (4) Nstart=17 Nend=17 TPS=Not reported A vs 0	E: Wobble Board exercises + Conventional Therapy C: Conventional Therapy Duration: 6wks	E vs C: Static Balance Eyes open (-) Eyes closed (+exp) Foursquare step test (+exp)
Balance-Focused Exercise Programs vs At-home Exercises		
Curuk & Aruin (2022) RCT crossover (8) Nstart=6 Nend=6 TPS=Chronic A vs B	E: Anticipatory postural adjustment and postural control exercises C: At-home self-guided general mobility exercise program Duration: 4wks, 1wk washout period	E vs C: COP displacement (+exp) Mini-BESTest score (-) ABC Scale (-)
Balance Training Using SMART Balance Master vs Conventional Rehabilitation		
Rao et al. (2013) RCT (5) Nstart=28 Nend=28 TPS=Acute A + B vs A Also in Table 15 (Biofeedback)	E: Balance training + postural control visual biofeedback (SMART Balance master) C: Conventional PT + balance training Duration: 60min/d, 5d/wk, 2wks + 30min/d, 1d/wk, 2wks conventional PT & 3session balance training/balance training with visual biofeedback with BWS	E vs C: Functional Independence Measure (-) Fugl-Meyer Balance scores (-) Fugl-Meyer lower extremity assessment (-)
Chen et al. (2002) RCT (4) Nstart=41 Nend=41 TPS=Subacute A + B vs 0 Also in Table 15 (Biofeedback)	E: Balance training + postural control visual biofeedback (SMART Balance master) C: Conventional rehabilitation Duration: Not Specified	E vs C: Functional Independent Measure selfcare and sphincter control (No stats) mobility and locomotion (No stats) static balance maximal stability (No stats) ankle strategy (No stats) center of gravity alignment (No stats) dynamic balance axis velocity (No stats) directional control (No stats) end point excusion (No stats)
Geiger et al. (2001) RCT (5) Nstart=13 Nend=13 TPS=Subacute A vs 0 Also in Table 15 (Biofeedback)	E: Physical therapy + visual biofeedback (SMART Balance master forceplate) C: Physical therapy Duration: 50min/d, 2-3d/wk for 4wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-)
Walker et al. (2000) RCT (4) Nstart=54 Nend=46 TPS=Subacute A + B vs A + C vs 0 Also in Table 15 (Biofeedback)	E1: Balance training + Visual feedback E2: Balance training + Verbal and tactile cues C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 3- 8wks Balance training, 120min/d, 5d/wk Conventional rehabilitation	E1 vs E2 vs C: Postural sway Eyes open (-) Eyes closed (-) Berg Balance Scale (-) Timed Up & Go Test (-) 10-m walk test (-)

Non-Supportive Balance Trainers with Feedback vs Conventional Therapy or Balance Training		
Komiya et al. (2021) RCT (6) Nstart=30 Nend=27 TPS=Chronic A + B vs A	E: Balance exercises + Real- time position feedback system+ standard physical therapy C: Balance exercise using polyurethane mat + standard physical therapy Duration: 2min/d, 2d/wk for 6wks balance exercise & 2d/wk for 6wks physical therapy	E vs C: Isometric Muscle Strength Knee extension Paretic (-) Non Paretic (-) Short Physical Performance Battery (-) Timed Up and Go Test (+exp) Center of Pressure trajectory length (-) Modified Gait Efficacy Scale (+exp) Falls Efficacy (-)
Brunelli et al. (2020) RCT (5) Nstart=32 Nend=24 TPS=Acute A vs 0	E: Computerized balance training + conventional physiotherapy C: Conventional physiotherapy Duration: 80min/d, 5d/wk for 4wks	E vs C: Berg Balance Scale (+exp) Tinetti Balance Scale (+exp) Two minutes walk test (+exp) Barthel Index (-) Clinical Test of Sensory Integration and Balance 1 (-) 2 (+exp) 3 (-) 4 (+exp)
Zhang et al. (2020) RCT (5) Nstart=40 Nend=40 TPS=Subacute A + B vs C	E: Conventional balance training + visual balance training with Pro-kin system + Game training C: Conventional balance training Duration: 20min/d, 5d/wk for 3wks	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (+exp) Functional Ambulation Classification (+exp) Barthel Index (+exp) Pro-kin system parameters Perimeter EO (+exp) Ellipse area EO (+exp) Perimeter EC (+exp) Ellipse area EC (+exp)
Maciaszek. (2018) RCT (4) Nstart=20 Nend=20 TPS=Subacute A vs 0 Also in Table 15 (Biofeedback)	E: Posturographic platform biofeedback training C: Standard hospital treatment Duration: 15d	E vs C: One-leg standing test (+exp) Timed Up & Go Test (+exp)
Balance Training with Visual Biofeedback vs Conventional Therapy or Balance Training		
Aphiphaksakul et al. (2022) RCT (7) Nstart=32 Nend=32 TPS=Subacute A vs B	E: Sitting balance training with balance disc and smartphone app + conventional home rehab C: Conventional home rehab Duration: 60 min/d, 5d/wk, 4wks	E vs C: FIST(-) PASS total(-) maintaining posture(-) changing posture(+exp) BI(+exp)
Noh et al. (2019) RCT (8) Nstart=24 Nend=24 TPS=Subacute A vs 0	E: 3D balance training using visual feedback + Conventional therapy C: Conventional therapy Duration: 30min/d conventional therapy & 30min/d space balance training, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Gait speed (+exp) Cadence (+exp) Step length (+exp) Double-limb support period (+exp)

Also in Table 15 (Biofeedback)		Activity-specific balance confidence (+exp)
James et al. (2017) RCT (6) Nstart=10 Nend=10 TPS=Acute A1 vs A2 Also in Table 15 (Biofeedback)	E: Gaming Assisted Visual feedback for balance training + Conventional therapy C: Balance training exercises + Conventional therapy Duration: 60min/d, 2sessions/d, 4d (8 sessions total)	E vs C: Berg Balance Scale (+exp) AP-Postural sway (-) Lat-Postural Sway (+exp) Stance symmetry (+exp) Active ankle ROM dorsiflexion (-) Active ankle ROM plantarflexion (+exp) Lateral reach test (-)
Ghomashchi (2016) RCT (3) Nstart=31 Nend=31 TPS=Chronic A + B vs A Also in Table 15 (Biofeedback)	E: Balance training using Biodex stability system + visual biofeedback C: Balance training Duration: 1hr/d, 3d/wk for 4wks	E vs C: Postural balance (-) Centre of pressure (-)
Ordahan et al. (2015) RCT (4) Nstart=50 Nend=50 TPS=Subacute A + B vs 0 Also in Table 15 (Biofeedback)	E: Balance training + postural control visual biofeedback + conventional rehabilitation C: Conventional rehabilitation Duration: 20min/d, 5d/wk for 6wks Balance Training & 30min/d, 5d/wk, for 6wks Conventional Program	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (+exp) Functional Independence Measure (-)
Ko et al. (2015) RCT (4) Nstart=52 Nend=40 TPS=Acute A vs 0 Also in Table 15 (Biofeedback)	E: Space balance 3D training using visual feedback program + Conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 3wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-) Postural Assessment Scale for Stroke (-)
De Nunzio et al. (2014) RCT (7) Nstart=37 Nend=37 TPS=Acute A vs B Also in Table 15 (Biofeedback)	E: Balance Platform Training with Audio-visual Feedback + Rehabilitation program C: Rehabilitation program + postural training with physiotherapy Duration: 60min, 6d/wk, for 2wks rehabilitation program & 30min of postural training	E vs C: Standing Balance Score (-) Berg Balance Score (-) Performance-Oriented Mobility Assessment (-) Fullerton's Advanced Balance Scale (-) Functional Independence Measure (-) Centre of Pressure (-)
Lee et al. (2013e) RCT (4) Nstart=22 Nend=22 TPS=Chronic A + B vs 0 Also in Table 15 (Biofeedback)	E: Balance training + postural control visual biofeedback C: Conventional physiotherapy Duration: 60min/d, 5d/wk for 4wks	E vs C: Static balance (+exp) Dynamic balance (+exp)
Yoon et al. (2013) RCT (2) Nstart=24 Nend=24 TPS=Chronic A1 + B vs A2 + B vs A Also in Table 15 (Biofeedback)	E1: Balance training + self- controlled postural control visual biofeedback E2: Balance training + no control over postural control visual biofeedback C: Balance training Duration: 2d	E1/E2 vs C: Postural sway:(+exp1, +exp2) E1 vs E2: Postural Sway (+exp1)

Varoqui et al. (2011) RCT (6) Nstart=24 Nend=23 TPS=Subacute A1 + B vs A2 + B vs C Also in Table 15 (Biofeedback)	E1: Balance training + postural control visual biofeedback from unaffected side + physiotherapy E2: Balance training + postural control visual biofeedback from affected side +physiotherapy C: Stand-up task + physiotherapy Duration: 10min/session, 8session/28d	E1/E2 vs C: Postural Assessment Scale for Stroke (-) Berg Balance Scale (-) modified Ashworth scale (-) Motor weakness (-) Functional Ambulation Category (-) Functional Independence Measure Motor (+exp1, +exp2) Cognitive (-)
Yavuzer et al. (2006a) RCT (6) Nstart=50 Nend=41 TPS=Chronic A vs 0 Also in Table 15 (Biofeedback)	E: Force platform biofeedback balance training + Conventional rehabilitation C: Conventional rehabilitation Duration: 2-5hr/d, 5d/wk, for 8wks Conventional rehabilitation & 15min/d, 5d/wk for 3wks Balance training	E vs C: Walking Velocity (-) Cadence (-) Step length (-) Single-Support Time (-) Step Length Asymmetry (-) Single-support Time Asymmetry (-) Pelvic Tilt (-) Pelvis Obliquity (+exp) Pelvic rotation (-) Sagittal Plane Total Excursion Knee (-) Hip (-) Ankle (-) Peak Hip Extensor Moment (-) Peak Hip Abductor Moment (-) Peak Knee Extensor Moment (-) Peak Ankle Plantar Flexor Moment (-) Vertical Ground Reaction Force (+exp)
Sackley & Lincoln (1997) RCT (6) Nstart=26 Nend=24 TPS=Subacute A + B vs B Also in Table 15 (Biofeedback)	E: Visual feedback + Nottingham Balance Platform training + physical therapy C: Sham visual feedback + Nottingham Balance Platform training + physical therapy Duration: 60min/d, 3d/wk, for 4wks	E vs C: Balance co-efficient (+exp) Rivermead Motor assessment (+exp) Leg and trunk (-) Gross function (+exp) Nottingham 10-point Activities of Daily Life scale (+exp) Stance symmetry (+exp) Sway (+exp)
Standing Practice vs Conventional Therapy		
Inoue et al. (2021) RCT (8) Nstart=52 Nend=52 TPS=Acute A1 vs A2	E: Standing exercise with weight shifting to the nonparetic side (on an inclined surface that was elevated 5 degrees to the nonparetic side) + Conventional physiotherapy C: Standing exercise with weight shifting to the nonparetic side (on a flat surface) + Conventional physiotherapy 30 exercises sessions/d for 5d interventions & 60min/session conventional physiotherapy	E vs C: Berg Balance Scale (-) Posturographic examination Static standing (-) Maximum lateral weight shifting to nonparetic side (-) Maximum lateral weight shifting to paretic side (-) Stroke Impairment Assessment Set (-) Trunk Control Test (-) Trunk Impairment Scale (-) Functional Ambulation Category (+exp) Functional Independence Measure motor items (-)

Allison et al. (2007) RCT (8) Nstart=17 Nend=14 TPS=Acute A vs 0	E: Standing practice + Conventional therapy C: Conventional therapy Duration: 45min/d, 5d/wk for 2- 4wks	E vs C: Berg Balance Scale (-) Rivermead Motor Assessment (-) Trunk Control Test (-)
Wong et al. (1997) RCT (5) Nstart=60 Nend=60 TPS=Acute A + B vs C Also in Table 15 (Biofeedback)	E: Standing practice + Force platform biofeedback C: Standing training table Duration: 60min/d, 5d/wk, for 3- 4wks	E vs C: Postural symmetry (+exp)
Perturbation Balance Trainers with Feedback vs Conventional Therapy or Balance Training		
An et al. (2021) RCT (8) Nstart=30 Nend=30 TPS=Subacute A + B + C + D vs E Also in Table 15 (Biofeedback)	E: Whole-Body Tilting Postural Training (Visual feedback monitor + Trunk sensor + 8- direction body tilt + Spine balance 3D) C: General Postural Training Duration: 30min/session, 2sessions/d, 5d/wk, for 3wks	E vs C: Burke Lateropulsion Scale (+exp) Postural Assessment Scale for Stroke (+exp) Berg Balance Scale (+exp) Korea-Modified Barthel Index (+exp) Fugl-Meyer Assessment (+exp)
Jung et al. (2021) RCT (7) Nstart=24 Nend=24 TPS=Subacute A vs B Also in Table 4 (Trunk Training)	E: Space Balance 3D system for active trunk training + conventional physical and occupational therapy C: General trunk training + Conventional physical and occupational physiotherapy Duration: 30min/d, 5d/wk, for 3wks	E vs C: Trunk Impairment Scale (+exp) Trunk Flexion muscle strength (+exp) Trunk Extension muscle strength (+exp) Static balance (+exp) Brunel Balance Assessment (+exp)
Thijs et al. (2021) RCT (8) Nstart=30 Nend=29 TPS=Chronic A vs 0	E: Technology-supported sitting balance therapy + conventional therapy C: Conventional therapy Duration: 30-120min/d, 3d/wk, for 4wks usual care & 50min/d, 3-4d/wk, for 4wks (12 in total) sitting balance therapy	E vs C: Trunk Impairment Scale (+exp) Modified Functional Reaching Test (-) Functional Ambulation Categories (-) 10 Metre Walk Test Max speed (+exp) Comfortable speed (-) Two Minute Walk Test (-) Fugl-Meyer Assessment of Lower Extremity (-) Berg Balance Scale (+exp) Functional Independence Measure (-) Modified Barthel Index (-) Trunk and leg strengths (-) Modified Ashworth Scale (-)
Perturbation Balance Trainers vs Conventional Therapy or Balance Training		
Lanza et al. (2024) Feasibility/pilot RCT (4) Nstart=30 Nend=22 TPS=Chronic A vs B	E: Pertubation training (PERT) C: Voluntary step training (VOL) Duration: 3d/wk, 6 wks	E vs C: Community Balance and Mobility Scale (-) Activities-Specific Balance Confidence Scale (-) step onset time (-) step clearance (-0) step length (-) step velocity (-)

Shen et al. (2023) RCT (7) Nstart=40 Nend=40 TPS=Subacute A vs B	E: Dynamic motion instability training + Conventional rehabilitation C: Conventional rehab + balance training Duration: 50min/d(30min conventional + 20min DMIST/balance training), 5d/wk, 8wks	E vs C: FMA-LE(+exp) BBS(-) Gait speed(+exp) Stride length(+exp)
Dusane & Bhatt (2022) RCT (5) Nstart=49 Nend=45 TPS=Chronic A + B vs A	E: Slip adaptation training on an overground perturbation system (8 unexpected overground, nonparetic-side gait-slips + 2 paretic-side slips) C: Slip adaptation training an overground perturbation system (2 paretic-side slips) Duration: single time	E vs C: Falls between Paretic Slip 1 (-) Falls Between Paretic Slip 2 (-) Post Slip Stability at Touchdown at Paretic Slip 1 (-) Post Slip Stability at Touchdown at Paretic Slip 2 (-) Max Heel Velocity at Paretic Slip 1 and 2 (-) Backwards loss of balance (-) Pre-slip stability at touchdown (-)
Chayasit et al. (2022) RCT (5) Nstart=34 Nend=33 TPS=Chronic A vs B	E: Voluntary-induced stepping response (VSR) C: DynSTABLE perturbation training (DST) Duration: 60min, single session training	E vs C: Step length(-) Step width(-) COM position at the 1st stepping foot touchdown (+con) Number of protective steps per trial (No stats) Choice of protective leg stepping (No stats) Grasping events (No stats) Loss of balance events (No stats)
Yadav et al. (2020) RCT (4) Nstart=133 Nend=110 TPS=Acute A1 vs A2 vs B1 vs B2 Also in Table 27 (Electromechanical and Robotic Devices)	E1: Haemorrhagic Stroke Erigo Robotic Tilt Table E2: Ischemic Stroke Erigo Robotic Tilt Table C1: Haemorrhagic Stroke Conventional Care C2: Ischemic Stroke Conventional Care Duration: 50-60min, 6d/wk, 30d	E vs C: For haemorrhagic group National Institutes of Health Stroke Scale (+exp) Mini Mental Scale Examination (-) Modified Ashworth Scale (+exp) SF-36 Quality of Life (+exp) Medical Research Council (+exp) For Ischemic group National Institutes of Health Stroke Scale (-) Mini Mental Scale Examination (-) Modified Ashworth Scale (-) SF-36 Quality of Life (-) Medical Research Council (-)
Schinkel-Ivy et al. (2019) RCT (6) Nstart=43 Nend=16 TPS=Chronic A vs 0	E: Perturbation-Based Balance Training C: Conventional care Duration: 60min/d, 2d/wk, for 6wks	E vs C: Reactive Stepping (-) Frequency of extra steps (-) Frequency of lateral steps (-) Frequency of stepping with more affected limb (-) Frequency of foot collisions (-) Step Timing (-) Foot-off time (-) Swing time (-)
Handelzalts et al. (2019) RCT (6)	E: Perturbation-based balance training + conventional care	E vs C: Multistep threshold Forward (+exp)

Nstart=34 Nend=32 TPS=Subacute A vs B + C	C: Weight shifting + Gait training without perturbation + conventional care Duration: 12 sessions, 30min/d, for 2.5wks	Backward (+exp) Toward the paretic side (-) Toward the non-paretic side (-) Fall threshold (-) Fugl-Meyer assessment Lower Extremity (-) Berg balance scale (-) 10m Walk test (-) 6min Walk test (-) Activity-specific Balance Confidence scale (-)
Mansfield et al. (2018) RCT (8) Nstart=88 Nend=83 TPS=Chronic A vs B	E: Perturbation-based balance training C: Traditional balance training Duration: 60min/d, 2d/wk, for 6wks	E vs C: Fall rates (after 1 year) (-) Berg balance scale (-) Mini-Balance Evaluation Systems test (-) Anticipatory balance control (-) Reactive balance control (+exp) Sensory orientation (+con) Gait (-) Timed Up & Go (-) Activities-specific Balance Confidence (-) Physical Activity Scale for Individuals with Physical Disabilities (-) Subjective Index of Physical and Social Outcome (-)
Yadav et al. (2018) RCT (4) Nstart=30 Nend=30 TPS=Acute A + B vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Robotic Tilt table + Upper extremity exercises C: Conventional therapy Duration: 50-60min/d, 6d/wk, for 4wks	E vs C: SF-36 Quality of life (+exp) Medical Research council Muscle scale (+exp)
Goljar et al. (2010) RCT (6) Nstart=44 Nend=39 TPS=Subacute A vs 0	E: Balance trainer mechanical device + Conventional care C: Conventional balance training + Conventional care Duration: 45 mins (20min balance trainer/ conventional balance training+ 20 min physical therapy), 5d/wk, 4wk	E vs C: Berg Balance Scale (-) Timed Up and Go Test (-) 10-metre walk test (-) Single limb standing duration (-)
Balance Training with Visual Deprivation vs Balance Training with Visual Cues		
Jeong et al. (2024) RCT (5) Nstart=45 Nend=39 TPS=Chronic A1 vs A2 vs 0 Also in Table 15 (Biofeedback)	E1: Visual Deprivation Group Balance Training Group + Conventional Therapy; E2: Visual Feedback Balance Training Group + Conventional Therapy C: Conventional Therapy Duration: 30 min, 5x/wk, for 3 wks	E1 vs E2: (LOS = Limit of stability) LOS-Left (+exp) LOS-Right (+exp) LOS-Forward (+exp) LOS-Back (+exp) LOS-Total (+exp) BBS (-) E vs C: LOS-Left (+exp) LOS-Right (+exp) LOS-Forward (+exp) LOS-Back (+exp) LOS-Total (+exp)

		BBS (+exp1, +exp 2) FSST (+exp1) TUG (+exp1)
Nam et al. (2022a) RCT (5) Nstart=45 Nend=41 TPS=Chronic A + B + C vs A + B vs B	E1: Visual cue deprivation + balance training + head control E2: Visual cue deprivation + Balance training C: Balance training Duration: 30 mins/d, 3d/wk, 4wks	E1 vs C: Limit of stability Left (+exp1) Right (+exp1) forward (+exp1) back (+exp1) Berg balance scale (+exp1) Stride time (-) Stride length (+exp1) Cadence (+exp1) E2 vs C: Limit of stability Left (+exp2) Right (+exp2) forward (+exp2) back (+exp2) Berg balance scale (-) Stride time (-) Stride length (+exp2) Cadence (-) E1 vs E2: Limit of stability Left (-) Right (-) forward (-) back (-) Berg balance scale (+exp1) Stride time (-) Stride length (-) Cadence (-)
Narendra et al. (2013) RCT (4) Nstart=30 Nend=30 TPS=Not reported A vs B	E: Balance exercises with blindfold C: Balance exercises with free vision Duration: 45-60min/d, 5d/wk for 6wks	E vs C: Berg Balance scale (+exp) Stroke specific Quality of Life scale (-) Family role (-) Mobility (-) Self-care (-) Upper extremity Function/productivity (-) Rivermead mobility index (-)
Yelnik et al. (2008) RCT (7) Nstart=68 Nend=67 TPS=Chronic A + B vs 0	E: Balance training + Visual deprivation C: Conventional rehabilitation Duration: 60-70 min/d, 5d/wk, 4 wks	E vs C: Berg Balance Scale (-) 10m walk (-) Percentage of double stance phase (-) Time to climb 10 steps and return (-) Daily time of walking (-) Security sensation during walking (-) Number of falls since stroke (-) Functional Independence Measure (+exp) Nottingham Health Profile (-) Posturographic limits of stability (-)

Bonan et al. (2004) RCT (7) Nstart=20 Nend=20 TPS=Chronic A1 vs A2	E: Vision deprived balance rehabilitation C: Balance rehabilitation Duration: 60min/d, 5d/wk, for 4wks	E vs C: Sensory Organization Test (+exp) Self-Assessed VAS – ease of gait (-) Timed Stair Climbing (-) Gait Velocity (-) Nottingham Health Profile (-)
Balance Training with Kinesthetic Ability Training Device vs Conventional Rehabilitation		
Alptekin et al. (2008) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0 Also in Table 15 (Biofeedback)	E: Balance training with kinesthetic ability training device + conventional rehabilitation C: Conventional rehabilitation Duration: 2-3h/d, 5d/wk, for 4wks	E vs C: Fugl-Meyer Assessment lower extremity (-) balance (+exp) Kinesthetic Ability Trainer (+exp) static balance (+exp) dynamic balance (+exp) Functional Independence Measure motor (-) locomotion (-)
Balance Training with Full Rest Periods vs Balance Training with Short Rest Periods		
Elsner et al. (2018) RCT (8) Nstart=20 Nend=20 TPS=Subacute A1 vs A2	E: Full rest during Balance training C: Short rest during Balance training Duration: E: 4min rest in between exercises (full rest time), 2min/exercise for 7 exercises C: 1min rest in between exercises (short rest time), 2min/exercise for 7 exercises	E vs C: One-leg standing time (-) Tandem standing time (-)
Balance Training with Muscle Vibration vs Conventional Rehabilitation		
Merkert et al. (2011) RCT (3) Nstart=66 Nend=48 TPS=Acute A + B vs C Also in Table 31 (Muscle Vibration)	E: Vibrosphere (balance training + whole body vibration) + conventional geriatric rehabilitation. C: Conventional geriatric rehabilitation. Duration: 15 sessions of Vibrosphere training	E vs C: Berg Balance scale (-) Functional test of Lower trunk stability (-) Tinetti Gait test (-) Timed Up and Go (-) Mini-mental State examination (-) Barthel index (-) Transfer (+exp) Dressing (+exp) Feeding (+exp) Walking (-) Climbing stairs (-)
Balance Training with Biofeedback vs Balance Training		
Martino Cinnera et al. (2024) Feasibility/pilot RCT (9) Nstart=21 Nend=21 TPS=Chronic A vs B	E: sensor-based balance training C: Conventional balance training Duration: 30 mins/d, 2-3 ds/wk, 4wks [total 10 sessions]	E vs C: Berg balance scale (-) Canadian neurological scale (-) Barthel index (-) Rivermead mobility index (-) National institute of health stroke scale (-) Length of center of pressure open-eyes (+exp) closed-eyes (-) Pittsburgh Rehabilitation Participation Scale (+exp)
Kim et al. (2022e) RCT crossover (6)	E1: Pressure sensor-based vibrotactile biofeedback	E1/E2 vs C: Sway length (+exp1/2)

Nstart=24 Nend=24 TPS=Chronic A vs B vs C Also in Table 15 (Biofeedback)	E2: Visual biofeedback providing posture information C: Standing without biofeedback Duration: 1d, 24hr washout period	Sway velocity (+exp1/2) Weight distribution symmetric index (+exp1/2) E1 vs E2: Sway length (+exp1) Sway velocity (+exp1) Weight distribution symmetry index (+exp1)
Lupo et al. (2018) RCT (7) Nstart=15 Nend=15 TPS=Subacute A vs B Also in Table 15 (Biofeedback)	E: Biofeedback Balance training (RIABLO training) C: Conventional balance training Duration: 20min/d, 3d/wk, 10 sessions total	E vs C: Berg Balance scale (+exp) Rivermead mobility index (-) Modified Barthel index (-) NIH Stroke scale (+exp) Canadian Neurological scale (-) Centre of pressure (+exp)
Hung et al. (2017) RCT (7) Nstart=43 Nend=37 TPS=Chronic A vs B vs C Also in Table 15 (Biofeedback); Table 26 (Virtual Reality)	E1: Wii Fit balance training E2: Tetrax biofeedback balance training C: Conventional weight-shifting training Duration: 30min/d, 2d/wk for 12wks	E1 vs E2 vs C: Cognitive Abilities Screening Instrument-Chinese version total (-) long term memory (-) short term memory (-) attention (-) Mental manipulation (-) Orientation (-) Abstract/judgment (+exp1) Language (+exp1) Drawing (-) Word fluency (-) Berg Balance scale (-)
Eser et al. (2008) RCT (5) Nstart=50 Nend=41 TPS=Chronic A + B vs 0 Also in Table 15 (Biofeedback)	E: Balance training + force platform biofeedback + Conventional rehabilitation C: Conventional rehabilitation Duration: E: 15min/d, 5d/wk , 3wk Balance training + 2-5h/d, 5d/wk, 8wk conventional care; C: 2-5h/d, 5d/wk, 8wk conventional care	E vs C: Brunnstrom Recovery Stage (-) Rivermead Mobility Index (-) Functional Independence Measure (-)
Vestibular Training vs Conventional Therapy		
Calisgan et al. (2024) RCT (4) Nstart=78 Nend=52 TPS=Acute A + B vs C	E: Vestibular + Somatosensory rehab + Conventional early rehab C: Conventional early rehab Duration: 60min (20min vestibular/somato + 40min CT)/d, 5-7d	E vs C: Static balance scores (+exp) front-right (+exp) front-left (+exp) behind-right (+exp) behind-left (+exp) Dynamic balance scores (+exp) front-right (+exp) front-left (+exp) behind-right (+exp) behind-left (+exp) Functional reach test standind anterior (+exp) sitting anterior (+exp) Postural assessment for stroke (+exp) FAC (+exp)

Cui et al. (2024) RCT (5) Nstart=30 Nend=30 TPS=Chronic A + B vs A vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E1: Gaze stabilization exercises + balance exercises + routine neurodevelopmental treatment, E2: gaze stabilization exercises + routine neurodevelopmental treatment C: Balance exercises + routine neurodevelopmental treatment Duration: 40min/d, 3d/wk, 4 wks	E1/E2 vs C: Overall stability index eyes open (+exp1) eyes closed (+exp1) Limit of stability (+exp1) TUG (+exp1) BBS (-) gait velocity (+exp1) cadence (+exp1) step time (+exp1) step length (+exp1) Modified Falls Efficacy Scale (-) E1 vs E2: Overall stability index eyes open (+exp1) eyes closed (+exp1) Limit of stability (+exp1) TUG (+exp1) BBS (-) gait velocity (+exp1) cadence (+exp1) step time (+exp1) step length (+exp1) Modified Falls Efficacy Scale (-)
Son et al. (2024) RCT (6) Nstart=44 Nend=42 TPS=Chronic A1 vs A2	E: Self-administered eye exercise C: Self-administered exercise Duration: 30 min/d, 5x/wk,for 4wks	E vs C: Weight distribution (-) TUG (+exp) Step length affected side (-) unaffected side (-) Gait speed (-) Cadence (-)
Zhao et al. (2022b) RCT (7) Nstart=43 Nend=40 TPS=Subacute A vs 0	E: Gaze stabilization exercises + Conventional physical therapy C: Conventional physical therapy Duration: 60min (30min gaze + 30min PT)/d, 5d/wk, 4wks	E vs C: BBS (+exp) TUG (+exp) stance phase (-) swing phase affected side (+exp) unaffected side (-) stance phase ASI (-) swing phase ASI (+exp) AP COP velocity (+exp) envelope ellipse area eyes closed (+exp) eyes open (-) plantar pressure eyes open (+exp) eyes closed (+exp)
Ekvall Hansson et al. (2020) RCT (7) Nstart=32 Nend=22 TPS=Chronic	E: Vestibular rehabilitation + Conventional therapy C: Conventional therapy Duration: 2sessions/wk, for 3mo	E vs C: Activity-specific Balance Confidence scale (-) Berg Balance scale (-) Functional Gait assessment (-)

A vs 0		EuroQOL-5D Index (-) Visual analog scale (-)
Tramontano et al. (2018) RCT (6) Nstart=25 Nend=25 TPS=Subacute A vs B	E: Standard physiotherapy + Vestibular rehabilitation (Gaze stability and postural control) C: Standard physiotherapy + balance (trunk stabilization) Duration: 2d/wk, for 4wks standard physiotherapy & 20min/d, 3d/wk, for 4wks rehabilitation sessions	E vs C: Functional Ambulation Classification (-) Tinetti scale (+exp) Balance (-) Gait (+exp) Berg Balance Scale (-) Modified Barthel Index (-) 10-Meter Walk Test (+exp) Rivermead Motricity Index (-) Stride frequency (-) Stride length (+exp) Coefficient of attenuation of acceleration between pelvis and head (-) Improved harmonic ratio (-)
Robotic Balance Training vs Conventional Therapy		
Inoue et al. (2022b) RCT (7) Nstart=60 Nend=57 TPS=Subacute A vs B vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E1: Robotic balance training + conventional rehabilitation E2: Intensive balance training + conventional rehabilitation C: Conventional training Duration: E1/E2: 120-180min/d, 6d/wk, for 2wks conventional care + 18min/d, 6d/wk, for 2wks & C: 120-180min/d, 6d/wk, for 2wks conventional	E1/E2 v C: Mini-BEST (+exp1, +exp2) Muscle strength (-) Stroke Impairment Assessment set (-) Maximum COP movement (-) Functional Independence measure (-) Functional Ambulation category (-) Timed Up and Go (+exp1) Falls efficacy scale-international (-) E1 v E2: Mini-BEST (+exp1) Muscle strength (-) Stroke Impairment Assessment set (-) Maximum COP movement (-) Functional Independence measure (-) Functional Ambulation category (-) Timed Up and Go (-) Falls efficacy scale-international (-)
De Luca et al. (2020) RCT (6) Nstart=30 Nend=28 TPS=Chronic A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted balance exercises C: Conventional care Duration: 45min, 3d/wk, for 5wks	E vs C: Berg Balance Scale (-) Trunk Impairment Scale (-) Static & dynamic sitting balance (-) Trunk coordination (-) Mini-Balance Evaluation Test (-) Anticipatory (-) Sensory orientation (-) Dynamic gait (-) Static Balance Test eyes open (-) eyes closed (-) Dynamic Balance test on unstable platform sway area (+exp) sway path (-) Trunk total movement (+exp) Variability-trunk (+exp)

		Reactive Balance Test (changes of trunk oscillatory) forward (-) backward (-) Affected side (-) unaffected side - mediolateral (+exp) unaffected - anterioposterior (-) Proprioceptive control test (Reaching in standing position) number of targets (+exp), - variability-trunk (+exp) normalized range mediolateral trunk (-) normalized range anterio posteriorior trunk (-) Proprioceptive control test (Reaching in Sitting position) number of targets (+exp) variability-trunk (+exp) normalized range mediolateral trunk (+exp) normalized range anterio posteriorior trunk (+exp) Sit to stand (-)
Kumar et al. (2020) RCT (4) Nstart=133 Nend=110 TPS=Acute A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Robotic tilt table (Erigo) therapy C: Conventional physiotherapy Duration: 50-60min/d, 6d/wk, 30d	E vs C: SF-36 (+exp) Manual Muscle Testing (+exp)
Trampoline Balance Training vs Stable Surface Balance Training		
Miklitsch et al. (2013) RCT (8) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B	E: Predefined mini-trampoline balance training + individualized physiotherapy C: Balance training on stable surface + individualized physiotherapy Duration: 30min/session, 10sessions/3wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (-) 6-minute walk test (-) Barthel Index (-)
Ankle-Foot orthosis + Balance Training Shoes vs Ankle-Foot Orthosis + Regular Shoes		
Farmani et al. (2016) RCT (4) Nstart=30 Nend=30 TPS=Chronic A1 vs A2 Also in Table 13 (Orthotic Devices)	E: Solid Ankle-foot orthosis, then Rocker shoes C: Solid Ankle-foot orthosis, then Regular shoes Duration: Not reported	E vs C: Timed Up and Go (+exp) Timed Up Stairs test (-) Timed Downstairs test (-) 10MWT at preferred speed (+exp) Oxygen uptake (+exp)
Balance Training + TENS vs Balance Training + Conventional Care		
Jung et al. (2016) RCT (7) Nstart=61 Nend=60 TPS=Subacute A + B vs A vs 0	E1: Weight-shifting exercise + TENS + Conventional care E2: Weight-shifting training + Placebo TENS + Conventional care C: Conventional care	E1 vs C: Muscle Activity External Oblique (+exp1) External Spinae (+exp1) Maximum Reaching Distance (+exp1) Trunk Impairment Scale (+exp1) Dynamic Sitting balance (+exp1)

Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	Duration: 30min/d, 5d/wk, for 6wks intervention sessions + 60min/d, 5d/wk, for 6wks conventional care	Coordination (+exp1) Static Sitting Balance (-) E2 vs C: Muscle Activity External Oblique (+exp2) External Spinae (-) Maximum Reaching Distance (+exp2) Trunk Impairment Scale (+exp2) Dynamic Sitting Balance (+exp2) Coordination (+exp2) Static Sitting Balance (-) E1 vs E2: Muscle Activity External Oblique (+exp1) External Spinae (-) Maximum Reaching Distance (+exp1) Trunk Impairment Scale (+exp1) Dynamic Sitting Balance (-) Coordination (+exp1) Static Sitting Balance (-)
Balance Training with Shoe Lift vs Balance Training		
Sheikh & Hosseini (2021) RCT (8) Nstart=36 Nend=36 TPS=Chronic A vs B	E: Balance training with shoe lift under nonaffected leg C: Balance training alone Duration: 60min/d, 5d/wk, for 6wks balance training & 6wks wearing shoe lift for all daily activities	E vs C: Weight-bearing asymmetry (+exp) RMS of AP COP asymmetry index (+exp) RMS of ML COP asymmetry index (-) Berg Balance Scale (-) Activities-specific Balance Confidence Scale (-)
Strength or Resistance Training with Balance Training vs Conventional Therapy		
Vahlberg et al. (2017a) RCT (7) Nstart=43 Nend=43 TPS=Chronic A + B vs 0	E: Progressive resistance + balance training and motivational session C: Usual activity Duration: 75min/d, 2d/wk, for 12wks	E vs C: Bergs Balance Scale (-) Body Mass Index (-) Fat-free Mass Index (-) Fat Mass Index (-) Fat-mass Percent (+exp) Physical Activity Scale for the Elderly (-) Six-minute Walking (+exp) Short Physical Performance Test (-) Chair Rise 5times (-) Plasma Albumin (-) Plasma Total Cholesterol (-) Plasma HDL And LDL Cholesterol (-) Serum IGF-1 (+exp) Plasma CRP (-)
Vahlberg et al. (2017b) RCT (8) Nstart=67 Nend=57 TPS=Chronic A + B vs 0	E: Progressive resistance + balance training and motivational session C: Usual activity Duration: 75min/d, 2d/wk, for 12wks	E vs C: Berg Balance Scale (+exp) Short Physical Performance Battery (-) Six-Minute Walk Test (+exp) 10 Meter Walk Test (+exp) Euro-QoL-5D (-) Fall-Related Self-Efficacy Scale (-) Geriatric Depression Scale (-)

		Physical Activity Scale for the Elderly (-)
Sekhar et al. (2013) RCT (5) Nstart=40 Nend=40 TPS=Not reported A + B vs 0 Also in Table 21 (Strength and Resistance Training)	E: Isokinetic strength training + balance exercises C: Conventional physiotherapy Duration: 6wks	E vs C: Isokinetic peak torque 30° (+exp) 60° (+exp) 90° (+exp) Berg balance scale (+exp)
Structured Balance Awareness vs Health Awareness Program		
Shaik et al. (2021) RCT (5) Nstart=97 Nend=82 TPS=Chronic A vs B + A	E: Structured Balance awareness program + Balance training C: Health awareness program + Balance training Duration: 30min/d, 5d/wk for 8wks Specific interventions & 30min/d, 5d/wk for 8wks - Balance training	E vs C: Activities-specific Balance Confidence scale (+exp) Berg Balance scale (+exp) Falls-efficacy scale-International (+exp)
Balance Training with Fresnel Prism Glasses vs Balance and Walking Training		
Ha & Sung (2020) RCT (4) Nstart=23 Nend=17 TPS=Chronic A + B vs A	E: Balance training + walking training + Fresnel prism glasses C: Balance training + walking training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Motor-free visual perception test (-) Berg Balance Scale (+exp) Functional reach test (+exp) Gait Step count (+exp) Ambulation time (+exp) Velocity (+exp) Cadence (-) Step time (-) Cycle time (-) Swing time (-) Stance time (-) Double support time (+exp) Step length (+exp) Stride length (+exp) Single support of cycle (-) Double support of cycle (+exp)
Sensory Balance Training vs Robot-assisted Stair Climbing		
Gandolfi et al. (2019) RCT (8) Nstart=32 Nend=28 TPS=Chronic A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted stair climbing training (G-EO System) C: Sensory integration balance training Duration: 50min/session, 2d/wk, for 5wks	E vs C: Berg Balance Scale (-) 10-metre Walk test (-) 6min Walk test (+exp) Dynamic gait index (-) Stair climbing test Up (-) Down (-) Timed Up and Go (-) Postural sway (-) Centre of Pressure perimeter Open eyes-stable surface (-) Closed eyes-stable surface (+exp) dome-stable surface (-) Open eyes-compliant surface (-)

		Closed eyes-compliant surface (+exp) Dome-compliant surface (+exp) Centre of Pressure sway area Open eyes-stable surface (-) Closed eyes-stable surface (-) dome-stable surface (-) Open eyes-compliant surface (+exp) Closed eyes-compliant surface (-) Dome-compliant surface (+exp)
Sitting Balance Training with Sensory Input vs Sitting Balance		
Ibrahimi et al. (2010) RCT (4) Nstart=30 Nend=30 TPS=Subacute A1 vs A2	E: Sitting balance training under varied sensory input C: Sitting balance training without sensory input Duration: 20-30min/d, 5d/wk, for 2wks	E vs C: Berg Balance Scale (+exp) Stroke Specific Quality of Life Questionnaire (+exp) Motor Assessment Scale Sitting (+exp) Sit to Stand (+exp)
External vs Internal focus on Balance Board		
Kal et al. (2019) RCT (8) Nstart=63 Nend=51 TPS=Acute A1 vs A2	E1: External focus on balance board task E2: Internal focus on balance board task Duration: 3d/wk, for 3wks	E1 vs E2: Threshold stiffness (-) Single-task sway (+exp1) Dual-task sway (-) Single task Timed Up and Go Test (-) Dual-task Timed Up and Go Test (-) Utrecht Scale for Evaluation of Rehabilitation Mobility (-)
Balance Training vs No Training		
Lisinski et al. (2012) RCT (6) Nstart=26 Nend=26 TPS=Chronic A vs B vs C	E1: Balance training on Metitur Good Balance Platform E2: No balance training C: Healthy controls (able-bodied) Duration: 20-day balance training	E1 vs C: Weight symmetry (+exp1) Center of feet pressure sway velocity Medio-lateral direction (+exp1) Anterior-posterior direction eyes open and closed (-) Anterior-posterior tandem position (+exp1) E2 vs C: Weight symmetry (-) Center of feet pressure sway velocity Medio-lateral direction (+exp2) Anterior-posterior direction eyes open and closed (-) Anterior-posterior tandem position (+exp2) brunnstrom scale (No stats)
Vestibular rehabilitation vs Convectional treatment		
Balci et al. (2013) RCT (6) Nstart=25 Nend=25 TPS=Acute A vs B vs C Also in Table 15 (Biofeedback)	E1: Vestibular rehabilitation (consisted of eye-head coordination exercises, balance and ambulation exercises) E2: Visual feedback: Posturography Training C: Usual Home Exercise Duration: 10min, 2-3sessions/d (20-30min/d), for 6wks vestibular rehabilitation and & 25-30min, 3d/wk, for	E2 vs E1 vs C: Berg Balance scale (-) Timed Up and Go test (No stats) Dizziness Handicap inventory (-) Dynamic gait index (-) Center of Gravity Sway Velocity (-) Limit of Stability (-)

	6wks visual feedback training & 20-30min/d, for 6wks usual home exercise	
Dai et al. (2013) RCT (6) Nstart=55 Nend=48 TPS=Subacute A vs 0	E: Vestibular rehabilitation + Conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 2wks VR supervised by a nurse, then 30min/d, 5d/wk for 2wks at- home VR supervised by a care giver & 2hr/d, 5d/wk for 4wks conventional rehabilitation	E vs C: Functional Independence measure (-) Postural Assessment scale for Stroke (-) Number of falls (-) Behavioral Inattention Test Conventional (-)
Progressive Balance Training vs Standard Balance Training		
Memon et al. (2022) RCT (6) Nstart=60 Nend=60 TPS=Chronic A vs B	E: Balance Exercises initially under normal condition and then getting advance training + Conventional Training C: Balance Exercises under light exercises + Conventional Training Duration: 40min (10-15 min Conventional Training + 25-30min Balance Exercises), 3d/wk, for 6 wks	E vs C: Trunk Impairment Scale (TIS) (+exp) Berg Balance Scale (+exp) Activities Specific Balance Confidence (no stat) Balance Error Scoring System (BESS) (-) Dynamic Gait Index (no stat)
Perturbation Balance Training vs Proprioceptive Neuromuscular Facilitation		
Adhikari et al. (2024) RCT (7) Nstart=33 Nend=30 TPS=Not reported A vs B	E: Manual pertubation + Conventional therapy C: Proprioceptive Neuromuscular Fascilitation + Conventional therapy Duration: 8 wks	E vs C: TIS (-) TUG (+exp) Dynamic gait index (-) Cadence (-) Step length affected (-) unaffected (-) stride length affected (-) unaffected (+exp)
Class-Based vs Home-Based Body Awareness Training		
Serrada et al. (2022) Feasibility/pilot RCT (6) Nstart=20 Nend=16 TPS=Chronic A1 vs A2	E: Class-based body awareness training C: Home-based body awareness training Duration: 45min/d, 2d/wk, 10wks	E vs C: FMA UE (+exp) LE (+exp) MAL QOM (-) AOU (-) 10MWT (-) Patient-specific functional scale (-) Multidimensional assessment of interoceptive awareness (+exp) Body perception UL (-) LL(-) Erasmus Nottingham Sensory Assessment UL- Tactile (-) UL- proprioception (-) LL-Tactile (-) LL-proprioception (-) SIS (+exp) SSEQ (-)

		SSQol (-)
Visual Scanning Training with Task-Specific Activities vs Task-Specific Activities Alone		
Batool et al. (2022) RCT (9) Nstart=64 Nend=64 TPS=Subacute A + B vs B Also in Table 5 (Task-Specific Training)	E: Visual scanning exercises + task specific activities C: Placebo eye exercises + task specific activities(not sham) Duration: 45min/d(30min TST, 15min Vision training), 6d/wk, 4wks	E vs C: BBS(+exp) sitting to standing (+exp) standing unsupported (+exp) sitting unsupported (-) standing to sitting (-) transfers (-) standing with eyes closed (+exp) standing with feet together (+exp) reaching forward with outstretched arm (-) retrieving object from floor (+exp) turning to look behind (+exp) turning 360 degrees (+exp) placing alternate foot on stool (-) standing with one foot in front (-) standing on one foot (-) BI (+exp) feeding (-) bathing (-) grooming (-) dressing (-) bowels (-) bladder (-) toilet use (-) transfers (-) mobility (-) stairs (-)
Vestibular Training vs Virtual Reality Training		
Sana et al. (2023) RCT (7) Nstart=34 Nend=30 TPS=Subacute A vs B	E: Vestibular training + conventional rehab C: Virtual reality video games + conventional rehab Duration: 30min/d, 3d/wk, 8wks	E vs C: TUG(+exp) Dizziness handicap inventory DHI(+exp) DGI(+exp)
Additional Comparisons from the Source Dataset		
Elhamrawy et al. (2021) RCT crossover (3) Nstart=32 Nend=32 TPS=Chronic A vs 0	E: Vestibular rehabilitation therapy + Conventional physical therapy C: Conventional care Duration: E: 20min/d for VRT + 100min/d conventional therapy, 4d/wk, 4wk C: 60min/d, conventional therapy 4d/wk, 8wk	E vs C: Gait speed (No stats) Gait cadence (No stats) Step length (No stats) Step width (No stats)
Liu et al. (2019) RCT (7) Nstart=89 Nend=87 TPS=Chronic A + B vs X	E: Cognitive behaviour therapy + task-oriented balance training C: General health education + task-oriented balance training Duration: 90min/d, 2d/wk, 8wks	E vs C: Activities-specific balance confidence scale (+exp) Survey of activities and fear of falling in the elderly (+exp) Berg Balance Scale (+exp) Physiological Profile Assessment (No data) Lawton instrumental activities of daily living scale (+exp)

		Community integration measure (+exp) SF-36-C (No data)
Tramontano et al. (2019) RCT (8) Nstart=30 Nend=30 TPS=Subacute A vs B	E: Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation C: Trunk stabilization and weight transfer exercises + Conventional rehabilitation Duration: 80min/d, 5d/wk for 4wks Conventional rehabilitation + 20min/d, 3d/wk for 4wks intervention sessions	E vs C: Tinetti Balance and Gait scale (+exp) Barthel index (+exp) Berg Balance scale (-) Centre of pressure (-)
Mitsutake et al. (2017) RCT (5) Nstart=36 Nend=28 TPS=Subacute A vs 0	E: vestibular rehabilitation + conventional PT C: conventional PT Duration: E: 20min/d, 7d/wk, 3wk vestibular rehabilitation & 40min/d, 7d/wk, 3wk conventional PT then 60min/d, 7d/wk, 3wk conventional PT ; C: 60min/d, 7d/wk, 6wk conventional PT	E vs C: Gaze stabilization test (No stats) 10 m walking test (No stats) timed up and go (No stats) dynamic gait index (No stats)
Bayouk et al. (2006) RCT (4) Nstart=16 Nend=12 TPS=Chronic A + B vs X	E: Task-oriented balance Exercises + Altered Sensory Input C: Task-oriented balance Exercises Duration: 1h/session, 2x/wk, 8wks	E vs C: No between group stats Postural Stability center of pressure changes in double-legged stance phase (N/A) changes of pressure during sit-to-stand task (N/A) 10m walking test (N/A)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Lu et al. (2024) RCT (8) Nstart=62 Nend=62 TPS=Acute A + B vs C Primary listing: Table 15 (Biofeedback)	E: Pro-Kin system + weight loss system (body-weight support) with balance training C: Conventional balance training Duration: C: 20 mins/session, 10 times/wk, 4 wks. E: 30 mins/session (20 mins of Pro-Kin balance +10 mins of Pro-Kin weight loss), 10 sessions/wk, 4 wks	E vs C: Berg balance scale (+exp) TUG (+exp) Functional ambulation classification (+exp) Ellipse area open eyes (+exp) closed eyes (+exp) Motion trajectory length open eyes (+exp) closed eyes (+exp)
Rana et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B + C vs B + C Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Metronome training + core strengthening + general balance exercises C: Core strengthening + general balance exercises Duration: 8wks	E vs C: TUG (+exp) Tinetti Test (+exp)
Gunduz et al. (2024) RCT (8) Nstart=42 Nend=42 TPS=Subacute A + B vs C	E: Robot assisted gait training + Traditional balance training C: Traditonal balance training Duration: Experimental group: Traditional balance training (40 mins/d, 3ds/wk, 5wks) + Robot assisted gait training (40 mins, 2ds/wk, 5wks); Control Group: 40 mins/d, 5ds/wk, 5 wks	E vs C: Encephalog app anterior (-) postrior (-) medial (-) lateral (-) stand up time (+exp) sit down time (+exp)

Primary listing: Table 27 (Electromechanical and Robotic Devices)		TUG (-) Berg balance scale (-) Falls efficacy scale-international (-) FMA-LE (+exp) Foot posture index-6 (-)
Purohit et al. (2024) RCT crossover (4) Nstart=12 Nend=12 TPS=Chronic A + B vs C Primary listing: Table 28 (Functional Electrical Stimulation)	E: Gait-slip perturbation + FES to paretic quadriceps muscle C: Gait-slip perturbations Duration: 30min slip experiment, 1x; FES 50-500ms after perturbation onset	E vs C: Laboratory falls (+exp) Reactive stability (+exp) Vertical limb support (+exp) Pre-slip stability (-) Compensatory step length (+exp) Step initiation time (+exp) step execution time (-) number of compensatory steps (+exp)
Hu et al. (2023) Feasibility/pilot RCT (7) Nstart=33 Nend=33 TPS=Chronic A1 vs A2 Primary listing: Table 9 (Treadmill Training)	E: Treadmill gait and balance training + Traditional gait and balance training C: Traditional gait + balance training Duration: 90min/d, 5d/wk, 4wks	E vs C: 5MWT (-) Compensatory stepping test (no stat) TUG (-) FTSTS (-) ABC (-) RPE (no stat) HR (no stat)
Yeo et al. (2023) RCT (7) Nstart=39 Nend=39 TPS=Chronic A + B vs B vs 0 Primary listing: Table 15 (Biofeedback)	E1: Visual feedback + Unstable surface balance training E2: Unstable surface balance training C: Conventional physical therapy Duration: E: 20 mins/d, 3d/wk, for 4 wks; C: 30 mins/d, 3d/wk, 4 wks	E1 vs C: TIS (+exp1) Berg Balance Scale (+exp1) TUG (+exp1) Cadence (-) Gait velocity (+exp1) stride time (-) Stride length (+exp1) Hip flexion (+exp1) Hip extension (+exp1) Knee flexion (+exp1) Knee extension (-) E2 vs C: TIS (+exp2) Berg Balance Scale (+exp2) TUG (-) Cadence (-) Gait velocity (+exp2) stride time (-) Stride length (+exp2) Hip flexion (+exp2) Hip extension (-) Knee flexion (+exp2) Knee extension (-) E1 vs E2: TIS (+exp1) Berg Balance Scale (+exp1) TUG (+exp1) Cadence (-) Gait velocity (-) stride time (-)

		Stride length (-) Hip flexion (+exp1) Hip extension (-) Knee flexion (+exp1) Knee extension (-)
Kilinc et al. (2023) RCT (7) Nstart=30 Nend=29 TPS=Chronic A + B vs B Primary listing: Table 26 (Virtual Reality)	E: Virtual balance training (VBT) + Conservative training C: Conservative training (traditional rehab techniques) Duration: 20min VBT + 60min CR/d, 4d/wk, 8wks	E vs C: BBS (-) BI (-) NIHSS (-) SF-36 physical function (-) physical role limitations (-) pain (-) general health (-) energy (-) social function (-) emotional role limitation (-) mental health (-) Brunnstrom stage UE (-) hand (-) LE (-) FAS (-) MAS LE-plantar flexion spasticity degree (-)
Midan et al. (2022) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C Primary listing: Table 12 (Stretching or Mobilization Exercises)	E: Foot Mobilization + Intrinsic Foor Muscles Facilitation + (Strength and Resistance training including PNF, Gait training and Balance training through Pertubations) C: Strength and Resistance training including PNF, Gait training and Balance training through Pertubations Duration: 60 min/session, 3 session/wk, 4 wks	E vs C: Center of Pressure Mediolaterl displacement (-) Mediolateral Speed (-) Mediolateral width (-) Anteroposterior speed (+exp) Anteroposterior displacement (+exp) Reverse Anteroposterior displacement (+exp)
Wang et al. (2022c) RCT (6) Nstart=21 Nend=19 TPS=Chronic A vs 0 Primary listing: Table 13 (Orthotic Devices)	E: Non-elastic taping + Exercise training (progressive resistance exercise, balance training and treadmill training) C: Sham taping + exercise training Duration: 50min/d, 2d/wk, for 6wks	E vs C: double support time (+exp) spatial symmetry index (-) temporal symmetry index (-) velocity (-) BBS (-) 6MWT (-) FES-I (-)
Chaudhary et al. (2022) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs A Primary listing: Table 19 (Mirror Therapy)	E: Visual feedback via Mirror + Verbal feedback + Conventional treatment (static and dynamic balance training) C: Visual feedback via Mirror + Conventional treatment (static and dynamic balance training) Duration: 30 min/d, 3d/wk, 8 wks	E vs C: BBS (+exp)
Mihai et al. (2022) RCT (6) Nstart=24	E: Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy	E vs C: Modified ashworth scale (+exp) Passive Range of Motion

Nend=23 TPS=Chronic A + B vs B Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	C: Sham Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy Duration: 60min/day, 5d/wk, for 2 wks conventional therapy 7min/day, 1d/wk, for 2 wks rEWST 20min/day, 5d/wk, for 2 wks visual feedback balance training	Knee (-) Ankle (+exp) Visual analogue scale (+exp) Clonus score (+exp) Trunk Impairment Scale (-) Tinetti Assessment Tool (+exp) Functional Ambulation Categories (-) Fugl-Meyer Assessment for Lower Extremity (+exp) Stabilometric Outcome measures Dynamic (+exp) Static (+exp) Limit of stability (+exp) Static-perimeter, mm (EO) (+exp) Static-ellipse area, mm2 (EO) (+exp) Static-perimeter, mm (EC) (-) Static-ellipse area, mm2 (EC) (+exp)
Marques-Sule et al. (2021) RCT (9) Nstart=29 Nend=29 TPS=Chronic A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Virtual reality balance training with Nintendo Wii + conventional physical therapy C: Conventional physical therapy Duration: 120min/d, 2d/wk, for 4wks Conventional PT & 30min/d, 2d/wk, for 4wks VR training	E vs C: Timed up and go (+exp) Tinetti Performance-Oriented Mobility Assessment (+exp) Berg Balance Scale (+exp) Fugl-Meyer Upper Limb Motor Assessment (-) Barthel Index (+exp) Frenchay Activity Index (+exp)
Esmaeili et al. (2020) RCT (6) Nstart=21 Nend=18 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E: Perturbation treadmill training group C: Non-perturbation treadmill training group Duration: 35-70min, 3d/wk, for 3wks	E vs C: Mini-BESTest (+exp) 10m Walk test Comfortable speed (-) Fast speed (-) Knee extensors maximal strength Non paretic (-) Paretic (-) Activities-specific Balance Confidence scale (-) Reintegration to Normal Living Index (-)
Lee et al. (2020b) RCT (7) Nstart=49 Nend=49 TPS=Chronic A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Balance Training + EMG- triggered FES + General Rehabilitation C: Balance Training without FES + General Rehabilitation Duration: 40mins/d, 5d/wk, for 6 wks General Rehabilitation & 40 mins/d, 5d/wk, for 6wks Balance trainings +/- FES	E vs C: Static balance (+exp) Timed Up and Go (+exp) Functional reach test (+exp) Berg Balance scale (+exp) Surface EMG (Leg muscle activation) (+exp)
Tirupatamma et al. (2019) RCT (3) Nstart=50 Nend=30 TPS=Not reported A vs B Primary listing: Table 4 (Trunk Training)	E: Trunk balance training on rocker board + conventional therapy C: Trunk balance training on plain surface + conventional therapy Duration: 45min/d, 6d/wk, 6wks	E vs C: Berg Balance Score (+exp) Functional Reach Test (+exp) 2-Minute Walk Test (+exp)

Hsieh et al. (2019b) RCT (7) Nstart=54 Nend=54 TPS=Subacute A vs B Primary listing: Table 26 (Virtual Reality)	E: Modified PC Balance Training Gaming Platform C: PC gaming with Mouse Duration: 40 mins/d, 3d/wk, for 12wks	E vs C: Centre of pressure kinematics sway path (+exp) sway area (+exp) sway velocity (+exp) Berg Balance Scale (+exp) Fullerton Advanced Balance Scale (-) Timed Up and Go tests (+exp)
Liao et al. (2018) RCT (8) Nstart=56 Nend=51 TPS=Chronic A + B vs C vs 0 Primary listing: Table 13 (Orthotic Devices)	E1: Routine rehabilitation + Balance training + Visual biofeedback E2: Routine rehabilitation program + lateral wedge insole C: Routine rehabilitation program Duration: 20min/d, 3d/wk, 6wks balance training & 6 wks usual standing and walking with the show insole	E1/E2 vs C: Balance computerized adaptive test (+exp1, +exp2) Timed up and go (TUG) (+exp1, +exp2) E1 vs E2: Balance computerized adaptive test (-) Timed up and go (TUG) (-)
Utkan Karasu et al. (2018) RCT (7) Nstart=23 Nend=23 TPS=Subacute A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Wii Fit-based balance exercise + conventional rehabilitation C: Conventional rehabilitation Duration: 120-180min/d, 5d/wk, for 4 wks conventional therapy & 20min/d, 5d/wk, for 4 wks Wii Fit training	E vs C: Berg Balance Scale (+exp) Functional Reach Test (+exp) Postural Assessment Scale for Stroke Patients (-) Timed Up and Go Test (-) Static Balance Index (-) Postural sway AP/ML (eye open) (+exp) AP (eye closed) (+exp) ML (eye closed) (-) COP displacement during weight shift (to affected/non affected) (+exp) Functional Independence Measure transfer (+exp) locomotion (-)
Vahlberg et al. (2017a) RCT (7) Nstart=43 Nend=43 TPS=Chronic A + B vs 0 Primary listing: Table 21 (Strength and Resistance Training)	E: Progressive resistance + balance training and motivational session C: Usual activity Duration: 75min/d, 2d/wk, for 12wks	E vs C: Bergs balance scale (-) body mass index (-) fat-free mass index (-) fat mass index (-) fat-mass percent (+exp) physical activity scale for the elderly (-) six-minute walking (+exp) short physical performance test (-) Chair rise 5times (-) Plasma albumin (-) Plasma total cholesterol (-) Plasma HDL and LDL cholesterol (-) Serum IGF-1 (+exp) Plasma CRP (-)
Lee et al. (2017d) RCT (6) Nstart=50 Nend=47 TPS=Chronic A vs 0	E: Virtual reality balance training + Standard treatment C: Standard treatment Duration: 90min/d, 2d/wk, for 6wks	E vs C: Berg Balance Scale (-) Functional Reach Test (-) Timed Up and Go-cognitive (-) Modified Barthel Index (-) Activities-Specific Balance Confidence (-)

Primary listing: Table 26 (Virtual Reality)		Stroke Impact Scale (-)
Ng et al. (2016) RCT (7) Nstart=76 Nend=69 TPS=Subacute A + B vs C Primary listing: Table 5 (Task-Specific Training)	E: TENS + task-oriented balance training + conventional therapy C: C: Sham TENS+ task- oriented balance training + conventional therapy Duration: 60min/d, 2d/wk, 8wks. TENS + TOBT concurrent 150min/d conventional physiotherapy	E vs C: Berg Balance Scale (+exp) 6-minute walk test (-) Modified Rivermead Mobility Index(-) Timed up and go test(+exp) SF-36 Physical function(+exp) Role physical (-) Bodily pain(-) General health(-) Vitality(-) Social functioning(-) Role functioning-emotion(-) Mental health(-)
Hung et al. (2016b) RCT (5) Nstart=27 Nend=23 TPS=Chronic A vs 0 Primary listing: Table 15 (Biofeedback)	E: Tetrax biofeedback balance training + Conventional care C: Conventional care Duration: 100min/d, 3d/wk Conventional care & 20min/d, 3d/wk for 6wks Tetrax balance training	E vs C: Physiologic Profile Assessment Proprioception (+exp) Muscle strength (-) Reaction time (+exp) Postural sway area (-) Weight bearing (+exp) Timed Up and Go (+exp) Forward reach distance (-)
Braun et al. (2016) RCT (10) Nstart=28 Nend=24 TPS=Subacute A vs B Primary listing: Table 26 (Virtual Reality)	E: Dynamic balance training with Balance Trainer C: Static balance training with a conventional standing frame Duration: 30min/session, 3- 5x/wk for 5wks	E vs C: Berg Balance Scale (+exp) Functional Ambulation Category (+exp) De Morton Mobility Index (+exp) Functional Independence Measure (+exp)
Yang et al. (2015) RCT (7) Nstart=12 Nend=12 TPS=Subacute A1 vs A2 Primary listing: Table 15 (Biofeedback)	E: Computer-generated interactive visual feedback balance training + Physical therapy C: Mirror visual feedback balance training + Physical therapy Duration: 20min/d - Balance training, 20min/d - Physical therapy, 3d/wk, 3wks	E vs C: Pusher syndrome severity (+exp) Berg balance scale (+exp) Fugl-Meyer assessment upper extremity (-) lower extremity (+exp)
Choi et al. (2015b) RCT (5) Nstart=21 Nend=21 TPS=Subacute A + B vs A Primary listing: Table 16 (Dual-Task Training)	E: Balance training + cognitive training C: Balance training with balance board Duration: 1hr/d, 3d/wk for 4wk	E vs C: Berg Balance Scale (-) Fugl-Meyer Assessment (-) Modified Barthel Index (-)
Yatar et al. (2015) RCT (5) Nstart=33	E: Wii-based balance training C: Progressive balance training Duration: 1hr/d, 3d/wk for 4wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-)

Nend=30 TPS=Chronic A vs B Primary listing: Table 26 (Virtual Reality)		Functional Reach Test (-) Activity-Specific Balance Confidence Scale (-) Dynamic Gait Index (-) Frenchay Activities Index (-)
Tang et al. (2014) RCT (6) Nstart=56 Nend=48 TPS=Acute A + B vs A Primary listing: Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Contemporary BCA + early sitting, standing, and walking strategies with balance training C: Contemporary BCA Duration: 50min/d, 5d/wk, for 8wks	E vs C: Stroke Rehabilitation Assessment of Movement Upper extremity (-) Lower extremity (+exp) Basic mobility (+exp) Overall (+exp) Berg Balance Scale (+exp)
Lee et al. (2014c) RCT (5) Nstart=25 Nend=25 TPS=Chronic A + B vs C + B Primary listing: Table 13 (Orthotic Devices)	E: Ankle Foot Orthosis (Joint type) + Balance Training C: No Orthotic + Balance Training Duration: 40min/d, 5d/wk, 6wks	E vs C: Static Balance Index Normal open (+exp) Normal close (-) Pillow open (-) Pillow close (-) Paretic Tibialis Anterior Muscle Activity (+exp) Paretic Medial Gastrocnemius Muscle Activity (-)
Morone et al. (2014) RCT (7) Nstart=50 Nend=47 TPS=Subacute A1 vs A2 Primary listing: Table 26 (Virtual Reality)	E: Video Game-Based Balance Training + conventional PT C: Conventional PT + Balance Training Duration: 20min/d balance training + 80min/d conventional physical therapy, 3d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Barthel Index (+exp) 10-Metre Walk Test (-) Functional Ambulation Category (-)
Bower et al. (2014) RCT (8) Nstart=30 Nend=21 TPS=Acute A + B vs B Primary listing: Table 26 (Virtual Reality)	E: Wii Fit Plus video game (Balance training) C: Wii Sports video game (Upper limb training) Duration: 45min/session, 3d/wk for 2-4wks	E vs C: Step Test Affected (+exp1) Unaffected (-) Functional Reach Test (-) Timed Up and Go Test (-) Centre of Pressure Measures (+exp1) Short Falls Efficacy Scale – International (-) Upper Limb - Motor Assessment Scale (-) Stroke Rehabilitation Assessment of Movement (-)
Barcala et al. (2013) RCT (7) Nstart=20 Nend=20 TPS=Chronic A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Wii-based balance training C: Conventional rehabilitation Duration: 60min/d, 2d/wk, 5wks Conventional therapy ; 30min/d, 2d/wk, 5wks Wii Fit balance training	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-) Functional Independence Measure (-) Stabilometry (-) Body symmetry (-)
Kunkel et al. (2013) RCT (6)	E1: Standing balance exercises + FES E2: Standing balance exercises	E1 v E2 v C: Symmetry of weight transfer

Nstart=21 Nend=21 TPS=Subacute A + B vs A vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	C: Usual care Duration: 1hr/d, 4d/wk for 2wks interventions	Weight through affected limb in parallel stance (-) Weight transferred onto affected limb in parallel stance (-) Weight transferred onto affected limb in stride stance (-) Berg Balance Scale Rivermead Mobility Index (-) 10-Metre Walk Test Normal walking (-) Fast walking (-)
Jiejiao et al. (2012) RCT (8) Nstart=92 Nend=85 TPS=Chronic A + B vs A Primary listing: Table 16 (Dual-Task Training)	E: Balance training + cognitive training C: Balance training Duration: 40min/d, 5d/wk for 8wks	E vs C: Center of Pressure (-) Mediolateral Sway Distance (+exp) Anteroposterior Eyes Open (+exp) Eyes Closed (-)
Seo et al. (2012) RCT (4) Nstart=40 Nend=40 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Dual-task balance training C: Single-task balance training Duration: 30min/d, 5d/wk for 4wks	E vs C: Sway path (-) Sway area (+exp) Max velocity (+exp)
Cho et al. (2012) RCT (5) Nstart=24 Nend=22 TPS=Chronic A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Wii-based balance training C: Conventional rehabilitation Duration: 30min/d, 3d/wk, for 6wks virtual reality balance training & 1hr/d, 5d/wk, for 6wks conventional care	E vs C: Antero-posterior postural sway velocity (-) Medio-lateral postural sway velocity (-) Berg Balance Scale(+exp) Timed up and Go test(+exp)
Kim et al. (2012c) RCT (4) Nstart=20 Nend=17 TPS=Chronic A vs B Primary listing: Table 26 (Virtual Reality)	E: Wii-based balance training C: Control group Duration: 30min/d, 3d/wk for 3wks	E vs C: Postural Assessment Scale (+exp) Modified Motor Assessment Scale (+exp) Functional Independence Measure (-)
Lee et al. (2012) RCT (8) Nstart=40 Nend=40 TPS=Chronic A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Balance training with Balance Control Trainer C: Conventional rehabilitation Duration: 60min/d, 5d/wk, for 4wks conventional rehabilitation & 20min/d, 5d/wk, for 4wks balance training	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (+exp) Functional Ambulation Categories (+exp) Modified Barthel Index (-) 10-Metre Walking Test (+exp) Manual Muscle Test (-)
Jung et al. (2011) RCT (4)	E: 3D balance exercises (3D Thera-Balance) with visual feedback	E vs C: Berg Balance Scale (+exp)

Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 26 (Virtual Reality)	C: Weight shifting exercises Duration: 50min/d, 5d/wk for 6wks	10-Metre Walk Test (-)
Kim et al. (2009) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Virtual reality-based balance training C: Conventional therapy Duration: 30min/d, 4d/wk, for 4wks VR-balance training & 40min/d, 4d/wk, for 4wks Conventional therapy	E vs C: Berg Balance Scale (+exp) Static balance (-) Sway area (-) Sway path (-) Maximal velocity (-) Dynamic balance AP angle (+exp) ML angle (+exp) Modified Motor Assessment Scale (+exp) 10-Metre Walk Test (+exp) Cadence (+exp) Step time (+exp) Swing time (-) Stance time (-) Single Limb Support time (-) Double Limb Support time (-) Step length (+exp) Stride length (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Balance-Focused Exercise Programs may produce greater improvements in motor recovery than Conventional Rehabilitation.	2	Tan et al. 2023; Alptekin et al. 2008
1b	There is conflicting evidence about the effect of Balance Training with Posture Changes when compared to Balance Training for improving motor recovery.	1	Jiang et al. 2021
1b	Shoulder elevation posture change with balance training and Conventional training may produce greater improvements in motor recovery than Back posture change with balance training and Conventional training.	1	Jiang et al. 2021
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving motor recovery.	1	Rao et al. 2013
1a	Balance Training with Visual Biofeedback may produce greater improvements in motor recovery than Conventional Therapy or Balance Training.	2	Varoqui et al. 2011; Sackley & Lincoln 1997

1a	Standing Practice may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	2	Inoue et al. 2021; Allison et al. 2007
1a	There is conflicting evidence about the effect of Perturbation Balance Trainers with Feedback when compared to Conventional Therapy or Balance Training for improving motor recovery.	2	An et al. 2021; Thijs et al. 2021
1a	There is conflicting evidence about the effect of Perturbation Balance Trainers when compared to Conventional Therapy or Balance Training for improving motor recovery.	3	Shen et al. 2023; Yadav et al. 2020; Handelzalts et al. 2019
1b	Balance Training with Kinesthetic Ability Training Device may produce greater improvements in motor recovery than Conventional Rehabilitation.	1	Alptekin et al. 2008
1a	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training for improving motor recovery.	3	Martino Cinnera et al. 2024; Lupo et al. 2018; Eser et al. 2008
1b	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Inoue et al. 2022b
1b	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Vahlberg et al. 2017a
1b	Balance Training may not have a difference in efficacy when compared to No Training for improving motor recovery.	1	Lisinski et al. 2012
1b	There is conflicting evidence about the effect of Class-Based Body Awareness Training when compared to Home-Based Body Awareness Training for improving motor recovery.	1	Serrada et al. 2022
1b	There is conflicting evidence about the effect of Robot assisted gait training with Traditional balance training when compared to Traditonal balance training for improving motor recovery.	1	Gunduz et al. 2024
1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving motor recovery.	1	Kilinc et al. 2023
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in motor recovery than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
1b	Virtual reality balance training with Nintendo Wii with conventional physical therapy may not have a difference in efficacy when compared to Conventional physical therapy for improving motor recovery.	1	Marques-Sule et al. 2021
1b	Progressive resistance with balance training and motivational session may not have a difference in efficacy when compared to Usual activity for improving motor recovery.	1	Vahlberg et al. 2017a
1b	Computer-generated interactive visual feedback balance training with Physical therapy may produce greater improvements in motor recovery than Mirror visual feedback balance training with Physical therapy.	1	Yang et al. 2015
2	Balance training with cognitive training may not have a difference in efficacy when compared to Balance training with balance board for improving motor recovery.	1	Choi et al. 2015b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task Specific Balance Training may not have a difference in efficacy when compared to Upper Limb Exercise for improving biomechanical gait measures.	1	Pang et al. 2018
1a	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving biomechanical gait measures.	4	Noh et al. 2019; James et al. 2017; Yavuzer et al. 2006a; Sackley & Lincoln 1997
2	Standing Practice may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Wong et al. 1997
1a	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving biomechanical gait measures.	4	Lanza et al. 2024; Shen et al. 2023; Chayasit et al. 2022; Schinkel-Ivy et al. 2019
1b	Balance Training with Visual Deprivation may not have a difference in efficacy when compared to Balance Training with Visual Cues for improving biomechanical gait measures.	2	Nam et al. 2022a; Yelnik et al. 2008
2	Visual cue deprivation with balance training and head control may not have a difference in efficacy when compared to Visual cue deprivation with Balance training for improving biomechanical gait measures.	1	Nam et al. 2022a
1a	Vestibular Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	4	Cui et al. 2024; Son et al. 2024; Zhao et al. 2022b; Tramontano et al. 2018
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical gait measures than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Balance Training with Fresnel Prism Glasses may not have a difference in efficacy when compared to Balance and Walking Training for improving biomechanical gait measures.	1	Ha & Sung 2020
1b	There is conflicting evidence about the effect of Balance Training when compared to No Training for improving biomechanical gait measures.	1	Lisinski et al. 2012
1b	Perturbation Balance Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving biomechanical gait measures.	1	Adhikari et al. 2024
2	Vestibular rehabilitation therapy + Conventional physical therapy may not have a difference in efficacy when compared to Conventional care for improving biomechanical gait measures.	1	Elhamrawy et al. 2021
2	Gait-slip perturbation with FES to paretic quadriceps muscle may produce greater improvements in biomechanical gait measures than Gait-slip perturbations.	1	Purohit et al. 2024
1b	Visual feedback with Unstable surface balance training may not have a difference in efficacy when compared to Conventional physical therapy for improving biomechanical gait measures.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may not have a difference in efficacy when compared to Unstable surface balance training for improving biomechanical gait measures.	1	Yeo et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving biomechanical gait measures.	1	Wang et al. 2022c

1b	Wii-based balance training may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Barcala et al. 2013
1b	Standing balance exercises with functional electrical stimulation may not have a difference in efficacy when compared to Usual care for improving biomechanical gait measures.	1	Kunkel et al. 2013
1b	Virtual reality-based balance training may not have a difference in efficacy when compared to Conventional therapy for improving biomechanical gait measures.	1	Kim et al. 2009

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Balance-Focused Exercise Programs may produce greater improvements in biomechanical balance measures than Conventional Rehabilitation.	2	Battesha et al. 2022; Pollock et al. 2002
1b	Wobble Board Training may produce greater improvements in biomechanical balance measures than Conventional Physiotherapy.	1	Nagai et al. 2024
1b	Balance-Focused Exercise Programs may produce greater improvements in biomechanical balance measures than At-home Exercises.	1	Curuk & Aruin 2022
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving biomechanical balance measures.	2	Chen et al. 2002; Walker et al. 2000
1b	There is conflicting evidence about the effect of Non-Supportive Balance Trainers with Feedback when compared to Conventional Therapy or Balance Training for improving biomechanical balance measures.	1	Komiya et al. 2021
1a	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving biomechanical balance measures.	4	James et al. 2017; Ghomashchi 2016; De Nunzio et al. 2014; Sackley & Lincoln 1997
2	Balance training with self- controlled postural control visual biofeedback may produce greater improvements in biomechanical balance measures than Balance training with no control over postural control visual biofeedback.	1	Yoon et al. 2013
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may produce greater improvements in biomechanical balance measures than Visual Feedback Balance Training Group with Conventional Therapy.	1	Jeong et al. 2024
1a	Balance Training with Visual Deprivation may produce greater improvements in biomechanical balance measures than Balance Training with Visual Cues.	4	Jeong et al. 2024; Nam et al. 2022a; Yelnik et al. 2008; Bonan et al. 2004
2	Visual cue deprivation with balance training and head control may not have a difference in efficacy when compared to Visual cue deprivation with Balance training for improving biomechanical balance measures.	1	Nam et al. 2022a
1b	Balance Training with Kinesthetic Ability Training Device may produce greater improvements in biomechanical balance measures than Conventional Rehabilitation.	1	Alptekin et al. 2008
1a	Balance Training with Biofeedback may produce greater improvements in biomechanical balance measures than Balance Training.	3	Martino Cinnera et al. 2024; Kim et al. 2022e; Lupo et al. 2018
1b	Visual biofeedback providing posture information may produce greater improvements in biomechanical balance measures than Standing without biofeedback.	1	Kim et al. 2022e

1b	Pressure sensor-based vibrotactile biofeedback may produce greater improvements in biomechanical balance measures than Visual biofeedback providing posture information.	1	Kim et al. 2022e
1b	Vestibular Training may produce greater improvements in biomechanical balance measures than Conventional Therapy.	2	Cui et al. 2024; Son et al. 2024
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in biomechanical balance measures than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
1b	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical balance measures.	1	Inoue et al. 2022b
1b	Balance Training with Shoe Lift may produce greater improvements in biomechanical balance measures than Balance Training.	1	Sheikh & Hosseini 2021
1b	Sensory Balance Training may not have a difference in efficacy when compared to Robot-assisted Stair Climbing for improving biomechanical balance measures.	1	Gandolfi et al. 2019
1b	External focus on balance board task may produce greater improvements in biomechanical balance measures than Internal focus on balance board task.	1	Kal et al. 2019
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving biomechanical balance measures.	1	Balci et al. 2013
1b	Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may not have a difference in efficacy when compared to Trunk stabilization and weight transfer exercises + Conventional rehabilitation for improving biomechanical balance measures.	1	Tramontano et al. 2019
1b	There is conflicting evidence about the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations for improving biomechanical balance measures.	1	Midan et al. 2022
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in biomechanical balance measures than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
1b	Modified PC Balance Training Gaming Platform may produce greater improvements in biomechanical balance measures than PC gaming with Mouse.	1	Hsieh et al. 2019b
1b	Wii Fit-based balance exercise with conventional rehabilitation may produce greater improvements in biomechanical balance measures than Conventional rehabilitation.	1	Utkan Karasu et al. 2018
2	There is conflicting evidence about the effect of Tetrax biofeedback balance training with Conventional care when compared to Conventional care for improving biomechanical balance measures.	1	Hung et al. 2016b
2	Ankle Foot Orthosis (Joint type) with Balance Training may not have a difference in efficacy when compared to No Orthotic with Balance Training for improving biomechanical balance measures.	1	Lee et al. 2014c
1b	Wii Fit Plus video game (Balance training) may produce greater improvements in biomechanical balance measures than Wii Sports video game (Upper limb training).	1	Bower et al. 2014

1b	Wii-based balance training may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical balance measures.	2	Barcala et al. 2013; Cho et al. 2012
1b	There is conflicting evidence about the effect of Balance training with cognitive training when compared to Balance training for improving biomechanical balance measures.	1	Jiejiao et al. 2012
2	There is conflicting evidence about the effect of Dual-task balance training when compared to Single-task balance training for improving biomechanical balance measures.	1	Seo et al. 2012
1b	Virtual reality-based balance training may not have a difference in efficacy when compared to Conventional therapy for improving biomechanical balance measures.	1	Kim et al. 2009

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Non-Supportive Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving muscle strength.	1	Komiya et al. 2021
1b	Perturbation Balance Trainers with Feedback may produce greater improvements in muscle strength than Conventional Therapy or Balance Training.	1	Jung et al. 2021
2	Perturbation Balance Trainers may produce greater improvements in muscle strength than Conventional Therapy or Balance Training.	2	Yadav et al. 2020; Yadav et al. 2018
1b	Vestibular Training may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Tramontano et al. 2018
1b	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	2	Inoue et al. 2022b; Kumar et al. 2020
2	Strength or Resistance Training with Balance Training may produce greater improvements in muscle strength than Conventional Therapy.	1	Sekhar et al. 2013
1b	Perturbation treadmill training group may not have a difference in efficacy when compared to Non-perturbation treadmill training group for improving muscle strength.	1	Esmaeili et al. 2020
2	There is conflicting evidence about the effect of Tetrax biofeedback balance training with Conventional care when compared to Conventional care for improving muscle strength.	1	Hung et al. 2016b
1b	Balance training with Balance Control Trainer may not have a difference in efficacy when compared to Conventional rehabilitation for improving muscle strength.	1	Lee et al. 2012

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving spasticity.	1	Varoqui et al. 2011
1b	Perturbation Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving spasticity.	1	Thijs et al. 2021
2	There is conflicting evidence about the effect of Perturbation Balance Trainers when compared to Conventional Therapy or Balance Training for improving spasticity.	1	Yadav et al. 2020

1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving spasticity.	1	Kilinc et al. 2023
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in spasticity than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Balance Training with Visual Biofeedback when compared to Conventional Therapy or Balance Training for improving range of motion.	1	James et al. 2017
1b	There is conflicting evidence about the effect of Visual feedback with Unstable surface balance training when compared to Conventional physical therapy for improving range of motion.	1	Yeo et al. 2023
1b	There is conflicting evidence about the effect of Visual feedback with Unstable surface balance training when compared to Unstable surface balance training for improving range of motion.	1	Yeo et al. 2023
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in range of motion than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Balance Training with Posture Changes may produce greater improvements in neurophysiological measures than Balance Training.	1	Jiang et al. 2021
1b	Shoulder elevation posture change with balance training and Conventional training may produce greater improvements in neurophysiological measures than Back posture change with balance training and Conventional training.	1	Jiang et al. 2021
1b	Balance Training with transcutaneous electrical nerve stimulation may produce greater improvements in neurophysiological measures than Balance Training with Conventional Care.	1	Jung et al. 2016
1b	Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may produce greater improvements in neurophysiological measures than Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care.	1	Jung et al. 2016
1b	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving neurophysiological measures.	1	Vahlberg et al. 2017a
1b	Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation may produce greater improvements in neurophysiological measures than Balance Training without functional electrical stimulation with General Rehabilitation.	1	Lee et al. 2020b
1b	Progressive resistance with balance training and motivational session may not have a difference in efficacy when compared to Usual activity for improving neurophysiological measures.	1	Vahlberg et al. 2017a

2	There is conflicting evidence about the effect of Ankle Foot Orthosis (Joint type) with Balance Training when compared to No Orthotic with Balance Training for improving neurophysiological measures.	1	Lee et al. 2014c

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Ankle-Foot orthosis with Balance Training Shoes may produce greater improvements in aerobic measures than Ankle-Foot Orthosis with Regular Shoes.	1	Farmani et al. 2016

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Balance-Focused Exercise Programs may not have a difference in efficacy when compared to Conventional Rehabilitation for improving sensory and proprioceptive function.	1	Battesha et al. 2022
2	There is conflicting evidence about the effect of Non-Supportive Balance Trainers with Feedback when compared to Conventional Therapy or Balance Training for improving sensory and proprioceptive function.	1	Brunelli et al. 2020
1b	There is conflicting evidence about the effect of Perturbation Balance Trainers when compared to Conventional Therapy or Balance Training for improving sensory and proprioceptive function.	1	Mansfield et al. 2018
1b	Robotic Balance Training may produce greater improvements in sensory and proprioceptive function than Conventional Therapy.	1	De Luca et al. 2020
1b	Class-Based Body Awareness Training may not have a difference in efficacy when compared to Home-Based Body Awareness Training for improving sensory and proprioceptive function.	1	Serrada et al. 2022
2	Tetrax biofeedback balance training with Conventional care may produce greater improvements in sensory and proprioceptive function than Conventional care.	1	Hung et al. 2016b

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Balance-Focused Exercise Programs may not have a difference in efficacy when compared to Conventional Rehabilitation for improving activities of daily living.	1	Alptekin et al. 2008
1b	Task Specific Balance Training may not have a difference in efficacy when compared to Upper Limb Exercise for improving activities of daily living.	1	Pang et al. 2018
1b	Balance Training with Posture Changes may not have a difference in efficacy when compared to Balance Training for improving activities of daily living.	1	Jiang et al. 2021
1b	Shoulder elevation posture change with balance training and Conventional training may not have a difference in efficacy when compared to Back posture change with balance training and Conventional training for improving activities of daily living.	1	Jiang et al. 2021
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving activities of daily living.	2	Rao et al. 2013; Chen et al. 2002

2	Non-Supportive Balance Trainers with Feedback may produce greater improvements in activities of daily living than Conventional Therapy or Balance Training.	2	Brunelli et al. 2020; Zhang et al. 2020
1a	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving activities of daily living.	3	Aphiphaksakul et al. 2022; Ordahan et al. 2015; De Nunzio et al. 2014
1b	Standing Practice may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Inoue et al. 2021
1a	Perturbation Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving activities of daily living.	2	An et al. 2021; Thijs et al. 2021
1b	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving activities of daily living.	1	Mansfield et al. 2018
1b	Balance Training with Visual Deprivation may produce greater improvements in activities of daily living than Balance Training with Visual Cues.	1	Yelnik et al. 2008
1b	Balance Training with Kinesthetic Ability Training Device may not have a difference in efficacy when compared to Conventional Rehabilitation for improving activities of daily living.	1	Alptekin et al. 2008
2	There is conflicting evidence about the effect of Balance Training with Muscle Vibration when compared to Conventional Rehabilitation for improving activities of daily living.	1	Merkert et al. 2011
1a	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training for improving activities of daily living.	3	Martino Cinnera et al. 2024; Lupo et al. 2018; Eser et al. 2008
1b	Vestibular Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Tramontano et al. 2018
1b	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Inoue et al. 2022b
1b	Trampoline Balance Training may not have a difference in efficacy when compared to Stable Surface Balance Training for improving activities of daily living.	1	Miklitsch et al. 2013
1a	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	2	Vahlberg et al. 2017a; Vahlberg et al. 2017b
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving activities of daily living.	1	Dai et al. 2013
1b	Visual Scanning Training with Task-Specific Activities may not have a difference in efficacy when compared to Task-Specific Activities Alone for improving activities of daily living.	1	Batool et al. 2022
1b	Cognitive behaviour therapy + task-oriented balance training may produce greater improvements in activities of daily living than General health education + task-oriented balance training.	1	Liu et al. 2019
1b	Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may produce greater improvements in activities of daily living than Trunk stabilization and weight transfer exercises + Conventional rehabilitation.	1	Tramontano et al. 2019

1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving activities of daily living.	1	Kilinc et al. 2023
1b	Virtual reality balance training with Nintendo Wii with conventional physical therapy may produce greater improvements in activities of daily living than Conventional physical therapy.	1	Marques-Sule et al. 2021
1b	Perturbation treadmill training group may not have a difference in efficacy when compared to Non-perturbation treadmill training group for improving activities of daily living.	1	Esmaeili et al. 2020
1b	There is conflicting evidence about the effect of Wii Fit-based balance exercise with conventional rehabilitation when compared to Conventional rehabilitation for improving activities of daily living.	1	Utkan Karasu et al. 2018
1b	There is conflicting evidence about the effect of Progressive resistance with balance training and motivational session when compared to Usual activity for improving activities of daily living.	1	Vahlberg et al. 2017a
1b	Virtual reality balance training with treatment may not have a difference in efficacy when compared to treatment for improving activities of daily living.	1	Lee et al. 2017d
1b	Dynamic balance training with Balance Trainer may produce greater improvements in activities of daily living than Static balance training with a conventional standing frame.	1	Braun et al. 2016
2	Balance training with cognitive training may not have a difference in efficacy when compared to Balance training with balance board for improving activities of daily living.	1	Choi et al. 2015b
2	Wii-based balance training may not have a difference in efficacy when compared to Progressive balance training for improving activities of daily living.	1	Yatar et al. 2015
1b	Video Game-Based Balance Training with conventional physical therapy may produce greater improvements in activities of daily living than Conventional physical therapy with Balance Training.	1	Morone et al. 2014
1b	Wii-based balance training may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Barcala et al. 2013
2	Wii-based balance training may not have a difference in efficacy when compared to Control group for improving activities of daily living.	1	Kim et al. 2012c
1b	Balance training with Balance Control Trainer may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Lee et al. 2012

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Balance Training with Posture Changes when compared to Balance Training for improving gait speed.	1	Jiang et al. 2021
1b	Shoulder elevation posture change with balance training and Conventional training may produce greater improvements in gait speed than Back posture change with balance training and Conventional training.	1	Jiang et al. 2021
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving gait speed.	2	Chen et al. 2002; Walker et al. 2000

1a	There is conflicting evidence about the effect of Balance Training with Visual Biofeedback when compared to Conventional Therapy or Balance Training for improving gait speed.	2	Noh et al. 2019; Yavuzer et al. 2006a
1b	There is conflicting evidence about the effect of Perturbation Balance Trainers with Feedback when compared to Conventional Therapy or Balance Training for improving gait speed.	1	Thijs et al. 2021
1a	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving gait speed.	5	Lanza et al. 2024; Shen et al. 2023; Dusane & Bhatt 2022; Handelzalts et al. 2019; Goljar et al. 2010
1a	Balance Training with Visual Deprivation may not have a difference in efficacy when compared to Balance Training with Visual Cues for improving gait speed.	2	Yelnik et al. 2008; Bonan et al. 2004
1b	Balance Training with Biofeedback may produce greater improvements in gait speed than Balance Training.	1	Kim et al. 2022e
1a	Vestibular Training may produce greater improvements in gait speed than Conventional Therapy.	4	Cui et al. 2024; Son et al. 2024; Zhao et al. 2022b; Tramontano et al. 2018
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in gait speed than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
2	Ankle-Foot orthosis with Balance Training Shoes may produce greater improvements in gait speed than Ankle-Foot Orthosis with Regular Shoes.	1	Farmani et al. 2016
1b	Strength or Resistance Training with Balance Training may produce greater improvements in gait speed than Conventional Therapy.	1	Vahlberg et al. 2017b
2	Balance Training with Fresnel Prism Glasses may produce greater improvements in gait speed than Balance and Walking Training.	1	Ha & Sung 2020
1b	Sensory Balance Training may not have a difference in efficacy when compared to Robot-assisted Stair Climbing for improving gait speed.	1	Gandolfi et al. 2019
1b	Balance Training may produce greater improvements in gait speed than No Training.	1	Lisinski et al. 2012
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving gait speed.	1	Balci et al. 2013
1b	Class-Based Body Awareness Training may not have a difference in efficacy when compared to Home-Based Body Awareness Training for improving gait speed.	1	Serrada et al. 2022
2	Vestibular rehabilitation therapy + Conventional physical therapy may not have a difference in efficacy when compared to Conventional care for improving gait speed.	1	Elhamrawy et al. 2021
1b	Treadmill gait and balance training with Traditional gait and balance training may not have a difference in efficacy when compared to Traditional gait with balance training for improving gait speed.	1	Hu et al. 2023
1b	Visual feedback with Unstable surface balance training may produce greater improvements in gait speed than Conventional physical therapy.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may produce greater improvements in gait speed than Unstable surface balance training.	1	Yeo et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a	1	Wang et al. 2022c

	difference in efficacy when compared to Sham taping with exercise training for improving gait speed.		
1b	Perturbation treadmill training group may not have a difference in efficacy when compared to Non-perturbation treadmill training group for improving gait speed.	1	Esmaeili et al. 2020
1b	Modified PC Balance Training Gaming Platform may produce greater improvements in gait speed than PC gaming with Mouse.	1	Hsieh et al. 2019b
1b	Video Game-Based Balance Training with conventional physical therapy may not have a difference in efficacy when compared to Conventional physical therapy with Balance Training for improving gait speed.	1	Morone et al. 2014
1b	Standing balance exercises with functional electrical stimulation may not have a difference in efficacy when compared to Usual care for improving gait speed.	1	Kunkel et al. 2013
2	Dual-task balance training may produce greater improvements in gait speed than Single-task balance training.	1	Seo et al. 2012
2	3D balance exercises (3D Thera-Balance) with visual feedback may not have a difference in efficacy when compared to Weight shifting exercises for improving gait speed.	1	Jung et al. 2011
1b	There is conflicting evidence about the effect of Virtual reality-based balance training when compared to Conventional therapy for improving gait speed.	1	Kim et al. 2009

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Non-Supportive Balance Trainers with Feedback may produce greater improvements in gait endurance than Conventional Therapy or Balance Training.	1	Brunelli et al. 2020
1b	Perturbation Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving gait endurance.	1	Thijs et al. 2021
1b	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving gait endurance.	1	Handelzalts et al. 2019
1b	Trampoline Balance Training may not have a difference in efficacy when compared to Stable Surface Balance Training for improving gait endurance.	1	Miklitsch et al. 2013
1b	Strength or Resistance Training with Balance Training may produce greater improvements in gait endurance than Conventional Therapy.	1	Vahlberg et al. 2017b
2	Balance Training with Fresnel Prism Glasses may produce greater improvements in gait endurance than Balance and Walking Training.	1	Ha & Sung 2020
1b	Sensory Balance Training may produce greater improvements in gait endurance than Robot-assisted Stair Climbing.	1	Gandolfi et al. 2019
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving gait endurance.	1	Wang et al. 2022c
2	Trunk balance training on rocker board with conventional therapy may produce greater improvements in gait endurance than Trunk balance training on plain surface with conventional therapy.	1	Tirupatamma et al. 2019
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may not have a difference	1	Ng et al. 2016

	in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving gait endurance.		

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Balance-Focused Exercise Programs may produce greater improvements in functional mobility than Conventional Rehabilitation.	1	Tan et al. 2023
1b	There is conflicting evidence about the effect of Task Specific Balance Training when compared to Upper Limb Exercise for improving functional mobility.	1	Pang et al. 2018
1b	Wobble Board Training may produce greater improvements in functional mobility than Conventional Physiotherapy.	2	Madhuranga et al. 2019; Onigbinde et al. 2009
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving functional mobility.	3	Chen et al. 2002; Geiger et al. 2001; Walker et al. 2000
1b	Non-Supportive Balance Trainers with Feedback may produce greater improvements in functional mobility than Conventional Therapy or Balance Training.	4	Komiya et al. 2021; Brunelli et al. 2020; Zhang et al. 2020; Maciaszek. 2018
1a	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving functional mobility.	4	Ordahan et al. 2015; Ko et al. 2015; De Nunzio et al. 2014; Varoqui et al. 2011
1b	Standing Practice may produce greater improvements in functional mobility than Conventional Therapy.	1	Inoue et al. 2021
1b	Perturbation Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving functional mobility.	1	Thijs et al. 2021
1a	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving functional mobility.	2	Mansfield et al. 2018; Goljar et al. 2010
1a	Balance Training with Visual Deprivation may not have a difference in efficacy when compared to Balance Training with Visual Cues for improving functional mobility.	4	Jeong et al. 2024; Narendra et al. 2013; Yelnik et al. 2008; Bonan et al. 2004
2	Balance Training with Muscle Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving functional mobility.	1	Merkert et al. 2011
1a	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training for improving functional mobility.	3	Martino Cinnera et al. 2024; Lupo et al. 2018; Eser et al. 2008
1a	Vestibular Training may produce greater improvements in functional mobility than Conventional Therapy.	6	Calisgan et al. 2024; Cui et al. 2024; Son et al. 2024; Zhao et al. 2022b; Ekvall Hansson et al. 2020; Tramontano et al. 2018
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may produce greater improvements in functional mobility than gaze stabilization exercises with neurodevelopmental treatment.	1	Cui et al. 2024
1a	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	2	Inoue et al. 2022b; De Luca et al. 2020
1b	Trampoline Balance Training may not have a difference in efficacy when compared to Stable Surface Balance Training for improving functional mobility.	1	Miklitsch et al. 2013

2	Ankle-Foot orthosis with Balance Training Shoes may not have a difference in efficacy when compared to Ankle-Foot Orthosis with Regular Shoes for improving functional mobility.	1	Farmani et al. 2016
1b	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Vahlberg et al. 2017b
2	Balance Training with Fresnel Prism Glasses may produce greater improvements in functional mobility than Balance and Walking Training.	1	Ha & Sung 2020
1b	Sensory Balance Training may not have a difference in efficacy when compared to Robot-assisted Stair Climbing for improving functional mobility.	1	Gandolfi et al. 2019
2	Sitting Balance Training with Sensory Input may produce greater improvements in functional mobility than Sitting Balance.	1	Ibrahimi et al. 2010
1b	External focus on balance board task may not have a difference in efficacy when compared to Internal focus on balance board task for improving functional mobility.	1	Kal et al. 2019
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving functional mobility.	1	Balci et al. 2013
1b	There is conflicting evidence about the effect of Perturbation Balance Training when compared to Proprioceptive Neuromuscular Facilitation for improving functional mobility.	1	Adhikari et al. 2024
1b	Vestibular Training may produce greater improvements in functional mobility than Virtual Reality Training.	1	Sana et al. 2023
1b	Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may produce greater improvements in functional mobility than Trunk stabilization and weight transfer exercises + Conventional rehabilitation.	1	Tramontano et al. 2019
2	Vestibular rehabilitation + conventional PT may not have a difference in efficacy when compared to conventional PT for improving functional mobility.	1	Mitsutake et al. 2017
1b	Pro-Kin system with weight loss system (body-weight support) with balance training may produce greater improvements in functional mobility than Conventional balance training.	1	Lu et al. 2024
1b	Metronome training with core strengthening and general balance exercises may produce greater improvements in functional mobility than Core strengthening with general balance exercises.	1	Rana et al. 2024
1b	Robot assisted gait training with Traditional balance training may not have a difference in efficacy when compared to Traditonal balance training for improving functional mobility.	1	Gunduz et al. 2024
1b	Treadmill gait and balance training with Traditional gait and balance training may not have a difference in efficacy when compared to Traditional gait with balance training for improving functional mobility.	1	Hu et al. 2023
1b	Visual feedback with Unstable surface balance training may produce greater improvements in functional mobility than Conventional physical therapy.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may not have a difference in efficacy when compared to Unstable surface balance training for improving functional mobility.	1	Yeo et al. 2023
1b	There is conflicting evidence about the effect of Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback	1	Mihai et al. 2022

	balance training) and Conventional therapy when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy for improving functional mobility.		
1b	Virtual reality balance training with Nintendo Wii with conventional physical therapy may produce greater improvements in functional mobility than Conventional physical therapy.	1	Marques-Sule et al. 2021
1b	Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation may produce greater improvements in functional mobility than Balance Training without functional electrical stimulation with General Rehabilitation.	1	Lee et al. 2020b
1b	Modified PC Balance Training Gaming Platform may produce greater improvements in functional mobility than PC gaming with Mouse.	1	Hsieh et al. 2019b
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving functional mobility.	1	Liao et al. 2018
1b	Wii Fit-based balance exercise with conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Utkan Karasu et al. 2018
1b	Virtual reality balance training with treatment may not have a difference in efficacy when compared to treatment for improving functional mobility.	1	Lee et al. 2017d
1b	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving functional mobility.	1	Ng et al. 2016
2	There is conflicting evidence about the effect of Tetrax biofeedback balance training with Conventional care when compared to Conventional care for improving functional mobility.	1	Hung et al. 2016b
1b	Dynamic balance training with Balance Trainer may produce greater improvements in functional mobility than Static balance training with a conventional standing frame.	1	Braun et al. 2016
2	Wii-based balance training may not have a difference in efficacy when compared to Progressive balance training for improving functional mobility.	1	Yatar et al. 2015
1b	Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training may produce greater improvements in functional mobility than Contemporary Bobath Concept Approach.	1	Tang et al. 2014
1b	Video Game-Based Balance Training with conventional physical therapy may not have a difference in efficacy when compared to Conventional physical therapy with Balance Training for improving functional mobility.	1	Morone et al. 2014
1b	Wii Fit Plus video game (Balance training) may not have a difference in efficacy when compared to Wii Sports video game (Upper limb training) for improving functional mobility.	1	Bower et al. 2014
1b	There is conflicting evidence about the effect of Wii-based balance training when compared to Conventional rehabilitation for improving functional mobility.	2	Barcala et al. 2013; Cho et al. 2012
1b	Standing balance exercises with functional electrical stimulation may not have a difference in efficacy when compared to Usual care for improving functional mobility.	1	Kunkel et al. 2013

2	Wii-based balance training may produce greater improvements in functional mobility than Control group.	1	Kim et al. 2012c
1b	Balance training with Balance Control Trainer may produce greater improvements in functional mobility than Conventional rehabilitation.	1	Lee et al. 2012
1b	Virtual reality-based balance training may produce greater improvements in functional mobility than Conventional therapy.	1	Kim et al. 2009

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Balance-Focused Exercise Programs may produce greater improvements in balance than Conventional Rehabilitation.	3	Rauf et al. 2024; Puckree et al. 2014; Pollock et al. 2002
1b	Wobble Board Training may produce greater improvements in balance than Conventional Physiotherapy.	2	Madhuranga et al. 2019; Onigbinde et al. 2009
1b	Balance-Focused Exercise Programs may not have a difference in efficacy when compared to At-home Exercises for improving balance.	1	Curuk & Aruin 2022
2	Balance Training Using SMART Balance Master may not have a difference in efficacy when compared to Conventional Rehabilitation for improving balance.	3	Chen et al. 2002; Geiger et al. 2001; Walker et al. 2000
2	Non-Supportive Balance Trainers with Feedback may produce greater improvements in balance than Conventional Therapy or Balance Training.	3	Brunelli et al. 2020; Zhang et al. 2020; Maciaszek. 2018
1a	Balance Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving balance.	10	Aphiphaksakul et al. 2022; Noh et al. 2019; James et al. 2017; Ghomashchi 2016; Ordahan et al. 2015; Ko et al. 2015; De Nunzio et al. 2014; Lee et al. 2013e; Varoqui et al. 2011; Sackley & Lincoln 1997
1a	Standing Practice may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	2	Inoue et al. 2021; Allison et al. 2007
1a	Perturbation Balance Trainers with Feedback may produce greater improvements in balance than Conventional Therapy or Balance Training.	3	An et al. 2021; Jung et al. 2021; Thijs et al. 2021
1a	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving balance.	7	Lanza et al. 2024; Shen et al. 2023; Dusane & Bhatt 2022; Chayasit et al. 2022; Handelzalts et al. 2019; Mansfield et al. 2018; Goljar et al. 2010
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may not have a difference in efficacy when compared to Visual Feedback Balance Training Group with Conventional Therapy for improving balance.	1	Jeong et al. 2024
1b	There is conflicting evidence about the effect of Balance Training with Visual Deprivation when compared to Balance Training with Visual Cues for improving balance.	3	Nam et al. 2022a; Narendra et al. 2013; Yelnik et al. 2008
2	Visual cue deprivation with balance training and head control may produce greater improvements in balance than Visual cue deprivation with Balance training.	1	Nam et al. 2022a
1b	Balance Training with Full Rest Periods may not have a difference in efficacy when compared to Balance Training with Short Rest Periods for improving balance.	1	Elsner et al. 2018

2	Balance Training with Muscle Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving balance.	1	Merkert et al. 2011
1a	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training for improving balance.	3	Martino Cinnera et al. 2024; Lupo et al. 2018; Hung et al. 2017
1a	Vestibular Training may produce greater improvements in balance than Conventional Therapy.	5	Calisgan et al. 2024; Cui et al. 2024; Zhao et al. 2022b; Ekvall Hansson et al. 2020; Tramontano et al. 2018
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to gaze stabilization exercises with neurodevelopmental treatment for improving balance.	1	Cui et al. 2024
1a	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	2	Inoue et al. 2022b; De Luca et al. 2020
1b	Trampoline Balance Training may produce greater improvements in balance than Stable Surface Balance Training.	1	Miklitsch et al. 2013
1b	Balance Training with transcutaneous electrical nerve stimulation may produce greater improvements in balance than Balance Training with Conventional Care.	1	Jung et al. 2016
1b	There is conflicting evidence about the effect of Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care when compared to Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care for improving balance.	1	Jung et al. 2016
1b	Balance Training with Shoe Lift may not have a difference in efficacy when compared to Balance Training for improving balance.	1	Sheikh & Hosseini 2021
1a	Strength or Resistance Training with Balance Training may produce greater improvements in balance than Conventional Therapy.	3	Vahlberg et al. 2017a; Vahlberg et al. 2017b; Sekhar et al. 2013
2	Structured Balance Awareness may produce greater improvements in balance than Health Awareness Program.	1	Shaik et al. 2021
2	Balance Training with Fresnel Prism Glasses may produce greater improvements in balance than Balance and Walking Training.	1	Ha & Sung 2020
1b	Sensory Balance Training may not have a difference in efficacy when compared to Robot-assisted Stair Climbing for improving balance.	1	Gandolfi et al. 2019
2	Sitting Balance Training with Sensory Input may produce greater improvements in balance than Sitting Balance.	1	Ibrahimi et al. 2010
1a	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving balance.	2	Balci et al. 2013; Dai et al. 2013
1b	Progressive Balance Training may produce greater improvements in balance than Balance Training.	1	Memon et al. 2022
1b	Perturbation Balance Training may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving balance.	1	Adhikari et al. 2024
1b	Visual Scanning Training with Task-Specific Activities may produce greater improvements in balance than Task-Specific Activities Alone.	1	Batool et al. 2022
1b	Cognitive behaviour therapy + task-oriented balance training may produce greater improvements in balance than General health education + task-oriented balance training.	1	Liu et al. 2019
1b	Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may not have a difference in efficacy when compared	1	Tramontano et al. 2019

	to Trunk stabilization and weight transfer exercises + Conventional rehabilitation for improving balance.		
2	Vestibular rehabilitation + conventional PT may not have a difference in efficacy when compared to conventional PT for improving balance.	1	Mitsutake et al. 2017
1b	Pro-Kin system with weight loss system (body-weight support) with balance training may produce greater improvements in balance than Conventional balance training.	1	Lu et al. 2024
1b	Robot assisted gait training with Traditional balance training may not have a difference in efficacy when compared to Traditonal balance training for improving balance.	1	Gunduz et al. 2024
1b	Visual feedback with Unstable surface balance training may produce greater improvements in balance than Conventional physical therapy.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may produce greater improvements in balance than Unstable surface balance training.	1	Yeo et al. 2023
1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving balance.	1	Kilinc et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving balance.	1	Wang et al. 2022c
1b	Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may produce greater improvements in balance than Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).	1	Chaudhary et al. 2022
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may not have a difference in efficacy when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy for improving balance.	1	Mihai et al. 2022
1b	Virtual reality balance training with Nintendo Wii with conventional physical therapy may produce greater improvements in balance than Conventional physical therapy.	1	Marques-Sule et al. 2021
1b	Perturbation treadmill training group may produce greater improvements in balance than Non-perturbation treadmill training group.	1	Esmaeili et al. 2020
1b	Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation may produce greater improvements in balance than Balance Training without functional electrical stimulation with General Rehabilitation.	1	Lee et al. 2020b
2	Trunk balance training on rocker board with conventional therapy may produce greater improvements in balance than Trunk balance training on plain surface with conventional therapy.	1	Tirupatamma et al. 2019
1b	There is conflicting evidence about the effect of Modified PC Balance Training Gaming Platform when compared to PC gaming with Mouse for improving balance.	1	Hsieh et al. 2019b
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving balance.	1	Liao et al. 2018

1b	Wii Fit-based balance exercise with conventional rehabilitation may produce greater improvements in balance than Conventional rehabilitation.	1	Utkan Karasu et al. 2018
1b	Progressive resistance with balance training and motivational session may not have a difference in efficacy when compared to Usual activity for improving balance.	1	Vahlberg et al. 2017a
1b	Virtual reality balance training with treatment may not have a difference in efficacy when compared to treatment for improving balance.	1	Lee et al. 2017d
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may produce greater improvements in balance than C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy.	1	Ng et al. 2016
1b	Dynamic balance training with Balance Trainer may produce greater improvements in balance than Static balance training with a conventional standing frame.	1	Braun et al. 2016
1b	Computer-generated interactive visual feedback balance training with Physical therapy may produce greater improvements in balance than Mirror visual feedback balance training with Physical therapy.	1	Yang et al. 2015
2	Balance training with cognitive training may not have a difference in efficacy when compared to Balance training with balance board for improving balance.	1	Choi et al. 2015b
2	Wii-based balance training may not have a difference in efficacy when compared to Progressive balance training for improving balance.	1	Yatar et al. 2015
1b	Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training may produce greater improvements in balance than Contemporary Bobath Concept Approach.	1	Tang et al. 2014
1b	Video Game-Based Balance Training with conventional physical therapy may produce greater improvements in balance than Conventional physical therapy with Balance Training.	1	Morone et al. 2014
1b	Wii Fit Plus video game (Balance training) may not have a difference in efficacy when compared to Wii Sports video game (Upper limb training) for improving balance.	1	Bower et al. 2014
1b	There is conflicting evidence about the effect of Wii-based balance training when compared to Conventional rehabilitation for improving balance.	2	Barcala et al. 2013; Cho et al. 2012
2	Wii-based balance training may produce greater improvements in balance than Control group.	1	Kim et al. 2012c
1b	Balance training with Balance Control Trainer may produce greater improvements in balance than Conventional rehabilitation.	1	Lee et al. 2012
2	3D balance exercises (3D Thera-Balance) with visual feedback may produce greater improvements in balance than Weight shifting exercises.	1	Jung et al. 2011
1b	Virtual reality-based balance training may produce greater improvements in balance than Conventional therapy.	1	Kim et al. 2009

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Balance-Focused Exercise Programs when compared to Conventional Rehabilitation for improving falls and fear of falling.	1	Tan et al. 2023
1b	Task Specific Balance Training may not have a difference in efficacy when compared to Upper Limb Exercise for improving falls and fear of falling.	1	Pang et al. 2018
1b	Balance-Focused Exercise Programs may not have a difference in efficacy when compared to At-home Exercises for improving falls and fear of falling.	1	Curuk & Aruin 2022
1b	Non-Supportive Balance Trainers with Feedback may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving falls and fear of falling.	1	Komiya et al. 2021
1b	Balance Training with Visual Biofeedback may produce greater improvements in falls and fear of falling than Conventional Therapy or Balance Training.	1	Noh et al. 2019
1a	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving falls and fear of falling.	4	Lanza et al. 2024; Dusane & Bhatt 2022; Handelzalts et al. 2019; Mansfield et al. 2018
1b	Balance Training with Visual Deprivation may not have a difference in efficacy when compared to Balance Training with Visual Cues for improving falls and fear of falling.	1	Yelnik et al. 2008
1b	Vestibular Training may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	2	Cui et al. 2024; Ekvall Hansson et al. 2020
2	Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may not have a difference in efficacy when compared to gaze stabilization exercises with neurodevelopmental treatment for improving falls and fear of falling.	1	Cui et al. 2024
1b	Robotic Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	1	Inoue et al. 2022b
1b	Balance Training with Shoe Lift may not have a difference in efficacy when compared to Balance Training for improving falls and fear of falling.	1	Sheikh & Hosseini 2021
1b	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	1	Vahlberg et al. 2017b
2	Structured Balance Awareness may produce greater improvements in falls and fear of falling than Health Awareness Program.	1	Shaik et al. 2021
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving falls and fear of falling.	1	Dai et al. 2013
1b	Cognitive behaviour therapy + task-oriented balance training may produce greater improvements in falls and fear of falling than General health education + task-oriented balance training.	1	Liu et al. 2019
1b	Robot assisted gait training with Traditional balance training may not have a difference in efficacy when compared to Traditonal balance training for improving falls and fear of falling.	1	Gunduz et al. 2024
2	Gait-slip perturbation with FES to paretic quadriceps muscle may produce greater improvements in falls and fear of falling than Gait-slip perturbations.	1	Purohit et al. 2024

1b	Treadmill gait and balance training with Traditional gait and balance training may not have a difference in efficacy when compared to Traditional gait with balance training for improving falls and fear of falling.	1	Hu et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving falls and fear of falling.	1	Wang et al. 2022c
1b	Perturbation treadmill training group may not have a difference in efficacy when compared to Non-perturbation treadmill training group for improving falls and fear of falling.	1	Esmaeili et al. 2020
1b	Virtual reality balance training with treatment may not have a difference in efficacy when compared to treatment for improving falls and fear of falling.	1	Lee et al. 2017d
2	Wii-based balance training may not have a difference in efficacy when compared to Progressive balance training for improving falls and fear of falling.	1	Yatar et al. 2015
1b	Wii Fit Plus video game (Balance training) may not have a difference in efficacy when compared to Wii Sports video game (Upper limb training) for improving falls and fear of falling.	1	Bower et al. 2014

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task Specific Balance Training may not have a difference in efficacy when compared to Upper Limb Exercise for improving quality of life.	1	Pang et al. 2018
2	Perturbation Balance Trainers may produce greater improvements in quality of life than Conventional Therapy or Balance Training.	2	Yadav et al. 2020; Yadav et al. 2018
1a	Balance Training with Visual Deprivation may not have a difference in efficacy when compared to Balance Training with Visual Cues for improving quality of life.	3	Narendra et al. 2013; Yelnik et al. 2008; Bonan et al. 2004
1b	Balance Training with Biofeedback may produce greater improvements in quality of life than Balance Training.	1	Martino Cinnera et al. 2024
1b	Vestibular Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Ekvall Hansson et al. 2020
2	Robotic Balance Training may produce greater improvements in quality of life than Conventional Therapy.	1	Kumar et al. 2020
1b	Strength or Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Vahlberg et al. 2017b
2	Sitting Balance Training with Sensory Input may produce greater improvements in quality of life than Sitting Balance.	1	Ibrahimi et al. 2010
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving quality of life.	1	Balci et al. 2013
1b	Class-Based Body Awareness Training may not have a difference in efficacy when compared to Home-Based Body Awareness Training for improving quality of life.	1	Serrada et al. 2022
1b	Vestibular Training may produce greater improvements in quality of life than Virtual Reality Training.	1	Sana et al. 2023

1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving quality of life.	1	Kilinc et al. 2023
1b	Virtual reality balance training with treatment may not have a difference in efficacy when compared to treatment for improving quality of life.	1	Lee et al. 2017d
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may not have a difference in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving quality of life.	1	Ng et al. 2016

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Perturbation Balance Trainers may not have a difference in efficacy when compared to Conventional Therapy or Balance Training for improving cognition.	1	Yadav et al. 2020
2	Balance Training with Muscle Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving cognition.	1	Merkert et al. 2011
1b	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training for improving cognition.	1	Hung et al. 2017
1b	Vestibular rehabilitation may not have a difference in efficacy when compared to Convectional treatment for improving cognition.	1	Dai et al. 2013
1b	Class-Based Body Awareness Training may not have a difference in efficacy when compared to Home-Based Body Awareness Training for improving cognition.	1	Serrada et al. 2022

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual balance training (VBT) with Conservative training may not have a difference in efficacy when compared to Conservative training (traditional rehab techniques) for improving upper extremity function.	1	Kilinc et al. 2023
1b	Computer-generated interactive visual feedback balance training with Physical therapy may not have a difference in efficacy when compared to Mirror visual feedback balance training with Physical therapy for improving upper extremity function.	1	Yang et al. 2015

Key Points

- Balance-Focused Exercise Programs may be beneficial for improving motor recovery, biomechanical balance measures, functional mobility, and balance, but not sensory and proprioceptive function and activities of daily living, after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding falls and fear of falling.
- Task Specific Balance Training may not be beneficial for improving biomechanical gait measures, activities of daily living, falls and fear of falling, and quality of life after stroke when compared to Upper Limb Exercise; the literature is mixed regarding functional mobility.
- Balance Training with Posture Changes may be beneficial for improving neurophysiological measures, but not activities of daily living, after stroke when compared to Balance Training; the literature is mixed regarding motor recovery and gait speed.

- Shoulder elevation posture change with balance training and Conventional training may be beneficial for improving motor recovery, neurophysiological measures, and gait speed, but not activities of daily living, after stroke when compared to Back posture change with balance training and Conventional training.
- Wobble Board Training may be beneficial for improving biomechanical balance measures, functional mobility, and balance after stroke when compared to Conventional Physiotherapy.
- Balance-Focused Exercise Programs may be beneficial for improving biomechanical balance measures, but not balance and falls and fear of falling, after stroke when compared to At-home Exercises.
- Balance Training Using SMART Balance Master may not be beneficial for improving motor recovery, biomechanical balance measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional Rehabilitation.
- Non-Supportive Balance Trainers with Feedback may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not muscle strength and falls and fear of falling, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding biomechanical balance measures and sensory and proprioceptive function.
- Balance Training with Visual Biofeedback may be beneficial for improving motor recovery and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, spasticity, activities of daily living, functional mobility, and balance, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding range of motion and gait speed.
- Balance training with self- controlled postural control visual biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Balance training with no control over postural control visual biofeedback.
- Standing Practice may be beneficial for improving biomechanical gait measures and functional mobility, but not motor recovery, activities of daily living, and balance, after stroke when compared to Conventional Therapy.
- Perturbation Balance Trainers with Feedback may be beneficial for improving muscle strength and balance, but not spasticity, activities of daily living, gait endurance, and functional mobility, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding motor recovery and gait speed.
- Perturbation Balance Trainers may be beneficial for improving muscle strength and quality of life, but not biomechanical gait measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding motor recovery, spasticity, and sensory and proprioceptive function.
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures, but not balance, after stroke when compared to Visual Feedback Balance Training Group with Conventional Therapy.
- Balance Training with Visual Deprivation may be beneficial for improving biomechanical balance measures and activities of daily living, but not biomechanical gait measures, gait speed, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Balance Training with Visual Cues; the literature is mixed regarding balance.
- Visual cue deprivation with balance training and head control may be beneficial for improving balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Visual cue deprivation with Balance training.
- Balance Training with Kinesthetic Ability Training Device may be beneficial for improving motor recovery and biomechanical balance measures, but not activities of daily living, after stroke when compared to Conventional Rehabilitation.
- Balance Training with Full Rest Periods may not be beneficial for improving balance after stroke when compared to Balance Training with Short Rest Periods.
- Balance Training with Muscle Vibration may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding activities of daily living.
- Balance Training with Biofeedback may be beneficial for improving biomechanical balance measures, gait speed, and quality of life, but not motor recovery, activities of daily living, functional mobility, and balance, after stroke when compared to Balance Training.

- Vestibular Training may be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance, but not biomechanical gait measures, muscle strength, activities of daily living, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to gaze stabilization exercises with neurodevelopmental treatment.
- Robotic Balance Training may be beneficial for improving sensory and proprioceptive function and quality of life, but not motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional Therapy.
- Trampoline Balance Training may be beneficial for improving balance, but not activities of daily living, gait endurance, and functional mobility, after stroke when compared to Stable Surface Balance Training.
- Ankle-Foot orthosis with Balance Training Shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Ankle-Foot Orthosis with Regular Shoes.
- Balance Training with transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures and balance after stroke when compared to Balance Training with Conventional Care.
- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures after stroke when compared to Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care; the literature is mixed regarding balance.
- Balance Training with Shoe Lift may be beneficial for improving biomechanical balance measures, but not balance and falls and fear of falling, after stroke when compared to Balance Training.
- Strength or Resistance Training with Balance Training may be beneficial for improving muscle strength, gait speed, gait endurance, and balance, but not motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Structured Balance Awareness may be beneficial for improving balance and falls and fear of falling after stroke when compared to Health Awareness Program.
- Balance Training with Fresnel Prism Glasses may be beneficial for improving gait speed, gait endurance, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Balance and Walking Training.
- Sensory Balance Training may be beneficial for improving gait endurance, but not biomechanical balance measures, gait speed, functional mobility, and balance, after stroke when compared to Robot-assisted Stair Climbing.
- Sitting Balance Training with Sensory Input may be beneficial for improving functional mobility, balance, and quality of life after stroke when compared to Sitting Balance.
- External focus on balance board task may be beneficial for improving biomechanical balance measures, but not functional mobility, after stroke when compared to Internal focus on balance board task.
- Balance Training may be beneficial for improving gait speed, but not motor recovery, after stroke when compared to No Training; the literature is mixed regarding biomechanical gait measures.
- Vestibular rehabilitation may not be beneficial for improving biomechanical balance measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Convectional treatment.
- Progressive Balance Training may be beneficial for improving balance after stroke when compared to Balance Training.
- Perturbation Balance Training may not be beneficial for improving biomechanical gait measures and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation; the literature is mixed regarding functional mobility.

- Class-Based Body Awareness Training may not be beneficial for improving sensory and proprioceptive function, gait speed, and quality of life after stroke when compared to Home-Based Body Awareness Training; the literature is mixed regarding motor recovery.
- Visual Scanning Training with Task-Specific Activities may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Task-Specific Activities Alone.
- Vestibular Training may be beneficial for improving functional mobility and quality of life after stroke when compared to Virtual Reality Training.
- Vestibular rehabilitation therapy + Conventional physical therapy may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional care.
- Cognitive behaviour therapy + task-oriented balance training may be beneficial for improving activities of daily living, balance, and falls and fear of falling after stroke when compared to General health education + task-oriented balance training.
- Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may be beneficial for improving activities of daily living and functional mobility, but not biomechanical balance measures and balance, after stroke when compared to Trunk stabilization and weight transfer exercises + Conventional rehabilitation.
- Vestibular rehabilitation + conventional PT may not be beneficial for improving functional mobility and balance after stroke when compared to conventional PT.
- Pro-Kin system with weight loss system (body-weight support) with balance training may be beneficial for improving functional mobility and balance after stroke when compared to Conventional balance training.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.
- Robot assisted gait training with Traditional balance training may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Traditonal balance training; the literature is mixed regarding motor recovery.
- Gait-slip perturbation with FES to paretic quadriceps muscle may be beneficial for improving biomechanical gait measures and falls and fear of falling after stroke when compared to Gait-slip perturbations.
- Treadmill gait and balance training with Traditional gait and balance training may not be beneficial for improving gait speed, functional mobility, and falls and fear of falling after stroke when compared to Traditional gait with balance training.
- Visual feedback with Unstable surface balance training may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Conventional physical therapy; the literature is mixed regarding range of motion.
- Visual feedback with Unstable surface balance training may be beneficial for improving gait speed and balance, but not biomechanical gait measures and functional mobility, after stroke when compared to Unstable surface balance training; the literature is mixed regarding range of motion.
- Virtual balance training (VBT) with Conservative training may not be beneficial for improving motor recovery, spasticity, activities of daily living, balance, and quality of life after stroke when compared to Conservative training (traditional rehab techniques).
- The literature is mixed regarding the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) on biomechanical balance measures after stroke when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may be beneficial for improving balance after stroke when compared to Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).

- Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy; the literature is mixed regarding functional mobility.
- Virtual reality balance training with Nintendo Wii with conventional physical therapy may be beneficial for improving activities of daily living, functional mobility, and balance, but not motor recovery, after stroke when compared to Conventional physical therapy.
- Perturbation treadmill training group may be beneficial for improving balance, but not muscle strength, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Non-perturbation treadmill training group.
- Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation may be beneficial for improving neurophysiological measures, functional mobility, and balance after stroke when compared to Balance Training without functional electrical stimulation with General Rehabilitation.
- Trunk balance training on rocker board with conventional therapy may be beneficial for improving gait endurance and balance after stroke when compared to Trunk balance training on plain surface with conventional therapy.
- Modified PC Balance Training Gaming Platform may be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to PC gaming with Mouse; the literature is mixed regarding balance.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.
- Wii Fit-based balance exercise with conventional rehabilitation may be beneficial for improving biomechanical balance measures and balance, but not functional mobility, after stroke when compared to Conventional rehabilitation; the literature is mixed regarding activities of daily living.
- Progressive resistance with balance training and motivational session may not be beneficial for improving motor recovery, neurophysiological measures, and balance after stroke when compared to Usual activity; the literature is mixed regarding activities of daily living.
- Virtual reality balance training with treatment may not be beneficial for improving activities of daily living, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to treatment.
- Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- Tetrax biofeedback balance training with Conventional care may be beneficial for improving sensory and proprioceptive function after stroke when compared to Conventional care; the literature is mixed regarding biomechanical balance measures, muscle strength, and functional mobility.
- Dynamic balance training with Balance Trainer may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Static balance training with a conventional standing frame.
- Computer-generated interactive visual feedback balance training with Physical therapy may be beneficial for improving motor recovery and balance after stroke when compared to Mirror visual feedback balance training with Physical therapy.
- Balance training with cognitive training may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Balance training with balance board.
- Wii-based balance training may not be beneficial for improving activities of daily living, functional mobility, balance, and falls and fear of falling after stroke when compared to Progressive balance training.
- Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training may be beneficial for improving functional mobility and balance after stroke when compared to Contemporary Bobath Concept Approach.

- Ankle Foot Orthosis (Joint type) with Balance Training may not be beneficial for improving biomechanical balance measures after stroke when compared to No Orthotic with Balance Training; the literature is mixed regarding neurophysiological measures.
- Video Game-Based Balance Training with conventional physical therapy may be beneficial for improving activities of daily living and balance, but not gait speed and functional mobility, after stroke when compared to Conventional physical therapy with Balance Training.
- Wii Fit Plus video game (Balance training) may be beneficial for improving biomechanical balance measures, but not functional mobility, balance, and falls and fear of falling, after stroke when compared to Wii Sports video game (Upper limb training).
- Wii-based balance training may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, and activities of daily living after stroke when compared to Conventional rehabilitation; the literature is mixed regarding functional mobility and balance.
- Standing balance exercises with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Usual care.
- The literature is mixed regarding the effect of Balance training with cognitive training on biomechanical balance measures after stroke when compared to Balance training.
- Dual-task balance training may be beneficial for improving gait speed after stroke when compared to Single-task balance training; the literature is mixed regarding biomechanical balance measures.
- Wii-based balance training may be beneficial for improving functional mobility and balance, but not activities of daily living, after stroke when compared to Control group.
- Balance training with Balance Control Trainer may be beneficial for improving functional mobility and balance, but not muscle strength and activities of daily living, after stroke when compared to Conventional rehabilitation.
- 3D balance exercises (3D Thera-Balance) with visual feedback may be beneficial for improving balance, but not gait speed, after stroke when compared to Weight shifting exercises.
- Virtual reality-based balance training may be beneficial for improving functional mobility and balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Conventional therapy; the literature is mixed regarding gait speed.
- Visual biofeedback providing posture information may be beneficial for improving biomechanical balance measures after stroke when compared to Standing without biofeedback.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Visual biofeedback providing posture information.

Summary of Key Points: Balance Training

Intervention	Control(s)	Function domain(s)	Effect
Balance-Focused Exercise Programs	Conventional Rehabilitation	Motor recovery, biomechanical balance measures, functional mobility, balance	+
Balance-Focused Exercise Programs	Conventional Rehabilitation	Sensory and proprioceptive function, activities of daily living	–
Balance-Focused Exercise Programs	Conventional Rehabilitation	Falls and fear of falling	=
Task Specific Balance Training	Upper Limb Exercise	Biomechanical gait measures, activities of daily living, falls and fear of falling, quality of life	–
Task Specific Balance Training	Upper Limb Exercise	Functional mobility	=
Balance Training with Posture Changes	Balance Training	Neurophysiological measures	+
Balance Training with Posture Changes	Balance Training	Activities of daily living	–

Balance Training with Posture Changes	Balance Training	Motor recovery, gait speed	=
Shoulder elevation posture change with balance training and Conventional training	Back posture change with balance training and Conventional training	Motor recovery, neurophysiological measures, gait speed	+
Shoulder elevation posture change with balance training and Conventional training	Back posture change with balance training and Conventional training	Activities of daily living	–
Wobble Board Training	Conventional Physiotherapy	Biomechanical balance measures, functional mobility, balance	+
Balance-Focused Exercise Programs	At-home Exercises	Biomechanical balance measures	+
Balance-Focused Exercise Programs	At-home Exercises	Balance, falls and fear of falling	–
Balance Training Using SMART Balance Master	Conventional Rehabilitation	Motor recovery, biomechanical balance measures, activities of daily living, gait speed, functional mobility, balance	–
Non-Supportive Balance Trainers with Feedback	Conventional Therapy or Balance Training	Activities of daily living, gait endurance, functional mobility, balance	+
Non-Supportive Balance Trainers with Feedback	Conventional Therapy or Balance Training	Muscle strength, falls and fear of falling	–
Non-Supportive Balance Trainers with Feedback	Conventional Therapy or Balance Training	Biomechanical balance measures, sensory and proprioceptive function	=
Balance Training with Visual Biofeedback	Conventional Therapy or Balance Training	Motor recovery, falls and fear of falling	+
Balance Training with Visual Biofeedback	Conventional Therapy or Balance Training	Biomechanical gait measures, biomechanical balance measures, spasticity, activities of daily living, functional mobility, balance	–
Balance Training with Visual Biofeedback	Conventional Therapy or Balance Training	Range of motion, gait speed	=
Balance training with self- controlled postural control visual biofeedback	Balance training with no control over postural control visual biofeedback	Biomechanical balance measures	+
Standing Practice	Conventional Therapy	Biomechanical gait measures, functional mobility	+
Standing Practice	Conventional Therapy	Motor recovery, activities of daily living, balance	–
Perturbation Balance Trainers with Feedback	Conventional Therapy or Balance Training	Muscle strength, balance	+
Perturbation Balance Trainers with Feedback	Conventional Therapy or Balance Training	Spasticity, activities of daily living, gait endurance, functional mobility	–
Perturbation Balance Trainers with Feedback	Conventional Therapy or Balance Training	Motor recovery, gait speed	=
Perturbation Balance Trainers	Conventional Therapy or Balance Training	Muscle strength, quality of life	+
Perturbation Balance Trainers	Conventional Therapy or Balance Training	Biomechanical gait measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling	–
Perturbation Balance Trainers	Conventional Therapy or Balance Training	Motor recovery, spasticity, sensory and proprioceptive function	=

Visual Deprivation Group Balance Training Group with Conventional Therapy	Visual Feedback Balance Training Group with Conventional Therapy	Biomechanical balance measures	+
Visual Deprivation Group Balance Training Group with Conventional Therapy	Visual Feedback Balance Training Group with Conventional Therapy	Balance	–
Balance Training with Visual Deprivation	Balance Training with Visual Cues	Biomechanical balance measures, activities of daily living	+
Balance Training with Visual Deprivation	Balance Training with Visual Cues	Biomechanical gait measures, gait speed, functional mobility, falls and fear of falling, quality of life	–
Balance Training with Visual Deprivation	Balance Training with Visual Cues	Balance	=
Visual cue deprivation with balance training and head control	Visual cue deprivation with Balance training	Balance	+
Visual cue deprivation with balance training and head control	Visual cue deprivation with Balance training	Biomechanical gait measures, biomechanical balance measures	–
Balance Training with Kinesthetic Ability Training Device	Conventional Rehabilitation	Motor recovery, biomechanical balance measures	+
Balance Training with Kinesthetic Ability Training Device	Conventional Rehabilitation	Activities of daily living	–
Balance Training with Full Rest Periods	Balance Training with Short Rest Periods	Balance	–
Balance Training with Muscle Vibration	Conventional Rehabilitation	Functional mobility, balance	–
Balance Training with Muscle Vibration	Conventional Rehabilitation	Activities of daily living	=
Balance Training with Biofeedback	Balance Training	Biomechanical balance measures, gait speed, quality of life	+
Balance Training with Biofeedback	Balance Training	Motor recovery, activities of daily living, functional mobility, balance	–
Vestibular Training	Conventional Therapy	Biomechanical balance measures, gait speed, functional mobility, balance	+
Vestibular Training	Conventional Therapy	Biomechanical gait measures, muscle strength, activities of daily living, falls and fear of falling, quality of life	–
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility	+
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment	Balance, falls and fear of falling	–
Robotic Balance Training	Conventional Therapy	Sensory and proprioceptive function, quality of life	+
Robotic Balance Training	Conventional Therapy	Motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, balance, falls and fear of falling	–
Trampoline Balance Training	Stable Surface Balance Training	Balance	+
Trampoline Balance Training	Stable Surface Balance Training	Activities of daily living, gait endurance, functional mobility	–

Ankle-Foot orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes	Aerobic measures, gait speed	+
Ankle-Foot orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes	Functional mobility	–
Balance Training with transcutaneous electrical nerve stimulation	Balance Training with Conventional Care	Neurophysiological measures, balance	+
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care	Neurophysiological measures	+
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care	Balance	=
Balance Training with Shoe Lift	Balance Training	Biomechanical balance measures	+
Balance Training with Shoe Lift	Balance Training	Balance, falls and fear of falling	–
Strength or Resistance Training with Balance Training	Conventional Therapy	Muscle strength, gait speed, gait endurance, balance	+
Strength or Resistance Training with Balance Training	Conventional Therapy	Motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, quality of life	–
Structured Balance Awareness	Health Awareness Program	Balance, falls and fear of falling	+
Balance Training with Fresnel Prism Glasses	Balance and Walking Training	Gait speed, gait endurance, functional mobility, balance	+
Balance Training with Fresnel Prism Glasses	Balance and Walking Training	Biomechanical gait measures	–
Sensory Balance Training	Robot-assisted Stair Climbing	Gait endurance	+
Sensory Balance Training	Robot-assisted Stair Climbing	Biomechanical balance measures, gait speed, functional mobility, balance	–
Sitting Balance Training with Sensory Input	Sitting Balance	Functional mobility, balance, quality of life	+
External focus on balance board task	Internal focus on balance board task	Biomechanical balance measures	+
External focus on balance board task	Internal focus on balance board task	Functional mobility	–
Balance Training	No Training	Gait speed	+
Balance Training	No Training	Motor recovery	–
Balance Training	No Training	Biomechanical gait measures	=
Vestibular rehabilitation	Convectional treatment	Biomechanical balance measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, quality of life	–
Progressive Balance Training	Balance Training	Balance	+

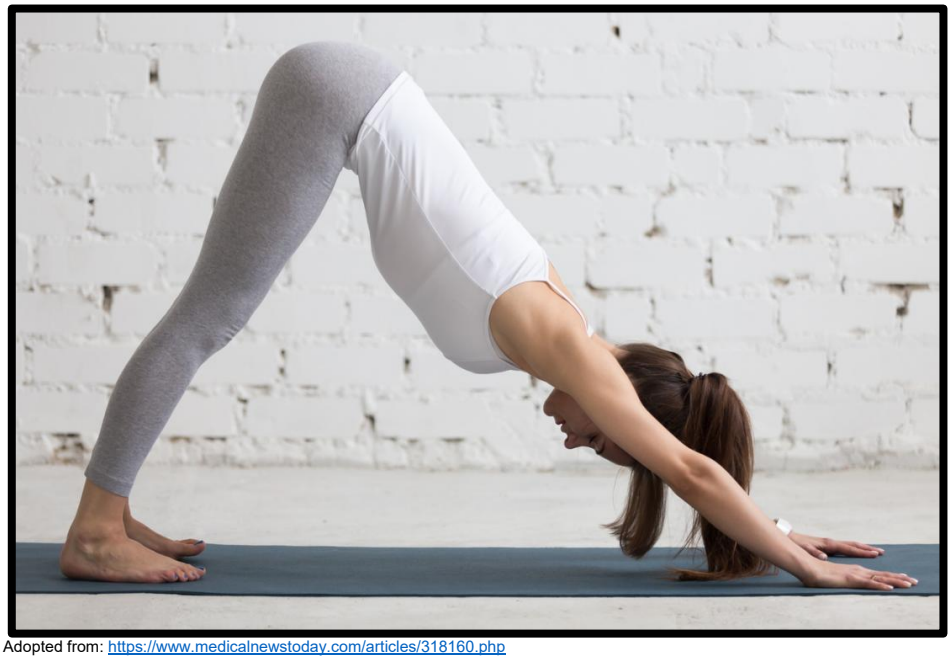
Perturbation Balance Training	Proprioceptive Neuromuscular Facilitation	Biomechanical gait measures, balance	–
Perturbation Balance Training	Proprioceptive Neuromuscular Facilitation	Functional mobility	=
Class-Based Body Awareness Training	Home-Based Body Awareness Training	Sensory and proprioceptive function, gait speed, quality of life	–
Class-Based Body Awareness Training	Home-Based Body Awareness Training	Motor recovery	=
Visual Scanning Training with Task-Specific Activities	Task-Specific Activities Alone	Balance	+
Visual Scanning Training with Task-Specific Activities	Task-Specific Activities Alone	Activities of daily living	–
Vestibular Training	Virtual Reality Training	Functional mobility, quality of life	+
Vestibular rehabilitation therapy + Conventional physical therapy	Conventional care	Biomechanical gait measures, gait speed	–
Cognitive behaviour therapy + task-oriented balance training	General health education + task-oriented balance training	Activities of daily living, balance, falls and fear of falling	+
Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation	Trunk stabilization and weight transfer exercises + Conventional rehabilitation	Activities of daily living, functional mobility	+
Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation	Trunk stabilization and weight transfer exercises + Conventional rehabilitation	Biomechanical balance measures, balance	–
Vestibular rehabilitation + conventional PT	conventional PT	Functional mobility, balance	–
Pro-Kin system with weight loss system (body-weight support) with balance training	Conventional balance training	Functional mobility, balance	+
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises	Functional mobility	+
Robot assisted gait training with Traditional balance training	Traditonal balance training	Functional mobility, balance, falls and fear of falling	–
Robot assisted gait training with Traditional balance training	Traditonal balance training	Motor recovery	=
Gait-slip perturbation with FES to paretic quadriceps muscle	Gait-slip perturbations	Biomechanical gait measures, falls and fear of falling	+
Treadmill gait and balance training with Traditional gait and balance training	Traditional gait with balance training	Gait speed, functional mobility, falls and fear of falling	–
Visual feedback with Unstable surface balance training	Conventional physical therapy	Gait speed, functional mobility, balance	+
Visual feedback with Unstable surface balance training	Conventional physical therapy	Biomechanical gait measures	–
Visual feedback with Unstable surface balance training	Unstable surface balance training	Gait speed, balance	+
Visual feedback with Unstable surface balance training	Unstable surface balance training	Biomechanical gait measures, functional mobility	–

Visual feedback with Unstable surface balance training	Unstable surface balance training	Range of motion	=
Visual feedback with Unstable surface balance training	Conventional physical therapy	Range of motion	=
Virtual balance training (VBT) with Conservative training	Conservative training (traditional rehab techniques)	Motor recovery, spasticity, activities of daily living, balance, quality of life	–
Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations)	Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations	Biomechanical balance measures	=
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training	Biomechanical gait measures, gait speed, gait endurance, balance, falls and fear of falling	–
Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training)	Visual feedback via Mirror with Conventional treatment (static and dynamic balance training)	Balance	+
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Motor recovery, biomechanical balance measures, spasticity, range of motion	+
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Balance	–
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Functional mobility	=
Virtual reality balance training with Nintendo Wii with conventional physical therapy	Conventional physical therapy	Activities of daily living, functional mobility, balance	+
Virtual reality balance training with Nintendo Wii with conventional physical therapy	Conventional physical therapy	Motor recovery	–
Perturbation treadmill training group	Non-perturbation treadmill training group	Balance	+
Perturbation treadmill training group	Non-perturbation treadmill training group	Muscle strength, activities of daily living, gait speed, falls and fear of falling	–
Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation	Balance Training without functional electrical stimulation with General Rehabilitation	Neurophysiological measures, functional mobility, balance	+
Trunk balance training on rocker board with conventional therapy	Trunk balance training on plain surface with conventional therapy	Gait endurance, balance	+
Modified PC Balance Training Gaming Platform	PC gaming with Mouse	Biomechanical balance measures, gait speed, functional mobility	+
Modified PC Balance Training Gaming Platform	PC gaming with Mouse	Balance	=
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole	Functional mobility, balance	–

Wii Fit-based balance exercise with conventional rehabilitation	Conventional rehabilitation	Biomechanical balance measures, balance	+
Wii Fit-based balance exercise with conventional rehabilitation	Conventional rehabilitation	Functional mobility	–
Wii Fit-based balance exercise with conventional rehabilitation	Conventional rehabilitation	Activities of daily living	=
Progressive resistance with balance training and motivational session	Usual activity	Motor recovery, neurophysiological measures, balance	–
Progressive resistance with balance training and motivational session	Usual activity	Activities of daily living	=
Virtual reality balance training with treatment	treatment	Activities of daily living, functional mobility, balance, falls and fear of falling, quality of life	–
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Balance	+
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Gait endurance, quality of life	–
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Functional mobility	=
Tetrax biofeedback balance training with Conventional care	Conventional care	Sensory and proprioceptive function	+
Tetrax biofeedback balance training with Conventional care	Conventional care	Biomechanical balance measures, muscle strength, functional mobility	=
Dynamic balance training with Balance Trainer	Static balance training with a conventional standing frame	Activities of daily living, functional mobility, balance	+
Computer-generated interactive visual feedback balance training with Physical therapy	Mirror visual feedback balance training with Physical therapy	Motor recovery, balance	+
Balance training with cognitive training	Balance training with balance board	Motor recovery, activities of daily living, balance	–
Wii-based balance training	Progressive balance training	Activities of daily living, functional mobility, balance, falls and fear of falling	–
Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training	Contemporary Bobath Concept Approach	Functional mobility, balance	+
Ankle Foot Orthosis (Joint type) with Balance Training	No Orthotic with Balance Training	Biomechanical balance measures	–
Ankle Foot Orthosis (Joint type) with Balance Training	No Orthotic with Balance Training	Neurophysiological measures	=
Video Game-Based Balance Training with conventional physical therapy	Conventional physical therapy with Balance Training	Activities of daily living, balance	+
Video Game-Based Balance Training with conventional physical therapy	Conventional physical therapy with Balance Training	Gait speed, functional mobility	–

Wii Fit Plus video game (Balance training)	Wii Sports video game (Upper limb training)	Biomechanical balance measures	+
Wii Fit Plus video game (Balance training)	Wii Sports video game (Upper limb training)	Functional mobility, balance, falls and fear of falling	−
Wii-based balance training	Conventional rehabilitation	Biomechanical gait measures, biomechanical balance measures, activities of daily living	−
Standing balance exercises with functional electrical stimulation	Usual care	Biomechanical gait measures, gait speed, functional mobility	−
Balance training with cognitive training	Balance training	Biomechanical balance measures	=
Dual-task balance training	Single-task balance training	Gait speed	+
Dual-task balance training	Single-task balance training	Biomechanical balance measures	=
Wii-based balance training	Conventional rehabilitation	Biomechanical balance measures	−
Wii-based balance training	Control group	Functional mobility, balance	+
Wii-based balance training	Control group	Activities of daily living	−
Balance training with Balance Control Trainer	Conventional rehabilitation	Functional mobility, balance	+
Balance training with Balance Control Trainer	Conventional rehabilitation	Muscle strength, activities of daily living	−
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises	Balance	+
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises	Gait speed	−
Virtual reality-based balance training	Conventional therapy	Functional mobility, balance	+
Virtual reality-based balance training	Conventional therapy	Biomechanical gait measures, biomechanical balance measures	−
Virtual reality-based balance training	Conventional therapy	Gait speed	=
Visual biofeedback providing posture information	Standing without biofeedback	Biomechanical balance measures	+
Pressure sensor-based vibrotactile biofeedback	Visual biofeedback providing posture information	Biomechanical balance measures	+
Wii-based balance training	Conventional rehabilitation	Functional mobility, balance	=

Stretching or Mobilization Exercises



Adopted from: https://www.medicalnewstoday.com/articles/318160.php

Stretching exercise performed during dynamic activities such as pilates, yoga, and tai chi or during proprioceptive neuromuscular facilitation aims to reduce hypertonicity post-stroke. Prevention of hypertonicity may reduce the risk for development of contracture while improving the range of motion of the joint and stability of the whole-body. Most stretching activities are of relatively low physical impact and low cost. From a fitness standpoint, they focus on flexibility, balance, coordination and muscle endurance (Donahoe-Fillmore & Grant, 2019). Given these attributes, dynamic stretching could provide an alternative therapy to improve lower extremity rehabilitation. In addition, these practices have non-physical benefits. It has been reported that yoga can increase mental health outcomes and contribute to a higher overall quality of life (Büssing et al., 2012). Stretching activities are also benefiting from the addition of technology as evidenced by the use of VR and ankle stretching robotics.

A total of 53 RCTs were found that evaluated stretching or mobilization exercises for lower extremity motor rehabilitation. Two RCTs compared Functional Stretching with Conventional Therapy (Pradines et al. 2019; Ghasemi et al. 2018). Thirteen RCTs compared Mobilization Therapy or Placebo with Conventional Therapy or Placebo (Li et al. 2024b; Traxler et al. 2024; Dengiz et al. 2024; Kim et al. 2024c; Arabzadeh et al. 2023; Lee et al. 2023b; Choi et al. 2023; Longo et al. 2023; Park et al. 2022; Navid et al. 2022; Midan et al. 2022; Kim & Lee 2018a; An et al. 2017). Two RCTs compared Early and Intense Mobilization with Standard Care (Anjos et al. 2023; Bernhardt et al. 2008). One RCT compared Active Stretching with Joint Mobilization (Cho et al. 2020c). Two RCTs compared Mobilization With Movement with Muscle Stretching (Park et al. 2020b; Park et al. 2019a). One RCT compared Mobilization With with Without Incline Board (Park et al. 2018b). Twelve RCTs compared Dynamic Stretching (Tai Chi, Yoga, Pilates) with Conventional or No Therapy (Garcia-Bravo et al. 2024; Haolin et al. 2024; Lenoir Dit Caron et al. 2024; Zhao et al. 2022a; Song et al. 2021a; Chan & Tsang 2018; Chan & Tsang 2017b; Lim et al. 2016; Kim et al. 2015d; Immink et al. 2014; Schmid et al. 2012; Au-Yeung et al. 2009). One RCT compared Dynamic Stretching with SilverSneaker exercises vs Usual care (Taylor-Piliae et al. 2014). Two RCTs compared Body Weight Supported Dynamic Stretching with Conventional Therapy (Yu et al. 2020a; Huang et al. 2019). One RCT compared Early Proprioceptive Neuromuscular Facilitation (PNF) with late Proprioceptive Neuromuscular Facilitation (PNF) (Morreale et al. 2016). One RCT compared Baduanjin Training with Conventional Exercise (Yuen et al. 2021). Two RCTs compared Proprioceptive Neuromuscular Facilitation (PNF) with Conventional Therapy (Rostami et al. 2024; Asghar et al. 2021). One RCT compared Proprioceptive Neuromuscular Facilitation (PNF) with Custom Exercises with Custom Exercises Alone (Stern et al. 1970). One RCT compared Proprioceptive Neuromuscular Facilitation (PNF) with VR with PNF or VR Alone (dos Santos Junior et al. 2019). One RCT compared Proprioceptive Neuromuscular Facilitation (PNF) with Electrical Stimulation with PNF Alone (Shim et al., 2020). One RCT compared Technology-Assisted Ankle Stretcher with Stretching Board (Yoo et al. 2018a). One RCT evaluated Isotonic and Isokinetic Stretch (Maynard et al. 2005). One RCT compared Ankle Range of Motion Training with No Treatment (Rydwik et al. 2006). One RCT compared Stretching in a Supine Position with Stretching in a Seated Position (Fleuren et al. 2006). One RCT compared PNF-Based Gait Training with

Conventional Gait Training (Asghar et al. 2023). One RCT evaluated Comparison of Joint Mobilization Techniques (Buyukturan et al. 2022). One RCT compared Peripheral Nerve Mobilization with VR-Based Gait Training with Conventional Exercises (Vishnuram et al. 2024).

In addition, 21 RCTs in which stretching or mobilization exercises formed part of a combined or comparative intervention are cross-referenced at the end of Table 12; their primary listings appear in other tables.

The methodological details and results of all 53 RCTs are presented in Table 12.

Table 12. RCTs Evaluating Stretching or Mobilization Exercises for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Functional Stretching vs Conventional Therapy		
Pradines et al. (2019) RCT (6) Nstart=23 Nend=23 TPS=Chronic A vs 0	E: Guided Self-rehabilitation Stretching Program C: Conventional Care Duration: 0-3d/wk, 52 wks conventional PT 24.7min/d, 7d/wk, 52wks self-stretch	E vs C: Muscle architecture Fascicle length in soleus muscle (+exp) Soleus thickness (+exp) Medial gastrocnemius thickness (+exp) Tardieu scale-passive extensibility Soleus (+exp) Gastrocnemius (+exp) Gluteus maximus (-) Rectus femoris (+exp) 10m Walk test (+exp)
Ghasemi et al. (2018) RCT (5) Nstart=45 Nend=45 TPS=Chronic A vs 0	E: Functional stretch training C: Conventional physiotherapy Duration: 5min/d, 3d/wk, 4wks	E vs C: H-reflex latency (-) Hmax/Mmax Ratio (-) Ultrasonic measurement Fasicle length (-) pennation angle (-) muscle thickness (-) Modified Ashworth Scale (No stats) Achilles Deep Tendon Reflex (No stats) Active Range of Motion: Ankle (No stats) Ankle clonus (No stats)
Mobilization vs Conventional Therapy or Placebo		
Li et al. (2024b) RCT (4) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: Fascial manipulation therapy + Conventional therapy C: Conventional therapy Duration: Fascial manipulation therapy (30 mins/d, 2ds/wk, 3wks); Conventional therapy (40 mins, 5ds/wk, 3wks)	E vs C: Comprehensive spasticity scale (+exp) Passive range of motion (+exp) FMA-LE (+exp) Modified ashworth scale (+exp)
Traxler et al. (2024) Feasibility/pilot RCT (8) Nstart=36 Nend=36 TPS=Chronic A + B + C vs B + C vs 0	E1: Manual therapy + task oriented training + home exercise program, E2: task oriented training + home exercise program C: conventional rehab Duration: Clinic: 45min/d, 2d/wk, 4wks Home: 20min/d, 4d/wk, 4wks	E1 vs E2: MiniBestest(-) TUG(-) 10MWT(-) Active Ankle ROM(+exp1) Passive Ankle ROM(+exp1) SIS

Also in Table 5 (Task-Specific Training)		Strength(-) ADL(-) mobility(-) social participation(-) overall recovery(-) E1 vs C: MiniBestest(+exp1) TUG(+exp1) 10MWT(-) Active Ankle ROM(+exp1) Passive Ankle ROM(+exp1) SIS Strength(+exp1) ADL(+exp1) mobility(+exp1) social participation(+exp1) overall recovery(+exp1) E2 vs C: MiniBestest(+exp2) TUG(+exp2) 10MWT(-) Active Ankle ROM(+exp2) Passive Ankle ROM(-) SIS Strength(+exp2) ADL(-) mobility(+exp2) social participation(-) overall recovery(+exp2)
Dengiz et al. (2024) RCT (5) Nstart=27 Nend=24 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Cervical mobilization + Bobath neurodevelopmental therapy C: Sham spinal mobilization + Bobath neurodevelopmental therapy Duration: 75min (60min BT + 15min mobilization)/d, 3d/wk, 4wks	E vs C: Craniovertebral angle (-) Balance left side (-) right side (+exp) forward (+exp) backward (+exp) total balance (+exp) Gait parameters stride number (+exp) stride length (+exp) stride time (+exp) stride velocity (+exp) cadence (+exp) double support time (-) TUG (+exp)
Kim et al. (2024c) RCT (7) Nstart=50 Nend=50 TPS=Chronic A + B vs C + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E1: Sustained natural apophyseal glides + neurodevelopmental techniques E2: Maitland mobilization + neurodevelopmental techniques C: conventional rehab + neurodevelopmental techniques Duration: less than 10 mins, 5d/wk, 4wks	E1 vs E2: Postural sway(-) FTSST(-) FRT(-) 10MWT(-) 6MWT(-)

Arabzadeh et al. (2023) RCT (6) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Hip mobilization C: Conventional rehab Duration: 60min/d(30min conventional, 30min Hip mobilization), 3d/wk, 4wks	E vs C: BBS(+exp) TUG(+exp) static postural control (+exp) antroposterior (+exp) mediolateral (-) dynamic postural control (-) antroposterior (+exp) mediolateral (+exp) EMG muscle activation biceps femoris (+exp) medial gastrocnemius (-) rectus femoris (+exp) tibialis anterior (-) rectus abdominus (-) erector spine (-)
Lee et al. (2023b) RCT (6) Nstart=69 Nend=69 TPS=Chronic A + B vs A vs 0 Also in Table 53 (Acupuncture and Massage)	E1: Joint mobilization + acupuncture E2: Joint mobilization C: Conventional rehab Duration: 60min/d(30min conventional, 30min acupuncture), 2d/wk, 12wks	E1 vs E2: Pain-VAS(-) SPADI(+exp1) WOMAC(-) AROM Shoulder flexion(-) Shoulder abduction(-) Shoulder adduction(-) knee flexion(-) 10MWT(-) FGA(-) MFT(+exp1) ADL(-) IADL(+exp1) CES-D(-) BDI(-) E1 vs C: Pain-VAS(-) SPADI(+exp1) WOMAC(+exp1) AROM Shoulder flexion(-) Shoulder abduction(-) Shoulder adduction(-) knee flexion(+exp1) 10MWT(-) FGA(-) MFT(+exp1) ADL(+exp1) IADL(+exp1) CES-D(+exp1) BDI(+exp1) E2 vs C: Pain-VAS(-) SPADI(+exp2) WOMAC(-) AROM Shoulder flexion(-)

		Shoulder abduction(-) Shoulder adduction(-) knee flexion(+exp2) 10MWT(-) FGA(-) MFT(+exp2) ADL(+exp2) IADL(-) CES-D(+exp2) BDI(+exp2)
Choi et al. (2023) Feasibility/pilot RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Lumbar Joint mobilization C: Sham Lumbar Joint mobilization Duration: 15min/d, 5d/wk, 6wks	E vs C: TIS Static(-) dynamic(-) coordination(+exp) Total(+exp) Body weight disturbance(+exp) BBS(+exp) TUG(+exp) 10MWT(+exp) FGA(+exp) Step length(+exp) Stride length(+exp)
Longo et al. (2023) Feasibility/pilot RCT (6) Nstart=10 Nend=10 TPS=Chronic A vs 0	E: Muscle shortening maneuver C: Conventional rehab Duration: 1hr/d, 1d/wk, 4wks	E vs C: MAS(-) MI(-) Tonic Stretch Reflex Threshold (TSRT)(+exp) Dorsiflex strength(+exp) BI(-) TUG(+exp) AROM(+exp) PROM(-)
Park et al. (2022) RCT (4) Nstart=42 Nend=42 TPS=Chronic A1 vs A2	E: Grade III lumbar mobilization C: Grade I Lumbar rotational mobilization Duration: 1 min/ session, 6 sessions	E vs C: TIS static sitting balance (-) dynamic sitting balance (+exp) coordination (+exp) total (+exp) Cadence (+exp) gait speed (+exp) stride length (+exp) gait cycle symmetric index (+exp) Pelvic angle tilt symmetric index (+exp) pelvic angle obliquity symmetric index (+exp) Pelvic angle rotation symmetric index (+exp)
Navid et al. (2022) RCT (7) Nstart=29 Nend=29 TPS=Chronic	E: High-velocity, low amplitude (HVLA) chiropractic spinal adjustments C: Passive movement Duration: 15min, 1 session	E vs C: MEP Amplitude Absolute (+exp) Relative (+exp)

A vs B		
Midan et al. (2022) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C Also in Table 11 (Balance Training); Table 21 (Strength and Resistance Training)	E: Foot Mobilization + Intrinsic Foor Muscles Facilitation + (Strength and Resistance training including PNF, Gait training and Balance training through Pertubations) C: Strength and Resistance training including PNF, Gait training and Balance training through Pertubations Duration: 60 min/session, 3 session/wk, 4 wks	E vs C: Center of Pressure Mediolaterl displacement (-) Mediolateral Speed (-) Mediolateral width (-) Anteroposterior speed (+exp) Anteroposterior displacement (+exp) Reverse Anteroposterior displacement (+exp)
Kim & Lee (2018a) RCT (5) Nstart=33 Nend=30 TPS=Chronic A vs 0	E: Weight-bearing-based mobilization with movement + physical therapy C: Weight-bearing with placebo mobilization with movement + physical therapy Duration: 5d/wk, for 4wks	E vs C: Ankle ROM (+exp) Postural sway (+exp) Static balance (+exp) Timed Up and Go (+exp) Dynamic Gait index (+exp)
An et al. (2017) RCT (6) Nstart=26 Nend=26 TPS=Chronic A vs 0	E: Talocrural Mobilization with Movement (MWM) + Conventional Physiotherapy C: Conventional Physiotherapy Duration: 30min, 3d/wk, 5wks PT & 30min, 3d/wk, 5wks MWM	E vs C: Limit of Stability Forward (+exp) Backward (-) Paretic (-) Forward-paretic (+exp) Ankle Strength Plantarflexor (+exp) Dorsiflexor (-) Dorsiflexion-PROM (+exp) Gait Cycle Swing Phase (-) Single Limb Support Phase (-) Double Limb Support Phase (-)
Early and Intense Mobilization vs Standard Care		
Anjos et al. (2023) RCT (7) Nstart=104 Nend=104 TPS=Acute A vs 0	E: Very early mobilization Program C: Conventional rehab Duration: 30min/d, 7d/wk, 1wk	E vs C: mRS(-) NIHSS(-) BBS(-) TUG(-)
Bernhardt et al. (2008) RCT (8) Nstart=71 Nend=65 TPS=Acute A vs 0	E: Very early mobilization + Standard care C: Standard care Duration: 2sessions/d, 6d/wk for 2wks	E vs C: Scandinavian Stroke Scale (-) Borg Perceived Exertion scale (-) Mortality at 3mo (-)
Active Stretching vs Joint Mobilization		
Cho et al. (2020c) RCT (6) Nstart=45 Nend=45 TPS=Chronic A vs B vs A + B	E1: Joint mobilization E2: Active Stretching E3: Joint mobilization + active stretching Duration: 15min/d, 3d/wk, 6wks	E1 vs E3: Cadence(+exp3) Gait speed(+exp3) Stride length (+exp3) passive ankle dorsiflexion ROM seated position (+exp) supine position (-)

		E2 vs E3: Cadence(-) Gait speed (-) Stride length(-) passive ankle dorsiflexion ROM seated position (+exp) supine position (-)
Mobilization With Movement vs Muscle Stretching		
Park et al. (2020b) RCT (7) Nstart=38 Nend=38 TPS=Chronic A vs B	E: Self-ankle mobilization with movement + Conventional physiotherapy (CT) C: Calf muscle stretching + Conventional physiotherapy (CT) Duration: 30min/d - Conventional care, 3d/wk for 4wks - Self ankle mobilization or Calf muscle stretching	E vs C: Ankle dorsiflexion passive range of motion (+exp) Gait speed (+exp) Cadence (+exp) Stride length Affected side (+exp) Unaffected side (+exp) Fall risk test (+exp)
Park et al. (2019a) RCT (7) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Mobilization with movement (MWM) + Conventional rehabilitation (CR) C: Static muscle stretching (SMS) + Conventional rehabilitation (CR) Duration: 30 min/d, 3d/wk, 4 wks (MWM & SMS) 30 min per session CT	E vs C: Dorsiflexion passive range of motion (-) Static balance ability (+exp) Berg Balance Scale (+exp) Gait speed (-) Cadence (+exp)
Mobilization With vs Without Incline Board		
Park et al. (2018b) RCT (6) Nstart=28 Nend=28 TPS=Chronic A1 vs A2	E1: Self-ankle mobilization + standard rehabilitation E2: Self-ankle mobilization with 10-degree inclined board + standard rehabilitation Duration: 30min/d standard rehabilitation & ~7min/d ankle exercises, 3d/wk, for 4wks	E1 vs E2: Passive range of motion-ankle dorsiflexion (+exp2) Static balance ability (+exp2) Berg Balance scale (-) Gait speed (+exp2) Cadence (+exp2) Single limb support (No stats) Double limb support (No stats) Step length affected side (+exp2) unaffected side (+exp2) Stride length (No stats) Modified Barthel index-Korean (-)
Dynamic Stretching (Tai Chi, Yoga, Pilates) vs Conventional or No Therapy		
Garcia-Bravo et al. (2024) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Neuropilates + Conventional therapy C: Conventional therapy Duration: 20min/d, 2x/wk, 12wks	E vs C: FIM (+exp) FRT (+exp) TUG (-) NHPT right (+exp) left (-) BBT right (-) left (-) DASH disability (-) occupation (+exp)

		Client Satisfaction Questionnaire (CSQ-8) (+exp)
Haolin et al. (2024) RCT (8) Nstart=100 Nend=100 TPS=Subacute A vs B vs A + B vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E1: Daoyin + Conventional rehab, E2: Lower Limb Robot + Conventional rehab, E3: Daoyin + Lower Limb Robot + Conventional rehab C: Conventional rehab Duration: E1: 80min/d, 5d/wk, 2 wks; E2: 40min/d, 5d/wl, 2wks; E3: 120 min/d, 5d/wk, 2 wks (2x/day, Daoyin 40 min, Robot 20min)	E1/E2/E3 vs C: FMA (+exp3) BBS (+exp2/3) BI (+exp3) Fatigue Scale-14 (+exp1/3) Pittsburgh sleep quality index (+exp1/3) Hamilton rating scale for anxiety (+exp1/3) Hamilton rating scale for depression (+exp1/3) E1/E3 vs E2: FMA (-) BBS (-) BI (-) Fatigure Scale-14 (+exp1) Pittsburgh sleep quality index (-) Hamilton rating scale for anxiety (+exp1/3) Hamilton rating scale for depression (+exp1/3)
Lenoir Dit Caron et al. (2024) RCT (8) Nstart=36 Nend=32 TPS=Chronic A vs B	E: Yoga C: Conventional Exercises based on the Fitness and Mobility Exercise (FAME) Program Duration: 60min, 3x/wk, for 12wk	E vs C: Berg Balance Scale (BBS) (-) Activities-Specific Balance Confidence Scale (ABC-Scale) (-) 6-Minute Walk Test (6MWT) (-) Timed Up and Go Test (TUG) (-) Quadriceps Strength (-) State-Trait Anxiety Inventory (-) Beck's Depression Inventory (-) Reintegration to Normal Living Index (-)
Zhao et al. (2022a) RCT (7) Nstart=160 Nend=134 TPS=Subacute A vs B	E: Sitting Tai Chi program with home program C: Attention control (hospital-recommended upper limb movements) Duration: 40min/d, 3d/wk, 12wks	E vs C: FMA-UE (-) WMFT Performance time (+exp) grip (-) functional ability (+exp) Berg balance scale (+exp) TIS (+exp) Geriatric depression scale short form (+exp) Shoulder ROM flexion (-) extension (+exp) abduction (-) external rotation (-) internal rotation (-) Shoulder pain on movement (-) at night (-) at rest (-) modifed Barthel index (+exp) Stroke specific quality of life scale (+exp)
Song et al. (2021a)	E: Tai Chi-based stroke rehabilitation program	E vs C:

RCT (7) Nstart=34 Nend=29 TPS=Chronic A vs B	C: Stroke symptom management program Duration: 50min/d, 2d/wk, 24wks	Montreal Cognitive Assessment (+exp) Mini Mental State Examination (+exp) knee flexion peak torque (+exp) knee extension peak torque (-) Berg Balance Scale (-) Trunk Impairment Scale (-) Functional Ambulation Category(+exp) modified Rankin Scale (-) Modified Barthel Index (+exp) Stroke-Specific Quality of Life Energy (-) Family roles (-) Language (-) Mobility (-) Stroke Symptom Cluster Scale Mobility (-) Sensory (-) Cognition (-) Communication (-) Mood (-) Swallowing (+exp)
Chan & Tsang (2018) RCT (7) Nstart=47 Nend=42 TPS=Chronic A vs 0 vs 0	E1: Tai Chi E2: Conventional exercise C: No Treatment Duration: 1h/d, 2d/wk, for 12wks	E1 vs E2 vs C: Stroop Test (-) Turn speed (-) Dual task test (-)
Chan & Tsang (2017b) RCT (6) Nstart=26 Nend=18 TPS=Chronic A vs 0 vs 0	E1: Tai Chi exercise group E2: Conventional exercises C: No treatment Duration: 1hr/session, 2d/wk for 12wks	E1/E2 vs C: Auditory stroop test (-) Anteroposterior sway COP (-) Mediolateral sway COP (-) Sway velocity (-) E2 vs E1: Auditory stroop test (-) Anteroposterior sway COP (-) Mediolateral sway COP (-) Sway velocity (-)
Lim et al. (2016) RCT (5) Nstart=19 Nend=19 TPS=Chronic A vs B	E: Pilates C: No therapy Duration: 60min/d, 3d/wk for 8wks	E vs C: Centre of pressure sway (+exp) Centre of pressure velocity (+exp)
Kim et al. (2015d) RCT (5) Nstart=22 Nend=22 TPS=Chronic A vs 0	E: Therapeutic Tai Chi + General PT C: General PT Duration: 60min/d, 2d/wk, 6wks Therapeutic Tai Chi & 60min/d, 10sessions/wk, 6wks General PT	E vs C: static balance sway length (+exp) sway velocity (+exp) functional reach test (+exp) dynamic gait index (+exp) 10-m walking test(+exp) timed up-and-go test (+exp) SF36 Physical functioning Role (+exp)

		limitations because of physical health (+exp) Pain (+exp) General health (+exp) Energy/fatigue (+exp) Social functioning (-) Role limitations because of emotional problems (-) Emotional well-being (+exp)
Immink et al. (2014) RCT (6) Nstart=25 Nend=22 TPS=Chronic A vs 0	E: Yoga (yoga asana and pranayama practices and Satyananda Yoga Nidra meditation) C: No treatment Duration: 90min/d, 1d/wk, 10 weeks in person group yoga, 35- 45min/d, 6d/wk, 10wks home yoga	E vs C: Motor assessment scale (-) Berg balance scale (-) 2-minute walk test distance (-) Comfortable speed (-) Geriatric Depression Scale (-) State Anxiety Inventory (-) Trait Anxiety Inventory (-) Stroke Impact Scale Physical domain (-) Emotion domain (-) Memory domain (+exp) Communication (-) Social participation domain (-) Stroke recovery domain (-)
Schmid et al. (2012) RCT (6) Nstart=47 Nend=40 TPS=Chronic A1 vs A2 vs B	E1: Group yoga E2: Group yoga + at-home yoga C: No therapy Duration: 60min/d, 2d/wk, 8wks	E1 vs E2 vs C: Berg Balance Scale (-) Activities-specific Balance Confidence Scale (-) Stroke-Specific QoL scale (-) fear of falling (-)
Au-Yeung et al. (2009) RCT (6) Nstart=136 Nend=114 TPS=Chronic A vs 0	E: Tai Chi C: Conventional exercises Duration: 4hr (1hr group practice+ 3hr self-practice)/session, 1d/wk, 12wks	E vs C: Limit of Stability Test- Reaction Time Affected side (+exp) Non-affected side (-) Backward (-) Forward(-) Limit of Stability Test-Excursion Affected site (+exp) Non-affected side (+exp) Backward (+exp) Forward(+exp) Sensory Organization Test- Sensory ratio Somatosensory (-) Visual (-) Vestibular (+exp) Sensory Organization Test- standing equilibrium score (-) Timed Up & Go Test (-)
Dynamic Stretching vs SilverSneaker exercises vs Usual care		
Taylor-Piliae et al. (2014) RCT (8) Nstart=145	E1: Tai Chi E2: SilverSneakers exercises C: Usual care	E1/E2 vs C: Short Physical Performance Battery (-) balance (-)

Nend=131 TPS=Chronic A vs B vs 0	Duration: 60min/d, 3d/wk, 12wks Tai Chi/Silver Sneakers Exercise	strength (-) gait (-) fall rates (+exp1) 2minute step test (+exp1, +exp2) SF-36 (-) Center for Epidemiologic Studies Depression Scale (-) Pittsburgh Sleep Quality Index (-) E1 vs E2: Short Physical Performance Battery (-) balance (-) strength (-) gait (-) fall rates (-) 2 minute step test (-) SF-36 (-) Center for Epidemiologic Studies Depression Scale (-) Pittsburgh Sleep Quality Index (-)
Body Weight Supported Dynamic Stretching vs Conventional Therapy		
Yu et al. (2020a) RCT (8) Nstart=74 Nend=71 TPS=Chronic A vs 0	E: Body weight supported Tai Chi + conventional rehabilitation C: Conventional rehabilitation Duration: 40min/d, 3d/wk, for 12wks	E vs C: Limit of Stability Overall (-) Complete time (+exp) Forward (-) Backward (-) Left (-) Right (+exp) Forward-left (+exp) Forward-right (+exp) Backward-left (-) Backward-right (-) Gait cycle time (+exp) Step velocity (-) Step length (+exp) Single support time (-) Double support time (-) Hip swing range (+exp) Knee swing range (-) Ankle range (-) Berg Balance Scale (+exp) Fugl-Meyer Assessment (+exp)
Huang et al. (2019) RCT (8) Nstart=28 Nend=25 TPS=Chronic A vs 0	E: Body Weight Supported Tai Chi C: Conventional Care Duration: 40min/d, 3d/wk, 12wks	E vs C: Dynamic balance (-) Time to complete (-) Forward (+exp) Backwad (-) Left (+exp) Right (-) Forward/left & right (-) Backward/left & right (-) Modified Clinical Test of Sensory Integration of Balance (Sway Index of centre of gravity)

		firm surface (eye open/eye close) (+exp) foam surface (eye open (+exp) foam surface (eye close) (-) Fall risk index (+exp) Fugl-Meyer assessment (+exp)
Early vs late Proprioceptive Neuromuscular Facilitation (PNF)		
Morreale et al. (2016) RCT (7) Nstart=340 Nend=293 TPS=Acute A1 vs B1 vs A2 vs B2	E1: Early (<24hrs post-admission) Proprioceptive Neuromuscular Facilitation E2: Early (<24hrs post-admission) Cognitive Therapeutic Exercises C1: Delayed (4 days post- admission) Proprioceptive Neuromuscular Facilitation C2: Delayed (4 days post- admission) Cognitive Therapeutic Exercises Duration: 60min/d, 4d, then 135min/d, 55d, then 90min/d, 5d/wk, 38wks	E1/E2 vs C1/C2: modified Rankin score (+exp1, +exp2) Barthel index (+exp1, +exp2) 6 min walking test (+exp1, +exp2) motricity index (+exp1, +exp2) Mini-mental state examination (-) Beck Depression Inventory(-) E1/C1 vs E2/C2: modified Rankin score (-) Barthel index (-) 6 min walking test (-) motricity index (-) Mini-mental state examination (-) Beck Depression Inventory(-)
Baduanjin Training vs Conventional Exercise		
Yuen et al. (2021) RCT (7) Nstart=58 Nend=50 TPS=Chronic A vs 0	E: Baduanjin training C: Conventional exercise training Duration: 50min/d, 3d/wk, 16wks	E vs C: Mini-Balance Evaluation Systems Test (+exp) Limit of Stability Test (-) Sensory Organization Test (+exp) Five Times Sit to Stand (+exp) Timed Up & Go (+exp) Fall Efficacy Scale (-) Modified Barthel Index (-) Stroke-Specific Quality of Life (-)
Proprioceptive Neuromuscular Facilitation (PNF) vs Conventional Therapy		
Rostami et al. (2024) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0	E: Proprioceptive neuromuscular facilitation exercises + Conventional rehabilitation C: Conventional rehabilitation Duration: E: 20min/d PNF + 30min Conventional rehab, 3x/wk, for 8wks; C: 30min, 3x/wk, for 8wk	E vs C: Flexibility Dorsiflexion ROM for gastrocnemius (-) Active straight leg raising for hamstring (+exp) Strength hamstring (-) quadriceps (-)
Asghar et al. (2021) RCT (6) Nstart=60 Nend=60 TPS=Chronic A vs 0	E: Proprioceptive Neuromuscular Facilitation (PNF) + Conventional Physical Therapy C: Conventional Physical Therapy Duration: 50min/d, 3d/wk, 6wks (40min PT + 10min PNF for intervention/ 50 min PT for control)	E vs C: Berg Balance Scale (+exp)
Proprioceptive Neuromuscular Facilitation (PNF) with Custom Exercises vs Custom Exercises Alone		
Stern et al. (1970) RCT (4) Nstart=62 Nend=62	E: Proprioceptive neuromuscular facilitation (PNF) program + custom exercises C: Custom exercises	E vs C: Motility Index (-) Kenny Self-Care Evaluation (-) Leg muscle Strength (-)

TPS=Acute A + B vs B	Duration: 75min/d, 5d/wk custom exercises & 40min/d, 5d/wk PNF	
Proprioceptive Neuromuscular Facilitation (PNF) with VR vs PNF or VR Alone		
Dos Santos Junior et al. (2019) RCT (6) Nstart=48 Nend=40 TPS=Chronic A vs A + B vs B Also in Table 26 (Virtual Reality)	E1: Virtual Reality E2: Virtual Reality + Proprioceptive Neuromuscular Facilitation C: Proprioceptive Neuromuscular Facilitation Duration: 50min/d, 2d/wk, 8wks	E1/E2 vs C: Fugl-Meyer Assessment (-) Sensory Assessment (-) Balance (-) Lower Limb Motor Function (-) E1 vs E2: Fugl-Meyer Assessment (-) ; - Sensory Assessment (-) ; - Balance (-) ; - Lower Limb Motor Function (-)
Proprioceptive Neuromuscular Facilitation (PNF) with Electrical Stimulation vs PNF Alone		
Shim et al. (2020) RCT (4) Nstart=40 Nend=33 TPS=Chronic A + B vs A Also in Table 28 (Functional Electrical Stimulation); Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Proprioceptive neuromuscular facilitation (PNF) trunk pattern + EMG-triggered FES C: proprioceptive neuromuscular facilitation (PNF) trunk pattern Duration: 30min/d, 5d/wk, 4wks	E vs C: Trunk impairment scale (-) Berg balance scale (-) Dynamic gait index (-)
Technology-Assisted Ankle Stretcher vs Stretching Board		
Yoo et al. (2018a) RCT (4) Nstart=16 Nend=16 TPS=Chronic A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Robotic ankle stretching exercises C: Conventional stretching board Duration: 30min/d, 2d/wk, for 3.5wks (7 sessions total)	E vs C: Ankle ROM (+exp) Sensory organization test (+exp) Walking speed (-) Cadence (-) Step Length affected (-) Step Length unaffected (+exp)
Isotonic and Isokinetic Stretch		
Maynard et al. (2005) RCT (6) Nstart=87 Nend=87 TPS=Chronic A1 vs A2 vs B1 vs A3 vs A4 vs B2	E1: Isotonic muscle stretch with weight bearing E2: Isotonic stretch without weight bearing E3: Isokinetic stretch C1: Healthy isotonic muscle stretch with weight bearing C2: Healthy isotonic stretch without weight bearing C3: Healthy isokinetic stretch Duration: 20min/d, 1d	E1/E2/E3 vs C1/C2/C3: Kinematic gait parameters (-) kinetic gait parameters (-) spatio-temporal gait parameters (-) Duration stance, Duration of swing, Walking speed, Hip angle, Knee angle, Ankle angle, foot-ground forceplate measurements
Ankle Range of Motion Training vs No Treatment		
Rydwik et al. (2006) RCT (5) Nstart=18 Nend=16 TPS=Chronic A vs 0	E: Stimulo-based ankle range of motion training C: No treatment Duration: 30min/d, 3d/wk, for 6wks	E vs C: Short form-36 physical functioning (-) role-physical (-) bodily pain (-) general health (-) vitality (-)

		social functioning (+exp) role-emotional (-) mental health (-) Functional Independence measure (-) Instrumental activity measure-Swedish (-) 6min Walk test (-) 10-m walk speed (-) Number of steps (+con) Timed Up and Go (-) Romberg's test semi-tandem stance (-) tandem stance (-) Muscle strength dorsal extension (-) plantar extension (-) Modified Ashworth scale (-)
Stretching in a Supine Position vs Stretching in a Seated Position		
Fleuren et al. (2006) RCT crossover (6) Nstart=20 Nend=19 TPS=Chronic A1 vs A2	E: Strech flex activity in supine position C: Stretch flex activity in sitting position Duration: 3 tests done per position	E vs C: Pendulum test (+exp) Ashworth Scale Extensors (+exp) Flexors (+con) Muscle Activation by EMG (+exp)
PNF-Based Gait Training vs Conventional Gait Training		
Asghar et al. (2023) RCT (4) Nstart=60 Nend=60 TPS=Chronic A vs 0	E: PNF-based gait training + Routine physical therapy C: Gait-training + Routine physical therapy Duration: E: 50min (30min PNF + 20min routine)/d, 3d/wk, 6wks; C: 40min (20min gait + 20min routine)/d, 3d/wk, 6wks	E vs C: BBS (+exp) swing phase (-) stance phase (-) cadence (-) stride length (-) step length (-) ambulation time (-) velocity (-)
Comparison of Joint Mobilization Techniques		
Buyukturan et al. (2022) RCT (6) Nstart=30 Nend=28 TPS=Chronic A1 vs A2 Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Subtalar joint and talocrural joint mobilization + Standard neurodevelopmental techniques C: Talocrural joint only mobilization + Standard neurodevelopmental techniques Duration: 30min/d, 3d/wk, 4wks	E vs C: BBS(+exp) Dorsiflexion strength(+exp) Plantarflexion strength(+exp) TUG(+exp) Gait speed(+exp)
Peripheral Nerve Mobilization with VR-Based Gait Training vs Conventional Exercises		
Vishnuram et al. (2024) Feasibility/pilot RCT (6) Nstart=8 Nend=8 TPS=Chronic A + B vs 0	E: Peripheral nerve mobilization + VR-based gait training C: Conventional exercises Duration: 2x30-90min/d, 5d/wk, 4wks	E vs C: Gait speed (+exp) stride length (+exp) cadence (+exp)

Also in Table 26 (Virtual Reality)		
Additional Comparisons from the Source Dataset		
Holt et al. (2021) RCT (6) Nstart=63 Nend=55 TPS=Chronic A vs 0	E: Chiropractic spinal adjustments + Physical Therapy C: Sham chiropractic + physical therapy Duration: 15 min/d, 3d/wk, 4 wks chiropractic/sham & 40 min/d, 3d/wk, 4wks physical therapy	E vs C: Fugl-Meyer Assessment (+exp) Upper Extremity (-) Lower Extremity (+exp) Stroke Specific Quality of Life scale (-) Timed Up and GO test (-) Modified Rankin Scale (-) five-repetition Sit-to-Stand (-)
Xie et al. (2018) RCT (6) Nstart=250 Nend=244 TPS=Chronic A vs B	E: Tai Chi Yunshou C: Common Balance Rehabilitation Therapy Duration: 2h/d, 5d/wk, 12wks	E vs C: Fugl-Meyer Assessment UE/LE (+exp) Modified Barthel Index (-) Berg Balance Scale (-) TUG (-) modified falls efficacy scale (+exp) SF-39 (-) Beck depression inventory (+exp)
Hart et al. (2004) RCT (2) Nstart=18 Nend=18 TPS=Chronic A vs 0	E: Tai Chi Chuan exercises C: Conventional care physiotherapy Duration: 60min/d, 2d/wk, 12wk	E vs C: Romberg's Test (No stats) standing on the unaffected leg (No stats) Emory Fractional Ambulation Profile (No stats) Berg Balance Test (No stats) Timed Up and Go Test (No stats) Duke Health Profile (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Nada et al. (2024) RCT (10) Nstart=100 Nend=100 TPS=Chronic A + B + C vs B + C Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E: Radial Extracorporeal Shock Wave Therapy + antispastic meds + stretching excercises C: Sham Radial Extracorporeal Shock Wave Therapy + antispastic meds + stretching excercises Duration: Radial Extracorporeal Shock Wave Therapy: weekly session for 4 wks total; anti-spastic meds: 4 weeks total; stretching: 30 min/d,5 days/wk, 4 wks	E vs C: Modified Ashworth Scale (+exp) Passive ankle dorsiflexion motion (+exp) 10 meter walk test (+exp) H/M ratio (+exp) Heckmatt Scale (-)
Bae et al. (2022) RCT crossover (5) Nstart=18 Nend=18 TPS=Chronic A vs B vs C Primary listing: Table 13 (Orthotic Devices)	E1: Ankle Kinesio taping E2: Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) C: No Taping Duration: 10min familiarization on treadmill + 10min rest+ Start three conditions with 5min washout in between.	E1/E2 vs C: Ankle Dorsi-flexion range of motion (+exp1/2) Gait Speed (+exp1/2) Cadence (+exp1/2) Step length Affected side (+exp1/2) Unaffected side (+exp1/2 E1 vs E2: Ankle Dorsi-flexion range of motion (+exp2) Gait Speed (+exp2) Cadence (+exp2) Step length Affected side (+exp2) Unaffected side (+exp2)

Tedla et al. (2022) RCT (9) Nstart=54 Nend=54 TPS=Subacute A + B vs A vs C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Trunk-targeted,proprioceptive neuromuscular facilitation + Bihemispheric tDCS + Conventional physiotherapy E2: Trunk-targeted,proprioceptive neuromuscular facilitation + sham transcranial direct current stimulation + Conventional physiotherapy C: Convetional physiotherapy Duration: E1/2: 90 mins/d (20 mins of tDCS/sham tDCS + 30 mins of PNF + 40 mins of conventional physiotherapy), 4ds/wk, 6wks; C: 90 mins/d (90 mins of conventional physiotherapy), 4ds/wk, 6wks	E1 vs C: TIS (+exp1) FMA-UE (+exp1) WMFT time score (+exp1) function score (+exp1) 10 meter walk test (-) Stroke specific quality of life (+exp1) E2 vs C: TIS (+exp2) FMA-UE (+exp2) WMFT time score (+exp2) function score (+exp2) 10 meter walk test (-) Stroke specific quality of life (+exp2) E1 vs E2: TIS (+exp1) FMA-UE (+exp1) WMFT time score (+exp1) function score (+exp1) 10 meter walk test (-) Stroke specific quality of life (+exp1)
Ye et al. (2022) RCT (8) Nstart=48 Nend=41 TPS=Chronic A + B vs B Primary listing: Table 53 (Acupuncture and Massage)	E: Baduanjin exercise training + Health education program C: Health education program Duration: 40min/d, 1d/mo, for 24wks Health education program & 40min/d, 3d/wk, for 24wks Baduanjin exercise training	E vs C: Fugl-Meyer Assessment (+exp) Berg Balance Scale (+exp) Manual Muscle Tests Biceps brachii (-) Triceps brachii (+exp) Quadriceps femoris (+exp) Hamstring tendon (+exp) Modified Ashworth Scale (-) % Stance (-) % Swing (-) % Double stance (-) % Single limb support (-) Step length (+exp) Stride length (-) Walking speed (+exp) Cadence (+exp)
Zhai et al. (2021) RCT (8) Nstart=20 Nend=20 TPS=Subacute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China). C: Manual stretching by the appointed physiotherapist Duration: 20min/d, 5d/wk, for 2wks	E vs C: Modified Ashworth Scale (-) Fugl-Meyer Lower Extremity (-) Berg Balance Scale (-) Modified Barthel Index (-) Biomechanical DF PROM (-) DF strength (-) DF Stiffness (-) PF Stiffness (-)
Anandan et al. (2020) RCT (4)	E1: Task-specific training	E1 vs E2: Modified Ashworth Scale (+exp1)

Nstart=74 Nend=50 TPS=Chronic A vs B Primary listing: Table 5 (Task-Specific Training)	E2: Proprioceptive Neuromuscular Facilitation Duration: 60min/session, 10wks	Action Research Arm Test (+exp1) Berg Balance Scale (+exp1) Dynamic Gait Index (+exp1)
dos Santos Junior et al. (2019) RCT (6) Nstart=48 Nend=40 TPS=Chronic A vs A + B vs B Primary listing: Table 26 (Virtual Reality)	E1: Virtual Reality (Nintendo Wii) E2: Virtual Reality + Proprioceptive Neuromuscular Facilitation C: Proprioceptive Neuromuscular Facilitation Duration: 50min/d, 2d/wk, for 8wks	E1/E2 vs C: Fugl-Meyer Assessment (-) Sensory Assessment (-) Balance (-) Lower Limb Motor Function (-) E1 vs E2: Fugl-Meyer Assessment (-) ; - Sensory Assessment (-) ; - Balance (-) ; - Lower Limb Motor Function (-)
Kim & Kang (2018c) RCT (4) Nstart=27 Nend=27 TPS=Chronic A + B vs A Primary listing: Table 9 (Treadmill Training); Table 13 (Orthotic Devices)	E: Treadmill training + Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) C: Sham taping + treadmill training Duration: 50min/d, 5d/wk, 6wks	E vs C: 6-minute walk test (+exp) 10-metre walking test (+exp) Timed up and go test (+exp)
Yoo et al. (2018a) RCT (4) Nstart=16 Nend=16 TPS=Chronic A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robotic ankle stretching exercises C: Conventional stretching board 2d/wk, for 3.5wks (7 sessions total)	E vs C: Ankle ROM (+exp) Sensory organization test (+exp) Speed (-) Cadence (-) Step Length affected (-) Step Length unaffected (+exp)
Alp et al. (2018) RCT (6) Nstart=22 Nend=21 TPS=Chronic A vs 0 Primary listing: Table 31 (Muscle Vibration)	E: Whole Body Vibration (40 hz,4 mm) + Exercise (Stretching and active ROM exercise) C: Sham Vibration + Exercise (Stretching and active ROM exercise) Duration: 15min, 3d/wk, for 4wks Exercise & 5min, 3d/wk, for 4wks WBV/Sham	E vs C: 10-meter Walk Test (+exp) Functional Independence Measurement (-) Modified Ashworth Scale-Ankle (-)
Taheri et al. (2017) RCT (5) Nstart=28 Nend=25 TPS=Subacute A + B vs B Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E: Extracorporeal Shock Wave Therapy + Standard stretching + Oral anti-spastic drugs C: Standard stretching + Oral anti-spastic drugs Duration: 1x/wk for 3wks Extracorporeal shock wave therapy; 30min/d, 5x/wk, for 3wks Standard Stretching; 2mg/d for 4d then 4mg/d, for 3wks oral anti-spastic	E vs C: passive ROM (-) Clonus score (-) 3m Walk test (-) Lower extremity Functional Score (-) Visual Analogue scale-pain (-) Modified Ashworth scale (-)
Krukowska et al. (2016) RCT (4) Nstart=72	E1: Neurodevelopmental BCA E2: PNF method (proprioceptive neuromuscular facilitation)	E1 vs E2: Gait Parameters Total area of support (+exp1)

Nend=72 TPS=Subacute A vs B Primary listing: Table 1 (Neurodevelopmental Techniques and Motor Relearning)	Duration 6d/wk, for 6wks (35 sessions total)	Center of Pressure pathway length (+exp1)
Kim et al. (2015f) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs B Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic therapy (based on proprioceptive neuromuscular facilitation) C: Proprioceptive neuromuscular facilitation on the ground Duration: 30min/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go Test (+exp) Functional Reach Test (+exp) One Leg Stand Test (+exp) Functional Independence Measure (+exp)
Kim et al. (2015b) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs 0 Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic therapy (based on proprioceptive neuromuscular facilitation) C: Conventional therapy Duration: 30min/d, 5d/wk for 6wks conventional rehabilitation for both groups	E vs C: Berg Balance Scale (+exp) Functional Reach Test (+exp) 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp)
Forrester et al. (2014) RCT (5) Nstart=39 Nend=34 TPS=Acute A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Performance-based training with Anklebot stretching C: Manual stretching of ankle Duration: Performance Based Training: 60min, daily Duration not specified	E vs C: 8 m Walk (-) Berg Balance Scale (-) AROM (-) Muscle strength (-) Functional Independence Measure (-) Interlimb temporal symmetry (+exp) Step time ratio (+exp) Interlimb spatial symmetry (+exp) Step length ratio (-) Peak angular velocity (+exp) Mean angular velocity (-) Movement smoothness Normalized jerk (+exp) Target success (+exp) Step time Paretic (-) Non paretic (-) Step time symmetry (+exp) Step length Paretic (-) Non paretic (-) Step length symmetry (+exp)
Chiong et al. (2013) RCT (8) Nstart=9 Nend=8 TPS=Chronic A + B vs C Primary listing: Table 13 (Orthotic Devices)	E: Stretching exercise + wearing toe spreader C: No Orthotic (conventional care) Duration: Daily stretching exercise & wearing spreader over 6mo	E vs C: Gait velocity (-) Stride length (-) Step length (-) Modified Ashworth scale (-) Berg Balance scale (-) Cadence (-) plantar surface contact area (-)

Waldman et al. (2013) RCT (5) Nstart=24 Nend=23 TPS=Chronic A vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robot assisted passive stretching and active movement training C: At-home passive ankle stretching Duration: 60min/d, 3d/wk for 6wks	E vs C: Modified Ashworth Scale (+exp) Stroke Rehabilitation Assessment of Movement (+exp) Berg Balance Scale (+exp) 6 minute Walk Test (-) Ankle Dorsiflexion Passive Range of Motion (+exp) Ankle Dorsiflexion Active Range of Motion (-) Isometric Muscle Strength (+exp) Maximal Voluntary Contraction (+exp) Vertical Ground Reaction during Stance Phase (+exp)
Sahin et al. (2011) RCT (6) Nstart=46 Nend=41 TPS=Chronic A + B vs B Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E: Therapeutic ultrasound + passive stretching exercise C: Passive stretching exercise Duration: 5d/wk, for 4wks stretching exercise & 10min/d, 5d/wk, for 4wks ultrasound	E vs C: Modified Ashworth scale(-) Ankle dorsiflexion ROM (active/passive) (-) Brunnstrom Motor Recovery Stage (lower) (-) Functional Independency Measure (-) MAS, Hmax/Mmax ratio (-)
Carda et al. (2011) RCT (7) Nstart=69 Nend=67 TPS=Chronic A + B + C vs A + D + C vs A + C Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A (100U) + Serial casting + stretching and gait training E2: Botulinum toxin A (100U) + Taping + stretching and gait training E3: Botulinum toxin A (100U) + stretching and gait training Duration: 1wk of serial casting, or 5d of taping, or 30 min, 2sessions/d, 1wk of stretching, then 30min gait training + 20 min stretching, 1session/d, 1wk.	E1 vs E2: Modified Ashworth Scale (+exp1) 6min walking test (-) 10-meter walk test (-) Functional Ambulation category (-) Strength of ankle dorsal flexors (-) Passive range of motion- ankle (+exp1)
Kluding et al. (2008) RCT (5) Nstart=17 Nend=16 TPS=Chronic A + B vs A Primary listing: Table 5 (Task-Specific Training)	E: Task-specific training + Ankle joint mobilizations C: Task-specific training Duration: 30min/d, 2d/wk for 4wk	E vs C: Passive ROM (+exp) Active ROM (+exp) Ankle Kinematics (-); -during sit-to-stand (-); during Gait (-) Weight bearing symmetry; -during static standing (-); - during sit-to-stand (+con) Sit-to-Stand time (+exp) Rivermead mobility index (-)
Baricich et al. (2008) RCT (6) Nstart=23 Nend=23 TPS=Chronic A + B vs A + C vs A + D Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A (500U) + FES E2: Botulinum toxin A (500U) + Taping E3: Botulinum toxin A (500U) + Stretching Duration: 30min/session, 2sessions/d, 5d FES & 5d taping & 30min/session, 2sessions/d for 7d stretching	E1 vs E2 vs E3: Modified Ashworth Scale (-) Passive Range of Motion (-) Motor Action Potential (-) Max Dorsiflexion Angle in Stance Phase (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group
- indicates no statistically significant between groups differences at α=0.05
no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Mobilization Therapy or Placebo may produce greater improvements in motor recovery than Conventional Therapy or Placebo.	1	Li et al. 2024b
1a	Early and Intense Mobilization may not have a difference in efficacy when compared to Care for improving motor recovery.	2	Anjos et al. 2023; Bernhardt et al. 2008
1b	Dynamic Stretching (Tai Chi, Yoga, Pilates) may produce greater improvements in motor recovery than Conventional or No Therapy.	1	Haolin et al. 2024
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving motor recovery.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving motor recovery.	1	Haolin et al. 2024
1a	Body Weight Supported Dynamic Stretching may produce greater improvements in motor recovery than Conventional Therapy.	2	Yu et al. 2020a; Huang et al. 2019
1b	Proprioceptive Neuromuscular Facilitation with virtual reality may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation or virtual reality Alone for improving motor recovery.	1	Dos Santos Junior et al. 2019
1b	Chiropractic spinal adjustments + Physical Therapy may produce greater improvements in motor recovery than Sham chiropractic + physical therapy.	1	Holt et al. 2021
1b	Tai Chi Yunshou may produce greater improvements in motor recovery than Common Balance Rehabilitation Therapy.	1	Xie et al. 2018
1b	Baduanjin exercise training with Health education program may produce greater improvements in motor recovery than Health education program.	1	Ye et al. 2022
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in efficacy when compared to Manual stretching by the appointed physiotherapist for improving motor recovery.	1	Zhai et al. 2021
1b	Virtual Reality (Nintendo Wii) may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	dos Santos Junior et al. 2019
1b	Virtual Reality (Nintendo Wii) may not have a difference in efficacy when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	dos Santos Junior et al. 2019
1b	Therapeutic ultrasound with passive stretching exercise may not have a difference in efficacy when compared to Passive stretching exercise for improving motor recovery.	1	Sahin et al. 2011

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may produce greater improvements in biomechanical gait measures than Conventional Therapy or Placebo.	4	Dengiz et al. 2024; Choi et al. 2023; Park et al. 2022; An et al. 2017
1b	Joint mobilization may result in lesser improvements in biomechanical gait measures when compared to Joint mobilization with active stretching.	1	Cho et al. 2020c
1b	Active Stretching may not have a difference in efficacy when compared to Joint mobilization with active stretching for improving biomechanical gait measures.	1	Cho et al. 2020c
1a	Mobilization With Movement may produce greater improvements in biomechanical gait measures than Muscle Stretching.	2	Park et al. 2020b; Park et al. 2019a
1b	There is conflicting evidence about the effect of Self-ankle mobilization with rehabilitation when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation for improving biomechanical gait measures.	1	Park et al. 2018b
1b	Body Weight Supported Dynamic Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	1	Yu et al. 2020a
2	Technology-Assisted Ankle Stretcher may not have a difference in efficacy when compared to Stretching Board for improving biomechanical gait measures.	1	Yoo et al. 2018a
1b	Isotonic muscle stretch with weight bearing may not have a difference in efficacy when compared to Healthy isotonic muscle stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch for improving biomechanical gait measures.	1	Maynard et al. 2005
2	Proprioceptive neuromuscular facilitation-Based Gait Training may not have a difference in efficacy when compared to Conventional Gait Training for improving biomechanical gait measures.	1	Asghar et al. 2023
1b	Peripheral Nerve Mobilization with virtual reality-Based Gait Training may produce greater improvements in biomechanical gait measures than Conventional Exercises.	1	Vishnuram et al. 2024
2	Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in biomechanical gait measures than No Taping.	1	Bae et al. 2022
1b	Baduanjin exercise training with Health education program may not have a difference in efficacy when compared to Health education program for improving biomechanical gait measures.	1	Ye et al. 2022
2	Robotic ankle stretching exercises may not have a difference in efficacy when compared to Conventional stretching board 2d/wk, for 3.5wks (7 sessions total) for improving biomechanical gait measures.	1	Yoo et al. 2018a
2	Neurodevelopmental Bobath Concept Approach may produce greater improvements in biomechanical gait measures than proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).	1	Krukowska et al. 2016

2	There is conflicting evidence about the effect of Performance-based training with Anklebot stretching when compared to Manual stretching of ankle for improving biomechanical gait measures.	1	Forrester et al. 2014
1b	Stretching exercise with wearing toe spreader may not have a difference in efficacy when compared to No Orthotic (conventional care) for improving biomechanical gait measures.	1	Chiong et al. 2013
2	Robot assisted passive stretching and active movement training may produce greater improvements in biomechanical gait measures than At-home passive ankle stretching.	1	Waldman et al. 2013
2	Task-specific training with Ankle joint mobilizations may not have a difference in efficacy when compared to Task-specific training for improving biomechanical gait measures.	1	Kluding et al. 2008
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving biomechanical gait measures.	1	Baricich et al. 2008

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may produce greater improvements in biomechanical balance measures than Conventional Therapy or Placebo.	5	Dengiz et al. 2024; Arabzadeh et al. 2023; Midan et al. 2022; Kim & Lee 2018a; An et al. 2017
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving biomechanical balance measures.	1	Kim et al. 2024c
1a	There is conflicting evidence about the effect of Dynamic Stretching (Tai Chi, Yoga, Pilates) when compared to Conventional or No Therapy for improving biomechanical balance measures.	3	Chan & Tsang 2017b; Lim et al. 2016; Au-Yeung et al. 2009
1b	Conventional exercises may not have a difference in efficacy when compared to No treatment for improving biomechanical balance measures.	1	Chan & Tsang 2017b
1b	Body Weight Supported Dynamic Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical balance measures.	1	Yu et al. 2020a
1b	There is conflicting evidence about the effect of Baduanjin Training when compared to Conventional Exercise for improving biomechanical balance measures.	1	Yuen et al. 2021
2	Technology-Assisted Ankle Stretcher may produce greater improvements in biomechanical balance measures than Stretching Board.	1	Yoo et al. 2018a
2	Robotic ankle stretching exercises may produce greater improvements in biomechanical balance measures than Conventional stretching board 2d/wk, for 3.5wks (7 sessions total).	1	Yoo et al. 2018a
2	There is conflicting evidence about the effect of Task-specific training with Ankle joint mobilizations when compared to Task-specific training for improving biomechanical balance measures.	1	Kluding et al. 2008

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Functional Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Ghasemi et al. 2018

1a	Mobilization Therapy or Placebo may produce greater improvements in muscle strength than Conventional Therapy or Placebo.	2	Longo et al. 2023; An et al. 2017
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving muscle strength.	2	Lenoir Dit Caron et al. 2024; Song et al. 2021a
1b	Dynamic Stretching may not have a difference in efficacy when compared to SilverSneaker exercises or Usual care for improving muscle strength.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving muscle strength.	1	Taylor-Piliae et al. 2014
1b	Tai Chi or SilverSneakers exercises may not have a difference in efficacy when compared to Usual care for improving muscle strength.	1	Taylor-Piliae et al. 2014
1b	Early Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to late Proprioceptive Neuromuscular Facilitation for improving muscle strength.	1	Morreale et al. 2016
1b	Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Rostami et al. 2024
2	Proprioceptive Neuromuscular Facilitation with Custom Exercises may not have a difference in efficacy when compared to Custom Exercises Alone for improving muscle strength.	1	Stern et al. 1970
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving muscle strength.	1	Rydwik et al. 2006
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in muscle strength than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Baduanjin exercise training with Health education program may produce greater improvements in muscle strength than Health education program.	1	Ye et al. 2022
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in efficacy when compared to Manual stretching by the appointed physiotherapist for improving muscle strength.	1	Zhai et al. 2021
2	Performance-based training with Anklebot stretching may not have a difference in efficacy when compared to Manual stretching of ankle for improving muscle strength.	1	Forrester et al. 2014
2	Robot assisted passive stretching and active movement training may produce greater improvements in muscle strength than At-home passive ankle stretching.	1	Waldman et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving muscle strength.	1	Carda et al. 2011

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	2	Pradines et al. 2019; Ghasemi et al. 2018

1b	There is conflicting evidence about the effect of Mobilization Therapy or Placebo when compared to Conventional Therapy or Placebo for improving spasticity.	2	Li et al. 2024b; Longo et al. 2023
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving spasticity.	1	Rydwik et al. 2006
1b	Stretching in a Supine Position may produce greater improvements in spasticity than Stretching in a Seated Position.	1	Fleuren et al. 2006
1b	Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises may produce greater improvements in spasticity than Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises.	1	Nada et al. 2024
1b	Baduanjin exercise training with Health education program may not have a difference in efficacy when compared to Health education program for improving spasticity.	1	Ye et al. 2022
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in efficacy when compared to Manual stretching by the appointed physiotherapist for improving spasticity.	1	Zhai et al. 2021
2	Task-specific training may produce greater improvements in spasticity than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1b	Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise) may not have a difference in efficacy when compared to Sham Vibration with Exercise (Stretching and active ROM exercise) for improving spasticity.	1	Alp et al. 2018
2	Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not have a difference in efficacy when compared to stretching with Oral anti-spastic drugs for improving spasticity.	1	Taheri et al. 2017
1b	Stretching exercise with wearing toe spreader may not have a difference in efficacy when compared to No Orthotic (conventional care) for improving spasticity.	1	Chiong et al. 2013
2	Robot assisted passive stretching and active movement training may produce greater improvements in spasticity than At-home passive ankle stretching.	1	Waldman et al. 2013
1b	Therapeutic ultrasound with passive stretching exercise may not have a difference in efficacy when compared to Passive stretching exercise for improving spasticity.	1	Sahin et al. 2011
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in spasticity than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving spasticity.	1	Baricich et al. 2008

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Functional Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	1	Ghasemi et al. 2018
1a	Mobilization Therapy or Placebo may produce greater improvements in range of motion than Conventional Therapy or Placebo.	5	Li et al. 2024b; Traxler et al. 2024; Lee et al. 2023b; Longo et al. 2023; Kim & Lee 2018a

1b	Manual therapy with task oriented training and home exercise program may produce greater improvements in range of motion than task oriented training with home exercise program.	1	Traxler et al. 2024
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving range of motion.	1	Lee et al. 2023b
1b	There is conflicting evidence about the effect of Joint mobilization when compared to Joint mobilization with active stretching for improving range of motion.	1	Cho et al. 2020c
1b	There is conflicting evidence about the effect of Active Stretching when compared to Joint mobilization with active stretching for improving range of motion.	1	Cho et al. 2020c
1a	There is conflicting evidence about the effect of Mobilization With Movement when compared to Muscle Stretching for improving range of motion.	2	Park et al. 2020b; Park et al. 2019a
1b	Self-ankle mobilization with rehabilitation may result in lesser improvements in range of motion when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation.	1	Park et al. 2018b
1b	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving range of motion.	1	Zhao et al. 2022a
1b	There is conflicting evidence about the effect of Proprioceptive Neuromuscular Facilitation when compared to Conventional Therapy for improving range of motion.	1	Rostami et al. 2024
2	Technology-Assisted Ankle Stretcher may produce greater improvements in range of motion than Stretching Board.	1	Yoo et al. 2018a
1b	Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises may produce greater improvements in range of motion than Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises.	1	Nada et al. 2024
2	Ankle Kinesio taping may result in lesser improvements in range of motion when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in range of motion than No Taping.	1	Bae et al. 2022
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in efficacy when compared to Manual stretching by the appointed physiotherapist for improving range of motion.	1	Zhai et al. 2021
2	Robotic ankle stretching exercises may produce greater improvements in range of motion than Conventional stretching board 2d/wk, for 3.5wks (7 sessions total).	1	Yoo et al. 2018a
2	Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not have a difference in efficacy when compared to stretching with Oral anti-spastic drugs for improving range of motion.	1	Taheri et al. 2017
2	Performance-based training with Anklebot stretching may not have a difference in efficacy when compared to Manual stretching of ankle for improving range of motion.	1	Forrester et al. 2014

2	There is conflicting evidence about the effect of Robot assisted passive stretching and active movement training when compared to At-home passive ankle stretching for improving range of motion.	1	Waldman et al. 2013
1b	Therapeutic ultrasound with passive stretching exercise may not have a difference in efficacy when compared to Passive stretching exercise for improving range of motion.	1	Sahin et al. 2011
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in range of motion than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
2	Task-specific training with Ankle joint mobilizations may produce greater improvements in range of motion than Task-specific training.	1	Kluding et al. 2008
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving range of motion.	1	Baricich et al. 2008

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Functional Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving neurophysiological measures.	1	Ghasemi et al. 2018
1a	There is conflicting evidence about the effect of Mobilization Therapy or Placebo when compared to Conventional Therapy or Placebo for improving neurophysiological measures.	3	Arabzadeh et al. 2023; Longo et al. 2023; Navid et al. 2022
1b	Stretching in a Supine Position may produce greater improvements in neurophysiological measures than Stretching in a Seated Position.	1	Fleuren et al. 2006
1b	Therapeutic ultrasound with passive stretching exercise may not have a difference in efficacy when compared to Passive stretching exercise for improving neurophysiological measures.	1	Sahin et al. 2011

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Early and Intense Mobilization may not have a difference in efficacy when compared to Care for improving aerobic measures.	1	Bernhardt et al. 2008

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Proprioceptive Neuromuscular Facilitation with virtual reality may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation or virtual reality Alone for improving sensory and proprioceptive function.	1	Dos Santos Junior et al. 2019
1b	Virtual Reality (Nintendo Wii) may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving sensory and proprioceptive function.	1	dos Santos Junior et al. 2019

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mobilization Therapy or Placebo may not have a difference in efficacy when compared to Conventional Therapy or Placebo for improving pain.	1	Lee et al. 2023b

1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving pain.	1	Lee et al. 2023b
2	Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not have a difference in efficacy when compared to stretching with Oral anti-spastic drugs for improving pain.	1	Taheri et al. 2017

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may produce greater improvements in activities of daily living than Conventional Therapy or Placebo.	2	Lee et al. 2023b; Longo et al. 2023
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving activities of daily living.	1	Lee et al. 2023b
1b	Early and Intense Mobilization may not have a difference in efficacy when compared to Care for improving activities of daily living.	1	Anjos et al. 2023
1b	Self-ankle mobilization with rehabilitation may not have a difference in efficacy when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation for improving activities of daily living.	1	Park et al. 2018b
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may produce greater improvements in activities of daily living than Conventional or No Therapy.	5	Garcia-Bravo et al. 2024; Haolin et al. 2024; Lenoir Dit Caron et al. 2024; Zhao et al. 2022a; Song et al. 2021a
1b	There is conflicting evidence about the effect of Daoyin with Conventional rehab when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving activities of daily living.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving activities of daily living.	1	Haolin et al. 2024
1b	Early Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to late Proprioceptive Neuromuscular Facilitation for improving activities of daily living.	1	Morreale et al. 2016
1b	Baduanjin Training may not have a difference in efficacy when compared to Conventional Exercise for improving activities of daily living.	1	Yuen et al. 2021
2	Proprioceptive Neuromuscular Facilitation with Custom Exercises may not have a difference in efficacy when compared to Custom Exercises Alone for improving activities of daily living.	1	Stern et al. 1970
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving activities of daily living.	1	Rydwik et al. 2006
1b	Chiropractic spinal adjustments + Physical Therapy may not have a difference in efficacy when compared to Sham chiropractic + physical therapy for improving activities of daily living.	1	Holt et al. 2021
1b	Tai Chi Yunshou may not have a difference in efficacy when compared to Common Balance Rehabilitation Therapy for improving activities of daily living.	1	Xie et al. 2018
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in	1	Zhai et al. 2021

	efficacy when compared to Manual stretching by the appointed physiotherapist for improving activities of daily living.		
1b	Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise) may not have a difference in efficacy when compared to Sham Vibration with Exercise (Stretching and active ROM exercise) for improving activities of daily living.	1	Alp et al. 2018
2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in activities of daily living than Proprioceptive neuromuscular facilitation on the ground.	1	Kim et al. 2015f
2	Performance-based training with Anklebot stretching may not have a difference in efficacy when compared to Manual stretching of ankle for improving activities of daily living.	1	Forrester et al. 2014

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional Stretching may produce greater improvements in gait speed than Conventional Therapy.	1	Pradines et al. 2019
1a	There is conflicting evidence about the effect of Mobilization Therapy or Placebo when compared to Conventional Therapy or Placebo for improving gait speed.	5	Traxler et al. 2024; Dengiz et al. 2024; Lee et al. 2023b; Choi et al. 2023; Park et al. 2022
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to task oriented training with home exercise program for improving gait speed.	1	Traxler et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving gait speed.	1	Kim et al. 2024c
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving gait speed.	1	Lee et al. 2023b
1b	Joint mobilization may result in lesser improvements in gait speed when compared to Joint mobilization with active stretching.	1	Cho et al. 2020c
1b	Active Stretching may not have a difference in efficacy when compared to Joint mobilization with active stretching for improving gait speed.	1	Cho et al. 2020c
1a	There is conflicting evidence about the effect of Mobilization With Movement when compared to Muscle Stretching for improving gait speed.	2	Park et al. 2020b; Park et al. 2019a
1b	Self-ankle mobilization with rehabilitation may result in lesser improvements in gait speed when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation.	1	Park et al. 2018b
1b	There is conflicting evidence about the effect of Dynamic Stretching (Tai Chi, Yoga, Pilates) when compared to Conventional or No Therapy for improving gait speed.	2	Chan & Tsang 2017b; Kim et al. 2015d
1b	Body Weight Supported Dynamic Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	1	Yu et al. 2020a
2	Technology-Assisted Ankle Stretcher may not have a difference in efficacy when compared to Stretching Board for improving gait speed.	1	Yoo et al. 2018a
1b	Isotonic muscle stretch with weight bearing may not have a difference in efficacy when compared to Healthy isotonic muscle	1	Maynard et al. 2005

	stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch for improving gait speed.		
2	There is conflicting evidence about the effect of Ankle Range of Motion Training when compared to No Treatment for improving gait speed.	1	Rydwik et al. 2006
2	Proprioceptive neuromuscular facilitation-Based Gait Training may not have a difference in efficacy when compared to Conventional Gait Training for improving gait speed.	1	Asghar et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in gait speed than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Peripheral Nerve Mobilization with virtual reality-Based Gait Training may produce greater improvements in gait speed than Conventional Exercises.	1	Vishnuram et al. 2024
1b	Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises may produce greater improvements in gait speed than Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises.	1	Nada et al. 2024
2	Ankle Kinesio taping may result in lesser improvements in gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in gait speed than No Taping.	1	Bae et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Convetional physiotherapy for improving gait speed.	1	Tedla et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy for improving gait speed.	1	Tedla et al. 2022
1b	Baduanjin exercise training with Health education program may produce greater improvements in gait speed than Health education program.	1	Ye et al. 2022
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in gait speed than Sham taping with treadmill training.	1	Kim & Kang 2018c
2	Robotic ankle stretching exercises may not have a difference in efficacy when compared to Conventional stretching board 2d/wk, for 3.5wks (7 sessions total) for improving gait speed.	1	Yoo et al. 2018a
1b	Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise) may produce greater improvements in gait speed than Sham Vibration with Exercise (Stretching and active ROM exercise).	1	Alp et al. 2018
2	Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not have a difference in efficacy when compared to stretching with Oral anti-spastic drugs for improving gait speed.	1	Taheri et al. 2017

2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in gait speed than Conventional therapy.	1	Kim et al. 2015b
2	Performance-based training with Anklebot stretching may produce greater improvements in gait speed than Manual stretching of ankle.	1	Forrester et al. 2014
1b	Stretching exercise with wearing toe spreader may not have a difference in efficacy when compared to No Orthotic (conventional care) for improving gait speed.	1	Chiong et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait speed.	1	Carda et al. 2011

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving gait endurance.	1	Kim et al. 2024c
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving gait endurance.	2	Lenoir Dit Caron et al. 2024; Immink et al. 2014
1b	Early Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to late Proprioceptive Neuromuscular Facilitation for improving gait endurance.	1	Morreale et al. 2016
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving gait endurance.	1	Rydwik et al. 2006
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in gait endurance than Sham taping with treadmill training.	1	Kim & Kang 2018c
2	Robot assisted passive stretching and active movement training may not have a difference in efficacy when compared to At-home passive ankle stretching for improving gait endurance.	1	Waldman et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait endurance.	1	Carda et al. 2011

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may produce greater improvements in functional mobility than Conventional Therapy or Placebo.	6	Traxler et al. 2024; Dengiz et al. 2024; Arabzadeh et al. 2023; Choi et al. 2023; Longo et al. 2023; Kim & Lee 2018a
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to task oriented training with home exercise program for improving functional mobility.	1	Traxler et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving functional mobility.	1	Kim et al. 2024c

1b	Early and Intense Mobilization may not have a difference in efficacy when compared to Care for improving functional mobility.	1	Anjos et al. 2023
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving functional mobility.	7	Garcia-Bravo et al. 2024; Lenoir Dit Caron et al. 2024; Song et al. 2021a; Chan & Tsang 2018; Kim et al. 2015d; Immink et al. 2014; Au-Yeung et al. 2009
1b	Dynamic Stretching may not have a difference in efficacy when compared to SilverSneaker exercises or Usual care for improving functional mobility.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving functional mobility.	1	Taylor-Piliae et al. 2014
1b	Baduanjin Training may produce greater improvements in functional mobility than Conventional Exercise.	1	Yuen et al. 2021
2	Proprioceptive Neuromuscular Facilitation with Electrical Stimulation may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation Alone for improving functional mobility.	1	Shim et al. 2020
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving functional mobility.	1	Rydwik et al. 2006
2	Proprioceptive neuromuscular facilitation-Based Gait Training may not have a difference in efficacy when compared to Conventional Gait Training for improving functional mobility.	1	Asghar et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in functional mobility than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Chiropractic spinal adjustments + Physical Therapy may not have a difference in efficacy when compared to Sham chiropractic + physical therapy for improving functional mobility.	1	Holt et al. 2021
1b	Tai Chi Yunshou may not have a difference in efficacy when compared to Common Balance Rehabilitation Therapy for improving functional mobility.	1	Xie et al. 2018
2	Tai Chi Chuan exercises may not have a difference in efficacy when compared to Conventional care physiotherapy for improving functional mobility.	1	Hart et al. 2004
2	Task-specific training may produce greater improvements in functional mobility than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in functional mobility than Sham taping with treadmill training.	1	Kim & Kang 2018c
2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in functional mobility than Proprioceptive neuromuscular facilitation on the ground.	1	Kim et al. 2015f
2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in functional mobility than Conventional therapy.	1	Kim et al. 2015b
2	Robot assisted passive stretching and active movement training may produce greater improvements in functional mobility than At-home passive ankle stretching.	1	Waldman et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to	1	Carda et al. 2011

	Botulinum toxin A (100U) with Taping and stretching and gait training for improving functional mobility.		
2	There is conflicting evidence about the effect of Task-specific training with Ankle joint mobilizations when compared to Task-specific training for improving functional mobility.	1	Kluding et al. 2008

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may produce greater improvements in balance than Conventional Therapy or Placebo.	5	Traxler et al. 2024; Arabzadeh et al. 2023; Choi et al. 2023; Park et al. 2022; Kim & Lee 2018a
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to task oriented training with home exercise program for improving balance.	1	Traxler et al. 2024
1b	Sustained natural apophyseal glides with neurodevelopmental techniques may not have a difference in efficacy when compared to Maitland mobilization with neurodevelopmental techniques for improving balance.	1	Kim et al. 2024c
1b	Early and Intense Mobilization may not have a difference in efficacy when compared to Care for improving balance.	1	Anjos et al. 2023
1b	Mobilization With Movement may produce greater improvements in balance than Muscle Stretching.	1	Park et al. 2019a
1b	There is conflicting evidence about the effect of Self-ankle mobilization with rehabilitation when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation for improving balance.	1	Park et al. 2018b
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may produce greater improvements in balance than Conventional or No Therapy.	7	Garcia-Bravo et al. 2024; Lenoir Dit Caron et al. 2024; Zhao et al. 2022a; Song et al. 2021a; Kim et al. 2015d; Immink et al. 2014; Schmid et al. 2012
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving balance.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving balance.	1	Haolin et al. 2024
1b	Dynamic Stretching may not have a difference in efficacy when compared to SilverSneaker exercises or Usual care for improving balance.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving balance.	1	Taylor-Piliae et al. 2014
1b	Tai Chi or SilverSneakers exercises may not have a difference in efficacy when compared to Usual care for improving balance.	1	Taylor-Piliae et al. 2014
1a	Body Weight Supported Dynamic Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	2	Yu et al. 2020a; Huang et al. 2019
1b	Baduanjin Training may produce greater improvements in balance than Conventional Exercise.	1	Yuen et al. 2021
1b	Proprioceptive Neuromuscular Facilitation may produce greater improvements in balance than Conventional Therapy.	1	Asghar et al. 2021

1b	Proprioceptive Neuromuscular Facilitation with virtual reality may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation or virtual reality Alone for improving balance.	1	Dos Santos Junior et al. 2019
2	Proprioceptive Neuromuscular Facilitation with Electrical Stimulation may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation Alone for improving balance.	1	Shim et al. 2020
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving balance.	1	Rydwik et al. 2006
2	Proprioceptive neuromuscular facilitation-Based Gait Training may produce greater improvements in balance than Conventional Gait Training.	1	Asghar et al. 2023
1b	Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may produce greater improvements in balance than Talocrural joint only mobilization with neurodevelopmental techniques.	1	Buyukturan et al. 2022
1b	Tai Chi Yunshou may not have a difference in efficacy when compared to Common Balance Rehabilitation Therapy for improving balance.	1	Xie et al. 2018
2	Tai Chi Chuan exercises may not have a difference in efficacy when compared to Conventional care physiotherapy for improving balance.	1	Hart et al. 2004
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in balance than Convetional physiotherapy.	1	Tedla et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in balance than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022
1b	Baduanjin exercise training with Health education program may produce greater improvements in balance than Health education program.	1	Ye et al. 2022
1b	Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not have a difference in efficacy when compared to Manual stretching by the appointed physiotherapist for improving balance.	1	Zhai et al. 2021
2	Task-specific training may produce greater improvements in balance than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020
1b	Virtual Reality (Nintendo Wii) may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving balance.	1	dos Santos Junior et al. 2019
2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in balance than Proprioceptive neuromuscular facilitation on the ground.	1	Kim et al. 2015f
2	Aquatic therapy (based on proprioceptive neuromuscular facilitation) may produce greater improvements in balance than Conventional therapy.	1	Kim et al. 2015b
2	Performance-based training with Anklebot stretching may not have a difference in efficacy when compared to Manual stretching of ankle for improving balance.	1	Forrester et al. 2014

1b	Stretching exercise with wearing toe spreader may not have a difference in efficacy when compared to No Orthotic (conventional care) for improving balance.	1	Chiong et al. 2013
2	Robot assisted passive stretching and active movement training may produce greater improvements in balance than At-home passive ankle stretching.	1	Waldman et al. 2013

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mobilization With Movement may produce greater improvements in falls and fear of falling than Muscle Stretching.	1	Park et al. 2020b
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving falls and fear of falling.	2	Lenoir Dit Caron et al. 2024; Schmid et al. 2012
1b	Dynamic Stretching may produce greater improvements in falls and fear of falling than SilverSneaker exercises or Usual care.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving falls and fear of falling.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may produce greater improvements in falls and fear of falling than Usual care.	1	Taylor-Piliae et al. 2014
1b	SilverSneakers exercises may not have a difference in efficacy when compared to Usual care for improving falls and fear of falling.	1	Taylor-Piliae et al. 2014
1b	Body Weight Supported Dynamic Stretching may produce greater improvements in falls and fear of falling than Conventional Therapy.	1	Huang et al. 2019
1b	Baduanjin Training may not have a difference in efficacy when compared to Conventional Exercise for improving falls and fear of falling.	1	Yuen et al. 2021
1b	There is conflicting evidence about the effect of Tai Chi Yunshou when compared to Common Balance Rehabilitation Therapy for improving falls and fear of falling.	1	Xie et al. 2018

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mobilization Therapy or Placebo may produce greater improvements in quality of life than Conventional Therapy or Placebo.	1	Traxler et al. 2024
1b	Manual therapy with task oriented training and home exercise program may not have a difference in efficacy when compared to task oriented training with home exercise program for improving quality of life.	1	Traxler et al. 2024
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving quality of life.	5	Zhao et al. 2022a; Song et al. 2021a; Kim et al. 2015d; Immink et al. 2014; Schmid et al. 2012
1b	Dynamic Stretching may not have a difference in efficacy when compared to SilverSneaker exercises or Usual care for improving quality of life.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving quality of life.	1	Taylor-Piliae et al. 2014
1b	Tai Chi or SilverSneakers exercises may not have a difference in efficacy when compared to Usual care for improving quality of life.	1	Taylor-Piliae et al. 2014

1b	Baduanjin Training may not have a difference in efficacy when compared to Conventional Exercise for improving quality of life.	1	Yuen et al. 2021
2	Ankle Range of Motion Training may not have a difference in efficacy when compared to No Treatment for improving quality of life.	1	Rydwik et al. 2006
1b	Chiropractic spinal adjustments + Physical Therapy may not have a difference in efficacy when compared to Sham chiropractic + physical therapy for improving quality of life.	1	Holt et al. 2021
2	Tai Chi Chuan exercises may not have a difference in efficacy when compared to Conventional care physiotherapy for improving quality of life.	1	Hart et al. 2004
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in quality of life than Convetional physiotherapy.	1	Tedla et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in quality of life than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mobilization Therapy or Placebo may produce greater improvements in mood than Conventional Therapy or Placebo.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving mood.	1	Lee et al. 2023b
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving mood.	2	Lenoir Dit Caron et al. 2024; Immink et al. 2014
1b	Early Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to late Proprioceptive Neuromuscular Facilitation for improving mood.	1	Morreale et al. 2016
1b	Tai Chi Yunshou may produce greater improvements in mood than Common Balance Rehabilitation Therapy.	1	Xie et al. 2018

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving fatigue and sleep.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving fatigue and sleep.	1	Haolin et al. 2024
1b	Dynamic Stretching may not have a difference in efficacy when compared to SilverSneaker exercises or Usual care for improving fatigue and sleep.	1	Taylor-Piliae et al. 2014
1b	Tai Chi may not have a difference in efficacy when compared to SilverSneakers exercises for improving fatigue and sleep.	1	Taylor-Piliae et al. 2014

1b	Tai Chi or SilverSneakers exercises may not have a difference in efficacy when compared to Usual care for improving fatigue and sleep.	1	Taylor-Piliae et al. 2014

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Dynamic Stretching (Tai Chi, Yoga, Pilates) when compared to Conventional or No Therapy for improving cognition.	3	Song et al. 2021a; Chan & Tsang 2018; Chan & Tsang 2017b
1b	Conventional exercises may not have a difference in efficacy when compared to No treatment for improving cognition.	1	Chan & Tsang 2017b
1b	Early Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to late Proprioceptive Neuromuscular Facilitation for improving cognition.	1	Morreale et al. 2016

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mobilization Therapy or Placebo may not have a difference in efficacy when compared to Conventional Therapy or Placebo for improving upper extremity function.	2	Arabzadeh et al. 2023; Lee et al. 2023b
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving upper extremity function.	1	Lee et al. 2023b
1a	Dynamic Stretching (Tai Chi, Yoga, Pilates) may not have a difference in efficacy when compared to Conventional or No Therapy for improving upper extremity function.	2	Garcia-Bravo et al. 2024; Zhao et al. 2022a
1b	There is conflicting evidence about the effect of Chiropractic spinal adjustments + Physical Therapy when compared to Sham chiropractic + physical therapy for improving upper extremity function.	1	Holt et al. 2021
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in upper extremity function than Convetional physiotherapy.	1	Tedla et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in upper extremity function than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022
1b	There is conflicting evidence about the effect of Baduanjin exercise training with Health education program when compared to Health education program for improving upper extremity function.	1	Ye et al. 2022
2	Task-specific training may produce greater improvements in upper extremity function than Proprioceptive Neuromuscular Facilitation.	1	Anandan et al. 2020

Key Points

- Functional Stretching may be beneficial for improving gait speed, but not muscle strength, spasticity, range of motion, and neurophysiological measures, after stroke when compared to Conventional Therapy.
- Mobilization Therapy or Placebo may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living,

functional mobility, balance, and quality of life, but not pain, after stroke when compared to Conventional Therapy or Placebo; the literature is mixed regarding spasticity, neurophysiological measures, and gait speed.

- Manual therapy with task oriented training and home exercise program may be beneficial for improving range of motion, but not gait speed, functional mobility, balance, and quality of life, after stroke when compared to task oriented training with home exercise program.
- Sustained natural apophyseal glides with neurodevelopmental techniques may not be beneficial for improving biomechanical balance measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Maitland mobilization with neurodevelopmental techniques.
- Joint mobilization with acupuncture may not be beneficial for improving range of motion, pain, activities of daily living, and gait speed after stroke when compared to Joint mobilization.
- Early and Intense Mobilization may not be beneficial for improving motor recovery, aerobic measures, activities of daily living, functional mobility, and balance after stroke when compared to Care.
- Joint mobilization may result in lesser improvements in biomechanical gait measures and gait speed when compared to Joint mobilization with active stretching; the literature is mixed regarding range of motion.
- Active Stretching may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Joint mobilization with active stretching; the literature is mixed regarding range of motion.
- Mobilization With Movement may be beneficial for improving biomechanical gait measures, balance, and falls and fear of falling after stroke when compared to Muscle Stretching; the literature is mixed regarding range of motion and gait speed.
- Self-ankle mobilization with rehabilitation may not be beneficial for improving activities of daily living after stroke when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation; Self-ankle mobilization with rehabilitation may result in lesser improvements in range of motion and gait speed when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation; the literature is mixed regarding biomechanical gait measures and balance.
- Dynamic Stretching (Tai Chi, Yoga, Pilates) may be beneficial for improving motor recovery, activities of daily living, and balance, but not muscle strength, range of motion, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional or No Therapy; the literature is mixed regarding biomechanical balance measures and gait speed.
- Daoyin with Conventional rehab may not be beneficial for improving motor recovery and balance after stroke when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab; the literature is mixed regarding activities of daily living.
- Dynamic Stretching may be beneficial for improving falls and fear of falling, but not muscle strength, functional mobility, balance, and quality of life, after stroke when compared to SilverSneaker exercises or Usual care.
- Tai Chi may not be beneficial for improving muscle strength, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to SilverSneakers exercises.
- Body Weight Supported Dynamic Stretching may be beneficial for improving motor recovery and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, gait speed, and balance, after stroke when compared to Conventional Therapy.
- Early Proprioceptive Neuromuscular Facilitation may not be beneficial for improving muscle strength, activities of daily living, and gait endurance after stroke when compared to late Proprioceptive Neuromuscular Facilitation.
- Baduanjin Training may be beneficial for improving functional mobility and balance, but not activities of daily living, falls and fear of falling, and quality of life, after stroke when compared to Conventional Exercise; the literature is mixed regarding biomechanical balance measures.
- Proprioceptive Neuromuscular Facilitation may be beneficial for improving balance, but not muscle strength, after stroke when compared to Conventional Therapy; the literature is mixed regarding range of motion.
- Proprioceptive Neuromuscular Facilitation with Custom Exercises may not be beneficial for improving muscle strength and activities of daily living after stroke when compared to Custom Exercises Alone.

- Proprioceptive Neuromuscular Facilitation with virtual reality may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to proprioceptive neuromuscular facilitation or virtual reality Alone.
- Proprioceptive Neuromuscular Facilitation with Electrical Stimulation may not be beneficial for improving functional mobility and balance after stroke when compared to proprioceptive neuromuscular facilitation Alone.
- Technology-Assisted Ankle Stretcher may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Stretching Board.
- Isotonic muscle stretch with weight bearing may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Healthy isotonic muscle stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch.
- Ankle Range of Motion Training may not be beneficial for improving muscle strength, spasticity, activities of daily living, gait endurance, functional mobility, balance, and quality of life after stroke when compared to No Treatment; the literature is mixed regarding gait speed.
- Stretching in a Supine Position may be beneficial for improving spasticity and neurophysiological measures after stroke when compared to Stretching in a Seated Position.
- Proprioceptive neuromuscular facilitation-Based Gait Training may be beneficial for improving balance, but not biomechanical gait measures, gait speed, and functional mobility, after stroke when compared to Conventional Gait Training.
- Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may be beneficial for improving muscle strength, gait speed, functional mobility, and balance after stroke when compared to Talocrural joint only mobilization with neurodevelopmental techniques.
- Peripheral Nerve Mobilization with virtual reality-Based Gait Training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional Exercises.
- Chiropractic spinal adjustments + Physical Therapy may be beneficial for improving motor recovery, but not activities of daily living, functional mobility, and quality of life, after stroke when compared to Sham chiropractic + physical therapy.
- Tai Chi Yunshou may be beneficial for improving motor recovery, but not activities of daily living, functional mobility, and balance, after stroke when compared to Common Balance Rehabilitation Therapy; the literature is mixed regarding falls and fear of falling.
- Tai Chi Chuan exercises may not be beneficial for improving functional mobility, balance, and quality of life after stroke when compared to Conventional care physiotherapy.
- Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises may be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises.
- Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures, range of motion, and gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Convetional physiotherapy.
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.
- Baduanjin exercise training with Health education program may be beneficial for improving motor recovery, muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Health education program.
- Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not be beneficial for improving motor recovery, muscle strength, spasticity, range of motion, activities of daily living, and balance after stroke when compared to Manual stretching by the appointed physiotherapist.

- Task-specific training may be beneficial for improving spasticity, functional mobility, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Sham taping with treadmill training.
- Robotic ankle stretching exercises may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional stretching board 2d/wk, for 3.5wks (7 sessions total).
- Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise) may be beneficial for improving gait speed, but not spasticity and activities of daily living, after stroke when compared to Sham Vibration with Exercise (Stretching and active ROM exercise).
- Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not be beneficial for improving spasticity, range of motion, pain, and gait speed after stroke when compared to stretching with Oral anti-spastic drugs.
- Neurodevelopmental Bobath Concept Approach may be beneficial for improving biomechanical gait measures after stroke when compared to proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).
- Aquatic therapy (based on proprioceptive neuromuscular facilitation) may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Proprioceptive neuromuscular facilitation on the ground.
- Aquatic therapy (based on proprioceptive neuromuscular facilitation) may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Conventional therapy.
- Performance-based training with Anklebot stretching may be beneficial for improving gait speed, but not muscle strength, range of motion, activities of daily living, and balance, after stroke when compared to Manual stretching of ankle; the literature is mixed regarding biomechanical gait measures.
- Stretching exercise with wearing toe spreader may not be beneficial for improving biomechanical gait measures, spasticity, gait speed, and balance after stroke when compared to No Orthotic (conventional care).
- Robot assisted passive stretching and active movement training may be beneficial for improving biomechanical gait measures, muscle strength, spasticity, functional mobility, and balance, but not gait endurance, after stroke when compared to At-home passive ankle stretching; the literature is mixed regarding range of motion.
- Therapeutic ultrasound with passive stretching exercise may not be beneficial for improving motor recovery, spasticity, range of motion, and neurophysiological measures after stroke when compared to Passive stretching exercise.
- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.
- Task-specific training with Ankle joint mobilizations may be beneficial for improving range of motion, but not biomechanical gait measures, after stroke when compared to Task-specific training; the literature is mixed regarding biomechanical balance measures and functional mobility.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Lower Limb Robot with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Daoyin with Lower Limb Robot with Conventional rehab.

- Conventional exercises may not be beneficial for improving biomechanical balance measures after stroke when compared to No treatment.
- Tai Chi may be beneficial for improving falls and fear of falling, but not muscle strength, balance, and quality of life, after stroke when compared to Usual care.
- SilverSneakers exercises may not be beneficial for improving falls and fear of falling, muscle strength, balance, and quality of life after stroke when compared to Usual care.
- Ankle Kinesio taping may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.

Summary of Key Points: Stretching or Mobilization Exercises

Intervention	Control(s)	Function domain(s)	Effect
Functional Stretching	Conventional Therapy	Gait speed	+
Functional Stretching	Conventional Therapy	Muscle strength, spasticity, range of motion, neurophysiological measures	–
Mobilization Therapy or Placebo	Conventional Therapy or Placebo	Motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living, functional mobility, balance, quality of life	+
Mobilization Therapy or Placebo	Conventional Therapy or Placebo	Pain	–
Mobilization Therapy or Placebo	Conventional Therapy or Placebo	Spasticity, neurophysiological measures, gait speed	=
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program	Range of motion	+
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program	Gait speed, functional mobility, balance, quality of life	–
Sustained natural apophyseal glides with neurodevelopmental techniques	Maitland mobilization with neurodevelopmental techniques	Biomechanical balance measures, gait speed, gait endurance, functional mobility, balance	–
Joint mobilization with acupuncture	Joint mobilization	Range of motion, pain, activities of daily living, gait speed	–
Early and Intense Mobilization	Care	Motor recovery, aerobic measures, activities of daily living, functional mobility, balance	–
Joint mobilization	Joint mobilization with active stretching	Biomechanical gait measures, gait speed	–
Joint mobilization	Joint mobilization with active stretching	Range of motion	=
Active Stretching	Joint mobilization with active stretching	Biomechanical gait measures, gait speed	–
Active Stretching	Joint mobilization with active stretching	Range of motion	=
Mobilization With Movement	Muscle Stretching	Biomechanical gait measures, balance, falls and fear of falling	+

Mobilization With Movement	Muscle Stretching	Range of motion, gait speed	=
Self-ankle mobilization with rehabilitation	Self-ankle mobilization with 10-degree inclined board with rehabilitation	Activities of daily living	–
Self-ankle mobilization with rehabilitation	Self-ankle mobilization with 10-degree inclined board with rehabilitation	Range of motion, gait speed	–
Self-ankle mobilization with rehabilitation	Self-ankle mobilization with 10-degree inclined board with rehabilitation	Biomechanical gait measures, balance	=
Dynamic Stretching (Tai Chi, Yoga, Pilates)	Conventional or No Therapy	Motor recovery, activities of daily living, balance	+
Dynamic Stretching (Tai Chi, Yoga, Pilates)	Conventional or No Therapy	Muscle strength, range of motion, gait endurance, functional mobility, falls and fear of falling, quality of life	–
Dynamic Stretching (Tai Chi, Yoga, Pilates)	Conventional or No Therapy	Biomechanical balance measures, gait speed	=
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab	Motor recovery, balance	–
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab	Activities of daily living	=
Dynamic Stretching	SilverSneaker exercises vs Usual care	Falls and fear of falling	+
Dynamic Stretching	SilverSneaker exercises vs Usual care	Muscle strength, functional mobility, balance, quality of life	–
Tai Chi	SilverSneakers exercises	Muscle strength, functional mobility, balance, falls and fear of falling, quality of life	–
Body Weight Supported Dynamic Stretching	Conventional Therapy	Motor recovery, falls and fear of falling	+
Body Weight Supported Dynamic Stretching	Conventional Therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, balance	–
Early Proprioceptive Neuromuscular Facilitation	late Proprioceptive Neuromuscular Facilitation	Muscle strength, activities of daily living, gait endurance	–
Baduanjin Training	Conventional Exercise	Functional mobility, balance	+
Baduanjin Training	Conventional Exercise	Activities of daily living, falls and fear of falling, quality of life	–
Baduanjin Training	Conventional Exercise	Biomechanical balance measures	=
Proprioceptive Neuromuscular Facilitation	Conventional Therapy	Balance	+
Proprioceptive Neuromuscular Facilitation	Conventional Therapy	Muscle strength	–
Proprioceptive Neuromuscular Facilitation	Conventional Therapy	Range of motion	=

Proprioceptive Neuromuscular Facilitation with Custom Exercises	Custom Exercises Alone	Muscle strength, activities of daily living	–
Proprioceptive Neuromuscular Facilitation with virtual reality	proprioceptive neuromuscular facilitation or virtual reality Alone	Motor recovery, sensory and proprioceptive function, balance	–
Proprioceptive Neuromuscular Facilitation with virtual reality	proprioceptive neuromuscular facilitation or virtual reality Alone	Motor recovery	–
Proprioceptive Neuromuscular Facilitation with Electrical Stimulation	proprioceptive neuromuscular facilitation Alone	Functional mobility, balance	–
Technology-Assisted Ankle Stretcher	Stretching Board	Biomechanical balance measures, range of motion	+
Technology-Assisted Ankle Stretcher	Stretching Board	Biomechanical gait measures, gait speed	–
Isotonic muscle stretch with weight bearing	Healthy isotonic muscle stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch	Biomechanical gait measures, gait speed	–
Ankle Range of Motion Training	No Treatment	Muscle strength, spasticity, activities of daily living, gait endurance, functional mobility, balance, quality of life	–
Ankle Range of Motion Training	No Treatment	Gait speed	=
Stretching in a Supine Position	Stretching in a Seated Position	Spasticity, neurophysiological measures	+
Proprioceptive neuromuscular facilitation-Based Gait Training	Conventional Gait Training	Balance	+
Proprioceptive neuromuscular facilitation-Based Gait Training	Conventional Gait Training	Biomechanical gait measures, gait speed, functional mobility	–
Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques	Talocrural joint only mobilization with neurodevelopmental techniques	Muscle strength, gait speed, functional mobility, balance	+
Peripheral Nerve Mobilization with virtual reality-Based Gait Training	Conventional Exercises	Biomechanical gait measures, gait speed	+
Chiropractic spinal adjustments + Physical Therapy	Sham chiropractic + physical therapy	Motor recovery	+
Chiropractic spinal adjustments + Physical Therapy	Sham chiropractic + physical therapy	Activities of daily living, functional mobility, quality of life	–
Tai Chi Yunshou	Common Balance Rehabilitation Therapy	Motor recovery	+
Tai Chi Yunshou	Common Balance Rehabilitation Therapy	Activities of daily living, functional mobility, balance	–
Tai Chi Yunshou	Common Balance Rehabilitation Therapy	Falls and fear of falling	=
Tai Chi Chuan exercises	Conventional care physiotherapy	Functional mobility, balance, quality of life	–
Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises	Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises	Spasticity, range of motion, gait speed	+
Ankle Kinesio taping	Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping	Biomechanical gait measures, range of motion, gait speed	–

	(proprioceptive neuromuscular facilitation-KT)		
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Convetional physiotherapy	Balance, quality of life	+
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Convetional physiotherapy	Gait speed	−
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy	Balance, quality of life	+
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy	Gait speed	−
Baduanjin exercise training with Health education program	Health education program	Motor recovery, muscle strength, gait speed, balance	+
Baduanjin exercise training with Health education program	Health education program	Biomechanical gait measures, spasticity	−
Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China)	Manual stretching by the appointed physiotherapist	Motor recovery, muscle strength, spasticity, range of motion, activities of daily living, balance	−
Task-specific training	Proprioceptive Neuromuscular Facilitation	Spasticity, functional mobility, balance	+
Virtual Reality (Nintendo Wii)	Proprioceptive Neuromuscular Facilitation	Motor recovery, sensory and proprioceptive function, balance	−
Virtual Reality (Nintendo Wii)	Virtual Reality with Proprioceptive Neuromuscular Facilitation	Motor recovery	−
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training	Gait speed, gait endurance, functional mobility	+
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training	Gait endurance, functional mobility	+
Robotic ankle stretching exercises	Conventional stretching board 2d/wk, for 3.5wks (7 sessions total)	Biomechanical balance measures, range of motion	+
Robotic ankle stretching exercises	Conventional stretching board 2d/wk, for 3.5wks (7 sessions total)	Biomechanical gait measures, gait speed	−
Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise)	Sham Vibration with Exercise (Stretching and active ROM exercise)	Gait speed	+
Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise)	Sham Vibration with Exercise (Stretching and active ROM exercise)	Spasticity, activities of daily living	−

Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs	stretching with Oral anti-spastic drugs	Spasticity, range of motion, pain, gait speed	–
Neurodevelopmental Bobath Concept Approach	proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation)	Biomechanical gait measures	+
Aquatic therapy (based on proprioceptive neuromuscular facilitation)	Proprioceptive neuromuscular facilitation on the ground	Activities of daily living, functional mobility, balance	+
Aquatic therapy (based on proprioceptive neuromuscular facilitation)	Conventional therapy	Gait speed, functional mobility, balance	+
Performance-based training with Anklebot stretching	Manual stretching of ankle	Gait speed	+
Performance-based training with Anklebot stretching	Manual stretching of ankle	Muscle strength, range of motion, activities of daily living, balance	–
Performance-based training with Anklebot stretching	Manual stretching of ankle	Biomechanical gait measures	=
Stretching exercise with wearing toe spreader	No Orthotic (conventional care)	Biomechanical gait measures, spasticity, gait speed, balance	–
Robot assisted passive stretching and active movement training	At-home passive ankle stretching	Biomechanical gait measures, muscle strength, spasticity, functional mobility, balance	+
Robot assisted passive stretching and active movement training	At-home passive ankle stretching	Gait endurance	–
Robot assisted passive stretching and active movement training	At-home passive ankle stretching	Range of motion	=
Therapeutic ultrasound with passive stretching exercise	Passive stretching exercise	Motor recovery, spasticity, range of motion, neurophysiological measures	–
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Spasticity, range of motion	+
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Muscle strength, gait speed, gait endurance, functional mobility	–
Task-specific training with Ankle joint mobilizations	Task-specific training	Range of motion	+
Task-specific training with Ankle joint mobilizations	Task-specific training	Biomechanical gait measures	–
Task-specific training with Ankle joint mobilizations	Task-specific training	Biomechanical balance measures, functional mobility	=
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching	Biomechanical gait measures, spasticity, range of motion	–
Lower Limb Robot with Conventional rehab	Daoyin with Lower Limb Robot with Conventional rehab	Motor recovery, activities of daily living, balance	–
Conventional exercises	No treatment	Biomechanical balance measures	–
Tai Chi	Usual care	Falls and fear of falling	+
SilverSneakers exercises	Usual care	Falls and fear of falling, muscle strength, balance, quality of life	–

Tai Chi	Usual care	Muscle strength, balance, quality of life	–
Ankle Kinesio taping	No Taping	Biomechanical gait measures, range of motion, gait speed	+
Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT)	No Taping	Biomechanical gait measures, range of motion, gait speed	+

Orthotic Devices



Adopted from: https://unsplash.com/

Orthotics are defined as medical devices used to improve the function and mobility of the body. Commonly used orthotics used in post-stroke rehabilitation of the lower extremity include ankle foot orthoses and shoe lifts. Shoe lifts or wedges alter biomechanical positioning by compelling a weight shift to the paretic side and consequently redistribute weight more symmetrically. This has the potential to improve the ability for functional ambulation and quality gait cycles. Ankle-foot orthotics (also known as foot-drop splints) aim to stabilize the foot and ankle and during weight- bearing and lift the toes while stepping, in effect reducing foot drop (Tyson & Kent, 2013). Other assistive devices including taping and canes are also reviewed below.

A total of 82 RCTs were found that evaluated orthotic devices for lower extremity motor rehabilitation. Eighteen RCTs evaluated taping interventions (Gup et al. 2024; Jung et al. 2024; Moon et al. 2024; Hosbas et al. 2023; Wang et al. 2022c; Cho et al. 2022b; Jung et al. 2022; In et al. 2021b; Kurul et al. 2021; Mehraein et al. 2021; Cho et al. 2020b; Choi et al. 2020b; Park et al. 2020a; Chen et al. 2019c; Shin et al. 2019; Sheng et al. 2019; Kim & Kang 2018; Maguire et al. 2010). Two RCTs compared Taping With Electrical Stimulation with Electrical Stimulation or Taping Alone or No Taping (Bae et al. 2022; In et al. 2021b). One RCT compared New Body Orthosis with No Orthosis (Thijssen et al. 2007). Five RCTs compared Shoe Insole Orthotics During Walking with Overground Walking or Conventional Therapy or Sham (Liu et al. 2021a; Liao et al. 2018; Ferreira et al. 2017; Sungkarat 2011; Eckhardt et al. 2011). Two RCTs compared Weight-Shift Therapy Using Shoe Insert with Conventional Treatment (Sheikh et al. 2016; Aruin et al. 2012). Ten RCTs compared Ankle-Foot Orthosis with No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis (Rimaud et al. 2024; Karpe et al. 2019; Yeung et al. 2018; Pomeroy et al. 2016; Zissimopoulos et al. 2015; Lee et al. 2014c; Erel et al. 2011; Chen et al. 2010; Simons et al. 2009; de Wit et al. 2004). One RCT compared Ankle-Foot Orthosis with Botulinum Toxin with Botulinum Toxin (Farina et al. 2008). One RCT compared Taping with Botulinum Toxin with Botulinum Toxin (Reiter et al. 1998). One RCT compared Early Ankle Foot Orthosis with Late Ankle Foot Orthosis (Nikamp et al. 2017). Sixteen RCTs evaluated A Comparison of Orthoses (Pradhan et al. 2024; Msechu et al. 2023; Ling et al. 2023; Daryabor et al. 2022; Yamamoto et al. 2022; Daryabor et al. 2021; Karakkattil et al. 2020; Katsuhira et al. 2018; Tyson et al. 2018; Yamamoto et al. 2018; Zollo et al. 2015; Do et al. 2014; Rao et al. 2014; de Seze et al. 2011; Forghany et al. 2010; Tyson & Rogerson 2009). Two RCTs compared Anterior Ankle-Foot Orthosis with Posterior Ankle-Foot Orthosis (Chen et al. 2022; Chen et al. 2010). One RCT compared Bivalve Cast with Pressure-Relieving Ankle-Foot Orthosis vs Conventional Care (DeMeyer et al. 2015). One RCT compared Toe Spreader with Conventional Care (Chiong et al. 2013). Three RCTs evaluated Comparing Types of Canes (Huang et al. 2022b; Avelino et al. 2021; Jeong et al. 2015). One RCT compared NMES Orthosis with Ankle-Foot Orthosis (Morone et al. 2012b). One RCT compared

Ankle-Foot Orthosis + Balance Training Shoes with Ankle-Foot Orthosis + Regular Shoes (Farmani et al. 2016). One RCT compared Night Splint with Standing on a Tilt Table (Robinson et al. 2008). Three RCTs compared Arm Sling with No Therapy (Morone et al. 2024; Jeong et al. 2017; Yavuzer & Ergin 2002). Three RCTs compared Wearable Devices with Conventional Care or No Therapy (Ho et al. 2024; Lee et al. 2017b; Pomeroy et al. 2001). One RCT evaluated Standing Frame Assistive Device (Bagley et al. 2005). Two RCTs compared Treadmill Training with Orthotic Devices with Treadmill Training Alone (An et al. 2020; In et al. 2017). One RCT compared Visual Biofeedback with Orthotic Devices with Sham Feedback (Tamburella et al. 2017). One RCT compared Regent Suit with Conventional Therapy (Iuppariello et al. 2018). One RCT compared Knee Immobilizer Brace with Foot Orthosis or Rigid Taping with Knee Immobilizer Brace (Talu & Bazancir 2017). One RCT compared Knee Orthosis with Gait Training with Gait Training Alone (Ito et al. 2024).

In addition, 16 RCTs in which orthotic devices formed part of a combined or comparative intervention are cross-referenced at the end of Table 13; their primary listings appear in other tables.

The methodological details and results of all 82 RCTs are presented in Table 13.

Table 13. RCTs Evaluating Orthotic Devices for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Gup et al. (2024) RCT (6) Nstart=76 Nend=69 TPS=Acute A1 vs A2 vs 0	E1: Anterior Kinesio Taping, E2: Posterior Kinesio Taping C: Standard physiotherapy Duration: 48 hr taping	E1/E2 vs C: TIS (+exp1/2) PASS (+exp1/2) BBS (+exp1/2) FTSST (+exp1/2) E1 vs E2: TIS (+exp1) PASS (+exp1) BBS (-) FTSST (-)
Jung et al. (2024) RCT (6) Nstart=45 Nend=42 TPS=Chronic A1 vs A2 vs 0	E1: Forward Rotation with Posterior Pelvic Tilt Taping; E2: Backward Rotation with Posterior Pelvic Tilt Taping C: Placebo Taping Duration: 1 session	E1 vs E2 vs C: pelvic inclination (+exp) TIS (-) Static Sitting Balance index (-) Dynamic balance (-) Coordination (-) Sway area (-) Sway path length (-) Sway velocity (-) Gait kinetics Velocity (-) cadence (-) step length-affected (+exp) step length-unaffected (+exp) stride length-affected stride length-unaffected single support time-affected Gait symmetry spatial symmetry (-) temporal symmetry (-)
Moon et al. (2024) RCT (6)	E: Floss band around ankle C: Sham band	E vs C: PROM

Nstart=40 Nend=40 TPS=Chronic A vs 0	Duration: 3min, 1x	Dorsiflexion (+exp) Plantarflexion (-) Weight-bearing lunge test (+exp) Static balance sway area (+exp) foot strike (+exp) toe-off (-)
Hosbas et al. (2023) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Non-elastic ankle taping + conventional physiotherapy C: Conventional physiotherapy Duration: 45min/d, 5d/wk, 4wks	E vs C: Dynamic gait index (-)
Wang et al. (2022c) RCT (6) Nstart=21 Nend=19 TPS=Chronic A vs 0 Also in Table 9 (Treadmill Training); Table 11 (Balance Training); Table 21 (Strength and Resistance Training)	E: Non-elastic taping + Exercise training (progressive resistance exercise, balance training and treadmill training) C: Sham taping + exercise training Duration: 50min/d, 2d/wk, for 6wks	E vs C: double support time (+exp) spatial symmetry index (-) temporal symmetry index (-) velocity (-) BBS (-) 6MWT (-) FES-I (-)
Cho et al. (2022b) RCT (5) Nstart=40 Nend=40 TPS=Chronic A vs B	E1: Extensor Digitorum Longus Taping, E2: Tibialis Anterior Taping Duration: 24 hrs	E1 vs E2: limited stability (-) cadence (-) gait speed (-) stride length (-)
Jung et al. (2022) RCT (6) Nstart=63 Nend=60 TPS=Chronic A + B vs A1 vs A2	E1: Pelvic stability training + posterior and lateral taping E2: Pelvic stability training with posterior taping only C: Pelvic stability training Duration: 30min/d, 5d/wk, 6wks	E1 vs E2: Abductor strength(+exp1) Anterior pelvic tilt(-) Lateral pelvic tilt(+exp1) 10MWT(-) E1 vs C: Abductor strength(+exp1) Anterior pelvic tilt(+exp1) Lateral pelvic tilt(+exp1) 10MWT(+exp1) E2 vs C: Abductor strength(-) Anterior pelvic tilt(+exp2) Lateral pelvic tilt(-) 10MWT(+exp2)
In et al. (2021a) RCT (7) Nstart=40 Nend=40 TPS=Chronic A + B + C + D vs E + C + D	E: Posterior pelvic tilt taping + functional movements (sitting-to- standing + indoor walking + stair walking training) C: Functional movements (sitting-to-standing + indoor walking + stair walking training) Duration: 30min/d, 5d/wk, 6wks	E vs C: Pelvic inclination (+exp) Isometric muscle strength (+exp) 10-metre walk test (+exp)
Kurul et al. (2021) RCT (5) Nstart=68	E: Kinesio taping + conventional therapy C: Conventional therapy Duration: 60min/d, 5d/wk, 2wks	E vs C: Balance Evaluation Systems Test (+exp) Functional Reach Test (+exp)

Nend=61 TPS=Chronic A vs 0		Timed Up and Go Test (-) Tetrax Balance System (postural stability & static balance) (-) Barthel Index (-)
Mehraein et al. (2021) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Inhibitory kinesiology taping C: No treatment Duration: 48hr	E vs C: H-reflex Assessment Hmax/Mmax (+exp) Modified Ashworth Scale (-)
Cho et al. (2020b) RCT (8) Nstart=28 Nend=28 TPS=Chronic A + B vs A Also in Table 4 (Trunk Training)	E: Trunk rehabilitation + Kinesio taping C: Trunk rehabilitation + Placebo taping Duration: 18hr/d, 7d/wk, 8wks Taping & 60min/d, 3d/wk, 8wks Trunk rehabilitation	E vs C: Dynamic center of pressure affected-side sway area (-) unaffected-side sway area (-) forward sway area (+exp) backward sway area (-) LOS total area (-) Static sway area (-) Static sway length (-)
Choi et al. (2020b) RCT (8) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Non-elastic sports tape C: Placebo tape Duration: One session	E vs C: Static balance (+exp) Dynamic balance (+exp) Gait velocity (+exp) Cadence (+exp) Step Length Paretic (+exp) Non-paretic (+exp) Stride length Paretic (+exp) Non-paretic (+exp)
Park et al. (2020a) RCT crossover (8) Nstart=20 Nend=20 TPS=Chronic A vs B vs C	E1: Tibialis anterior taping E2: Calf taping C: No intervention Duration: Not reported	E1 vs E2 vs C: COP excursion Paretic side area (-) Nonparetic side area (-) Forward area (+exp2) Backward area (+exp1)
Chen et al. (2019c) RCT (8) Nstart=28 Nend=28 TPS=Chronic A vs 0	E: Kinesiotaping with outpatient rehabilitation C: Sham taping with outpatient rehabilitation Duration: 50min, 2-3d/wk outpatient rehabilitation	E vs C: Berg Balance Scale (+exp) 6-minute walk test (+exp) Falls Efficacy Scale (-) Walking speed (-)
Shin et al. (2019) RCT crossover (8) Nstart=15 Nend=15 TPS=Chronic A vs 0 vs B	E: Ankle Eversion Taping C1: Placebo Taping C2: No taping Duration: single session - 10min washout period	E1 vs C1/C2: Gait Speed (+exp) Step Length (+exp) Stride Length (+exp) Cadence (+exp)
Sheng et al. (2019) RCT (6) Nstart=60 Nend=60	E: Routine rehabilitation + kinesio taping C: Routine rehabilitation Duration: Not Specified	E vs C: 10-MeterWalking Test (+exp) Timed Up and Go Test (+exp) stride length(+exp)

TPS=Chronic A vs 0		stance phase(+exp) swing phase(+exp)
Kim & Kang (2018c) RCT (4) Nstart=27 Nend=27 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training); Table 12 (Stretching or Mobilization Exercises)	E: Treadmill training + Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) C: Sham taping + treadmill training Duration: 50min/d, 5d/wk, 6wks	E vs C: 6-minute walk test (+exp) 10-metre walking test (+exp) Timed up and go test (+exp)
Maguire et al. (2010) RCT (3) Nstart=13 Nend=13 TPS=Subacute A vs B vs C	E1: Walking with hip abductor taping E2: Walking with TheraTogs E3: Walking with cane at normal height Duration: Until six gait cycles with clear datasets were collected	E2 vs E3: Peak EMG for gluteus medius (+exp2) tensor fascia lata (+exp2) gait speed (-) E1 vs E3: Peak EMG for gluteus medius (+exp1) tensor fascia lata (-) gait speed (-) E1 vs E2: Peak EMG for gluteus medius (-) tensor fascia lata (-)
Taping With Electrical Stimulation vs Electrical Stimulation or Taping Alone or No Taping		
Bae et al. (2022) RCT crossover (5) Nstart=18 Nend=18 TPS=Chronic A vs B vs C Also in Table 12 (Stretching or Mobilization Exercises)	E1: Ankle Kinesio taping E2: Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) C: No Taping Duration: 1 session: Total time 59 min (10 min familiarization phase + 10 min break before data collection + 3 min break after each trial (3 trials in total) + 5 min interval between each condition)	E1/E2 vs C: Ankle Dorsi-flexion range of motion (+exp1/2) Gait Speed (+exp1/2) Cadence (+exp1/2) Step length Affected side (+exp1/2) Unaffected side (+exp1/2 E1 vs E2: Ankle Dorsi-flexion range of motion (+exp2) Gait Speed (+exp2) Cadence (+exp2) Step length Affected side (+exp2) Unaffected side (+exp2)
In et al. (2021b) RCT (7) Nstart=50 Nend=46 TPS=Chronic A + B vs A Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E: TENS + Taping + Exercise C: TENS + Exercise Duration: 30min/d, 5d/wk, for 6wks (30 sessions total TENS) +/- tape during session & 30min/5d/wk, for 6wks exercise	E vs C: Composite spasticity score (+exp) Muscle Strength Knee extensor (+exp) Ankle plantar flexor (+exp) 10m walk test (+exp)
New Body Orthosis vs No Orthosis		
Thijssen et al. (2007)	E: New body orthosis	E vs C:

RCT crossover (4) Nstart=27 Nend=27 TPS=Chronic A vs B	C: No orthosis Duration: 3wks	Oxygen uptake during preferred walking speed (+exp) 6m Walk test speed (+exp) cadence (-) step length affected side (+exp) unaffected (+exp) swing phase affected (+exp) unaffected (+exp) stance phase affected (+exp) unaffected side (+exp) double-support (+exp)
Shoe Insole Orthotics During Walking vs Overground Walking or Conventional Therapy or Sham		
Liu et al. (2021a) RCT crossover (7) Nstart=32 Nend=32 TPS=Chronic A vs 0	E: Orthopaedic insoles C: Standard insoles (flat pad) sham Duration: Single session, 1 day wash out	E vs C: Berg balance scale (+exp) Functional reach test (+ecp) Timed-Up- and-go (+exp) Computerized Posturography Static anterioposterior (-) Static mediolateral (+exp) Static velocity (-) Dynamic anterioposterior () Dynamic mediolateral (-) Dynamic velocity (-)
Liao et al. (2018) RCT (8) Nstart=56 Nend=51 TPS=Chronic A + B vs C vs 0 Also in Table 11 (Balance Training); Table 15 (Biofeedback)	E1: Routine rehabilitation + Balance training + Visual biofeedback E2: Routine rehabilitation program + lateral wedge insole C: Routine rehabilitation program Duration: 20min/d, 3d/wk, 6wks balance training & 6 wks usual standing and walking with the show insole	E1/E2 vs C: Balance computerized adaptive test (+exp1, +exp2) Timed up and go (TUG) (+exp1, +exp2) E1 vs E2: Balance computerized adaptive test (-) Timed up and go (TUG) (-)
Ferreira et al. (2017) RCT (6) Nstart=24 Nend=20 TPS=Chronic A vs 0	E: Insoles + Conventional physiotherapy C: Conventional physiotherapy Duration: 12wks	E vs C: Oscillation in center of pressure Maximum (-) Minimum (-) Anterioposterior Range of movement (-) Mediolateral range of movement eye open (+exp) eye closed (-) Trace length of oscillation (-) Sway velocity (-) Equivalent area (-)
Sungkarat (2011) RCT (7) Nstart=40 Nend=35 TPS=Subacute A + B vs 0 Also in Table 15 (Biofeedback)	E: Gait training with Insole Shoe Wedge and Sensors + Auditory feedback + Conventional rehabilitation C: Conventional gait training + Conventional rehabilitation Duration: 30min/d, 5d/wk for 3wks - Conventional rehabilitation, 30min/d, 5d/wk for 3wks - Gait training	E vs C: Gait speed (+exp) Step length asymmetry ratio (+exp) Single support time asymmetry ratio (+exp) Berg balance scale (+exp) Timed up and go (+exp) Loading on paretic leg during stance (+exp)

Eckhardt et al. (2011) RCT (5) Nstart=19 Nend=19 TPS=Subacute A vs B	E: High orthopedic shoe C: Regular shoes without high orthosis Duration: 2wks	E vs C: Without dual-task Timed Up and Go (+exp) Step length affected/unaffected leg (+exp) stance duration affected/unaffected leg (+exp) Cadence (+exp) Walking speed (+exp) Clearance (-) Step width (+exp) Knee extension (-) With dual-task Timed Up and Go (+exp) Step length affected/unaffected leg (+exp) stance duration affected/unaffected leg (+exp) Cadence (+exp) Walking speed (+exp) Clearance (-) Step width (-) Knee extension (-)
Weight-Shift Therapy Using Shoe Insert vs Conventional Treatment		
Sheikh et al. (2016) RCT (7) Nstart=28 Nend=28 TPS=Chronic A vs B	E: Gait training + compelled weight-shift insole device C: Gait training with conventional insole Duration: 90min/d, 6d/wk, 6wks	E vs C: Weight bearing (+exp) Gait velocity (-) Stance symmetry ratio (-) Swing symmetry ratio (-) Overall symmetry ratio (-) Step symmetry ratio (-)
Aruin et al. (2012) RCT (4) Nstart=18 Nend=18 TPS=Chronic A vs 0	E: Compelled Body Weight Shift (CBWS) + Physical Therapy C: Physical Therapy Duration: 60 min, 1d/wk, 6wks Physiotherapy, wearing weighted shoes for ADL, 6wks	E vs C: Symmetric Weight Bearing (-) Gait Velocity (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-)
Ankle-Foot Orthosis vs No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis		
Rimaud et al. (2024) RCT crossover (7) Nstart=15 Nend=15 TPS=Chronic A vs B vs 0	E1: C-AFO ("off the shelf" composite AFO), E2: P-AFO (custom made plastic AFO) C: No treatment (No AFO , shoes only) Duration: 4 sessions, 2wks between each session, 6wks	E1/E2 vs C: 6 min walk test (+exp1/2) walking speed (+exp1/2) steps (-) Vo2 rest (-) VO2 peak (-) VO2 6mwt (-) energy cost (+exp1/2) Spatiotemporal stride length (+exp1/2) stride width (+exp1/2) walking at comfortable speed (-) cycle time (-) double support time (-) step length (+exp1/2) step time (-) step phase (+exp1/2)

		stance phase (-) swing phase (-) cadence (-) paretic leg-ankle plantar flexion angle (+exp1/2) non paretic leg-knee extension angle (+exp1/2) E1 vs E2: 6 min walk test (-) walking speed (-) steps (-) Vo2 rest (-) VO2 peak (-) VO2 6mwt (-) energy cost (-) Spatiotemporal stride length (-) stride width (-) walking at comfortable speed (-) cycle time (-) double support time (-) step length (-) step time (-) step phase (-) stance phase (-) swing phase (-) cadence (-) Paretic leg-ankle plantar flexion angle (-) Non Paretic-knee extension angle (-) Patient satisfaction VAS bigger steps (+exp) less fatigue (+exp) less pain (-) less foot drop (-) less spasticity (-) less foot catching ground (-) less circumduction (-)
Karpe et al. (2019) RCT (3) Nstart=20 Nend=20 TPS=Not reported A vs 0 Also in Table 28 (Functional Electrical Stimulation)	E: Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) + Conventional physiotherapy C: Conventional physiotherapy Duration: 3d/wk, 4wks	E vs C: 10-metre Walk (+exp)
Yeung et al. (2018) RCT (5) Nstart=19 Nend=15 TPS=Chronic A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted ankle-foot- orthosis (AFO) with dorsiflexion assistance C: Sham Ankle foot orthosis (AFO) with torque impedance Duration: 30min/d, 2-4d/wk, 5wks (20 session total)	E vs C: Functional Ambulation Categories (+exp) Fugl-Meyer Assessment (+exp) Modified Ashworth Scale (-) Berg Balance Scale (-) 10-Meter Walk Test (+exp) Six-Minute Walk Test (-) Walking Speed (+exp) Step Length (-)

		Stance Time (-) Swing Time (-) Peak Kinetic Gait Parameters Vertical Force loading response (+exp) Vertical Force loading response unaffected (-) Vertical Force terminal stance (-) Braking Force loading response (-) Propulsive Force terminal stance (-) Peak Kinematic Gait Parameters Foot Tilting at initial contact (-) Ankle Dorsiflexion at stance (-) Ankle Dorsiflexion at swing (-) Knee Flexion at stance (-) Knee Flexion at swing affected (-) Knee Flexion at swing unaffected (+exp) Knee Flexion at swing (-) Hip Flexion at stance (-) Hip Flexion at swing (-)
Pomeroy et al. (2016) RCT (7) Nstart=105 Nend=91 TPS=Acute A vs 0	E: Ankle-foot orthosis (SWIFT cast) + Conventional therapy C: Conventional therapy Duration: 6wks wearing cast during daytime and physiotherapy	E vs C: Walking speed (-) Functional Ambulation category (-) Modified Rivermead mobility index (-) Gait symmetry (-) Peak angular velocity of knee paretic (-) nonparetic (-) Angle of tibia when walking initial contact (-) foot flat (-) midstance (-) heel rise (-) terminal contact (-) midswing (-) Serious adverse events (-) Ratio of stance time (-) Ratio of step lengths (-) Ratio peak angular velocities (-)
Zissimopoulos et al. (2015) RCT crossover (6) Nstart=15 Nend=13 TPS=Chronic A vs B	E: Ankle Foot Orthoses (participants own, non-rigid articulated, dorsiflexion, plantar flexion, posterior leaf spring types) C: No Orthotic Duration: 1 session per treatment	E vs C: Mid-swing Plantar Flexion (+exp) Hip hiking (-) Circumduction (-) Coronal Plane Hip Range of Motion (-) Mediolateral Foot-Placement Ability (-)
Lee et al. (2014c) RCT (5) Nstart=25 Nend=25 TPS=Chronic A + B vs C + B Also in Table 11 (Balance Training)	E: Ankle Foot Orthosis (Joint type) + Balance Training C: No Orthotic + Balance Training Duration: 40min/d, 5d/wk, 6wks	E vs C: Static Balance Index Normal open (+exp) Normal close (-) Pillow open (-) Pillow close (-) Paretic Tibialis Anterior Muscle Activity (+exp)

		Paretic Medial Gastrocnemius Muscle Activity (-)
Erel et al. (2011) RCT (6) Nstart=32 Nend=28 TPS=Chronic A vs 0	E: Dynamic Ankle-foot orthosis C: Conventional care Duration: 3mo	E vs C: Functional Reach test (-) Timed Up and Go (-) Timed Up Stairs (+exp) Timed Downstairs (-) Walking velocity (+exp) Physiological Cost index (+exp)
Chen et al. (2010) RCT crossover (3) Nstart=14 Nend=14 TPS=Chronic A1 vs A2 vs B	E1: Posterior ankle-foot orthosis E2: Anterior ankle-foot orthosis C: No orthosis Duration: 5min/session - 5min washout	E1 vs E2 vs C: Walking speed (-) Step length (-) Cycle times (-) Rear-foot kinematic, swing phase , : - sagittal plane (+exp1) coronal plane (+exp2) tansverse plane (+exp1) (exp2)
Simons et al. (2009) RCT crossover (5) Nstart=23 Nend=20 TPS=Chronic A1 vs A2	E: Wearing Ankle-foot orthosis C: Tested Without wearing Ankle-foot orthosis Duration: One session; 1wk washout	E vs C: Static weight bearing (-) Dynamic weight bearing (-) Dynamic balance contribution (-) Berg Balance scale (+exp) Timed Up and Go (+exp) 10m Walk test (+exp) Functional Ambulation category (+exp) Timed Balance test (-)
de Wit et al. (2004) RCT crossover (6) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Walking with non-articulated plastic ankle-foot orthosis C: Walking without non- articulated plastic ankle-foot orthosis Duration: 6mo wearing AFO	E vs C: Timed Up-and-Go (+exp) Stair Climb (+exp) Walking speed (+exp)
Ankle-Foot Orthosis with Botulinum Toxin vs Botulinum Toxin		
Farina et al. (2008) RCT (5) Nstart=13 Nend=13 TPS=Chronic A + B vs A Also in Table 46 (Botulinum Toxin)	E: Botulinum toxin A (190-320U) + AFO C: Botulinum toxin A (190-320U) Duration: 4mo	E vs C: Modified Ashworth Scale (+exp) 10-Metre Walk Test (-) Baropodometric footprint changes (+exp) Baropodometric changes in time of full load (+exp)
Taping with Botulinum Toxin vs Botulinum Toxin		
Reiter et al. (1998) RCT (5) Nstart=18 Nend=18 TPS=Chronic A + B vs C Also in Table 46 (Botulinum Toxin)	E: Botulinum toxin A (100U) injection into tibialis posterior + ankle-foot adhesive taping C: EMG-guided Botulinum toxin A (190-320U) injection into several calf muscles Duration: Single injection session & 1d/wk, 3wks ankle- foot taping	E vs C: Ankle passive ROM Dorsiflexion (+exp) Eversion (-) Ankle Rest Position Foot extension (-) Foot inversion (-) Modified Ashworth scale (-) 10 m walk test (-) Step length (-)

Early vs Late Ankle Foot Orthosis		
Nikamp et al. (2017) RCT (7) Nstart=33 Nend=26 TPS=Subacute A vs B	E: Early use of ankle-foot orthosis + conventional physical therapy C: Delayed ankle-foot orthosis + conventional physical therapy Duration: E: wk1-wk11, C: wk9- wk11	E vs C: Berg balance scale (+exp1) Functional ambulation categories (-) Rivermead mobility index (-) 10-meter walk test (-) 6-minute walk test (-) Barthel index (+exp1) Timed up and go test (-) Stair test (-)
A Comparison of Orthoses		
Pradhan et al. (2024) RCT crossover (7) Nstart=36 Nend=34 TPS=Not reported A vs B1 vs B2	E1: Low PFR Dynamic Ankle-Foot Orthosis (DAFO); E2: Medium PFR DAFO; E3: High PFR DAFO Duration: Trials conducted on same day for each participant, 30 mins of familiarization period + 3-5mins of rest between balance and walking trials if needed	E3 vs E2/E1: COP velocity (+exp2) COP path length (+exp2/3) Stability score (-) Walking velocity (+exp2) Cadence (+exp1/2) Step length (-) Stride length (-) ankle dorsiflexion maximum peak (+exp2) angular posture during swing phase (-) asymmetrical (+exp3) E1 vs E2: COP velocity (+exp2) COP path length (-) Stability score (-) Walking velocity (+exp2) Cadence (-) Step length (-) Stride length (-) ankle dorsiflexion maximum peak (+exp2) angular posture during swing phase (+exp2) asymmetrical (-)
Msechu et al. (2023) RCT (4) Nstart=27 Nend=25 TPS=Chronic A vs B	E1: Carbon Composite Ankle Foot Orthosis, E2: Posterior Leaf Spring Ankle Foot Orthosis Duration: 7d	E1 vs E2: TUG (-) 10MWT AFO-self-selected walking speed (+exp) AFO-fast walking speed (-) NO-AFO-self-selected walking speed (-) NO-AFO-fast walking speed (-) Client Satisfaction with Device (-)
Ling et al. (2023) RCT (5) Nstart=34 Nend=29 TPS=Subacute A1 vs A2	E: Rigid AFO with Gait training C: Oil Damper AFO with Gait training Duration: 1h/d, 7d/wk, 2wks	E vs C: Pelvic tilt angle initial contact forward backward tilt(-) initial contact rotation(+exp) contralateral foot off forward backward tilt(+exp) contralateral foot off rotation(-) contralateral initial contact forward back tilt(+exp)

		contralateral intitial contact rotation(-) foot off forward/backward tilt(-) Thoracic angle(-) Temporal and spatial factors(-)
Daryabor et al. (2022) RCT (6) Nstart=42 Nend=39 TPS=Subacute A1 vs A2	E: Gait training with AFO-OD (plantarflexion resistance) C: Gait training with AFO-PS (plantarflexion stop) Duration: 60 min/d, 7d/wk, 2 wks	E vs C: Velocity (-) loading response time (-) single stance time (-) pre-swing time (-) swing time (-) cycle time (-) Max COG velocity in loading response (-) in pre swing (-) Ground reaction forces (-) Shank to Vertical Angle (-) Ankle joint angle (-) Ankle joint moment (-) Ankle joint power (-) Knee joint angle (-) Knee angular velocity (-) Knee joint moment (-) Max flexion in loading response (-) Hip Joint angle (-) Hip angular velocity (-) Hip joint moment (-) Pelvic tilt (-) Pelvic obliquity (-) Thoracic tilt (-)
Yamamoto et al. (2022) RCT (5) Nstart=41 Nend=36 TPS=Subacute A vs B	E: Ankle–foot orthosis Gait training with an oil damper +conventional physiotherapy C: Nonarticulated ankle–foot orthosis + Gait training + conventional physiotherapy Duration: 60 mins/d, 7d/wk, 2 wks	E vs C: Ankle angle initial contact (+exp) Peak platarflexion in loading response (-) Peak dorsiflexion in single stance (+exp) Peak plantarflexion pre-swing (+exp) Peak dorsiflexion in swing (+exp) Ankle angular velocity (-) Ankle moment (-) Ankle power peak absorption in stance (+exp) peak generation in stance (-) Knee angle initial contact (+exp) peak flexion in loading response (-) peak extension in single stance (-) Knee movement (-) Hip angle (-) Hip moment (-) Velocity (-) Step length (-) Cycle time (-) Loading response time (-) single stance time (-)

		pre-swing time (-) Swing time (-) Ground reaction forces (-) Shank to vertical angle (-)
Daryabor et al. (2021) RCT (4) Nstart=20 Nend=10 TPS=Chronic A vs B vs C1 vs D vs E vs C2	E1: Ankle-foot orthosis with mechanical plantar flexion stops (AFO-PlfS) with Rocker shoe (RSh) E2: AFO-PlfS with Standard shoe (SSh) E3: SSh only C1: Ankle-foot orthosis with plantar flexion resistive movement (AFO-PlfR) with RSh C2: AFO-plfR C3: SSh only Duration: 2wk adaptation	E2 vs E3: Gait cycle phase/time (-) Step length/time/width (-) Ankle kinematics (-) Knee kinematics (-) Hip kinematics (-) Active range of motion(-) ROM for thorax (-) C2 vs C3 Gait cycle phase/time (+con2) Step length/time/width (+con2) Ankle kinematics (+con2) Knee kinematics (+con2) Hip kinematics (-) Active range of motion(-) ROM for thorax (-) E2 vs C2: Gait cycle phase/time (-) Step length/time/width (-) Ankle kinematics (-) Knee kinematics (-) Hip kinematics (-) Active range of motion(-) ROM for thorax (-) E1 vs E2: Ankle kinematics (+exp1) Peak power output (+exp1) C1 vs C2 Ankle kinematics (+con1) Peak power output (+con1) E1 vs C1: Ankle kinematics (-) Peak power output (+exp1)
Karakkattil et al. (2020) RCT crossover (5) Nstart=21 Nend=20 TPS=Subacute A1 vs A2	E: Custom double-adjustable ankle foot orthotic C: Standard ankle foot orthotic Duration: 1wk- 10min washout	E vs C: 6 Minute walk test (-) Gait symmetry self-selected velocity (-) fast paced velocity (-) Gait velocity self-selected velocity (-) fast paced velocity (-)
Katsuhira et al. (2018) RCT (4) Nstart=28 Nend=27 TPS=Chronic A + B vs A + C	E: Level walking with ankle-foot orthosis + trunk orthosis with joints providing a resistive force (TORF) C: Level walking with ankle-foot orthosis + lumbosacral orthosis (corset) Duration: Not Reported	E vs C: Spatiotemporal parameter Walking speed (+exp) Step time (+exp) Steps/min (+exp) Ground reaction force (-) Ankle peak plantar flexion and dorsiflexion (+exp)

		Peak knee abduction (-) Peak hip extension (-) Pelvis backward tilt angle (-) Thorax forward bending angle (-) Thorax lateral bending angle (-)
Tyson et al. (2018) RCT (6) Nstart=139 Nend=125 TPS=Chronic A vs B	E: Bespoke ankle-foot orthoses C: Off-the-shelf ankle-foot orthosis Duration: 12wks	E vs C: Patient Satisfaction (-) Walking Handicap Scale (-) Falls Efficacy Scale (-) 5-m walk test (-) Step length (-)
Yamamoto et al. (2018) RCT (6) Nstart=42 Nend=40 TPS=Subacute A1 vs A2	E: Ankle foot Orthosis with Plantar Stop C: Ankle Foot Orthosis with Plantar Flexion Resistance Duration: 60min/d, 7d/wk, 2wks of physiotherapy while wearing device	E vs C: Ground Reaction Forces (-) Center of Pressure (-) Ankle Joint Angle (-) Ankle Joint Moment and Power (-) Knee Joint Angle (-) Knee Joint Moment (-) Hip Joint Angle (-) Hip Joint Moment (-) Gait Speed (-) Cycle time (-) Loading Response Time (-) Single-Stance Time (-) Swing time (-)
Zollo et al. (2015) RCT crossover (4) Nstart=10 Nend=10 TPS=Chronic A1 vs A2 vs A3	E1: Solid Ankle Foot Orthosis E2: Dynamic Ankle Foot Orthosis C: No Ankle Foot Orthosis Duration: 5 walking trials/condition, no washout period	E1/E2 vs C: Cadence (-) Stride Time (-) Step Length (-) Stride Length (-) Swing Phase (-) Double Support Phase (-) Kinematic Data ankle (-) knee (-) hip (-) E1 vs E2: Cadence (-) Stride Time (-) Step Length (-) Stride Length (-) Swing Phase (-) Double Support Phase (-) Kinematic Data ; - ankle (-) ; - knee (-) ; - hip (-)
Do et al. (2014) RCT crossover (6) Nstart=17 Nend=17 TPS=Chronic A1 vs A2 vs B	E1: Plastic ankle foot orthosis made with polypropylene E2: Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric C: Barefoot Duration: 3h/d, for 2wks – 5min washout	E1 vs E2: Walking velocity (-) Cadence (-) Stride length (-) Step length (-) Ankle dorsiflexion angle at heel strike (+exp1) Mean and peak ankle dorsiflexion angle (-)

		Ankle dorsiflexion angle at toe off (-) Knee and hip flexion angle (-) Satisfaction questionnaire (+exp2) E1/E2 vs C: Walking velocity (+exp1)(+exp2) Cadence (-) Stride and step length (-) Mean and peak ankle dorsiflexion angles (+exp1)(+exp2) ankle dorsiflexion angles at heal strike and toe off (+exp1)(+exp2) Knee and hip flexion angle (-)
Rao et al. (2014) RCT crossover (5) Nstart=30 Nend=30 TPS=Acute A vs B vs C	E1: Using an off-the-shelf carbon ankle-foot orthosis (C- AFO) E2: Using a custom plastic ankle-foot orthosis (P-AFO) C: No ankle-foot orthosis Duration: Single session of each exposure - 5min rest in-between	E1 vs C: Gait velocity (+exp1) Cadence (+exp1) Stride Length (+exp1) Step length (+exp1) L-test (+exp1) E1 vs E2: Gait velocity (-) Cadence (-) Stride length (-) Step length (-) L-test (-) E2 vs C ; Gait velocity (+exp2) Cadence (+exp2) Stride length (+exp2) Step length (+exp2) L-test (-)
de Seze et al. (2011) RCT (6) Nstart=28 Nend=26 TPS=Subacute A1 vs A2	E: Chignon Ankle-Foot Orthosis C: Standard Ankle-Foot Orthosis Duration: Not Reported	E vs C: 10m Walking test: -time with orthosis (-) time without orthosis (-) Mean time difference (+exp) Gain ratio (+exp) Modified Ashworth scale: Quadricipital spasticity (-) Sural spasticity (-) Motricity index (-) Functional ambulation category: with orthosis (-) without orthosis (-) Postural assessment structural scale: with orthosis (-) without orthosis (-) Subjective therapist quantification Dropped foot: with orthosis (+exp) without orthosis (-) Subjective therapist quantification of Knee recurvatum: with orthosis- (+exp) without orthosis (-) Subjective therapist quantification of Foot varus: -with orthosis (-) without orthosis (-) Functional Independence measure (-) Visual analog scale for pain tolerance (-)

Forghany et al. (2010) RCT crossover (4) Nstart=8 Nend=8 TPS=Not reported A1 vs A2 vs B	E1: 5-degree lateral wedge orthotic in both shoes E2: 8.5-degree lateral wedge orthotic in both shoes C: Overground walking with no wedge Duration: Single session, no washout period	E1 vs C: Walking speed (-) Ankle plane of motion (+exp1) Lower leg muscle strength (-) E2 vs C: Walking speed (-) Ankle plane of motion (+exp2) Lower leg muscle strength (+exp2) E1 vs E2: Walking speed (-) Ankle plane of motion (+exp2)
Tyson & Rogerson (2009) RCT crossover (7) Nstart=20 Nend=20 TPS=Subacute A vs B vs C vs A + B + D vs E	E1: Walking cane; E2: Ankle-foot orthosis; E3: Slider shoe; E4: Walking cane + Ankle-foot orthosis + Slider shoes C: Walking with no device Duration: One day	E1/E2/E3/E4 vs C: Functional Ambulatory category (+exp1, +exp2, +exp3+exp4) 5m Walk test walking speed (-) affected side step length (-)
Anterior vs Posterior Ankle-Foot Orthosis		
Chen et al. (2022) RCT crossover (6) Nstart=20 Nend=20 TPS=Chronic A1 vs A2	E1: Anterior ankle foot orthosis E2: Posterior ankle foot orthosis Duration: 6h/d, for 30d	E1 vs E2: PROM of ankle dorsiflexion (-) MAS of Gastrocnemius Muscle (-) Walking Velocity (+exp) Root Mean Square of Stretch Reflex for Gastrocnemius Muscle (+exp) Walking Rooting Mean Square of Gastrocnemius Muscle (+exp) Patient Satisfaction Beautiful (+exp) Strong/Durable (-) Easy to put on (+exp) Comfort during walking (+exp) Reduces ankle spasticity (+exp)
Bivalve Cast vs Pressure-Relieving Ankle-Foot Orthosis vs Conventional Care		
DeMeyer et al. (2015) RCT (7) Nstart=46 Nend=45 TPS=Acute A vs B vs 0	E1: Bivalve Cast + Physical Therapy E2: Pressure-relieving Ankle- foot Orthosis + Physical Therapy C: Physical Therapy Duration: 60-90min/d, 5-7 d/wk, physical therapy & 480- 720min/d, 5-7 d/wk bivalve cast and pressure-relieving ankle-foot orthosis (nighttime)	E1 vs C: Functional independence measure (-) Modified Ashworth scale (-) Range of motion (-) E2 vs C: Functional Independence measure (-) Modified Ashworth scale (-) Range of Motion (-)
Toe Spreader vs Conventional Care		
Chiong et al. (2013) RCT (8) Nstart=9 Nend=8 TPS=Chronic A + B vs C Also in Table 12 (Stretching or Mobilization Exercises)	E: Stretching exercise + wearing toe spreader C: No Orthotic (conventional care) Duration: Daily stretching exercise & wearing spreader over 6mo	E vs C: Gait velocity (-) Stride length (-) Step length (-) Modified Ashworth scale (-) Berg Balance scale (-) Cadence (-) plantar surface contact area (-)

Comparing Types of Canes		
Huang et al. (2022b) RCT (6) Nstart=40 Nend=34 TPS=Chronic A1 vs A2	E: Ambulation therapy with laser cane + Conventional therapy C: Ambulation therapy with cane + Conventional therapy Duration: 30 mins/d (15 mins training with cane + 15 mins conventional physiotherapy), 2ds/wk, 4wks	E vs C: Stride length (+exp) Cadence (-) Stance phase (-) Swing phase (-) Temporal swing symmetry (+exp) Temporal stance symmetry (-) Overall gait symmetry deviation (-) Heel-strike angle (-) Toe-off angle (-) Gait speed (-) Berg balance scale (-) Barthel index (-) TUG (-)
Avelino et al. (2021) RCT (8) Nstart=50 Nend=45 TPS=Chronic A vs B	E: Provision of a single-point cane C: Stretching exercises Duration: 1mo	E vs C: 10-m Walk Test (-) Step length (-) Cadence (-) Six-minute Walk test (-) Modified Gait-Efficacy Scale (-) Stroke Impact Scale (-)
Jeong et al. (2015) RCT crossover (7) Nstart=30 Nend=30 TPS=Chronic A vs B vs C	E1: Single-point cane E2: Quad cane E3: Hemi-walker Duration: same amount of time for 3 days – 1d washout	E1 vs E2 vs E3: 10m Walk test (+exp1) Heart rate (-) 6min Walk test (+exp1) Energy cost (+exp1) Energy expenditure (+exp1)
NMES vs Ankle-Foot Orthosis		
Morone et al. (2012b) RCT (5) Nstart=20 Nend=20 TPS=Acute A vs B Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: NMES (Walkaide) + walking training + conventional therapy C: Walking training + ankle-foot- orthosis + conventional therapy Duration: 40min/d, 5d/wk, 4wks Walking training with NMES or AFO & 40min/d, 5d/wk, 4wks conventional therapy	E vs C: 10-Metre Walk Test (+exp) Functional Ambulation Classification (+exp) Barthel Index (-) Rivermead Mobility Index (-) Medical Research Council Scale (-) Canadian Neurological Scale (-) Ashworth Scale (-) Manual Muscle Test (-)
Ankle-Foot Orthosis + Balance Training Shoes vs Ankle-Foot Orthosis + Regular Shoes		
Farmani et al. (2016) RCT (4) Nstart=30 Nend=30 TPS=Chronic A1 vs A2	E: Solid Ankle-foot orthosis, then Rocker shoes C: Solid Ankle-foot orthosis, then Regular shoes Duration: Not reported	E vs C: Timed Up-and-Go (+exp) Timed Up Stairs test (-) Timed Downstairs test (-) 10-Meter Walk Test at preferred speed (+exp) Oxygen uptake (+exp)
Night Splint vs Standing on a Tilt Table		
Robinson et al. (2008) RCT (8) Nstart=30 Nend=24	E1: Nighttime splint wearing + Inpatient rehabilitation E2: Standing on a tilt table + Inpatient rehabilitation	E1 vs E2: Maximum passive dorsiflexion (-) Motor Assessment Scale (-)

TPS=Acute A vs B	Duration: 30min/d, 5d/wk, 4wks tilt table; 7d/wk, 4wks Nighttime splint; 5d/wk, 4wks Inpatient rehabilitation	
Arm Sling vs No Therapy		
Morone et al. (2024) Feasibility/pilot RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs B	E: Shoulder brace C: Upper limb observation during walking Duration: Brace: 8 hours/d, 7ds/wk, 4 wks; Conventional neurorehabilitation (Both groups): 1 session/d, 5 ds/wk	E vs C: Trunk control test (+exp) Numerical rating scale Pain (-) Manual Muscle test (-) Motricity Index (-) Stride length (-) Stride duration (-) Walking speed (-) Coefficient of attenuation along the AP axis between pelvis and head (+exp) Magnitude of coefficient of attenuation (+exp) Coefficient of attenuation from pelvis to sternum (-)
Jeong et al. (2017) RCT crossover (6) Nstart=57 Nend=57 TPS=Chronic A vs B	E: Arm multi-support sling while waking with walk aid C: No support while walking with walk aid Duration: 12min, 1session/d, 1d -1hr washout period.	E vs C for those with a single cane Energy cost (+exp) energy expenditure (+exp) 6 minute walking test (+exp) 10 meter walk test (-) Heart rate (-) E vs C for those with a quad cane walk aid: Energy cost (-) energy expenditure (-) 6 minute walking test (-) 10 meter walk test (-) Heart rate (-)
Yavuzer & Ergin (2002) RCT crossover (4) Nstart=31 Nend=31 TPS=Subacute A vs 0	E: Arm sling C: No treatment Duration: Single session	E vs C: Gait Parameters Walking Velocity (+exp) % of Stance Phase Paretic Side (+exp) Step Time (-) Step Length (-) Double Support Time (+exp) Pelvic Excursion Sagittal Plane (+exp) Coronal Plane (+exp) Transverse Plane (+exp) Hip Excursion (-) Knee Excursion (-) Ankle Excursion (-) Peak Vertical Force (+exp)
Wearable Devices vs Conventional Care or No Therapy		
Ho et al. (2024) RCT (8) Nstart=127 Nend=90 TPS=Acute A vs 0	E: WEAR System-assisted Rehabilitation + Conventional therapy C: Conventional therapy Duration: Experimental group: 90 mins/d (60 mins of conventional rehab + 30 mins of WEAR), over 3 days/week, 12 weeks (TOTAL - 90 days); Control group: 90 mins/d, over 3 ds/week, 12 weeks (TOTAL - 90 days);	E vs C: modified Rankin Scale (+exp) BI (+exp) FIM (+exp) BBS (+exp) WMFT- Functional ability scale (+exp)

Lee et al. (2017b) RCT (6) Nstart=23 Nend=23 TPS=Chronic A vs B vs C	E: Wearable tubing assistive walking device (WTAWD) C1: Conventional elastic band orthosis C2: Walking barefoot (no orthosis) Duration: One session	E vs C1/C2: Gait speed (+exp) Cadence (+exp) Step Length (+exp) Stride Length (+exp) Swing Time (-) C1 vs C2: Gait Speed (+exp) Cadence (+exp) Step Length (+exp) Stride Length (+exp) Swing Time (-)
Pomeroy et al. (2001) RCT (7) Nstart=24 Nend=22 TPS=Chronic A vs 0	E: Wearing weighted garments on the paretic side C: No treatment Duration: 7d/wk, for 6wks	E vs C: Berg Balance Scale (-) Step Length Symmetry Index (-) Single Support Time (-) Double Support Time (-) Support Base Width (-) Velocity (-) Cadence (-)
Standing Frame Assistive Device		
Bagley et al. (2005) RCT (8) Nstart=140 Nend=112 TPS=Acute A vs 0	E: Oswestry standing frame treatment C: Usual treatment Duration: 1sessions/d, 14d	E vs C: Rivermead Mobility Index (-) Barthel Index (-) Hospital Anxiety and Depression score (-) Nottingham Extended ADL scale (-) Rivermead Motor assessment (-) Motor assessment scale (-) Trunk Control Test
Treadmill Training with Orthotic Devices Vs Treadmill Training Alone		
An et al. (2020) RCT (5) Nstart=36 Nend=36 TPS=Chronic A1 vs A2 Also in Table 9 (Treadmill Training)	E: Treadmill training using insole on less affected side C: Treadmill training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Functional Gait Assessment (+exp) Figure-of-Eight Walk Test Step (+exp) Time (+exp) 6-Minute Walk Test (+exp) 10-m Walk Test (+exp) Gait Cadence (+exp) Stride Length/ Heigh Ratio (+exp) Stride Length (+exp) Stance Phase Duration (-) Swing Phase Duration (-) Double Support Duration (+exp) Single Support Duration (+exp)
In et al. (2017) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + Thera- band C: Treadmill training Duration: 30min/d, 5d/wk, 4wks	E vs C: Fugl-meyer Assessment (+exp) Timed Up-and-Go (+exp) 10-Metre Walk Test (+exp) Performance-oriented mobility assessment (+exp) Balance (-) Gait (+exp)

Visual Biofeedback with Orthotic Devices vs Sham Feedback		
Tamburella et al. (2017) RCT (7) Nstart=10 Nend=10 TPS=Subacute A + B vs A + C Also in Table 15 (Biofeedback)	E: Ankle treatment + biomechanical visual biofeedback (using an active sensorized AFO) C: Ankle treatment + an inactive sensorized AFO (sham) Duration: 60min/d, 5d/wk, 6wks	E vs C: Active/passive ankle ROM (-) Modified Ashworth Scale (+exp) Coactivation index (+exp) Active joint speed (+exp) Passive joint speed (-)
Regent Suit vs Conventional Therapy		
Iuppariello et al. (2018) RCT (4) Nstart=60 Nend=60 TPS=Chronic A vs 0 vs B	E: Rehabilitation training + regent suit C1: Rehabilitation training C2: Healthy controls Duration: 40min/d, 5d/wk for 8wks	E vs C1: NIH Stroke Scale (No stats) Barthel Index (No stats) Functional Independent Measure (No stats) Berg Balance Scale (No stats) EMG patterns SL NAS (+exp) SL AS (+exp) TA NAS (-) TA AS (+exp) ST NAS (+exp) ST AS (+exp) VL NAS (+exp) VL AS (+exp) E vs C2: EMG patterns (-)
Knee Immobilizer Brace with Foot Orthosis or Rigid Taping vs Knee Immobilizer Brace		
Talu & Bazancir (2017) RCT (5) Nstart=20 Nend=20 TPS=Acute A vs A + B vs A + C	E1: Knee immobilizer brace E2: Knee immobilizer brace + Foot lifter orthosis E3: Knee immobilizer brace + Rigid taping Duration: Single application of each intervention	E1 vs E2: Total Balance Score (+exp2) E1 vs E3: Total Balance Score (-) E2 vs E3: Total Balance Score (+exp2)
Knee Orthosis with Gait Training vs Gait Training Alone		
Ito et al. (2024) RCT (6) Nstart=34 Nend=29 TPS=Acute A vs 0	E: Walking Training + Knee Orthosis C: Walking Training Duration: 30 min, 5 d/wk, for 3 wks	E vs C: Trailing Limb Angle (knee kinetic) (+exp) 10MWT (-)
Additional Comparisons from the Source Dataset		
Aruin et al. (2018) RCT (4) Nstart=10 Nend=10 TPS=Chronic A vs 0	E: Physical Therapy Wearing Insole (unaffected side) C: Physical Therapy Duration: 60min, 3d/wk, 6wks	E vs C: Gait Velocity (No stats) Activities-Specific Balance Confidence (No stats) Fugl-Meyer Lower extremity score (No stats) Timed-Up and Go (No stats) Wight Bearing affected (no stats unaffected (No stats) Gait Cycle

		swing phase (No stats) stance phase (No stats) single leg support (No stats)
Han et al. (2011) RCT crossover (6) Nstart=37 Nend=37 TPS=Chronic A vs 0	E: Arm sling C: No Treatment Duration: 20 minute washout	E vs C: Heart rate (+exp) Gait speed (+exp) O2 rate (+exp) O2 cost (+exp)
Suat et al. (2011) RCT (6) Nstart=19 Nend=19 TPS=Chronic A vs 0	E: wearing an Inhibitor Hand Splint during ambulation C: no treatment Duration: 120min/d, 24wks	E vs C: Berg Balance Scale (-) Functional Reach test (-) Timed Up & Go test (+exp) L test (modified version of TUG) (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Park et al. (2024a) RCT crossover (6) Nstart=36 Nend=36 TPS=Chronic A + B vs A Primary listing: Table 7 (Non-Technological Overground Walking and Gait Training)	E: Gait training (with insole on non-paretic foot) C: Gait training (without insole) Duration: 10-20min (+5 min practice walking), experiment conducted 1x/participant	E vs C: gait parameters step count (-) step velocity (+exp) cadence (-) step-time differential (+exp) step length differential (-) step time (+exp) step length (+exp) cycle time (-) stride length (-) H-H Base Support (+exp) stride velocity (+exp) Gait cycle swing phase (+exp) stance phase (+exp) single support time (-) double support time (-) Double Support Unload Phase (+exp)
Park et al. (2024b) Feasibility/pilot RCT (7) Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E: Shoulder brace during treadmill training C: conventional treadmill training Duration: 40min/d(10min treadmill, 30min conventional), 5d/wk, 4wks	E vs C: Arm swing angle(+exp) Gait speed(+exp) Cadence(+exp) stride length(+exp)
Nagai et al. (2024) RCT (6) Nstart=43 Nend=42 TPS=Subacute A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg + Knee ankle foot orthosis (KAFO) on paralyzed leg + Usual physical therapy C: Usual Physical Therapy Duration: 40min/d, for 3d	E vs C: angle of RR in paralyzed side tilt condition neck (-) trunk (+exp) paralyzed lower leg (-) non-paralyzed lower leg (-) angle of RR in non-paralyzed side tilt condition neck (-)

		trunk (+exp) paralyzed lower leg (-) non-paralyzed lower leg (-) Movement distance of COP of the RR paralyzed side tilted (+exp) non-paralyzed side tilted (+exp)
Hirano et al. (2024) RCT (8) Nstart=91 Nend=85 TPS=Subacute A vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted gait training (Welwalk orthosis-type robotic leg) + Conventional rehab C: Conventional rehab Duration: 80min (40min RAGT + 40min Conventional)/d, 6d/wk, 4wks; Conventional therapy: 7d/wk	E vs C: FIM motor (-) cognitive (-) walk (-) 10-metre walk test (-) 6 minute walk test (-) SIAS motor (-) verticality (-) position sense in LE (-) Wisconsin Gait Scale (-) gait pattern (-)
da Cunha et al. (2024) RCT (8) Nstart=44 Nend=32 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Bicephalic tDCS + gait training + foot drop stimulator (Walkaide orthosis) C: Sham tDCS + gait training + foot drop stimulator Duration: 30min/d, 5d/wk, 2wks	E vs C: FMA(-) TUG(-) BDNF(-) Cortisol(-) Insulin growth factor 1/3(-) Interleukin 6/10(-) tumor necrosis factor(-)
Sannyasi et al. (2022) RCT crossover (6) Nstart=20 Nend=20 TPS=Chronic A vs B Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Ankle foot orthosis + gait training E2: FES +gait training Duration: 120 mins of gait training/d, 2wks (1 week of FES and 1 week of AFO)	E1 vs E2: 10-meter walk test (+exp) 6-minute walk test (+exp) gait speed (+exp) TUG (+exp) Stance-swing ratio paretic stance (+exp) non-paretic stance (+exp) paretic swing (+exp) non-paretic swing (+exp) single-limb support paretic (+exp) non-paretic (+exp) Physiological cost index (-) Stride length paretic (-) non-paretic (-) step width paretic (-) non-paretic (-)
Elnassag et al. (2019) RCT (6) Nstart=30 Nend=30 TPS=Chronic	E: Cryo-airflow therapy for calf muscle + Physical therapy + Ankle foot orthosis at night C: Physical therapy + Ankle foot orthosis Duration: 3d/wk, for 4wks	E vs C: Modified Ashworth Scale (+exp) EMG H/ M ratio (-) Ankle Range of Motion (+exp)

A + B vs B Primary listing: Table 34 (Thermal Stimulation and Cryotherapy)		
Farmani et al. (2016) RCT (4) Nstart=30 Nend=30 TPS=Chronic A1 vs A2 Primary listing: Table 11 (Balance Training)	E: Solid Ankle-foot orthosis, then Rocker shoes C: Solid Ankle-foot orthosis, then Regular shoes Duration: Not reported	E vs C: Timed Up and Go (+exp) Timed Up Stairs test (-) Timed Downstairs test (-) 10MWT at preferred speed (+exp) Oxygen uptake (+exp)
Ding et al. (2015) RCT (4) Nstart=103 Nend=83 TPS=Acute A + B vs A vs 0 Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A under ultrasound guidance + ankle foot orthosis (AFO) + Conventional rehabilitation E2: Botulinum toxin A + Conventional rehabilitation C: Conventional rehabilitation Duration: 6mo follow-up	E1 vs E2 vs C: After 1mo E1 vs E2/C Clinic Spasticity Influx (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-) Functional Independence Measure (-) After 3 and 6mo E1 vs E2/C Clinic Spasticity Influx (+exp1) Berg Balance Scale (+exp1) Fugl-Meyer Assessment (+exp1) Functional Independence Measure (+exp1)
Stein et al. (2014) RCT (7) Nstart=24 Nend=24 TPS=Chronic A1 vs A2 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Gait training with robotic leg brace C: Group exercise without robotic leg brace Duration: 60min/d, 3d/wk for 6wks	E vs C: Timed Up and Go (-) 10-m walk test (-) 6-min walk test (-) Five-Times-Sit-to-Stand test (-) Berg Balance scale (+exp) California Functional Evaluation 40 (-) Emory Functional Ambulation Profile (+con) Romberg (open eye/ closed eye) (-)
Everaert et al. (2013) RCT (6) Nstart=120 Nend=99 TPS=Chronic A1 vs A2 vs B1 vs B2 vs C vs B3 Primary listing: Table 28 (Functional Electrical Stimulation)	E1: 6wk of Peroneal nerve FES (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (AFO) E2: 6wk of Ankle Foot Orthosis followed by 6wk of Peroneal nerve FES (WalkAide Foot- Drop Stimulator) C: Ankle Foot Orthosis only Duration: E1: 6wk FES followed by 6wk AFO E2: 6wk AFO followed by 6wk FES C: 12wk AFO	E1 vs E2/C: Modified Rivermead Mobility Index (-) perceived safety level (-) 10-meter speed Device On (-) Device Off (-) Figure-8 speed Device On (-) Device Off (-) Physiological Cost Index Device On (-) Device Off (-) E2 vs C: Mobility Index (-) perceived safety level (-) 10-meter speed Device On (-) Device Off (-) Figure-8 speed Device On (-) Device Off (-)

		Physiological Cost Index Device On (+exp3) Device Off (-)
Carda et al. (2011) RCT (7) Nstart=69 Nend=67 TPS=Chronic A + B + C vs A + D + C vs A + C Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A (100U) + Serial casting + stretching and gait training E2: Botulinum toxin A (100U) + Taping + stretching and gait training E3: Botulinum toxin A (100U) + stretching and gait training Duration: 1wk of serial casting, or 5d of taping, or 30 min, 2sessions/d, 1wk of stretching, then 30min gait training + 20 min stretching, 1session/d, 1wk.	E1 vs E2: Modified Ashworth Scale (+exp1) 6min walking test (-) 10-meter walk test (-) Functional Ambulation category (-) Strength of ankle dorsal flexors (-) Passive range of motion- ankle (+exp1)
Karadag-Saygi et al. (2010) RCT (7) Nstart=20 Nend=20 TPS=Chronic A + B + C vs A + C Primary listing: Table 46 (Botulinum Toxin)	E: Botulinum toxin A (75- 100U) + Kinesio Taping + home exercises C: Botulinum toxin A (75- 100U) + Sham taping + home exercises Duration: 20min, 2sessions/d, 7d/wk, for 4wks rehabilitation	E vs C: Modified ashworth score (-) Passive ankle dorsiflexion (-) Step length 10-m walk Velocity (-)
Baricich et al. (2008) RCT (6) Nstart=23 Nend=23 TPS=Chronic A + B vs A + C vs A + D Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A (500U) + FES E2: Botulinum toxin A (500U) + Taping E3: Botulinum toxin A (500U) + Stretching Duration: 30min/session, 2sessions/d, 5d FES & 5d taping & 30min/session, 2sessions/d for 7d stretching	E1 vs E2 vs E3: Modified Ashworth Scale (-) Passive Range of Motion (-) Motor Action Potential (-) Max Dorsiflexion Angle in Stance Phase (-)
Sheffler et al. (2006) RCT crossover (5) Nstart=14 Nend=14 TPS=Chronic A vs B vs C Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Odstock Dropped-foot Stimulator (peroneal nerve FES) E2: Customized unilateral ankle-foot orthosis C: No Intervention Duration: single session - 30min washout	E1/E2 vs C: Modified Emory Functional Ambulation Profile Carpet (+exp1, +exp2) Floor (+exp2) Up and go (+exp2) E1 vs E2: Modified Emory Functional Ambulation Profile (-)
Beckerman et al. (1996a) RCT (7) Nstart=60 Nend=58 TPS=Chronic A + B vs B vs A vs 0 Primary listing: Table 45 (Nerve Block Agents)	E1: Tibial nerve block through thermocoagulation + AFO E2: Sham thermocoagulation + AFO E3: Thermocoagulation + Sham AFO E4: Sham thermocoagulation + Sham AFO Duration: 45-60min/1session thermocoagulation	E1/E3 vs E2/E4: Modified Ashworth Scale (-) Ankle Clonus Score (+exp1, +exp3) Achilles tendon reflex (+exp1, +exp3) Fugl-Meyer Assessment (-) Spasticity (+exp1, +exp3) Sickness Impact Profile (-) Walking Speed (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Weight-Shift Therapy Using Shoe Insert may not have a difference in efficacy when compared to Conventional Treatment for improving motor recovery.	1	Aruin et al. 2012
2	Ankle-Foot Orthosis may produce greater improvements in motor recovery than No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis.	1	Yeung et al. 2018
2	Neuromuscular electrical stimulation Orthosis may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving motor recovery.	1	Morone et al. 2012b
1b	Oswestry standing frame treatment may not have a difference in efficacy when compared to Usual treatment for improving motor recovery.	1	Bagley et al. 2005
1b	Treadmill Training with Orthotic Devices may produce greater improvements in motor recovery than Treadmill Training Alone.	1	In et al. 2017
2	Regent Suit may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Iuppariello et al. 2018
2	Physical Therapy Wearing Insole (unaffected side) may not have a difference in efficacy when compared to Physical Therapy for improving motor recovery.	1	Aruin et al. 2018
1b	Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving motor recovery.	1	Hirano et al. 2024
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving motor recovery.	1	da Cunha et al. 2024
2	There is conflicting evidence about the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation when compared to Conventional rehabilitation for improving motor recovery.	1	Ding et al. 2015
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving motor recovery.	1	Beckerman et al. 1996a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving biomechanical gait measures.	7	Jung et al. 2024; Moon et al. 2024; Wang et al. 2022c; Jung et al. 2022; Choi et al. 2020b; Shin et al. 2019; Sheng et al. 2019
2	Extensor Digitorum Longus Taping may not have a difference in efficacy when compared to Tibialis Anterior Taping for improving biomechanical gait measures.	1	Cho et al. 2022b
1b	There is conflicting evidence about the effect of Pelvic stability training with posterior and lateral taping when compared to Pelvic	1	Jung et al. 2022

	stability training with posterior taping only for improving biomechanical gait measures.		
1b	Posterior pelvic tilt taping with functional movements (sitting-to-standing, indoor walking and stair walking training) may produce greater improvements in biomechanical gait measures than Functional movements (sitting-to-standing with indoor walking and stair walking training).	1	In et al. 2021a
2	Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in biomechanical gait measures than No Taping.	1	Bae et al. 2022
2	New Body Orthosis may produce greater improvements in biomechanical gait measures than No Orthosis.	1	Thijssen et al. 2007
1b	Shoe Insole Orthotics During Walking may not have a difference in efficacy when compared to Overground Walking or Conventional Therapy or Sham for improving biomechanical gait measures.	2	Sungkarat 2011; Eckhardt et al. 2011
1b	Weight-Shift Therapy Using Shoe Insert may not have a difference in efficacy when compared to Conventional Treatment for improving biomechanical gait measures.	2	Sheikh et al. 2016; Aruin et al. 2012
1a	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving biomechanical gait measures.	5	Rimaud et al. 2024; Yeung et al. 2018; Pomeroy et al. 2016; Zissimopoulos et al. 2015; Chen et al. 2010
1b	C-AFO ("off the shelf" composite AFO) may not have a difference in efficacy when compared to P-AFO (custom made plastic AFO) for improving biomechanical gait measures.	1	Rimaud et al. 2024
1b	C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may produce greater improvements in biomechanical gait measures than No treatment (No AFO, shoes only).	1	Rimaud et al. 2024
2	Ankle-Foot Orthosis with Botulinum Toxin may produce greater improvements in biomechanical gait measures than Botulinum Toxin.	1	Farina et al. 2008
2	Taping with Botulinum Toxin may not have a difference in efficacy when compared to Botulinum Toxin for improving biomechanical gait measures.	1	Reiter et al. 1998
1b	High PFR DAFO may not have a difference in efficacy when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO) for improving biomechanical gait measures.	1	Pradhan et al. 2024
1b	Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may not have a difference in efficacy when compared to Medium PFR DAFO for improving biomechanical gait measures.	1	Pradhan et al. 2024
1a	There is conflicting evidence about the effect of A Comparison of Orthoses when compared to Oil Damper ankle-foot orthosis with Gait training for improving biomechanical gait measures.	11	Ling et al. 2023; Daryabor et al. 2022; Yamamoto et al. 2022; Daryabor et al. 2021; Tyson et al. 2018; Yamamoto et al. 2018; Katsuhira et al. 2018; Zollo et al. 2015; Rao et al. 2014; Do et al. 2014; Tyson & Rogerson 2009
2	Ankle-foot orthosis-PlfS with shoe (SSh) may not have a difference in efficacy when compared to SSh only for improving biomechanical gait measures.	1	Daryabor et al. 2021

2	AFO-plfR may produce greater improvements in biomechanical gait measures than SSh only.	1	Daryabor et al. 2021
2	AFO-PlfS with Standard shoe (SSh) may not have a difference in efficacy when compared to AFO-plfR for improving biomechanical gait measures.	1	Daryabor et al. 2021
2	There is conflicting evidence about the effect of Ankle-foot orthosis with mechanical plantar flexion stops (ankle-foot orthosis-PlfS) with Rocker shoe (RSh) when compared to ankle-foot orthosis-PlfS with shoe (SSh) for improving biomechanical gait measures.	1	Daryabor et al. 2021
2	Solid Ankle Foot Orthosis may not have a difference in efficacy when compared to Dynamic Ankle Foot Orthosis for improving biomechanical gait measures.	1	Zollo et al. 2015
1b	Plastic ankle foot orthosis made with polypropylene may not have a difference in efficacy when compared to Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric for improving biomechanical gait measures.	1	Do et al. 2014
1b	Plastic ankle foot orthosis made with polypropylene or Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric may not have a difference in efficacy when compared to Barefoot for improving biomechanical gait measures.	1	Do et al. 2014
2	Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis) may produce greater improvements in biomechanical gait measures than Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis).	1	Rao et al. 2014
2	Using an off-the-shelf carbon ankle-foot orthosis (C- AFO) or Using a custom plastic ankle-foot orthosis (P-AFO) may produce greater improvements in biomechanical gait measures than No ankle-foot orthosis.	1	Rao et al. 2014
2	There is conflicting evidence about the effect of Anterior Ankle-Foot Orthosis when compared to Posterior Ankle-Foot Orthosis for improving biomechanical gait measures.	1	Chen et al. 2010
1b	Toe Spreader may not have a difference in efficacy when compared to Conventional Care for improving biomechanical gait measures.	1	Chiong et al. 2013
1a	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving biomechanical gait measures.	2	Huang et al. 2022b; Avelino et al. 2021
1b	Arm Sling may not have a difference in efficacy when compared to No Therapy for improving biomechanical gait measures.	2	Morone et al. 2024; Yavuzer & Ergin 2002
1a	Wearable Devices may not have a difference in efficacy when compared to Conventional Care or No Therapy for improving biomechanical gait measures.	2	Lee et al. 2017b; Pomeroy et al. 2001
2	Treadmill Training with Orthotic Devices may produce greater improvements in biomechanical gait measures than Treadmill Training Alone.	1	An et al. 2020
1b	Knee Orthosis with Gait Training may produce greater improvements in biomechanical gait measures than Gait Training Alone.	1	Ito et al. 2024
2	Physical Therapy Wearing Insole (unaffected side) may not have a difference in efficacy when compared to Physical Therapy for improving biomechanical gait measures.	1	Aruin et al. 2018
1b	Gait training (with insole on non-paretic foot) may produce greater improvements in biomechanical gait measures than Gait training (without insole).	1	Park et al. 2024a

1b	Shoulder brace during treadmill training may produce greater improvements in biomechanical gait measures than conventional treadmill training.	1	Park et al. 2024b
1b	Ankle foot orthosis with gait training may produce greater improvements in biomechanical gait measures than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving biomechanical gait measures.	1	Baricich et al. 2008

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving biomechanical balance measures.	5	Jung et al. 2024; Moon et al. 2024; Kurul et al. 2021; Cho et al. 2020b; Park et al. 2020a
1a	Shoe Insole Orthotics During Walking may not have a difference in efficacy when compared to Overground Walking or Conventional Therapy or Sham for improving biomechanical balance measures.	2	Liu et al. 2021a; Ferreira et al. 2017
1b	Weight-Shift Therapy Using Shoe Insert may produce greater improvements in biomechanical balance measures than Conventional Treatment.	1	Sheikh et al. 2016
2	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving biomechanical balance measures.	2	Lee et al. 2014c; Simons et al. 2009
1b	High PFR DAFO may not have a difference in efficacy when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO) for improving biomechanical balance measures.	1	Pradhan et al. 2024
1b	Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may not have a difference in efficacy when compared to Medium PFR DAFO for improving biomechanical balance measures.	1	Pradhan et al. 2024
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving biomechanical balance measures.	1	Yamamoto et al. 2018
1b	Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg with Knee ankle foot orthosis (KAFO) on paralyzed leg and Usual physical therapy may produce greater improvements in biomechanical balance measures than Usual Physical Therapy.	1	Nagai et al. 2024

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Pelvic stability training with posterior and lateral taping may produce greater improvements in muscle strength than Pelvic stability training with posterior taping only.	1	Jung et al. 2022
1b	Taping may produce greater improvements in muscle strength than no taping, sham taping, or conventional therapy.	1	Jung et al. 2022
1b	Posterior pelvic tilt taping with functional movements (sitting-to-standing, indoor walking and stair walking training) may produce greater improvements in muscle strength than Functional movements (sitting-to-standing with indoor walking and stair walking training).	1	In et al. 2021a

1b	Taping With Electrical Stimulation may produce greater improvements in muscle strength than Electrical Stimulation or Taping Alone or No Taping.	1	In et al. 2021b
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving muscle strength.	1	de Seze et al. 2011
2	5-degree lateral wedge orthotic in both shoes may not have a difference in efficacy when compared to 8.5-degree lateral wedge orthotic in both shoes for improving muscle strength.	1	Forghany et al. 2010
2	5-degree lateral wedge orthotic in both shoes may not have a difference in efficacy when compared to Overground walking with no wedge for improving muscle strength.	1	Forghany et al. 2010
2	8.5-degree lateral wedge orthotic in both shoes may produce greater improvements in muscle strength than Overground walking with no wedge.	1	Forghany et al. 2010
2	Neuromuscular electrical stimulation Orthosis may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving muscle strength.	1	Morone et al. 2012b
1b	Arm Sling may not have a difference in efficacy when compared to No Therapy for improving muscle strength.	1	Morone et al. 2024
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving muscle strength.	1	Carda et al. 2011

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Taping may not have a difference in efficacy when compared to no taping, sham taping, or conventional therapy for improving spasticity.	1	Mehraein et al. 2021
1b	Taping With Electrical Stimulation may produce greater improvements in spasticity than Electrical Stimulation or Taping Alone or No Taping.	1	In et al. 2021b
2	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving spasticity.	1	Yeung et al. 2018
2	Ankle-Foot Orthosis with Botulinum Toxin may produce greater improvements in spasticity than Botulinum Toxin.	1	Farina et al. 2008
2	Taping with Botulinum Toxin may not have a difference in efficacy when compared to Botulinum Toxin for improving spasticity.	1	Reiter et al. 1998
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving spasticity.	1	de Seze et al. 2011
1b	Bivalve Cast may not have a difference in efficacy when compared to Pressure-Relieving Ankle-Foot Orthosis or Conventional Care for improving spasticity.	1	DeMeyer et al. 2015
1b	Pressure-relieving Ankle- foot Orthosis with Physical Therapy may not have a difference in efficacy when compared to Physical Therapy for improving spasticity.	1	DeMeyer et al. 2015
1b	Toe Spreader may not have a difference in efficacy when compared to Conventional Care for improving spasticity.	1	Chiong et al. 2013

2	Neuromuscular electrical stimulation Orthosis may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving spasticity.	1	Morone et al. 2012b
1b	Visual Biofeedback with Orthotic Devices may produce greater improvements in spasticity than Sham Feedback.	1	Tamburella et al. 2017
1b	Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night may produce greater improvements in spasticity than Physical therapy with Ankle foot orthosis.	1	Elnassag et al. 2019
2	There is conflicting evidence about the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation when compared to Conventional rehabilitation for improving spasticity.	1	Ding et al. 2015
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in spasticity than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
1b	Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving spasticity.	1	Karadag-Saygi et al. 2010
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving spasticity.	1	Baricich et al. 2008
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving spasticity.	1	Beckerman et al. 1996a

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving range of motion.	1	Moon et al. 2024
2	Ankle Kinesio taping may result in lesser improvements in range of motion when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in range of motion than No Taping.	1	Bae et al. 2022
2	Shoe Insole Orthotics During Walking may not have a difference in efficacy when compared to Overground Walking or Conventional Therapy or Sham for improving range of motion.	1	Eckhardt et al. 2011
1b	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving range of motion.	1	Zissimopoulos et al. 2015
1b	C-AFO ("off the shelf" composite AFO) may not have a difference in efficacy when compared to P-AFO (custom made plastic AFO) for improving range of motion.	1	Rimaud et al. 2024

1b	C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may produce greater improvements in range of motion than No treatment (No AFO, shoes only).	1	Rimaud et al. 2024
2	Taping with Botulinum Toxin may not have a difference in efficacy when compared to Botulinum Toxin for improving range of motion.	1	Reiter et al. 1998
1b	High PFR DAFO may result in lesser improvements in range of motion when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO).	1	Pradhan et al. 2024
1b	Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may result in lesser improvements in range of motion when compared to Medium PFR DAFO.	1	Pradhan et al. 2024
1a	There is conflicting evidence about the effect of A Comparison of Orthoses when compared to Oil Damper ankle-foot orthosis with Gait training for improving range of motion.	4	Daryabor et al. 2022; Yamamoto et al. 2022; Katsuhira et al. 2018; Do et al. 2014
2	Ankle-foot orthosis-PlfS with shoe (SSh) may not have a difference in efficacy when compared to SSh only for improving range of motion.	1	Daryabor et al. 2021
2	AFO-plfR may not have a difference in efficacy when compared to SSh only for improving range of motion.	1	Daryabor et al. 2021
2	AFO-PlfS with Standard shoe (SSh) may not have a difference in efficacy when compared to AFO-plfR for improving range of motion.	1	Daryabor et al. 2021
1b	Plastic ankle foot orthosis made with polypropylene may not have a difference in efficacy when compared to Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric for improving range of motion.	1	Do et al. 2014
1b	Anterior ankle foot orthosis may not have a difference in efficacy when compared to Posterior ankle foot orthosis for improving range of motion.	1	Chen et al. 2022
1b	Bivalve Cast may not have a difference in efficacy when compared to Pressure-Relieving Ankle-Foot Orthosis or Conventional Care for improving range of motion.	1	DeMeyer et al. 2015
1b	Pressure-relieving Ankle- foot Orthosis with Physical Therapy may not have a difference in efficacy when compared to Physical Therapy for improving range of motion.	1	DeMeyer et al. 2015
1b	Nighttime splint wearing with Inpatient rehabilitation may not have a difference in efficacy when compared to Standing on a tilt table with Inpatient rehabilitation for improving range of motion.	1	Robinson et al. 2008
1b	Visual Biofeedback with Orthotic Devices may not have a difference in efficacy when compared to Sham Feedback for improving range of motion.	1	Tamburella et al. 2017
1b	Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night may produce greater improvements in range of motion than Physical therapy with Ankle foot orthosis.	1	Elnassag et al. 2019
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in range of motion than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
1b	Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving range of motion.	1	Karadag-Saygi et al. 2010
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin	1	Baricich et al. 2008

	A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving range of motion.		

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Taping may produce greater improvements in neurophysiological measures than no taping, sham taping, or conventional therapy.	1	Mehraein et al. 2021
2	Walking with TheraTogs may produce greater improvements in neurophysiological measures than Walking with cane at normal height.	1	Maguire et al. 2010
2	There is conflicting evidence about the effect of Walking with hip abductor taping when compared to Walking with cane at normal height for improving neurophysiological measures.	1	Maguire et al. 2010
2	Walking with hip abductor taping may not have a difference in efficacy when compared to Walking with TheraTogs for improving neurophysiological measures.	1	Maguire et al. 2010
2	There is conflicting evidence about the effect of Ankle-Foot Orthosis when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving neurophysiological measures.	1	Lee et al. 2014c
1b	Anterior ankle foot orthosis may produce greater improvements in neurophysiological measures than Posterior ankle foot orthosis.	1	Chen et al. 2022
2	Regent Suit may produce greater improvements in neurophysiological measures than Conventional Therapy.	1	Iuppariello et al. 2018
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving neurophysiological measures.	1	da Cunha et al. 2024
1b	Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night may not have a difference in efficacy when compared to Physical therapy with Ankle foot orthosis for improving neurophysiological measures.	1	Elnassag et al. 2019

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Ankle-Foot Orthosis when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving aerobic measures.	2	Rimaud et al. 2024; Erel et al. 2011
1b	C-AFO ("off the shelf" composite AFO) may not have a difference in efficacy when compared to P-AFO (custom made plastic AFO) for improving aerobic measures.	1	Rimaud et al. 2024
1b	C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may produce greater improvements in aerobic measures than No treatment (No AFO, shoes only).	1	Rimaud et al. 2024
1b	Single-point cane may produce greater improvements in aerobic measures than Quad cane.	1	Jeong et al. 2015
2	Ankle-Foot Orthosis with Balance Training Shoes may produce greater improvements in aerobic measures than Ankle-Foot Orthosis with Regular Shoes.	1	Farmani et al. 2016
1b	Arm Sling may not have a difference in efficacy when compared to No Therapy for improving aerobic measures.	1	Jeong et al. 2017

1b	Arm sling may produce greater improvements in aerobic measures than No Treatment.	1	Han et al. 2011
1b	Ankle foot orthosis with gait training may not have a difference in efficacy when compared to functional electrical stimulation with gait training for improving aerobic measures.	1	Sannyasi et al. 2022
2	Solid Ankle-foot orthosis, then Rocker shoes may produce greater improvements in aerobic measures than Solid Ankle-foot orthosis, then Regular shoes.	1	Farmani et al. 2016
1b	6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis) may not have a difference in efficacy when compared to Ankle Foot Orthosis only or 12wk ankle-foot orthosis for improving aerobic measures.	1	Everaert et al. 2013

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving pain.	1	de Seze et al. 2011
1b	Arm Sling may not have a difference in efficacy when compared to No Therapy for improving pain.	1	Morone et al. 2024

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Taping may not have a difference in efficacy when compared to no taping, sham taping, or conventional therapy for improving activities of daily living.	1	Kurul et al. 2021
1b	Early Ankle Foot Orthosis may produce greater improvements in activities of daily living than Late Ankle Foot Orthosis.	1	Nikamp et al. 2017
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving activities of daily living.	1	de Seze et al. 2011
1b	Bivalve Cast may not have a difference in efficacy when compared to Pressure-Relieving Ankle-Foot Orthosis or Conventional Care for improving activities of daily living.	1	DeMeyer et al. 2015
1b	Pressure-relieving Ankle- foot Orthosis with Physical Therapy may not have a difference in efficacy when compared to Physical Therapy for improving activities of daily living.	1	DeMeyer et al. 2015
1b	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving activities of daily living.	1	Huang et al. 2022b
2	Neuromuscular electrical stimulation Orthosis may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving activities of daily living.	1	Morone et al. 2012b
1b	Wearable Devices may produce greater improvements in activities of daily living than Conventional Care or No Therapy.	1	Ho et al. 2024
1b	Oswestry standing frame treatment may not have a difference in efficacy when compared to Usual treatment for improving activities of daily living.	1	Bagley et al. 2005

2	Regent Suit may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Iuppariello et al. 2018
1b	Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving activities of daily living.	1	Hirano et al. 2024
2	There is conflicting evidence about the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation when compared to Conventional rehabilitation for improving activities of daily living.	1	Ding et al. 2015

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving gait speed.	6	Jung et al. 2024; Wang et al. 2022c; Jung et al. 2022; Choi et al. 2020b; Chen et al. 2019c; Shin et al. 2019
2	Extensor Digitorum Longus Taping may not have a difference in efficacy when compared to Tibialis Anterior Taping for improving gait speed.	1	Cho et al. 2022b
1b	Pelvic stability training with posterior and lateral taping may not have a difference in efficacy when compared to Pelvic stability training with posterior taping only for improving gait speed.	1	Jung et al. 2022
1b	Posterior pelvic tilt taping with functional movements (sitting-to-standing, indoor walking and stair walking training) may produce greater improvements in gait speed than Functional movements (sitting-to-standing with indoor walking and stair walking training).	1	In et al. 2021a
2	Walking with TheraTogs may not have a difference in efficacy when compared to Walking with cane at normal height for improving gait speed.	1	Maguire et al. 2010
2	Walking with hip abductor taping may not have a difference in efficacy when compared to Walking with cane at normal height for improving gait speed.	1	Maguire et al. 2010
2	Ankle Kinesio taping may result in lesser improvements in gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).	1	Bae et al. 2022
2	Ankle Kinesio taping or Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may produce greater improvements in gait speed than No Taping.	1	Bae et al. 2022
1b	Taping With Electrical Stimulation may produce greater improvements in gait speed than Electrical Stimulation or Taping Alone or No Taping.	1	In et al. 2021b
2	New Body Orthosis may produce greater improvements in gait speed than No Orthosis.	1	Thijssen et al. 2007
1a	Shoe Insole Orthotics During Walking may not have a difference in efficacy when compared to Overground Walking or Conventional Therapy or Sham for improving gait speed.	4	Liu et al. 2021a; Ferreira et al. 2017; Sungkarat 2011; Eckhardt et al. 2011
1b	Weight-Shift Therapy Using Shoe Insert may not have a difference in efficacy when compared to Conventional Treatment for improving gait speed.	2	Sheikh et al. 2016; Aruin et al. 2012
1a	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving gait speed.	8	Rimaud et al. 2024; Karpe et al. 2019; Yeung et al. 2018; Pomeroy et al. 2016; Erel et al.

			2011; Chen et al. 2010; Simons et al. 2009; de Wit et al. 2004
1b	C-AFO ("off the shelf" composite AFO) may not have a difference in efficacy when compared to P-AFO (custom made plastic AFO) for improving gait speed.	1	Rimaud et al. 2024
1b	C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may produce greater improvements in gait speed than No treatment (No AFO, shoes only).	1	Rimaud et al. 2024
2	Ankle-Foot Orthosis with Botulinum Toxin may not have a difference in efficacy when compared to Botulinum Toxin for improving gait speed.	1	Farina et al. 2008
2	Taping with Botulinum Toxin may not have a difference in efficacy when compared to Botulinum Toxin for improving gait speed.	1	Reiter et al. 1998
1b	Early Ankle Foot Orthosis may not have a difference in efficacy when compared to Late Ankle Foot Orthosis for improving gait speed.	1	Nikamp et al. 2017
1b	High PFR DAFO may result in lesser improvements in gait speed when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO).	1	Pradhan et al. 2024
1b	Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may result in lesser improvements in gait speed when compared to Medium PFR DAFO.	1	Pradhan et al. 2024
2	Carbon composite ankle-foot orthosis may not have a difference in efficacy when compared to Posterior leaf spring ankle-foot orthosis for improving gait speed.	1	Msechu et al. 2023
1a	There is conflicting evidence about the effect of A Comparison of Orthoses when compared to Oil Damper ankle-foot orthosis with Gait training for improving gait speed.	10	Daryabor et al. 2022; Yamamoto et al. 2022; Karakkattil et al. 2020; Tyson et al. 2018; Yamamoto et al. 2018; Katsuhira et al. 2018; Rao et al. 2014; Do et al. 2014; de Seze et al. 2011; Tyson & Rogerson 2009
1b	Plastic ankle foot orthosis made with polypropylene may not have a difference in efficacy when compared to Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric for improving gait speed.	1	Do et al. 2014
1b	Plastic ankle foot orthosis made with polypropylene may produce greater improvements in gait speed than Barefoot.	1	Do et al. 2014
1b	Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric may not have a difference in efficacy when compared to Barefoot for improving gait speed.	1	Do et al. 2014
2	Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis) may produce greater improvements in gait speed than Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis).	1	Rao et al. 2014
2	Using an off-the-shelf carbon ankle-foot orthosis (C- AFO) or Using a custom plastic ankle-foot orthosis (P-AFO) may produce greater improvements in gait speed than No ankle-foot orthosis.	1	Rao et al. 2014
2	5-degree lateral wedge orthotic in both shoes may not have a difference in efficacy when compared to 8.5-degree lateral wedge orthotic in both shoes for improving gait speed.	1	Forghany et al. 2010
2	5-degree lateral wedge orthotic in both shoes or 8.5-degree lateral wedge orthotic in both shoes may not have a difference in efficacy when compared to Overground walking with no wedge for improving gait speed.	1	Forghany et al. 2010

1b	There is conflicting evidence about the effect of Anterior ankle foot orthosis when compared to Posterior ankle foot orthosis for improving gait speed.	2	Chen et al. 2022; Chen et al. 2010
1b	Toe Spreader may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	1	Chiong et al. 2013
1a	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving gait speed.	2	Huang et al. 2022b; Avelino et al. 2021
1b	Single-point cane may produce greater improvements in gait speed than Quad cane.	1	Jeong et al. 2015
2	Neuromuscular electrical stimulation Orthosis may produce greater improvements in gait speed than Ankle-Foot Orthosis.	1	Morone et al. 2012b
2	Ankle-Foot Orthosis with Balance Training Shoes may produce greater improvements in gait speed than Ankle-Foot Orthosis with Regular Shoes.	1	Farmani et al. 2016
1a	Arm Sling may not have a difference in efficacy when compared to No Therapy for improving gait speed.	3	Morone et al. 2024; Jeong et al. 2017; Yavuzer & Ergin 2002
1a	There is conflicting evidence about the effect of Wearable Devices when compared to Conventional Care or No Therapy for improving gait speed.	2	Lee et al. 2017b; Pomeroy et al. 2001
1b	Treadmill Training with Orthotic Devices may produce greater improvements in gait speed than Treadmill Training Alone.	2	An et al. 2020; In et al. 2017
1b	There is conflicting evidence about the effect of Visual Biofeedback with Orthotic Devices when compared to Sham Feedback for improving gait speed.	1	Tamburella et al. 2017
1b	Knee Orthosis with Gait Training may not have a difference in efficacy when compared to Gait Training Alone for improving gait speed.	1	Ito et al. 2024
2	Physical Therapy Wearing Insole (unaffected side) may not have a difference in efficacy when compared to Physical Therapy for improving gait speed.	1	Aruin et al. 2018
1b	Arm sling may produce greater improvements in gait speed than No Treatment.	1	Han et al. 2011
1b	Gait training (with insole on non-paretic foot) may produce greater improvements in gait speed than Gait training (without insole).	1	Park et al. 2024a
1b	Shoulder brace during treadmill training may produce greater improvements in gait speed than conventional treadmill training.	1	Park et al. 2024b
1b	Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving gait speed.	1	Hirano et al. 2024
1b	Ankle foot orthosis with gait training may produce greater improvements in gait speed than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in gait speed than Sham taping with treadmill training.	1	Kim & Kang 2018c
2	Solid Ankle-foot orthosis, then Rocker shoes may produce greater improvements in gait speed than Solid Ankle-foot orthosis, then Regular shoes.	1	Farmani et al. 2016
1b	Gait training with robotic leg brace may not have a difference in efficacy when compared to Group exercise without robotic leg brace for improving gait speed.	1	Stein et al. 2014

1b	6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis) may not have a difference in efficacy when compared to Ankle Foot Orthosis only or 12wk ankle-foot orthosis for improving gait speed.	1	Everaert et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait speed.	1	Carda et al. 2011
1b	Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving gait speed.	1	Karadag-Saygi et al. 2010
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving gait speed.	1	Beckerman et al. 1996a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving gait endurance.	2	Wang et al. 2022c; Chen et al. 2019c
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in gait endurance than Sham taping with treadmill training.	1	Kim & Kang 2018c
1b	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving gait endurance.	2	Rimaud et al. 2024; Yeung et al. 2018
1b	C-AFO ("off the shelf" composite AFO) may not have a difference in efficacy when compared to P-AFO (custom made plastic AFO) for improving gait endurance.	1	Rimaud et al. 2024
1b	C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may produce greater improvements in gait endurance than No treatment (No AFO, shoes only).	1	Rimaud et al. 2024
1b	Early Ankle Foot Orthosis may not have a difference in efficacy when compared to Late Ankle Foot Orthosis for improving gait endurance.	1	Nikamp et al. 2017
2	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving gait endurance.	1	Karakkattil et al. 2020
1b	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving gait endurance.	1	Avelino et al. 2021
1b	Single-point cane may produce greater improvements in gait endurance than Quad cane.	1	Jeong et al. 2015
1b	There is conflicting evidence about the effect of Arm Sling when compared to No Therapy for improving gait endurance.	1	Jeong et al. 2017
2	Treadmill Training with Orthotic Devices may produce greater improvements in gait endurance than Treadmill Training Alone.	1	An et al. 2020
1b	Gait training (with insole on non-paretic foot) may not have a difference in efficacy when compared to Gait training (without insole) for improving gait endurance.	1	Park et al. 2024a

1b	Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving gait endurance.	1	Hirano et al. 2024
1b	Ankle foot orthosis with gait training may produce greater improvements in gait endurance than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
1b	Gait training with robotic leg brace may not have a difference in efficacy when compared to Group exercise without robotic leg brace for improving gait endurance.	1	Stein et al. 2014
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait endurance.	1	Carda et al. 2011

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anterior Kinesio Taping may not have a difference in efficacy when compared to Posterior Kinesio Taping for improving functional mobility.	1	Gup et al. 2024
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving functional mobility.	3	Hosbas et al. 2023; Kurul et al. 2021; Sheng et al. 2019
2	Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may produce greater improvements in functional mobility than Sham taping with treadmill training.	1	Kim & Kang 2018c
1b	Shoe Insole Orthotics During Walking may produce greater improvements in functional mobility than Overground Walking or Conventional Therapy or Sham.	2	Sungkarat 2011; Eckhardt et al. 2011
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving functional mobility.	1	Liao et al. 2018
1a	Ankle-Foot Orthosis may produce greater improvements in functional mobility than No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis.	5	Yeung et al. 2018; Pomeroy et al. 2016; Erel et al. 2011; Simons et al. 2009; de Wit et al. 2004
1b	Early Ankle Foot Orthosis may not have a difference in efficacy when compared to Late Ankle Foot Orthosis for improving functional mobility.	1	Nikamp et al. 2017
2	Carbon composite ankle-foot orthosis may not have a difference in efficacy when compared to Posterior leaf spring ankle-foot orthosis for improving functional mobility.	1	Msechu et al. 2023
1a	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving functional mobility.	2	Tyson et al. 2018; de Seze et al. 2011
1a	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving functional mobility.	2	Huang et al. 2022b; Avelino et al. 2021
2	There is conflicting evidence about the effect of Neuromuscular electrical stimulation Orthosis when compared to Ankle-Foot Orthosis for improving functional mobility.	1	Morone et al. 2012b
2	Ankle-Foot Orthosis with Balance Training Shoes may not have a difference in efficacy when compared to Ankle-Foot Orthosis with Regular Shoes for improving functional mobility.	1	Farmani et al. 2016

1b	Nighttime splint wearing with Inpatient rehabilitation may not have a difference in efficacy when compared to Standing on a tilt table with Inpatient rehabilitation for improving functional mobility.	1	Robinson et al. 2008
1b	Oswestry standing frame treatment may not have a difference in efficacy when compared to Usual treatment for improving functional mobility.	1	Bagley et al. 2005
1b	Treadmill Training with Orthotic Devices may produce greater improvements in functional mobility than Treadmill Training Alone.	2	An et al. 2020; In et al. 2017
1b	There is conflicting evidence about the effect of Wearing an Inhibitor Hand Splint during ambulation when compared to no treatment for improving functional mobility.	1	Suat et al. 2011
1b	Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving functional mobility.	1	Hirano et al. 2024
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving functional mobility.	1	da Cunha et al. 2024
1b	Ankle foot orthosis with gait training may produce greater improvements in functional mobility than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
2	Solid Ankle-foot orthosis, then Rocker shoes may not have a difference in efficacy when compared to Solid Ankle-foot orthosis, then Regular shoes for improving functional mobility.	1	Farmani et al. 2016
1b	Gait training with robotic leg brace may not have a difference in efficacy when compared to Group exercise without robotic leg brace for improving functional mobility.	1	Stein et al. 2014
1b	6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis) may not have a difference in efficacy when compared to Ankle Foot Orthosis only or 12wk ankle-foot orthosis for improving functional mobility.	1	Everaert et al. 2013
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving functional mobility.	1	Carda et al. 2011
2	Odstock Dropped-foot Stimulator (peroneal nerve functional electrical stimulation) may not have a difference in efficacy when compared to No Intervention for improving functional mobility.	1	Sheffler et al. 2006
2	Customized unilateral ankle-foot orthosis may produce greater improvements in functional mobility than No Intervention.	1	Sheffler et al. 2006

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anterior Kinesio Taping may produce greater improvements in balance than Posterior Kinesio Taping.	1	Gup et al. 2024
1b	Anterior Kinesio Taping or Posterior Kinesio Taping may produce greater improvements in balance than Standard physiotherapy.	1	Gup et al. 2024
1a	There is conflicting evidence about the effect of Taping when compared to no taping, sham taping, or conventional therapy for improving balance.	5	Jung et al. 2024; Wang et al. 2022c; Kurul et al. 2021; Choi et al. 2020b; Chen et al. 2019c

1a	Shoe Insole Orthotics During Walking may produce greater improvements in balance than Overground Walking or Conventional Therapy or Sham.	2	Liu et al. 2021a; Sungkarat 2011
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving balance.	1	Liao et al. 2018
2	Weight-Shift Therapy Using Shoe Insert may not have a difference in efficacy when compared to Conventional Treatment for improving balance.	1	Aruin et al. 2012
1b	Ankle-Foot Orthosis may not have a difference in efficacy when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis for improving balance.	3	Yeung et al. 2018; Erel et al. 2011; Simons et al. 2009
1b	Early Ankle Foot Orthosis may produce greater improvements in balance than Late Ankle Foot Orthosis.	1	Nikamp et al. 2017
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving balance.	1	de Seze et al. 2011
1b	Toe Spreader may not have a difference in efficacy when compared to Conventional Care for improving balance.	1	Chiong et al. 2013
1b	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving balance.	1	Huang et al. 2022b
1b	Arm Sling may produce greater improvements in balance than No Therapy.	1	Morone et al. 2024
1a	Wearable Devices may produce greater improvements in balance than Conventional Care or No Therapy.	2	Ho et al. 2024; Pomeroy et al. 2001
1b	There is conflicting evidence about the effect of Treadmill Training with Orthotic Devices when compared to Treadmill Training Alone for improving balance.	1	In et al. 2017
2	Regent Suit may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	1	Iuppariello et al. 2018
2	Knee immobilizer brace may result in lesser improvements in balance when compared to Knee immobilizer brace with Foot lifter orthosis.	1	Talu & Bazancir 2017
2	Knee immobilizer brace may not have a difference in efficacy when compared to Knee immobilizer brace with Rigid taping for improving balance.	1	Talu & Bazancir 2017
2	Knee immobilizer brace with Foot lifter orthosis may produce greater improvements in balance than Knee immobilizer brace with Rigid taping.	1	Talu & Bazancir 2017
1b	Wearing an Inhibitor Hand Splint during ambulation may not have a difference in efficacy when compared to no treatment for improving balance.	1	Suat et al. 2011
2	There is conflicting evidence about the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation when compared to Conventional rehabilitation for improving balance.	1	Ding et al. 2015
1b	Gait training with robotic leg brace may not have a difference in efficacy when compared to Group exercise without robotic leg brace for improving balance.	1	Stein et al. 2014

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Taping may not have a difference in efficacy when compared to no taping, sham taping, or conventional therapy for improving falls and fear of falling.	2	Wang et al. 2022c; Chen et al. 2019c
1b	A Comparison of Orthoses may not have a difference in efficacy when compared to Oil Damper ankle-foot orthosis with Gait training for improving falls and fear of falling.	1	Tyson et al. 2018
2	Physical Therapy Wearing Insole (unaffected side) may not have a difference in efficacy when compared to Physical Therapy for improving falls and fear of falling.	1	Aruin et al. 2018

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Comparing Types of Canes may not have a difference in efficacy when compared to Ambulation therapy with cane with Conventional therapy for improving quality of life.	1	Avelino et al. 2021
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving quality of life.	1	Beckerman et al. 1996a

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Oswestry standing frame treatment may not have a difference in efficacy when compared to Usual treatment for improving mood.	1	Bagley et al. 2005

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Shoulder brace during treadmill training may produce greater improvements in upper extremity function than conventional treadmill training.	1	Park et al. 2024b

Key Points

- Anterior Kinesio Taping may be beneficial for improving balance, but not functional mobility, after stroke when compared to Posterior Kinesio Taping.
- Taping may be beneficial for improving muscle strength and neurophysiological measures, but not falls and fear of falling, activities of daily living, and spasticity, after stroke when compared to no taping, sham taping, or conventional therapy; the literature is mixed regarding biomechanical balance measures, gait speed, balance, biomechanical gait measures, range of motion, functional mobility, and gait endurance.
- Extensor Digitorum Longus Taping may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Tibialis Anterior Taping.
- Pelvic stability training with posterior and lateral taping may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Pelvic stability training with posterior taping only; the literature is mixed regarding biomechanical gait measures.

- Posterior pelvic tilt taping with functional movements (sitting-to- standing, indoor walking and stair walking training) may be beneficial for improving biomechanical gait measures, muscle strength, and gait speed after stroke when compared to Functional movements (sitting-to-standing with indoor walking and stair walking training).
- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait endurance, functional mobility, and gait speed after stroke when compared to Sham taping with treadmill training.
- Walking with TheraTogs may be beneficial for improving neurophysiological measures, but not gait speed, after stroke when compared to Walking with cane at normal height.
- Walking with hip abductor taping may not be beneficial for improving gait speed after stroke when compared to Walking with cane at normal height; the literature is mixed regarding neurophysiological measures.
- Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures, range of motion, and gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).
- Taping With Electrical Stimulation may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to Electrical Stimulation or Taping Alone or No Taping.
- New Body Orthosis may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No Orthosis.
- Shoe Insole Orthotics During Walking may be beneficial for improving functional mobility and balance, but not biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed, after stroke when compared to Overground Walking or Conventional Therapy or Sham.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.
- Weight-Shift Therapy Using Shoe Insert may be beneficial for improving biomechanical balance measures, but not motor recovery, biomechanical gait measures, gait speed, and balance, after stroke when compared to Conventional Treatment.
- Ankle-Foot Orthosis may be beneficial for improving motor recovery and functional mobility, but not biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, gait speed, gait endurance, and balance, after stroke when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis; the literature is mixed regarding neurophysiological measures and aerobic measures.
- Ankle-Foot Orthosis with Botulinum Toxin may be beneficial for improving biomechanical gait measures and spasticity, but not gait speed, after stroke when compared to Botulinum Toxin.
- Taping with Botulinum Toxin may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, and gait speed after stroke when compared to Botulinum Toxin.
- Early Ankle Foot Orthosis may be beneficial for improving activities of daily living and balance, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Late Ankle Foot Orthosis.
- High PFR DAFO may not be beneficial for improving biomechanical gait measures and biomechanical balance measures after stroke when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO); High PFR DAFO may result in lesser improvements in range of motion and gait speed when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO).
- Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may not be beneficial for improving biomechanical gait measures and biomechanical balance measures after stroke when compared to Medium PFR DAFO; Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may result in lesser improvements in range of motion and gait speed when compared to Medium PFR DAFO.
- Carbon composite ankle-foot orthosis may not be beneficial for improving gait speed and functional mobility after stroke when compared to Posterior leaf spring ankle-foot orthosis.
- A Comparison of Orthoses may not be beneficial for improving biomechanical balance measures, muscle strength, spasticity, pain, activities of daily living, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Oil Damper ankle-foot orthosis with Gait training; the literature is mixed regarding biomechanical gait measures, range of motion, and gait speed.

- Ankle-foot orthosis-PlfS with shoe (SSh) may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to SSh only.
- AFO-plfR may be beneficial for improving biomechanical gait measures, but not range of motion, after stroke when compared to SSh only.
- AFO-PlfS with Standard shoe (SSh) may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to AFO-plfR.
- The literature is mixed regarding the effect of Ankle-foot orthosis with mechanical plantar flexion stops (ankle-foot orthosis-PlfS) with Rocker shoe (RSh) on biomechanical gait measures after stroke when compared to ankle-foot orthosis-PlfS with shoe (SSh).
- Solid Ankle Foot Orthosis may not be beneficial for improving biomechanical gait measures after stroke when compared to Dynamic Ankle Foot Orthosis.
- Plastic ankle foot orthosis made with polypropylene may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric.
- Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis).
- 5-degree lateral wedge orthotic in both shoes may not be beneficial for improving muscle strength and gait speed after stroke when compared to 8.5-degree lateral wedge orthotic in both shoes.
- Anterior ankle foot orthosis may be beneficial for improving neurophysiological measures, but not range of motion, after stroke when compared to Posterior ankle foot orthosis; the literature is mixed regarding gait speed and biomechanical gait measures.
- Bivalve Cast may not be beneficial for improving spasticity, range of motion, and activities of daily living after stroke when compared to Pressure-Relieving Ankle-Foot Orthosis or Conventional Care.
- Toe Spreader may not be beneficial for improving biomechanical gait measures, spasticity, gait speed, and balance after stroke when compared to Conventional Care.
- Comparing Types of Canes may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, gait endurance, and quality of life after stroke when compared to Ambulation therapy with cane with Conventional therapy.
- Single-point cane may be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to Quad cane.
- Neuromuscular electrical stimulation Orthosis may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Ankle-Foot Orthosis; the literature is mixed regarding functional mobility.
- Ankle-Foot Orthosis with Balance Training Shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Ankle-Foot Orthosis with Regular Shoes.
- Nighttime splint wearing with Inpatient rehabilitation may not be beneficial for improving range of motion and functional mobility after stroke when compared to Standing on a tilt table with Inpatient rehabilitation.
- Arm Sling may be beneficial for improving balance, but not biomechanical gait measures, muscle strength, aerobic measures, pain, and gait speed, after stroke when compared to No Therapy; the literature is mixed regarding gait endurance.
- Wearable Devices may be beneficial for improving activities of daily living and balance, but not biomechanical gait measures, after stroke when compared to Conventional Care or No Therapy; the literature is mixed regarding gait speed.
- Oswestry standing frame treatment may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Usual treatment.
- Treadmill Training with Orthotic Devices may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and motor recovery after stroke when compared to Treadmill Training Alone; the literature is mixed regarding balance.
- Visual Biofeedback with Orthotic Devices may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Sham Feedback; the literature is mixed regarding gait speed.

- Regent Suit may be beneficial for improving neurophysiological measures, but not motor recovery, activities of daily living, and balance, after stroke when compared to Conventional Therapy.
- Knee immobilizer brace may result in lesser improvements in balance when compared to Knee immobilizer brace with Foot lifter orthosis.
- Knee immobilizer brace may not be beneficial for improving balance after stroke when compared to Knee immobilizer brace with Rigid taping.
- Knee immobilizer brace with Foot lifter orthosis may be beneficial for improving balance after stroke when compared to Knee immobilizer brace with Rigid taping.
- Knee Orthosis with Gait Training may be beneficial for improving biomechanical gait measures, but not gait speed, after stroke when compared to Gait Training Alone.
- Physical Therapy Wearing Insole (unaffected side) may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and falls and fear of falling after stroke when compared to Physical Therapy.
- Arm sling may be beneficial for improving aerobic measures and gait speed after stroke when compared to No Treatment.
- Wearing an Inhibitor Hand Splint during ambulation may not be beneficial for improving balance after stroke when compared to no treatment; the literature is mixed regarding functional mobility.
- Gait training (with insole on non-paretic foot) may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Gait training (without insole).
- Shoulder brace during treadmill training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to conventional treadmill training.
- Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg with Knee ankle foot orthosis (KAFO) on paralyzed leg and Usual physical therapy may be beneficial for improving biomechanical balance measures after stroke when compared to Usual Physical Therapy.
- Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional rehab.
- Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator.
- Ankle foot orthosis with gait training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility, but not aerobic measures, after stroke when compared to functional electrical stimulation with gait training.
- Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night may be beneficial for improving spasticity and range of motion, but not neurophysiological measures, after stroke when compared to Physical therapy with Ankle foot orthosis.
- Solid Ankle-foot orthosis, then Rocker shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Solid Ankle-foot orthosis, then Regular shoes.
- The literature is mixed regarding the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation on motor recovery, spasticity, activities of daily living, and balance after stroke when compared to Conventional rehabilitation.
- Gait training with robotic leg brace may not be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Group exercise without robotic leg brace.
- 6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis) may not be beneficial for improving aerobic measures, gait speed, and functional mobility after stroke when compared to Ankle Foot Orthosis only or 12wk ankle-foot orthosis.
- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and

functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.

- Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Odstock Dropped-foot Stimulator (peroneal nerve functional electrical stimulation) may not be beneficial for improving functional mobility after stroke when compared to No Intervention.
- Tibial nerve block through thermocoagulation with ankle-foot orthosis may not be beneficial for improving motor recovery, spasticity, gait speed, and quality of life after stroke when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis.
- Ankle Kinesio taping may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Anterior Kinesio Taping may be beneficial for improving balance after stroke when compared to Standard physiotherapy.
- Posterior Kinesio Taping may be beneficial for improving balance after stroke when compared to Standard physiotherapy.
- Plastic ankle foot orthosis made with polypropylene may be beneficial for improving gait speed, but not biomechanical gait measures, after stroke when compared to Barefoot.
- Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric may not be beneficial for improving gait speed and biomechanical gait measures after stroke when compared to Barefoot.
- Using an off-the-shelf carbon ankle-foot orthosis (C- AFO) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No ankle-foot orthosis.
- Using a custom plastic ankle-foot orthosis (P-AFO) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No ankle-foot orthosis.
- 5-degree lateral wedge orthotic in both shoes may not be beneficial for improving muscle strength and gait speed after stroke when compared to Overground walking with no wedge.
- Pressure-relieving Ankle- foot Orthosis with Physical Therapy may not be beneficial for improving spasticity, range of motion, and activities of daily living after stroke when compared to Physical Therapy.
- Customized unilateral ankle-foot orthosis may be beneficial for improving functional mobility after stroke when compared to No Intervention.
- 8.5-degree lateral wedge orthotic in both shoes may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Overground walking with no wedge.
- Walking with hip abductor taping may not be beneficial for improving neurophysiological measures after stroke when compared to Walking with TheraTogs.
- C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, gait speed, and gait endurance after stroke when compared to No treatment (No AFO, shoes only).
- C-AFO ("off the shelf" composite AFO) may not be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, gait speed, and gait endurance after stroke when compared to P-AFO (custom made plastic AFO).

Summary of Key Points: Orthotic Devices

Intervention	Control(s)	Function domain(s)	Effect
Anterior Kinesio Taping	Posterior Kinesio Taping	Balance	+

Anterior Kinesio Taping	Posterior Kinesio Taping	Functional mobility	–
Taping	no taping, sham taping, or conventional therapy	Falls and fear of falling, activities of daily living, spasticity	–
Taping	no taping, sham taping, or conventional therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, balance, range of motion, functional mobility, gait endurance	=
Taping	no taping, sham taping, or conventional therapy	Muscle strength, neurophysiological measures	+
Taping	no taping, sham taping, or conventional therapy	Range of motion	=
Taping	no taping, sham taping, or conventional therapy	Falls and fear of falling	–
Extensor Digitorum Longus Taping	Tibialis Anterior Taping	Biomechanical gait measures, gait speed	–
Pelvic stability training with posterior and lateral taping	Pelvic stability training with posterior taping only	Muscle strength	+
Pelvic stability training with posterior and lateral taping	Pelvic stability training with posterior taping only	Gait speed	–
Pelvic stability training with posterior and lateral taping	Pelvic stability training with posterior taping only	Biomechanical gait measures	=
Taping	no taping, sham taping, or conventional therapy	Muscle strength	+
Posterior pelvic tilt taping with functional movements (sitting-to-standing, indoor walking and stair walking training)	Functional movements (sitting-to-standing with indoor walking and stair walking training)	Biomechanical gait measures, muscle strength, gait speed	+
Taping	no taping, sham taping, or conventional therapy	Activities of daily living	–
Taping	no taping, sham taping, or conventional therapy	Neurophysiological measures	+
Taping	no taping, sham taping, or conventional therapy	Spasticity	–
Taping	no taping, sham taping, or conventional therapy	Biomechanical balance measures	=
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training	Gait endurance, functional mobility, gait speed	+
Walking with TheraTogs	Walking with cane at normal height	Neurophysiological measures	+
Walking with TheraTogs	Walking with cane at normal height	Gait speed	–
Walking with hip abductor taping	Walking with cane at normal height	Gait speed	–
Walking with hip abductor taping	Walking with cane at normal height	Neurophysiological measures	=
Ankle Kinesio taping	Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping	Biomechanical gait measures, range of motion, gait speed	–

	(proprioceptive neuromuscular facilitation-KT)		
Taping With Electrical Stimulation	Electrical Stimulation or Taping Alone or No Taping	Muscle strength, spasticity, gait speed	+
New Body Orthosis	No Orthosis	Biomechanical gait measures, gait speed	+
Shoe Insole Orthotics During Walking	Overground Walking or Conventional Therapy or Sham	Functional mobility, balance	+
Shoe Insole Orthotics During Walking	Overground Walking or Conventional Therapy or Sham	Biomechanical gait measures, biomechanical balance measures, range of motion, gait speed	–
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole	Functional mobility, balance	–
Weight-Shift Therapy Using Shoe Insert	Conventional Treatment	Biomechanical balance measures	+
Weight-Shift Therapy Using Shoe Insert	Conventional Treatment	Motor recovery, biomechanical gait measures, gait speed, balance	–
Ankle-Foot Orthosis	No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis	Motor recovery, functional mobility	+
Ankle-Foot Orthosis	No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis	Biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, gait speed, gait endurance, balance	–
Ankle-Foot Orthosis	No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis	Neurophysiological measures, aerobic measures	=
Ankle-Foot Orthosis with Botulinum Toxin	Botulinum Toxin	Biomechanical gait measures, spasticity	+
Ankle-Foot Orthosis with Botulinum Toxin	Botulinum Toxin	Gait speed	–
Taping with Botulinum Toxin	Botulinum Toxin	Biomechanical gait measures, spasticity, range of motion, gait speed	–
Early Ankle Foot Orthosis	Late Ankle Foot Orthosis	Gait speed, gait endurance, functional mobility	–
Early Ankle Foot Orthosis	Late Ankle Foot Orthosis	Activities of daily living, balance	+
High PFR DAFO	Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO)	Biomechanical gait measures, biomechanical balance measures, range of motion, gait speed	–
High PFR DAFO	Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO)	Range of motion, gait speed	–
Low PFR Dynamic Ankle-Foot Orthosis (DAFO)	Medium PFR DAFO	Biomechanical gait measures, biomechanical balance measures, range of motion, gait speed	–
Low PFR Dynamic Ankle-Foot Orthosis (DAFO)	Medium PFR DAFO	Range of motion, gait speed	–
Carbon composite ankle-foot orthosis	Posterior leaf spring ankle-foot orthosis	Gait speed, functional mobility	–
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Biomechanical balance measures, muscle strength, spasticity, pain, activities of daily living, gait endurance,	–

		functional mobility, balance, falls and fear of falling	
Ankle-foot orthosis-PlfS with shoe (SSh)	SSh only	Biomechanical gait measures, range of motion	–
AFO-plfR	SSh only	Biomechanical gait measures	+
AFO-plfR	SSh only	Range of motion	–
AFO-PlfS with Standard shoe (SSh)	AFO-plfR	Biomechanical gait measures, range of motion	–
Ankle-foot orthosis with mechanical plantar flexion stops (ankle-foot orthosis-PlfS) with Rocker shoe (RSh)	ankle-foot orthosis-PlfS with shoe (SSh)	Biomechanical gait measures	=
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Gait endurance	–
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Functional mobility, falls and fear of falling	–
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Biomechanical balance measures	–
Solid Ankle Foot Orthosis	Dynamic Ankle Foot Orthosis	Biomechanical gait measures	–
Plastic ankle foot orthosis made with polypropylene	Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric	Biomechanical gait measures, range of motion, gait speed	–
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Biomechanical gait measures, range of motion, gait speed	=
Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis)	Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis)	Biomechanical gait measures, gait speed	+
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Spasticity, pain, activities of daily living, functional mobility, balance	–
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training	Gait speed	=
5-degree lateral wedge orthotic in both shoes	8.5-degree lateral wedge orthotic in both shoes	Muscle strength, gait speed	–
Anterior ankle foot orthosis	Posterior ankle foot orthosis	Neurophysiological measures	+
Anterior ankle foot orthosis	Posterior ankle foot orthosis	Range of motion	–
Anterior Ankle-Foot Orthosis	Posterior Ankle-Foot Orthosis	Biomechanical gait measures, gait speed	=
Bivalve Cast	Pressure-Relieving Ankle-Foot Orthosis vs Conventional Care	Spasticity, range of motion, activities of daily living	–
Toe Spreader	Conventional Care	Biomechanical gait measures, spasticity, gait speed, balance	–
Comparing Types of Canes	Ambulation therapy with cane with Conventional therapy	Biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, gait endurance, quality of life	–
Comparing Types of Canes	Ambulation therapy with cane with Conventional therapy	Biomechanical gait measures, gait speed, gait endurance, functional mobility, quality of life	–

Single-point cane	Quad cane	Aerobic measures, gait speed, gait endurance	+
Neuromuscular electrical stimulation Orthosis	Ankle-Foot Orthosis	Gait speed	+
Neuromuscular electrical stimulation Orthosis	Ankle-Foot Orthosis	Motor recovery, muscle strength, spasticity, activities of daily living	–
Neuromuscular electrical stimulation Orthosis	Ankle-Foot Orthosis	Functional mobility	=
Ankle-Foot Orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes	Aerobic measures, gait speed	+
Ankle-Foot Orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes	Functional mobility	–
Nighttime splint wearing with Inpatient rehabilitation	Standing on a tilt table with Inpatient rehabilitation	Range of motion, functional mobility	–
Arm Sling	No Therapy	Balance	+
Arm Sling	No Therapy	Biomechanical gait measures, muscle strength, aerobic measures, pain, gait speed	–
Arm Sling	No Therapy	Gait endurance	=
Wearable Devices	Conventional Care or No Therapy	Activities of daily living, balance	+
Wearable Devices	Conventional Care or No Therapy	Biomechanical gait measures	–
Wearable Devices	Conventional Care or No Therapy	Gait speed	=
Oswestry standing frame treatment	Usual treatment	Motor recovery, activities of daily living, functional mobility	–
Treadmill Training with Orthotic Devices	Treadmill Training Alone	Biomechanical gait measures, gait speed, gait endurance, functional mobility, motor recovery	+
Treadmill Training with Orthotic Devices	Treadmill Training Alone	Motor recovery, gait speed, functional mobility	+
Treadmill Training with Orthotic Devices	Treadmill Training Alone	Balance	=
Visual Biofeedback with Orthotic Devices	Sham Feedback	Spasticity	+
Visual Biofeedback with Orthotic Devices	Sham Feedback	Range of motion	–
Visual Biofeedback with Orthotic Devices	Sham Feedback	Gait speed	=
Regent Suit	Conventional Therapy	Neurophysiological measures	+
Regent Suit	Conventional Therapy	Motor recovery, activities of daily living, balance	–
Knee immobilizer brace	Knee immobilizer brace with Foot lifter orthosis	Balance	–
Knee immobilizer brace	Knee immobilizer brace with Rigid taping	Balance	–

Knee immobilizer brace with Foot lifter orthosis	Knee immobilizer brace with Rigid taping	Balance	+
Knee Orthosis with Gait Training	Gait Training Alone	Biomechanical gait measures	+
Knee Orthosis with Gait Training	Gait Training Alone	Gait speed	−
Physical Therapy Wearing Insole (unaffected side)	Physical Therapy	Motor recovery, biomechanical gait measures, gait speed, falls and fear of falling	−
Arm sling	No Treatment	Aerobic measures, gait speed	+
Wearing an Inhibitor Hand Splint during ambulation	no treatment	Balance	−
Wearing an Inhibitor Hand Splint during ambulation	no treatment	Functional mobility	=
Gait training (with insole on non-paretic foot)	Gait training (without insole)	Biomechanical gait measures, gait speed	+
Gait training (with insole on non-paretic foot)	Gait training (without insole)	Gait endurance	−
Shoulder brace during treadmill training	conventional treadmill training	Biomechanical gait measures, gait speed	+
Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg with Knee ankle foot orthosis (KAFO) on paralyzed leg and Usual physical therapy	Usual Physical Therapy	Biomechanical balance measures	+
Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab	Conventional rehab	Motor recovery, activities of daily living, gait speed, gait endurance, functional mobility	−
Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis)	Sham transcranial direct current stimulation with gait training and foot drop stimulator	Motor recovery, neurophysiological measures, functional mobility	−
Ankle foot orthosis with gait training	functional electrical stimulation with gait training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Ankle foot orthosis with gait training	functional electrical stimulation with gait training	Aerobic measures	−
Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night	Physical therapy with Ankle foot orthosis	Spasticity, range of motion	+
Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night	Physical therapy with Ankle foot orthosis	Neurophysiological measures	−
Solid Ankle-foot orthosis, then Rocker shoes	Solid Ankle-foot orthosis, then Regular shoes	Aerobic measures, gait speed	+
Solid Ankle-foot orthosis, then Rocker shoes	Solid Ankle-foot orthosis, then Regular shoes	Functional mobility	−
Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation	Conventional rehabilitation	Motor recovery, spasticity, activities of daily living, balance	=

Gait training with robotic leg brace	Group exercise without robotic leg brace	Gait speed, gait endurance, functional mobility, balance	–
6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis)	Ankle Foot Orthosis only or 12wk ankle-foot orthosis	Aerobic measures, gait speed, functional mobility	–
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Spasticity, range of motion	+
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Muscle strength, gait speed, gait endurance, functional mobility	–
Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises	Botulinum toxin A (75- 100U) with Sham taping and home exercises	Spasticity, range of motion, gait speed	–
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching	Biomechanical gait measures, spasticity, range of motion	–
Odstock Dropped-foot Stimulator (peroneal nerve functional electrical stimulation)	No Intervention	Functional mobility	–
Tibial nerve block through thermocoagulation with ankle-foot orthosis	Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis	Motor recovery, spasticity, gait speed, quality of life	–
Ankle Kinesio taping	No Taping	Biomechanical gait measures, range of motion, gait speed	+
Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT)	No Taping	Biomechanical gait measures, range of motion, gait speed	+
Anterior Kinesio Taping	Standard physiotherapy	Balance	+
Posterior Kinesio Taping	Standard physiotherapy	Balance	+
Plastic ankle foot orthosis made with polypropylene	Barefoot	Gait speed	+
Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric	Barefoot	Gait speed, biomechanical gait measures	–
Plastic ankle foot orthosis made with polypropylene	Barefoot	Biomechanical gait measures	–
Using an off-the-shelf carbon ankle-foot orthosis (C- AFO)	No ankle-foot orthosis	Biomechanical gait measures, gait speed	+
Using a custom plastic ankle-foot orthosis (P-AFO)	No ankle-foot orthosis	Biomechanical gait measures, gait speed	+
5-degree lateral wedge orthotic in both shoes	Overground walking with no wedge	Muscle strength, gait speed	–
8.5-degree lateral wedge orthotic in both shoes	Overground walking with no wedge	Muscle strength	+
Pressure-relieving Ankle- foot Orthosis with Physical Therapy	Physical Therapy	Spasticity, range of motion, activities of daily living	–

Customized unilateral ankle-foot orthosis	No Intervention	Functional mobility	+
8.5-degree lateral wedge orthotic in both shoes	Overground walking with no wedge	Gait speed	–
Walking with hip abductor taping	Walking with TheraTogs	Neurophysiological measures	–
C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO)	No treatment (No AFO, shoes only)	Biomechanical gait measures, range of motion, aerobic measures, gait speed, gait endurance	+
C-AFO ("off the shelf" composite AFO)	P-AFO (custom made plastic AFO)	Biomechanical gait measures, range of motion, aerobic measures, gait speed, gait endurance	–

Hippotherapy



Adopted from: https://strokerecoveryfoundation.org

Hippotherapy utilizes the natural gait and rhythmic, repetitive movements of a horse to provide motor and sensory input, such inputs are similar to the movement pattern of the pelvis when a person is walking (Cunningham, 2009; Koca & Ataseven, 2015). As a result, hippotherapy has garnered attention as a rehabilitative method for lower limb stroke recovery.

A total of eight RCTs were found that evaluated hippotherapy for lower extremity motor rehabilitation. Three RCTs compared Hippotherapy Therapy or No Treatment with Conventional Therapy or No Treatment (Ozturk et al. 2024; Kim & Lee 2015c; Sung et al. 2013). One RCT compared Hippotherapy or Rhythm and Music-Based Therapy with No Treatment (Bunketorp-Käll et al. 2017). Two RCTs compared Hippotherapy Training Therapy with Trunk Training Therapy (Coban et al. 2024; Baek et al. 2014). One RCT compared Hippotherapy Training with Treadmill Training (Lee et al. 2014a).

In addition, one RCT in which hippotherapy formed part of a combined or comparative intervention are cross-referenced at the end of Table 14; their primary listings appear in other tables.

The methodological details and results of all eight RCTs are presented in Table 14.

Table 14. RCTs Evaluating Hippotherapy for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score)	Interventions	Outcome Measures Result (direction of effect)

Sample Size start/end Time post stroke category Study design	Duration: Session length, frequency per week for total number of weeks	
Hippotherapy vs Conventional Therapy or No Treatment		
Ozturk et al. (2024) RCT (6) Nstart=26 Nend=26 TPS=Chronic A vs 0	E: Hippotherapy simulator training + Conventional physiotherapy C: Conventional physiotherapy Duration: 60min (15min hippotherapy, 45min CT)/d, 5d/wk, 6wks	E vs C: BBS (+exp) Postural assessment scale for stroke (-) Rivermead mobility index (-) TUG (-) BI (-) 2MWT (+exp)
Kim & Lee (2015c) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Hippotherapy C: No Treatment Duration: 30min/d, 5d/wk for 6wks	E vs C: 10-Meter Walk Test (+exp) Berg Balance Scale (+exp) Modified Barthel Index (+exp)
Sung et al. (2013) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Hippotherapy stimulator + conventional rehabilitation C: Conventional rehabilitation Duration: 60min/d, 5d/wk for 4wk	E vs C: Surface EMG during sit to stand (+exp) Step length (-) Stance phase (-) Swing phase (-) Single support (+exp) Load response (+exp) Pre-swing (+exp) Cadence (-) Total double support (+exp)
Hippotherapy or Rhythm and Music-Based Therapy vs No Treatment		
Bunketorp-Käll et al. (2017) RCT (8) Nstart=123 Nend=117 TPS=Chronic A vs B vs 0	E1: Rhythm- and Music-based therapy E2: Horse-riding therapy C: No treatment Duration: 2d/wk, for 12wks	E1/E2 vs C: Stroke Impact Scale (+exp1, +exp2) Timed Up and Go Test (+exp 2) Berg Balance Scale (+exp 2) Bäckstrand, Dahlberg and Liljenäs Balance Scale (+exp1, +exp2) Grip Strength Right Hand Final (-) Right Hand Mean (-) Right Hand Max (+exp1) Left Hand Final (+exp1) Left Hand Mean (-) Left Hand Max (-) Barrow Neurological Institute Screen (+exp1) Letter Number Sequencing (+exp1)
Hippotherapy vs Trunk Training Therapy		
Coban et al. (2024) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs B	E: Hippotherapy Horseriding simulator therapy + Conventional rehabilitation C: trunk and balance control exercises + conventional rehab Duration: 60min/d(45min conventional, 15min intervention), 5d/wk, 4wks	E vs C: BBS(-) FMA-UE(-) FMA-LE(-) Postural Stability (-) anterior-posterior index (-)

		medial-lateral index (-) Fall Risk Index (-) TIS(-) TUG(-) SF-36(-)
Baek et al. (2014) RCT (3) Nstart=30 Nend=30 TPS=Not reported A + B vs C + B	E: Hippotherapy + Central nervous system development therapy C: Trunk training + Central nervous system development therapy Duration: 1h/d, 3d/wk for 8wks	E vs C: Static Balance (+exp) Muscle Thickness (-)
Hippotherapy vs Treadmill Training		
Lee et al. (2014a) RCT (4) Nstart=30 Nend=30 TPS=Not reported A vs B	E: Hippotherapy C: Treadmill training Duration: 30min/d, 3d/wk for 8wks	E vs C: Step length asymmetry ratio (+exp) Berg Balance Scale (-) Gait speed (+exp)
Additional Comparisons from the Source Dataset		
Bunketorp-Käll et al. (2019) RCT (8) Nstart=123 Nend=117 TPS=Chronic A vs 0	E1: Horse riding therapy; E2: Rhythm-and music based therapy C: Wait list control Duration: 2d/wk, 12wks Hours riding or MT	E1 / E2 vs C: 10 meter walk test time (+exp1) Steps number (+exp1) Step length (-) 6 minute walk test (-) Modified Motor Assessment Scale (+exp1)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving motor recovery.	1	Coban et al. 2024

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Hippotherapy Therapy or No Treatment when compared to Conventional Therapy or No Treatment for improving biomechanical gait measures.	1	Sung et al. 2013
2	Hippotherapy Training may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Lee et al. 2014a

1b	Horse riding therapy may produce greater improvements in biomechanical gait measures than Wait list control.	1	Bunketorp-Käll et al. 2019
1b	Rhythm-and music based therapy may not have a difference in efficacy when compared to Wait list control for improving biomechanical gait measures.	1	Bunketorp-Käll et al. 2019

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving biomechanical balance measures.	1	Coban et al. 2024

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving muscle strength.	1	Baek et al. 2014

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Therapy or No Treatment may produce greater improvements in neurophysiological measures than Conventional Therapy or No Treatment.	1	Sung et al. 2013

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Hippotherapy Therapy or No Treatment when compared to Conventional Therapy or No Treatment for improving activities of daily living.	2	Ozturk et al. 2024; Kim & Lee 2015c

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Therapy or No Treatment may produce greater improvements in gait speed than Conventional Therapy or No Treatment.	1	Kim & Lee 2015c
2	Hippotherapy Training may produce greater improvements in gait speed than Treadmill Training.	1	Lee et al. 2014a
1b	Horse riding therapy may produce greater improvements in gait speed than Wait list control.	1	Bunketorp-Käll et al. 2019
1b	Rhythm-and music based therapy may not have a difference in efficacy when compared to Wait list control for improving gait speed.	1	Bunketorp-Käll et al. 2019

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Hippotherapy Therapy or No Treatment may produce greater improvements in gait endurance than Conventional Therapy or No Treatment.	1	Ozturk et al. 2024

1b	Horse riding therapy or Rhythm-and music based therapy may not have a difference in efficacy when compared to Wait list control for improving gait endurance.	1	Bunketorp-Käll et al. 2019

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Hippotherapy Therapy or No Treatment may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving functional mobility.	1	Ozturk et al. 2024
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving functional mobility.	1	Coban et al. 2024
1b	Horse riding therapy may produce greater improvements in functional mobility than Wait list control.	1	Bunketorp-Käll et al. 2019
1b	Rhythm-and music based therapy may not have a difference in efficacy when compared to Wait list control for improving functional mobility.	1	Bunketorp-Käll et al. 2019

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Hippotherapy Therapy or No Treatment may produce greater improvements in balance than Conventional Therapy or No Treatment.	2	Ozturk et al. 2024; Kim & Lee 2015c
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving balance.	2	Coban et al. 2024; Baek et al. 2014
2	Hippotherapy Training may not have a difference in efficacy when compared to Treadmill Training for improving balance.	1	Lee et al. 2014a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving falls and fear of falling.	1	Coban et al. 2024

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving quality of life.	1	Coban et al. 2024

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Hippotherapy or Rhythm and Music-Based Therapy when compared to No Treatment for improving upper extremity function.	1	Bunketorp-Käll et al. 2017

2	Hippotherapy Training Therapy may not have a difference in efficacy when compared to Trunk Training Therapy for improving upper extremity function.	1	Coban et al. 2024

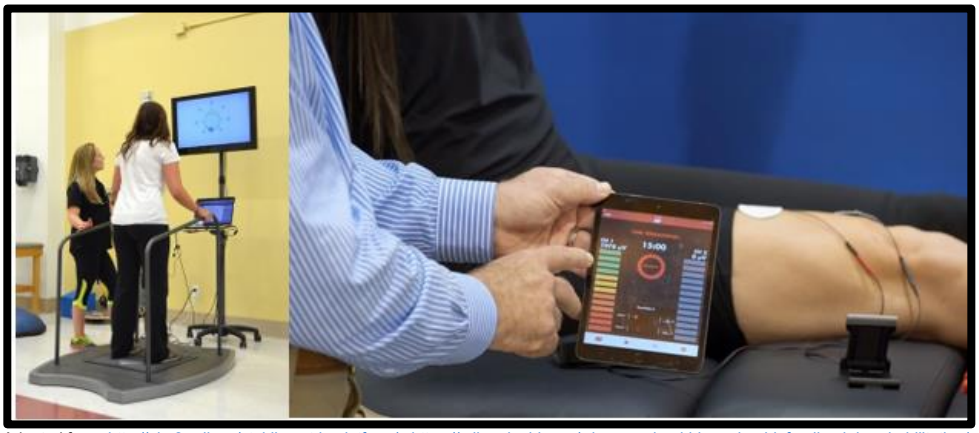
Key Points

- Hippotherapy Therapy or No Treatment may be beneficial for improving neurophysiological measures, gait speed, gait endurance, and balance, but not functional mobility, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding biomechanical gait measures and activities of daily living.
- Hippotherapy Training Therapy may not be beneficial for improving motor recovery, biomechanical balance measures, muscle strength, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Trunk Training Therapy.
- Hippotherapy Training may be beneficial for improving biomechanical gait measures and gait speed, but not balance, after stroke when compared to Treadmill Training.
- Horse riding therapy may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not gait endurance, after stroke when compared to Wait list control.
- Rhythm-and music based therapy may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Wait list control.

Summary of Key Points: Hippotherapy

Intervention	Control(s)	Function domain(s)	Effect
Hippotherapy Therapy or No Treatment	Conventional Therapy or No Treatment	Neurophysiological measures, gait speed, gait endurance, balance	+
Hippotherapy Therapy or No Treatment	Conventional Therapy or No Treatment	Functional mobility	–
Hippotherapy Therapy or No Treatment	Conventional Therapy or No Treatment	Biomechanical gait measures, activities of daily living	=
Hippotherapy Training Therapy	Trunk Training Therapy	Motor recovery, biomechanical balance measures, muscle strength, functional mobility, balance, falls and fear of falling, quality of life	–
Hippotherapy Training	Treadmill Training	Biomechanical gait measures, gait speed	+
Hippotherapy Training	Treadmill Training	Balance	–
Horse riding therapy	Wait list control	Biomechanical gait measures, gait speed, functional mobility	+
Horse riding therapy	Wait list control	Gait endurance	–
Rhythm-and music based therapy	Wait list control	Biomechanical gait measures, gait speed, gait endurance, functional mobility	–

Biofeedback



Adopted from: http://aim2walk.ca/stabilometric-platform/ ; https://mikereinold.com/why-you-should-be-using-biofeedback-in-rehabilitation/

Table 15. Classification of Biofeedback used for stroke rehabilitation (Giggins et al., 2013) Biofeedback category Subcategories Examples Biomechanical Movement • Inertial sensors Postural Control • Force plates Force • Electrogoimeters • Pressure biofeedback units • Camera based systems • Physiotherapist comments Physiological Neuromuscular system • EMG biofeedback • Real time ultrasound imagining biofeedback Cardiovascular system • Heart rate biofeedback • Heart rate variability biofeedback Respiratory system • Breathing electrodes and sensors that convert breathing to auditory and visual signals Biofeedback is a longstanding technique used within rehabilitation that involves providing real- time biological information to patients as a form of augmented or extrinsic feedback during rehabilitation (Giggins et al. 2013). Feedback provided is extrinsic as opposed to intrinsic because additional information is provided beyond self-generated information from intrinsic sensory receptors (Giggins et al. 2013). Providing additional and detailed feedback to patients during rehabilitation may produce a positive impact on their learning and performance through improving accuracy during functional tasks and increasing engagement during rehabilitation (Giggins et al., 2013; Johnson et al., 2013).

There are two strategies through which biofeedback is relayed to the user. The first option is through direct feedback, in which a physiological measurement such as heart rate is displayed (Giggins et al. 2013). The second way is through transformed feedback, in which measurements are used to inform and produce an auditory, visual, or tactile feedback signal (Giggins et al. 2013). Biofeedback can be classified most broadly into biomechanical or physiological categories (Table 15). Biomechanical feedback can be further broken down based on measurements of movement, postural control, and force (Giggins et al. 2013). Physiological feedback can be broken down based on measurements of the neuromuscular, cardiovascular, and respiratory systems (Giggins et al. 2013).

Electromyography (EMG) biofeedback therapy uses surface electrodes to detect changes in skeletal muscle activity, which is then transformed to a visual or auditory feedback signal (Giggins et al 2013). It is used to increase activity within a paretic muscle or can be used to reduce tone in a spastic muscle (Giggins et al. 2013).

A total of 67 RCTs were found that evaluated biofeedback for lower extremity motor rehabilitation. Four RCTs compared Gait Training with Visual Feedback with Gait Training or Conventional Therapy (Evron et al. 2024; Kim et al. 2020b; Pignolo et al. 2020; Byl et al. 2015). Six RCTs compared Treadmill Training with Visual Biofeedback with Treadmill Training (Shin et al. 2022; Druzbicki et al. 2018; Druzbicki et al. 2016a; Druzbicki et al. 2016b; Brasileiro et al. 2015; Druzbicki et al. 2015). Five RCTs compared Gait Training with Activity Feedback with Gait Training or Conventional Therapy (Waddell et al. 2022; Phonthee et al. 2020; Danks et al. 2016; Dorsch et al. 2015; Mansfield et al. 2015). Three RCTs compared Gait Training with Postural Control Visual Feedback with Gait Training or EMG Biofeedback (Khallaf et al. 2014; Balci et al. 2013; Mandel et al. 1990). Five RCTs compared Trunk Training with Visual Biofeedback with Conventional Therapy (Shin et al. 2020; Jung et al. 2017a; Shin & Song 2016; Chung et al. 2014; Chae et al. 2011). Nine RCTs compared Rehabilitation with EMG biofeedback with Conventional Therapy (Dost Surucu & Tezen 2021; Gamez et al. 2019; Tsaih et al., 2018; Xu et al. 2015; Jonsdottir et al. 2010; Bradley et al. 1998; Intiso et al. 1994; Cozean et al. 1988; Mulder et al. 1986). One RCT compared Lokomat Training with Galvanic Vestibular Stimulation or Physiotherapy with Visual Feedback (Krewer et al. 2013). One RCT compared Balance Training with Computer-based Visual Feedback with Mirror Feedback (Yang et al. 2015). One RCT compared Cycling Training with Biofeedback with Conventional Rehabilitation (Yang et al. 2014). Seven RCTs compared Overground Gait Training with Auditory Feedback with Gait Training (Jung et al. 2020a; Choi et al. 2019; Cha et al. 2018; Jung et al. 2015; Sungkarat et al. 2011; Dobkin et al. 2010; Aruin et al. 2003). One RCT compared Verbal Feedback During Walking with Tactile Feedback During Walking (Ploughman et al. 2018). Two RCTs

evaluated Biofeedback combined with sit-to-stand training (Hyun et al. 2021; Cheng et al. 2001). Seven RCTs compared Balance Training with Biofeedback with Balance Training or Conventional Therapy (Lu et al. 2024; Yeo et al. 2023; Elshinnawy et al. 2022; Liao et al. 2018; Lupo et al. 2018; Hung et al. 2016b; Maciaszek et al. 2014). Two RCTs compared Target or Reach Visual Feedback Training with Conventional Rehabilitation (Pak et al. 2020; Khumsapsiri et al. 2018). One RCT compared Strength Training with Visual Feedback with Physical Therapy (Cho et al. 2021). Two RCTs compared Perceptual Feedback with Conventional Treatment (Rao et al. 2023; Morioka et al. 2003). Two RCTs compared Robot-Assisted Gait Training with Biofeedback with No Biofeedback or Conventional Biofeedback (Maggio et al. 2021; Tamburella et al. 2019). One RCT compared Visual Biofeedback with Orthotic Devices with Sham Feedback (Tamburella et al. 2017). One RCT compared Neurofeedback with Sham (Lee et al. 2015g). One RCT compared Knowledge of Results with Knowledge of Performance Feedback Training (Kwon et al. 2024). One RCT compared EMG Biofeedback During Single Support Phase with Stance Phase (Skvortsov et al. 2024).

In addition, 38 RCTs in which biofeedback formed part of a combined or comparative intervention are cross-referenced at the end of Table 15; their primary listings appear in other tables.

The methodological details and results of all 67 RCTs are presented in Table 15.

Table 15. RCTs Evaluating Biofeedback for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Gait Training with Visual Feedback vs Gait Training or Conventional Therapy		
Evron et al. (2024) RCT (3) Nstart=33 Nend=25 TPS=Acute A vs 0	E: "Selfit" gait exercises with visual feedback + conventional rehabilitation C: conventional rehab Duration: 30min/d, 6 sessions	E vs C: TUG(+exp) DGI(-) 10MWT(-) ABC(-)
Kim et al. (2020b) RCT (5) Nstart=30 Nend=24 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Visual performance feedback training during overground walking + conventional physical therapy C: Overground walking without feedback + conventional physical therapy Duration: 30min/d overground walking & 60min/d physical therapy, 3d/wk, 6wk	E vs C: Timed Up and Go test (+exp) Step length (+exp) Stride length (+exp) Single support time on affected side (+exp) Double support time (-) Walking velocity (+exp) Step length ratio (-) Stride length ratio (+exp) Single support time ratio (+exp)
Pignolo et al. (2020) RCT (7) Nstart=66 Nend=63 TPS=Subacute A1 vs A2 vs B	E1: Gait training sessions using the computerized body-weight- support system with real-time interactive visual feedback E2: Gait training sessions using the computerized body-weight- support system without visual feedback C: Neuromotor conventional treatment Duration: 2hr, 5d/wk, 6wks conventional therapy in control group & 60min gait training + 60min conventional therapy, 5d/wk, 6wks for intervention groups	E1 vs E2/C: Tinetti balance scales (+exp1) Functional Independence Measures (+exp1) Trunk Control Test (-) Motricity Index (-) Fugl-Meyer Lower Extremities scale test (-) Static gait balance (+exp1)
Byl et al. (2015) RCT (4)	E: Gait training enhanced with visual kinematic biofeedback	E vs C: 10-Metre Walk Test (-)

Nstart=24 Nend=23 TPS=Chronic A vs 0	C: Gait training Duration: 90min, 12sessions over 6-8wk	Step length (-) 6-Minute walk test (-) Dynamic Gait Index (-) Tinetti Gait Scale (-) Timed Up and Go Test (-) Five times Sit-to-Stand test (-) Berg Balance Scale (-) Strength LE (-) Range of motion (-)
Treadmill Training with Visual Biofeedback vs Treadmill Training		
Shin et al. (2022) RCT (8) Nstart=32 Nend=32 TPS=Chronic A + B vs C	E: Visual feedback + rhytmic auditory cues + conventional rehab C: Treadmill training + conventional rehab Duration: 3d/wk, 8wks	E vs C: Gait speed(+exp) Cadence(+exp) step length(+exp) BBS(+exp) TUG(+exp) Spatial/temporal asymmetry(+exp) paretic single limb support (+exp) non paretic single limb support (-)
Druzbicki et al. (2018) RCT (7) Nstart=30 Nend=30 TPS=Acute A + B vs A Also in Table 9 (Treadmill Training)	E: Body weight support treadmill training + visual biofeedback C: Body weight support treadmill training Duration: 30min/d, 5d/wk for 3wks	E vs C: Stance phase Paretic (-) Non paretic (-) Symmetry Index Stance Phase (-) Swing Phase (-) Step Length (+exp) Swing phase Paretic (-) Non paretic (-) Cadence (-) Gait speed (-) Step length Paretic (-) Non paretic (-) 10-metre walk test (+exp) 2-minute walk test (+exp) Timed Up and Go (-)
Druzbicki et al. (2016a) RCT (8) Nstart=30 Nend=30 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + visual biofeedback + physiotherapy exercises C: Treadmill training + physiotherapy exercises Duration: 90min/d, 5d/wk for 2wk	E vs C: Step length Paretic side (-) Non paretic side (-) Stance phase Paretic side (-) Non paretic side (-) Swing phase Paretic side (-) Non paretic side (-) Range of motion Hip Paretic side (-) Non paretic side (-) Range of motion Knee Paretic side (-)

		Non paretic side (-)
Druzbicki et al. (2016b) RCT (7) Nstart=46 Nend=46 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E: Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) + Conventional individual exercises C: Treadmill training without biofeedback + Conventional individual exercises Duration: 70min/d (30-45min/d treadmill training + individual exercises), 5d/wk, 12d	E vs C: Static balance (-) Timed Up and Go (-) Center of Pressure Length Eyes Open (-) Eyes Closed (-) Sway Area Eyes Open (-) Eyes Closed (-) Center of Pressure in Mediolateral Range Scalar with Eyes Open (-) Eyes Closed (-) Center of Pressure in Anterioposterior Range Scalar with Eyes Open (-) Eyes Closed (-) Symmetry ratio of lowerlimb load ()
Brasileiro et al. (2015) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs A + C vs A Also in Table 9 (Treadmill Training)	E1: Partial body-weight support treadmill training + Visual biofeedback E2: Partial body-weight support treadmill training + Auditory biofeedback C: Partial body-weight support treadmill training Duration: 20min/1session	E vs C: Speed Stride Length (-) Cadence (-) Stance Time (-) Symmetry Ratio (-) Max hip extension during stance (-) Max hip flexion during swing (-) Hip range of motion (-) Knee angle at initial contact (-) Max knee flexion during swing (-) Knee range of motion (-) Ankle angle at initial contact (-) ankle angle at toe-off (-) ankle range of motion (-)
Druzbicki et al. (2015) RCT (7) Nstart=50 Nend=50 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + visual biofeedback + basic physiotherapy C: Treadmill training + basic physiotherapy Duration: 150min/d, 5d/wk, 2wks	E vs C: 10-Metre Walk Test (-) 2-Minute Walk Test (-) Timed Up & Go Test (-) Cadence (-) Gait velocity (-) Swing phase Paretic (-) Non paretic (+exp) Stance phase Paretic (-) Non paretic (+exp) Length of gait cycle Paretic (-) Non paretic (+exp) Barthel Index (-)
Gait Training with Activity Feedback vs Gait Training or Conventional Therapy		
Waddell et al. (2022) RCT (4)	E: Wearable wrist device to engage in game (feedback through points and	E vs C: Daily Steps (+exp)

Nstart=34 Nend=34 TPS=Chronic A1 vs A2	levels, weekly emails and daily texts) to meet step goal C: Wearable wrist device with basic feedback to meet step goal Duration: 8wks	Proportion of days acheiving step goal (+exp)
Phonthee et al. (2020) RCT (7) Nstart=39 Nend=36 TPS=Chronic A vs B	E: Stepping Training with External Feedback C: Stepping Training Alone Duration: 40min, 5d/wk, 4wks	E vs C: Lower limb support period (+exp) Single limb support period (affected) (+exp) Timed Up and Go Test (+exp) 10-Meter Walk Test (-) 6-Minute Walk Test (-) Step length (affected/non-affected) (-) Step length symmetry (-)
Danks et al. (2016) RCT (4) Nstart=37 Nend=27 TPS=Chronic A + B vs A	E: Fast Walking training (FAST) + Step activity monitoring (SAM) program C: Fast Walking training (FAST) Duration: 30min/d, 3d/wk, 12wks	E vs C: Steps per Day (-) Total Time Walking Per Day (-) 10-Meter Walk Test Self-selected speed (-) Maximal speed (-) 6-Minute-Walk Test: Distance (+exp)
Dorsch et al. (2015) RCT (6) Nstart=151 Nend=125 TPS=Acute A1 vs A2	E1: Gait training with Augmented Accelerometer feedback (speed and activity) C: Gait training with Accelerometer feedback on speed only Duration: variable duration, received feedback 3d/wk	E1 vs C: 15m Walking speed (-) 3-minute walking distance (-) Functional Ambulatory category (-) Stroke Impact Scale-16 (-)
Mansfield et al. (2015) RCT (8) Nstart=60 Nend=57 TPS=Acute A vs B	E: Accelerometer-based feedback + Walking training C: Walking training without feedback Duration: 60min/d, 5d/wk	E vs C: Total walking duration (-) Total number of steps (-) Cadence (+exp) Longest bout duration (-) Number of long walking bouts (-) Gait data Walking speed (+exp) Step length symmetry (-) Swing time symmetry (-) Step length variability (-) Step time variability (+exp) Step width variability (-) Stroke self-efficacy (-)
Gait Training with Postural Control Visual Feedback vs Gait Training or EMG Biofeedback		
Khallaf et al. (2014) RCT (5) Nstart=16 Nend=16 TPS=Chronic A + B vs 0 Also in Table 5 (Task-Specific Training)	E: Gait training with postural control visual feedback on monitor + task specific exercises C: Gait training + physiotherapy Duration: 90min/d, 5d/wk, 8wks Exercises Treatment Group & 50min/d, 5d/wk, 8wks Exercises Control Group	E vs C: Foot placement/contact during walking (+exp)
Balci et al. (2013) RCT (6) Nstart=25	E1: Vestibular rehabilitation (consisted of eye-head coordination exercises, balance and ambulation exercises)	E2 vs E1 vs C: Berg Balance scale (-) Timed Up and Go test (No stats) Dizziness Handicap inventory (-)

Nend=25 TPS=Acute A vs B vs C	E2: Visual feedback: Posturography Training C: Usual Home Exercise Duration: 10min, 2-3sessions/d (20-30min/d), 6wks vestibular rehabilitation & 25-30min, 3d/wk, 6wks visual feedback training & 20-30min/d, 6wks usual home exercise	Dynamic gait index (-) Center of Gravity Sway Velocity (-) Limit of Stability (-)
Mandel et al. (1990) RCT (3) Nstart=37 Nend=37 TPS=Chronic A1 vs A2 vs 0	E1: Electromyographic with novel biofeedback E2: Electromyographic with novel biofeedback for 6wks, then rhythmic positional novel biofeedback for last 6wks C: No treatment Duration: 12wks	E2 vs C: Gait speed (+exp2) E1 vs E2/C: Passive plantar flexor torque (-) Borg RPE (-)
Trunk Training with Visual Biofeedback vs Conventional Therapy		
Shin et al. (2020) RCT (7) Nstart=24 Nend=24 TPS=Chronic A vs 0 Also in Table 4 (Trunk Training)	E: Smartphone-based visual feedback trunk control training + Conventional rehabilitation C: Conventional Rehabilitation Duration: 50min/d, 5d/wk, 4wk Conventional Rehabilitation	E vs C: Trunk Impairment Scale (+exp) Velocity (+exp) Cadence (+exp) Stride length (+exp) Stride Time (+exp) Step length (+exp) Step width (+exp) Step time (+exp) Double Limb support (+exp)
Jung et al. (2017a) RCT (6) Nstart=46 Nend=43 TPS=Chronic A + B vs A Also in Table 4 (Trunk Training)	E: Trunk stabilization exercises + audiovisual biofeedback (Pressure biofeedback unit) C: Trunk stabilization exercises Duration: 50min/d, 5d/wk,6wks	E vs C: Thickness of trunk muscles (+exp) TrA-affected (+exp) TrA-unaffected (+exp) IO-affected (-) IO-unaffected (-) EO-affected (+con) EO-unaffected (+con) Symmetric ratio (-) static sitting balance ability (+exp) dynamic sitting balance ability (+exp)
Shin & Song (2016) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Also in Table 4 (Trunk Training)	E: Smartphone visual feedback for trunk control training + Conventional care C: Conventional care Duration: 80min/d conventional care + 20min/d Smartphone therapy, 5d/wk, 4wks	E vs C: Timed Up and Go (+exp) Static balance Eyes closed (+exp) Eyes open (+exp) Trunk Impairment scale (+exp) Modified Functional reach test (+exp)
Chung et al. (2014) RCT (4) Nstart=26 Nend=19 TPS=Chronic A + B vs A Also in Table 4 (Trunk Training)	E: Core stability exercises + real time feedback + conventional physical therapy C: Core stability exercises + conventional physical therapy Duration: 30min/session, 3d/wk for 6wks	E vs C: Timed Up and Go test (+exp) Gait velocity (+exp) Gait cadence (-) Affected side Stride length (+exp) Step length (-) Single support time (+exp) Double support time (-)

		Non-affected side Stride length (+exp) Step length (-) Single support time (-) Double support time (-)
Chae et al. (2011) RCT (5) Nstart=21 Nend=21 TPS=Chronic A + B vs 0	E: Spinal stabilization exercise + postural control visual biofeedback C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 8wks	E vs C: Gait speed (-) Cadence (-) Step length (-) Step length asymmetry ratio (-) Single support time (-) Functional Ambulation Category (-)
Rehabilitation with EMG biofeedback vs Conventional Therapy		
Dost Surucu & Tezen (2021) RCT (4) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: EMG biofeedback + Conventional physical therapy C: Conventional physical therapy Duration: 20min/d, 5d/wk, 3wks EMG biofeedback	E vs C: Modified Ashworth scale (+exp) Active dorsiflexion ankle range of motion (+exp) Brunnstrom recovery stages (+exp) Modified Motor assessment scale Sitting to standing (+con) Walking (+con) EMG activity of Tibialis Anterior (+exp)
Gamez et al. (2019) RCT (6) Nstart=40 Nend=28 TPS=Acute A vs 0	E: Surface electromyography-biofeedback (sEMG-B) + conventional care C: Conventional care Duration: 60min/d, 2d/wk, for 12wks	E vs C: Mean activity of EMG signals Upper limb hemiparetic side (+exp) Upper limb normal side (-) Lower limb hemiparetic side (+exp) Lower limb normal side (+exp) Barthel Index (+exp) Fugl Meyer Assessment Upper limb (-) Lower limb (+exp) Isometric strength of the wrist (-) Daniels and Worthingham's muscle testing (-) Kendall's Manual Muscle Test (-) Lovett's test (-)
Tsaih et al. (2018) RCT (7) Nstart=33 Nend=33 TPS=Chronic A1 vs A2 vs B	E1: Constant-force EMG- biofeedback Tibalis anterior training + general Physiotherapy E2: Variable-force EMG- biofeedback Tibalis anterior training + general Physiotherapy C: Upper extremity exercise + general Physiotherapy Duration: 40min/d, 3d/wk for 6wks	E1/E2 vs C: Muscle strength (+exp1, +exp2) Limit of stability anterior (-) posterior (+exp1) Timed Up and Go (-) 6min Walk test (-) 10m Walk test (-) E1 vs E2: Muscle strength (-) Limit of stability anterior (-) posterior (+exp2) Timed Up and Go (-) 6min Walk test (-) 10m Walk test (-)

Xu et al. (2015) RCT (5) Nstart=40 Nend=40 TPS=Subacute A + B vs 0	E: Comprehensive rehabilitation + EMG biofeedback C: Conventional rehabilitation Duration: 20min/d, 5d/wk EMG & 40min/d, 5d/wk comprehensive rehabilitation	E vs C: Fugl-Meyer Assessment (+exp) Functional Ambulation Category (+exp) Integrated Electromyography of Gastrosnemius (+exp)
Jonsdottir et al. (2010) RCT (7) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Rehabilitation + EMG biofeedback C: Conventional rehabilitation Duration: 45min/d, 3d/wk, 6wks (20 sessions totally)	E vs C: Gait speed (+exp) Stride length (+exp) Ankle power (+exp) Knee flexion (-)
Bradley et al. (1998) RCT (4) Nstart=23 Nend=19 TPS=Acute A vs 0	E: EMG biofeedback + conventional physical therapy C: Sham biofeedback + conventional physical therapy Duration: If inpatients: 3d/wk EMG + PT and 2d/wk PT only & If discharged: 3d/wk EMG + PT, 18sessions/ 6wks.	E vs C: Modified Bobath Scale (-) Modified Ashworth Scale (-) Sensation and Proprioception (-) 10 metre walk test Time in seconds (-) Number of steps (-) Step Length (-) Stride Width (-) Foot angle (-) Rivermead Mobility Index (-) Nottingham Extended ADL index (-) Mental Status Questionnaire (-) National Adult Reading Test (-) Ravens' Coloured Progressive Matrices (-) Rey Auditory Verbal Learning Test (-) Rey Osterrieth Figure Copying Test (-) Token Test (-)
Intiso et al. (1994) RCT (6) Nstart=16 Nend=14 TPS=Chronic A vs 0	E: EMG biofeedback training + conventional physiotherapy C: Conventional physiotherapy Duration: 60min/d, 7d/wk, 8wks physiotherapy & 30 sessions EMG-biofeedback	E vs C: Barthel Index (No stats) Canadian Neurological scale (No stats) Adams scale (No stats) Basmajian scale (No stats) Ashworth scale (No stats) Integrated surface EMG signal (No stats) Step length (-) Velocity (-) Ankle dorsiflexion in swing phase (+exp)
Cozean et al. (1988) RCT (6) Nstart=36 Nend=32 TPS=Chronic A vs B vs A + B vs 0 Also in Table 28 (Functional Electrical Stimulation)	E1: Rehabilitation + EMG biofeedback E2: Rehabilitation + Functional electrical stimulation E3: Rehabilitation + EMG biofeedback + Functional electrical stimulation C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 6wk	E1/E2/E3 vs C: Knee flexion (+exp3) Ankle dorsiflexion (+exp3) Stride length (-) Cycle time (+exp3)
Mulder et al. (1986) RCT (4) Nstart=12 Nend=12	E: Motor relearning + EMG biofeedback C: Motor relearning Duration: 40min/d, 3d/wk for 5wk	E vs C: EMG activity (-) Gait velocity (-) Range of motion (-)

TPS=Chronic A + B vs A Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)		
Lokomat Training vs Galvanic Vestibular Stimulation or Physiotherapy with Visual Feedback		
Krewer et al. (2013) RCT crossover (5) Nstart=25 Nend=24 TPS=Chronic A vs B vs C Also in Table 27 (Electromechanical and Robotic Devices)	E1: Galvanic vestibular stimulation E2: Lokomat gait training E3: Physiotherapy with visual feedback Duration: 20min session – 1d washout	E1 vs E2/E3: Burke Lateropulsion Scale (-) Scale for Contraversive Pushing (-) E2 vs E3: Burke Lateropulsion Scale (+exp2) Scale for Contraversive Pushing (-)
Balance Training with Computer-based Visual Feedback vs Mirror Feedback		
Yang et al. (2015) RCT (7) Nstart=12 Nend=12 TPS=Subacute A1 vs A2 Also in Table 11 (Balance Training)	E: Computer-generated interactive visual feedback balance training + Physical therapy C: Mirror visual feedback balance training + Physical therapy Duration: 20min/d - Balance training, 20min/d - Physical therapy, 3d/wk, 3wks	E vs C: Pusher syndrome severity (+exp) Berg balance scale (+exp) Fugl-Meyer assessment upper extremity (-) lower extremity (+exp)
Cycling Training with Biofeedback vs Conventional Rehabilitation		
Yang et al. (2014) RCT crossover (7) Nstart=31 Nend=30 TPS=Chronic A + B vs 0 Also in Table 8 (Cycle Ergometer Training)	E: Conventional Rehabilitation + Cycling training + biofeedback C: Conventional Rehabilitation (CR) Duration: 30min/d for 4wks Cycling ; 120min/d for 4wks Conventional rehabilitation – no washout	E vs C: Fugl-Meyer assessment-lower limb (+exp) 6min Walk test (+exp) 10m Walk Test (+exp) Modified Ashworth Scale (+exp)
Overground Gait Training with Auditory Feedback vs Gait Training		
Jung et al. (2020a) RCT (7) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Gait training (walking overground) + auditory feedback + conventional exercise C: Gait training (walking overground) + conventional exercise Duration: 60 mins, 5d/wk, 4 wks	E vs C: Peak vertical force on cane (+exp) EMG (Muscle activation % peak activity) (+exp) Trunk impairment scale (-): Static (-) Dynamic (-) Coordination (-) Timed Up and Go Test (+exp)
Choi et al. (2019) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs B	E1: Gait training with auditory feedback caused by active weight bearing on their paralyzed foot E2: General gait training over the ground Duration: 20min gait intervention + 30min conventional rehabilitation, 3x/wk, for 6wks	E1 vs E2: 10m walk test (+exp) Functional gait assessment (+exp) Timed up and go test (+exp) Center of pressure path length (+exp)
Cha et al. (2018) RCT (8) Nstart=31 Nend=31	E1: Gait training by active weight bearing on the paretic heel with auditory feedback + Conventional therapy	E1/E2 vs C: 10-metre walking test (-) Functional gait assessment(+exp2) Timed Up and Go test (-)

TPS=Chronic A1 vs A2 vs 0	E2: Gait training by active weight bearing on the paretic metatarsals with auditory feedback + Conventional therapy C: General gait intervention + Conventional therapy Duration: 30min, 3d/wk, 6wks conventional therapy & 20min, 3d/wk, 6wks gait training	Center of loading- path length: Eyes open (+exp1, +exp2) Eyes closed (-) Center of loading- path velocity: Eyes open (+exp1, +exp2) Eyes closed (-)
Jung et al. (2015) RCT (7) Nstart=22 Nend=21 TPS=Chronic A vs 0	E: Gait training + Auditory feedback from cane + Conventional rehabilitation C: Gait training + Conventional rehabilitation Duration: 30min/d, 5d/wk for 4wks - Gait training, 1h/d, 5d/wk for 4wks - Conventional rehabilitation	E vs C: Walking speed (+exp) Single limb support phase (+exp) Surface EMG Gluetus medius (+exp) Vastus medialis oblique (+exp)
Sungkarat et al. (2011) RCT (7) Nstart=40 Nend=35 TPS=Subacute A + B vs 0 Also in Table 13 (Orthotic Devices)	E: Gait training with Insole Shoe Wedge and Sensors + Auditory feedback + Conventional rehabilitation C: Conventional gait training + Conventional rehabilitation Duration: 30min/d, 5d/wk for 3wks - Conventional rehabilitation, 30min/d, 5d/wk for 3wks - Gait training	E vs C: Gait speed (+exp) Step length asymmetry ratio (+exp) Single support time asymmetry ratio (+exp) Berg balance scale (+exp) Timed up and go (+exp) Loading on paretic leg during stance (+exp)
Dobkin et al. (2010) RCT (7) Nstart=179 Nend=162 TPS=Acute A vs 0	E: Gait training + positive reinforcement about walking speed C: Gait training Duration: 4wk	E vs C: Walking speed (+exp) Length of rehabilitation stay (-) Walking distance (-) Functional Ambulatory category (-)
Aruin et al. (2003) RCT (3) Nstart=16 Nend=16 TPS=Acute A vs 0	E: Gait training + Auditory feedback C: Conventional gait therapy Duration: 25min (2sessions/d), for 10d	E vs C: Step Width (+exp)
Verbal Feedback During Walking vs Tactile Feedback During Walking		
Ploughman et al. (2018) RCT crossover (7) Nstart=10 Nend=10 TPS=Subacute A1 vs A2	E1: Verbal Cues and Feedback During Walking E2: Tactile Cues and Feedback During Walking Duration: Single Session, 7-10 day washout	E1 vs E2: Cadence (+exp) Velocity (+exp) Double support time (+exp) step length symmetry (-) hip kinematics (-) knee kinematics (-) Ankle kinematics (-) EMG muscle activity gluteus maximum (-) gluteus medius (-) vastus lateralis (+con) medial hamstrings (-) tibialis anterior (-) medial gastrocnemius (+con)

Biofeedback combined with sit-to-stand training		
Hyun et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Subacute A + B vs A Also in Table 2 (Sit-to-Stand Training); Table 26 (Virtual Reality)	E: Sit-to-stand training + visual feedback with Wii Balance Board + Standard physiotherapy C: Sit-to-stand Training + Standard physiotherapy Duration: 20min/d, 5d/wk, 6 wks sit-to-stand training & 30min/d, 5d/wk, 6wks physiotherapy	E vs C: Manual muscle Strength test of the Lower Extremities Hip flexor (+exp) hip abductor (+exp) knee extensor (+exp) Centre of Pressure (+exp) Berg Balance Scale (+exp) 10 meter walking test (+exp) Timed Up and Go test (+exp) Stroke-Specific Quality of Life (+exp)
Cheng et al. (2001) RCT (5) Nstart=54 Nend=54 TPS=Subacute A + B vs 0 Also in Table 2 (Sit-to-Stand Training)	E: Standing postural symmetry training with a visual and auditory biofeedback trainer + repetitive sit-to-stand training+ conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d postural training & 20min/d sit-to-stand training, 5d/wk for 3wks	E vs C: Rate of falls (No stats) the anteroposterior COP (No stats) mediolateral COP (No stats) Rate of rise in force during rising from a chair (No stats) time needed to rise and sit (No stats)
Balance Training with Biofeedback vs Balance Training or Conventional Therapy		
Lu et al. (2024) RCT (8) Nstart=62 Nend=62 TPS=Acute A + B vs C Also in Table 11 (Balance Training)	E: Pro-Kin system + weight loss system (body-weight support) with balance training C: Conventional balance training Duration: C: 20 mins/session, 10 times/wk, 4 wks. E: 30 mins/session (20 mins of Pro-Kin balance +10 mins of Pro-Kin weight loss), 10 sessions/wk, 4 wks	E vs C: Berg balance scale (+exp) TUG (+exp) Functional ambulation classification (+exp) Ellipse area open eyes (+exp) closed eyes (+exp) Motion trajectory length open eyes (+exp) closed eyes (+exp)
Yeo et al. (2023) RCT (7) Nstart=39 Nend=39 TPS=Chronic A + B vs B vs 0 Also in Table 11 (Balance Training)	E1: Visual feedback + Unstable surface balance training E2: Unstable surface balance training C: Conventional physical therapy Duration: E: 20 mins/d, 3d/wk, for 4 wks; C: 30 mins/d, 3d/wk, 4 wks	E1 vs C: TIS (+exp1) Berg Balance Scale (+exp1) TUG (+exp1) Cadence (-) Gait velocity (+exp1) stride time (-) Stride length (+exp1) Hip flexion (+exp1) Hip extension (+exp1) Knee flexion (+exp1) Knee extension (-) E2 vs C: TIS (+exp2) Berg Balance Scale (+exp2) TUG (-) Cadence (-) Gait velocity (+exp2) stride time (-) Stride length (+exp2) Hip flexion (+exp2) Hip extension (-)

		Knee flexion (+exp2) Knee extension (-) E1 vs E2: TIS (+exp1) Berg Balance Scale (+exp1) TUG (+exp1) Cadence (-) Gait velocity (-) stride time (-) Stride length (-) Hip flexion (+exp1) Hip extension (-) Knee flexion (+exp1) Knee extension (-)
Elshinnawy et al. (2022) RCT (7) Nstart=56 Nend=56 TPS=Chronic A vs 0	E: Visual biofeedback training + Conventional rehabilitation C: Conventional rehabilitation Duration: 15min visual biofeedback & 50min/d, 3d/wk for 24 sessions conventional rehabilitation	E vs C: Overall index stability (+exp) Anterior/posterior index (+exp) Medial-lateral index (+exp)
Liao et al. (2018) RCT (8) Nstart=56 Nend=51 TPS=Chronic A + B vs C vs 0 Also in Table 11 (Balance Training); Table 13 (Orthotic Devices)	E1: Routine rehabilitation + Balance training + Visual biofeedback E2: Routine rehabilitation program + lateral wedge insole C: Routine rehabilitation program Duration: 20min/d, 3d/wk, 6wks balance training & 6 wks usual standing and walking with the show insole	E1/E2 vs C: Balance computerized adaptive test (+exp1, +exp2) Timed up and go (TUG) (+exp1, +exp2) E1 vs E2: Balance computerized adaptive test (-) Timed up and go (TUG) (-)
Lupo et al. (2018) RCT (7) Nstart=15 Nend=15 TPS=Subacute A vs B Also in Table 11 (Balance Training)	E: Biofeedback Balance training (RIABLO training) C: Conventional balance training Duration: 20min/d, 3d/wk, 10 sessions total	E vs C: Berg Balance scale (+exp) Rivermead mobility index (-) Modified Barthel index (-) NIH Stroke scale (+exp) Canadian Neurological scale (-) Center of pressure (+exp)
Hung et al. (2016b) RCT (5) Nstart=27 Nend=23 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Tetrax biofeedback balance training + Conventional care C: Conventional care Duration: 100min/d, 3d/wk Conventional care & 20min/d, 3d/wk for 6wks Tetrax balance training	E vs C: Physiologic Profile Assessment Proprioception (+exp) Muscle strength (-) Reaction time (+exp) Postural sway area (-) Weight bearing (+exp) Timed Up and Go (+exp) Forward reach distance (-)
Maciaszek et al. (2014) RCT (6) Nstart=21 Nend=21 TPS=Subacute A vs 0	E: Biofeedback training on posturographic platform C: Standard hospital treatment Duration: 15d	E vs C: Timed Up and Go test (+exp)

Target or Reach Visual Feedback Training vs Conventional Rehabilitation		
Pak et al. (2020) RCT (4) Nstart=30 Nend=21 TPS=Chronic A vs B + C	E: Visual feedback training with visual targets + conventional rehabilitation C: Visual feedback training on weight shifting + conservative physiotherapy Duration: 30min/d conventional rehabilitation & 60min/d visual feedback training, 5d/wk, for 4wks	E vs C: EMG muscle activity Rectus femoris (-) Gluteus medius (+exp) Tensor fascia lata (-) Biceps femoris (-) Lateral reach test (-) Velocity (-) Path length (-) Affected side weight bearing (+exp) 10-Metre Walk Test (-)
Khumsapsiri et al. (2018) RCT (8) Nstart=16 Nend=14 TPS=Chronic A vs 0	E: Multidirectional reach training with visual feedback + conventional physical therapy C: Conventional physical therapy Duration: 30min/d, 3d/wk for 4wks multidirectional training & 30min/d, 3d/wk for 4 wks conventional therapy	E vs C: Limits of Stability (+exp) Movement velocity Forward MV (°/s) (-) Forward MV fractional difference (-) Backward MV (°/s) (-) Backward MV fractional difference (-) Affected side MV (°/s) (-) Affected side MV fractional difference (-) Less affected side MV (°/s) (-) Less affected side MV fractional difference (-) Endpoint excursion Forward EE (% LOS) (-) Forward EE fractional difference (-) Backward EE (% LOS) (-) Backward EE fractional difference (+exp) Affected side EE (% LOS) (-) Affected side EE fractional difference (-) Less affected side EE (% LOS) (-) Less affected side EE fractional difference (+exp) Maximum excursion Forward ME (% LOS) (-) Forward ME fractional difference (-) Backward ME (% LOS) (-) Backward ME fractional difference (-) Affected side ME (% LOS) (-) Affected side ME fractional difference (-) Less affected side ME (% LOS) (-) Less affected side ME fractional difference (+exp) weight-bearing squat 0° (% body weight) 0° fractional difference (+exp) 30° (% body weight) 30° fractional difference (+exp) 60° (% body weight) 60° fractional difference (-) 90° (% body weight) 90° fractional difference (+exp) Fullerton Advanced Balance scale (-)

Strength Training with Visual Feedback vs Physical Therapy		
Cho et al. (2021) RCT (8) Nstart=25 Nend=23 TPS=Chronic A + B vs C Also in Table 21 (Strength and Resistance Training)	E: Bi-axial ankle-resistive strengthening muscle training + visual feedback C: Ankle Physical therapy Duration: 40min/d, 5d/wk, 4 wks	E vs C: Fugl-Meyer Assessment lower extremity score (+exp) Berg balance Scale (-) 10-meter walking test (-) Ankle co-contraction index Dorsiflexion (+exp) Plantarflexion (+exp) Inversion (+exp) Eversion (+exp) Ankle proprioception (-) Ankle co-activation index (+exp)
Perceptual Feedback vs Conventional Treatment		
Rao et al. (2023) RCT (6) Nstart=30 Nend=30 TPS=Not reported A + B vs 0	E: Visual + verbal cues + Conventional physical therapy C: Conventional physical therapy Duration: 60min/d, 4d/wk, 4wks (2x/wk cued within treatment time)	E vs C: BBS (+exp)
Morioka et al. (2003) RCT (6) Nstart=28 Nend=26 TPS=Subacute A vs 0	E: Perceptual learning exercises by feedback from hardness discrimination (sensory training) + Conventional therapy C: Conventional therapy Duration: 5d/wk for 2wks sensory training exercises	E vs C: Postural sway when eyes open Locus length (+exp) Enveloped area (+exp) Rectangular area (-) Postural sway when eyes closed Locus length (-) Enveloped area (-) Rectangular area (-)
Robot-Assisted Gait Training with Biofeedback vs No Biofeedback or Conventional Biofeedback		
Maggio et al. (2021) RCT (6) Nstart=45 Nend=45 TPS=Subacute A + B vs A Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-Assisted Gait Training + Visuomotor feedback C: Robot-Assisted Gait Training Duration: 60min/d, 5d/wk, 8wks	E vs C: Body-esteem scale (+exp) Body Uneasiness Test-A Global Severity Index (-) Weight Phobia (+exp) Body Image Concern (-) Avoidance (+exp) Compulsive self-monitoring (-) Depersonalization (+exp) Body Uneasiness Test-B Positive Symptom Total (+exp) Positive Symptom Distress Index (+exp) I Mouth (+exp) II Face shape (+exp) III Thighs (+exp) IV Legs (+exp) V Arms (+exp) VI Moutsache (-) VII Skin (-) VIII Blushing (-) Fugl-Meyer assessment (+exp) Frontal assessment battery (-)

		Montreal Cognitive assessment (-) Beck Depression Inventory (-) Short form-12 Total (-) Physical Health (-) Mental Health (-) EEG (+exp)
Tamburella et al. (2019) RCT crossover (5) Nstart=12 Nend=10 TPS=Subacute A + B vs A + C Also in Table 27 (Electromechanical and Robotic Devices)	E: Lokomat robotic training + EMG biofeedback + Conventional therapy C: Lokomat robotic training + Commercial joint torque biofeedback + Conventional therapy Duration: 40min/d, 5d/wk for 6 session - Conventional therapy, 40min/d, 3d/wk for 6 sessions - Lokomat with EMG, 40min/d, 3d/wk for 6 sessions - Lokomat with Joint torque feedback	E vs C: Modified Ashworth scale hip (-) Knee (-) Ankle (-) Manual Muscle test: Hip (-) Knee (-) Ankle (-) Functional Ambulation category (-) Visual Analogue scale-pain (-) Barthel index (-) Berg Balance scale (-) Trunk Control test (-)
Visual Biofeedback with Orthotic Devices vs Sham Feedback		
Tamburella et al. (2017) RCT (7) Nstart=10 Nend=10 TPS=Subacute A + B vs A + C Also in Table 13 (Orthotic Devices)	E: Ankle treatment + biomechanical visual biofeedback (using an active sensorized AFO) C: Ankle treatment + an inactive sensorized AFO (sham) Duration: 60min/d, 5d/wk, 6wks	E vs C: Active/passive ankle ROM (-) Modified Ashworth Scale (+exp) Coactivation index (+exp) Active joint speed (+exp) Passive joint speed (-)
Neurofeedback vs Sham		
Lee et al. (2015g) RCT (6) Nstart=25 Nend=20 TPS=Subacute A vs 0	E: Neurofeedback + Conventional care C: Sham neurofeedback + Conventional care Duration: 30min/d, 3x/wk for 8wks	E vs C: Sensorimotor rhythm wavs (+exp) 10m Dual Task Test (+exp) 10m walk velocity (+exp) Cadence (+exp) Stance phase (-) Plantar foot pressure Entire foot (+exp) Forefoot (+exp) Hindfoot (-)
Knowledge of Results vs Knowledge of Performance Feedback Training		
Kwon et al. (2024) RCT (6) Nstart=30 Nend=27 TPS=Chronic A vs B	E1: Knowledge of Results (Real-time visual feedback), E2: Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) Duration: 30min/d, 5d/wk, 4wks	E1 vs E2: Sway length eyes open (+exp) eyes closed (-) Sway velocity eyes open (-) eyes closed (-) Area 95% eyes open (+exp) eyes closed (-) BBS (-)

		FMA-LE (-) PASS (-) TIS (-) FES (-)
EMG Biofeedback During Single Support Phase vs Stance Phase		
Skvortsov et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Subacute A vs B	E: EMG biofeeback (Single Support Phase Group) + conventional rehab C: EMG biofeedback (Stance Phase Group) + Conventional rehab Duration: E: 19min/d, 3wks; C: 17.5 min/d, 3 wks (only mean training session times recorded)	E vs C: Barthel index (+exp) Rivermead Mobility Index (+exp) Modified Rankin Scale (+exp) Rehabilitation Routing Scale (+exp) Berg Balance Scale (+exp) Functional Independence Measure (+exp) TUG (+exp) Hauser Ambulation Index (+exp)
Additional Comparisons from the Source Dataset		
Kang et al. (2021a) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs X	E: Weight support feedback cane (WSFC) gait training + conventional care C: Regular cane gait training + conventional care Duration: WSFC/ Regular gait training: 30min/d, 3x/wk, 4wk + conventional care: 5x/wk, 4wk	E vs C: Surface EMG Rectus femoris (+exp) Biceps femoris (-) Medial gastrocnemius (+exp) Gluteus medius (+exp) Gait velocity (-) Cadence (-) Paretic Single-limb support phase (+exp) Symmetry index (+exp)
Powers et al. (2021) RCT (5) Nstart=18 Nend=18 TPS=Chronic A vs 0	E1: 100% performance feedback and scatter plot visual feedback E2: 50% performance feedback and scatter plot visual feedback E3: 100% performance feedback and bar plot visual feedback E4: 50% performance feedback and bar plot visual feedback C: No performance feedback Duration: E: 25 reps 30s, C: 10 reps of 30s	E1 vs E2 vs E3 vs E4 vs C: Temporal gait symmetry (No stats) Gait speed (No stats) single limb support (No stats)
Ambrosini et al. (2020) RCT (6) Nstart=68 Nend=52 TPS=Subacute A + B vs B	E: multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation C: Conventional rehabilitation Duration: E: 20min/d, 5d/wk, 6wks multimodal training & 70min/d, 5d/wk, 6wks conventional rehabilitation C: 90min/d, 5d/wk, 6wks conventional rehabilitation	E vs C: 10-Meter Walk Test (-) 6-Minute Walk Test (-) Functional Independence Measure Motor Subscale (-) Motricity Index Leg (-) Trunk Control Test (-) Berg Balance Scale (-) Fall Efficiacy Scale (-) Global Perceived Effect (-) Step Length (-) Cadence (-) Paretic Step Times (-) Single Support Time (-) Double Support Time (-) Swing Velocity (-)

		ST ratio (-)
Colborne et al. (1993) RCT crossover (3) Nstart=8 Nend=8 TPS=Chronic A vs 0	E1: EMG biofeedback from the affected-side soleus muscle (EMG) E2: Sagittal plane joint angle feedback from the affected side ankle joint using an electrogoniometer (EL-GON) C: Physical therapy (PT) Duration: each treatment 30min, 2x/wk, 4wks	E vs C: Velocity (No stats) Stride length (No stats) Stride time (No stats) Knee angle at foot contact (degrees) Affected (No stats) unaffected (No stats) Knee flexion in swing: Affected (No stats) unaffected (No stats) Ankle range of motion affected (-) unaffected (-) Swing ratio (-) Weight ratio (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Jeong et al. (2024) RCT (5) Nstart=45 Nend=39 TPS=Chronic A1 vs A2 vs 0 Primary listing: Table 11 (Balance Training)	E1: Visual Deprivation Group Balance Training Group + Conventional Therapy; E2: Visual Feedback Balance Training Group + Conventional Therapy C: Conventional Therapy Duration: 30 min, 5x/wk, for 3 wks	E1 vs E2: (LOS = Limit of stability) LOS-Left (+exp) LOS-Right (+exp) LOS-Forward (+exp) LOS-Back (+exp) LOS-Total (+exp) BBS (-) E vs C: LOS-Left (+exp) LOS-Right (+exp) LOS-Forward (+exp) LOS-Back (+exp) LOS-Total (+exp) BBS (+exp1, +exp 2) FSST (+exp1) TUG (+exp1)
Inoue et al. (2022a) Feasibility/pilot RCT (4) Nstart=27 Nend=24 TPS=Acute A1 vs A2 Primary listing: Table 4 (Trunk Training)	E: Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay C: Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time Duration: 30 times/day, 5 days/wk,	E vs C: PASS (-) Static sitting task mean velocity of COP (-) Mean percentage of body weight on the paretic side (-) Lateral sitting task to the paretic side mean velocity of COP (-) Mean percentage of body weight on the paretic side (-) Lateral sitting task to the non-paretic side mean velocity of COP (-) Mean percentage of body weight on the non-paretic side (-) Forward sitting task mean velocity of COP (-) Mean percentage of body weight on the anterior direction (-) Five times sit to stand task (-) SIAS (-) TIS (-)

		FAC (-) FIM (-)
Kim et al. (2022e) RCT crossover (6) Nstart=24 Nend=24 TPS=Chronic A vs B vs C Primary listing: Table 11 (Balance Training)	E1: Pressure sensor-based vibrotactile biofeedback E2: Visual biofeedback providing posture information C: Standing without biofeedback Duration: 3 sets of 30sec with 3min rest between sets/1d - 24h washout	E1/E2 vs C: Sway length (+exp1/2) Sway velocity (+exp1/2) Weight distribution symmetric index (+exp1/2) E1 vs E2: Sway length (+exp1) Sway velocity (+exp1) Weight distribution symmetry index (+exp1)
Chaudhary et al. (2022) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs A Primary listing: Table 19 (Mirror Therapy)	E: Visual feedback via Mirror + Verbal feedback + Conventional treatment (static and dynamic balance training) C: Visual feedback via Mirror + Conventional treatment (static and dynamic balance training) Duration: 30 min/d, 3d/wk, 8 wks	E vs C: BBS (+exp)
Mihai et al. (2022) RCT (6) Nstart=24 Nend=23 TPS=Chronic A + B vs B Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E: Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy C: Sham Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy Duration: 60min/day, 5d/wk, for 2 wks conventional therapy 7min/day, 1d/wk, for 2 wks rEWST 20min/day, 5d/wk, for 2 wks visual feedback balance training	E vs C: Modified ashworth scale (+exp) Passive Range of Motion Knee (-) Ankle (+exp) Visual analogue scale (+exp) Clonus score (+exp) Trunk Impairment Scale (-) Tinetti Assessment Tool (+exp) Functional Ambulation Categories (-) Fugl-Meyer Assessment for Lower Extremity (+exp) Stabilometric Outcome measures Dynamic (+exp) Static (+exp) Limit of stability (+exp) Static-perimeter, mm (EO) (+exp) Static-ellipse area, mm2 (EO) (+exp) Static-perimeter, mm (EC) (-) Static-ellipse area, mm2 (EC) (+exp)
An et al. (2021) RCT (8) Nstart=30 Nend=30 TPS=Subacute A + B + C + D vs E Primary listing: Table 11 (Balance Training)	E: Whole-Body Tilting Postural Training (Visual feedback monitor + Trunk sensor + 8- direction body tilt + Spine balance 3D) C: General Postural Training Duration: 30min/session, 2sessions/d, 5d/wk, for 3wks	E vs C: Burke Lateropulsion Scale (+exp) Postural Assessment Scale for Stroke (+exp) Berg Balance Scale (+exp) Korea-Modified Barthel Index (+exp) Fugl-Meyer Assessment (+exp)
Mihara et al. (2021) RCT (8) Nstart=57 Nend=54 TPS=Chronic A + B vs B	E: Neurofeedback facilitation + motor imagery C: Sham neurofeedback + motor imagery Duration: 3 session/wk, 2wks	E vs C: Timed Up and Go (+exp) Functional Independence measure (-) Fugl-Meyer assessment Upper extremity (-) Lower extremity (-) Berg Balance scale (+exp)

Primary listing: Table 17 (Mental Practice)		Gait speed (-)
Noh et al. (2019) RCT (8) Nstart=24 Nend=24 TPS=Subacute A vs 0 Primary listing: Table 11 (Balance Training)	E: 3D balance training using visual feedback + Conventional therapy C: Conventional therapy Duration: 30min/d conventional therapy & 30min/d space balance training, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Gait speed (+exp) Cadence (+exp) Step length (+exp) Double-limb support period (+exp) Activity-specific balance confidence (+exp)
Maciaszek. (2018) RCT (4) Nstart=20 Nend=20 TPS=Subacute A vs 0 Primary listing: Table 11 (Balance Training)	E: Posturographic platform biofeedback training C: Standard hospital treatment Duration: 15d	E vs C: One-leg standing test (+exp) Timed Up & Go Test (+exp)
Jung et al. (2017a) RCT (6) Nstart=46 Nend=43 TPS=Chronic A + B vs A Primary listing: Table 4 (Trunk Training)	E: Trunk stabilization exercises + audiovisual biofeedback (Pressure biofeedback unit) C: Trunk stabilization exercises Duration: 50min/d, 5d/wk,6wks	E vs C: Thickness of trunk muscles (+exp) TrA-affected (+exp) TrA-unaffected (+exp) IO-affected (-) IO-unaffected (-) EO-affected (+con) EO-unaffected (+con) Symmetric ratio (-) Static sitting balance ability (+exp) Dynamic sitting balance ability (+exp)
James et al. (2017) RCT (6) Nstart=10 Nend=10 TPS=Acute A1 vs A2 Primary listing: Table 11 (Balance Training)	E: Gaming Assisted Visual feedback for balance training + Conventional therapy C: Balance training exercises + Conventional therapy Duration: 60min/d, 2sessions/d, 4d (8 sessions total)	E vs C: Berg Balance Scale (+exp) AP-Postural sway (-) Lat-Postural Sway (+exp) Stance symmetry (+exp) Active ankle ROM dorsiflexion (-) Active ankle ROM plantarflexion (+exp) Lateral reach test (-)
Hung et al. (2017) RCT (7) Nstart=43 Nend=37 TPS=Chronic A vs B vs C Primary listing: Table 11 (Balance Training)	E1: Wii Fit balance training E2: Tetrax biofeedback balance training C: Conventional weight-shifting training Duration: 30min/d, 2d/wk for 12wks	E1 vs E2 vs C: Cognitive Abilities Screening Instrument-Chinese version total (-) long term memory (-) short term memory (-) attention (-) Mental manipulation (-) Orientation (-) Abstract/judgment (+exp1) Language (+exp1) Drawing (-) Word fluency (-) Berg Balance scale (-)
Shin & Song (2016)	E: Smartphone visual feedback for trunk control training + Conventional care	E vs C:

RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Primary listing: Table 4 (Trunk Training)	C: Conventional care Duration: 80min/d conventional care + 20min/d Smartphone therapy, 5d/wk, 4wks	Timed Up-and-Go (+exp) Static balance Eyes closed (+exp) Eyes open (+exp) Trunk Impairment scale (+exp) Modified Functional reach test (+exp)
Ghomashchi (2016) RCT (3) Nstart=31 Nend=31 TPS=Chronic A + B vs A Primary listing: Table 11 (Balance Training)	E: Balance training using Biodex stability system + visual biofeedback C: Balance training Duration: 1hr/d, 3d/wk for 4wks	E vs C: Postural balance (-) Centre of pressure (-)
Yang et al. (2016) RCT (6) Nstart=24 Nend=22 TPS=Chronic A + B vs A Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E: Treadmill training + Rhythmic auditory feedback C: Treadmill training Duration: 30min/d, 3d/wk for 4wks	E vs C: Gait speed (+exp) Cadence (+exp) Stride length (+exp) Step length (+exp) Limb support (+exp) Gait asymmetry (+exp) Timed Up & Go Test (+exp)
Ordahan et al. (2015) RCT (4) Nstart=50 Nend=50 TPS=Subacute A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Balance training + postural control visual biofeedback + conventional rehabilitation C: Conventional rehabilitation Duration: 20min/d, 5d/wk for 6wks Balance Training & 30min/d, 5d/wk, for 6wks Conventional Program	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (+exp) Functional Independence Measure (-)
Ko et al. (2015) RCT (4) Nstart=52 Nend=40 TPS=Acute A vs 0 Primary listing: Table 11 (Balance Training)	E: Space balance 3D training using visual feedback program + Conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 3wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-) Postural Assessment Scale for Stroke (-)
Choi et al. (2015c) RCT (4) Nstart=26 Nend=24 TPS=Chronic A + B vs A Primary listing: Table 19 (Mirror Therapy)	E: Stepper Exercise + Visual Feedback (with mirror) C : Stepper Exercise Duration: 30min/d, 3d/wk, 6wks	E vs C: Muscle Strength Hip joint extensor muscle (+exp) Knee joint extensor muscle (-) 10-Meter Walking Test (+exp) 11 Stair Climbing Test (-)
Chen et al. (2015b) RCT (4) Nstart=36 Nend=36 TPS=Subacute A + B vs A	E: Botulinum Toxin A injection (under ultrasound guidance) + EMG biofeedback treatment + conventional care C: Botulinum Toxin A injection (under ultrasound guidance) + conventional care	E vs C: Modified Ashworth Scale (No stats) Step Length (No stats) Walking Speed (No stats)

Primary listing: Table 46 (Botulinum Toxin)	Duration: 20min/d, 5d/wk, for 6wks biofeedback & single session botulinum toxin-A nerve block	
De Nunzio et al. (2014) RCT (7) Nstart=37 Nend=37 TPS=Acute A vs B Primary listing: Table 11 (Balance Training)	E: Balance Platform Training with Audio-visual Feedback + Rehabilitation program C: Rehabilitation program + postural training with physiotherapy Duration: 60min, 6d/wk, for 2wks rehabilitation program & 30min of postural training	E vs C: Standing Balance Score (-) Berg Balance Score (-) Performance-Oriented Mobility Assessment (-) Fullerton's Advanced Balance Scale (-) Functional Independence Measure (-) Centre of Pressure (-)
Rao et al. (2013) RCT (5) Nstart=28 Nend=28 TPS=Acute A + B vs A Primary listing: Table 11 (Balance Training)	E: Balance training + postural control visual biofeedback (SMART Balance master) C: Conventional PT + balance training Duration: 60min/d, 5d/wk, 2wks + 30min/d, 1d/wk, 2wks conventional PT & 3session balance training/balance training with visual biofeedback with BWS	E vs C: Functional Independence Measure (-) Fugl-Meyer Balance scores (-) Fugl-Meyer lower extremity assessment (-)
Lee et al. (2013e) RCT (4) Nstart=22 Nend=22 TPS=Chronic A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Balance training + postural control visual biofeedback C: Conventional physiotherapy Duration: 60min/d, 5d/wk for 4wks	E vs C: Static balance (+exp) Dynamic balance (+exp)
Yoon et al. (2013) RCT (2) Nstart=24 Nend=24 TPS=Chronic A1 + B vs A2 + B vs A Primary listing: Table 11 (Balance Training)	E1: Balance training + self- controlled postural control visual biofeedback E2: Balance training + no control over postural control visual biofeedback C: Balance training Duration: 2d	E1/E2 vs C: Postural sway:(+exp1, +exp2) E1 vs E2: Postural Sway (+exp1)
Krewer et al. (2013) RCT crossover (5) Nstart=25 Nend=24 TPS=Chronic A vs 0 vs B Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Galvanic vestibular stimulation E2: Gait training (Lokomat) E3: Physiotherapy with visual feedback Duration: 20min session - 1d washout	E1 vs E2/E3: Burke Lateropulsion Scale (-) Scale for Contraversive Pushing (-) E2 vs E3: Burke Lateropulsion Scale (+exp2) Scale for Contraversive Pushing (-)
Varoqui et al. (2011) RCT (6) Nstart=24 Nend=23 TPS=Subacute A1 + B vs A2 + B vs C Primary listing: Table 11 (Balance Training)	E1: Balance training + postural control visual biofeedback from unaffected side + physiotherapy E2: Balance training + postural control visual biofeedback from affected side +physiotherapy C: Stand-up task + physiotherapy Duration: 10min/session, 8session/28d	E1/E2 vs C: Postural Assessment Scale for Stroke (-) Berg Balance Scale (-) modified Ashworth scale (-) Motor weakness (-) Functional Ambulation Category (-) Functional Independence Measure Motor (+exp1, +exp2) Cognitive (-)

Jung et al. (2011) RCT (4) Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 26 (Virtual Reality)	E: 3D balance exercises (3D Thera-Balance) with visual feedback C: Weight shifting exercises Duration: 50min/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) 10-Metre Walk Test (-)
Britton et al. (2008) RCT (5) Nstart=18 Nend=13 TPS=Subacute A + B vs C Primary listing: Table 2 (Sit-to-Stand Training)	E: Usual rehabilitation + Sit-to- Stand training + visual feedback C: Usual rehabilitation + Arm task training Duration: 30min/d, 5d/wk, 3wks	E vs C: Frequency of sit-to-stands/day (-) Mean time to rise (-) Weight bearing -affected leg (+exp) Number of attempts to successfully stand three times (-) Sit to stand 1-min test (-)
Alptekin et al. (2008) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0 Primary listing: Table 11 (Balance Training)	E: Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) C: Conventional rehabilitation Duration: 20min/d, 5d/wk, for 4wks balance KAT training & 3- 4hr/d, 5d/wk, for 4wks conventional rehabilitation	E vs C: Balance Index Static (+exp) Dynamic (+exp) Fugl-Meyer Assessment Lower Extremity (-) Balance (+exp) Instrument (-) Functional Independence Measure Total Motor (-) Locomotor (-)
Eser et al. (2008) RCT (5) Nstart=50 Nend=41 TPS=Chronic A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Balance training + force platform biofeedback + Conventional rehabilitation C: Conventional rehabilitation Duration: 15min/d, 5d/wk, for 3wks Balance training & 5h/d, 5d/wk, for 8wks conventional care	E vs C: Brunnstrom Recovery Stage (-) Rivermead Mobility Index (-) Functional Independence Measure (-)
Yavuzer et al. (2006a) RCT (6) Nstart=50 Nend=41 TPS=Chronic A vs 0 Primary listing: Table 11 (Balance Training)	E: Force platform biofeedback balance training + Conventional rehabilitation C: Conventional rehabilitation Duration: 2-5hr/d, 5d/wk, for 8wks Conventional rehabilitation & 15min/d, 5d/wk for 3wks Balance training	E vs C: Walking Velocity (-) Cadence (-) Step length (-) Single-Support Time (-) Step Length Asymmetry (-) Single-support Time Asymmetry (-) Pelvic Tilt (-) Pelvis Obliquity (+exp) Pelvic rotation (-) Sagittal Plane Total Excursion Knee (-) Hip (-) Ankle (-) Peak Hip Extensor Moment (-) Peak Hip Abductor Moment (-) Peak Knee Extensor Moment (-) Peak Ankle Plantar Flexor Moment (-)

		Vertical Ground Reaction Force (+exp)
Chen et al. (2002) RCT (4) Nstart=41 Nend=41 TPS=Subacute A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Balance training + postural control visual biofeedback (SMART Balance master) C: Conventional rehabilitation Duration: Not Specified	E vs C: Functional Independent Measure selfcare and sphincter control (No stats) mobility and locomotion (No stats) static balance maximal stability (No stats) ankle strategy (No stats) center of gravity alignment (No stats) dynamic balance axis velocity (No stats) directional control (No stats) end point excusion (No stats)
De Seze et al. (2001) RCT (6) Nstart=20 Nend=20 TPS=Subacute A vs B Primary listing: Table 4 (Trunk Training)	E: Trunk postural control training with visual and auditory feedback + Conventional neurorehabilitation C: Conventional neurorehabilitation Duration: 120min/d, 5d/wk for 3mo	E vs C: Motricity Index (-) Ashworth scale (-) Mini-mental status exam (-) Upright Equilibrium Index (+exp) Sitting Equilibrium Index (-) Functional Ambulation Category (+exp) Functional Independence Measure (-) Trunk Control Test (+exp) Bells Neglect Test (+exp)
Geiger et al. (2001) RCT (5) Nstart=13 Nend=13 TPS=Subacute A vs 0 Primary listing: Table 11 (Balance Training)	E: Physical therapy + visual biofeedback (SMART Balance master forceplate) C: Physical therapy Duration: 50min/d, 2-3d/wk for 4wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-)
Walker et al. (2000) RCT (4) Nstart=54 Nend=46 TPS=Subacute A + B vs A + C vs 0 Primary listing: Table 11 (Balance Training)	E1: Balance training + Visual feedback E2: Balance training + Verbal and tactile cues C: Conventional rehabilitation Duration: 30min/d, 5d/wk for 3- 8wks Balance training, 120min/d, 5d/wk Conventional rehabilitation	E1 vs E2 vs C: Postural sway Eyes open (-) Eyes closed (-) Berg Balance Scale (-) Timed Up & Go Test (-) 10-m walk test (-)
Sackley & Lincoln (1997) RCT (6) Nstart=26 Nend=24 TPS=Subacute A + B vs B Primary listing: Table 11 (Balance Training)	E: Visual feedback + Nottingham Balance Platform training + physical therapy C: Sham visual feedback + Nottingham Balance Platform training + physical therapy Duration: 60min/d, 3d/wk, for 4wks	E vs C: Balance co-efficient (+exp) Rivermead Motor assessment (+exp) Leg and trunk (-) Gross function (+exp) Nottingham 10-point Activities of Daily Life scale (+exp) Stance symmetry (+exp) Sway (+exp)
Wong et al. (1997) RCT (5) Nstart=60 Nend=60	E: Standing practice + Force platform biofeedback C: Standing training table Duration: 60min/d, 5d/wk, for 3- 4wks	E vs C: Postural symmetry (+exp)

TPS=Acute A + B vs C Primary listing: Table 11 (Balance Training)		
Engardt et al. (1993) RCT (5) Nstart=42 Nend=40 TPS=Subacute A vs B Primary listing: Table 2 (Sit-to-Stand Training)	E: Continuous Auditory Feedback During Sit-to-Stand Training C: No Feedback During Sit-to- stand Training Duration: 15min/session, 3sessions/d, 5d/wk, 6wks	E vs C: Weight distribution (+exp) Motor Assessment Scale (+exp) Barthel Index (-) Fugl-Meyer Assessment (+exp)
Cozean et al. (1988) RCT (6) Nstart=36 Nend=32 TPS=Chronic A vs B vs A + B vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Gait training + FES E2: Gait training + Biofeedback E3: Gait training + FES + Biofeedback C: Standard care Duration: 30min/d, 3d/wk for 6wks	E3 vs E1/E2/C: Gait cycle time (+exp3) Stride length (-) Knee flexion (+exp3) Ankle flexion (+exp3)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving motor recovery.	1	Pignolo et al. 2020
1a	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	5	Dost Surucu & Tezen 2021; Gamez et al. 2019; Xu et al. 2015; Bradley et al. 1998; Intiso et al. 1994
1b	Balance Training with Computer-based Visual Feedback may produce greater improvements in motor recovery than Mirror Feedback.	1	Yang et al. 2015
1b	Cycling Training with Biofeedback may produce greater improvements in motor recovery than Conventional Rehabilitation.	1	Yang et al. 2014
1b	There is conflicting evidence about the effect of Balance Training with Biofeedback when compared to Balance Training or Conventional Therapy for improving motor recovery.	1	Lupo et al. 2018
1b	Strength Training with Visual Feedback may produce greater improvements in motor recovery than Physical Therapy.	1	Cho et al. 2021
1b	There is conflicting evidence about the effect of Robot-Assisted Gait Training with Biofeedback when compared to No Biofeedback or Conventional Biofeedback for improving motor recovery.	1	Maggio et al. 2021

1b	Knowledge of Results (Real-time visual feedback) may not have a difference in efficacy when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) for improving motor recovery.	1	Kwon et al. 2024
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving motor recovery.	1	Inoue et al. 2022a
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in motor recovery than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
1b	Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D) may produce greater improvements in motor recovery than General Postural Training.	1	An et al. 2021
1b	Neurofeedback facilitation with motor imagery may not have a difference in efficacy when compared to Sham neurofeedback with motor imagery for improving motor recovery.	1	Mihara et al. 2021
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional physical therapy with balance training for improving motor recovery.	1	Rao et al. 2013
1b	Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not have a difference in efficacy when compared to Stand-up task with physiotherapy for improving motor recovery.	1	Varoqui et al. 2011
1b	Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) may not have a difference in efficacy when compared to Conventional rehabilitation for improving motor recovery.	1	Alptekin et al. 2008
2	Balance training with force platform biofeedback and Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving motor recovery.	1	Eser et al. 2008
1b	Visual feedback with Nottingham Balance Platform training and physical therapy may produce greater improvements in motor recovery than Sham visual feedback with Nottingham Balance Platform training and physical therapy.	1	Sackley & Lincoln 1997
2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in motor recovery than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Visual Feedback may produce greater improvements in biomechanical gait measures than Gait Training or Conventional Therapy.	2	Kim et al. 2020b; Byl et al. 2015
1a	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	5	Shin et al. 2022; Druzbicki et al. 2018; Druzbicki et al. 2016a; Brasileiro et al. 2015; Druzbicki et al. 2015

1a	Gait Training with Activity Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving biomechanical gait measures.	2	Phonthee et al. 2020; Mansfield et al. 2015
2	Gait Training with Postural Control Visual Feedback may produce greater improvements in biomechanical gait measures than Gait Training or electromyography Biofeedback.	1	Khallaf et al. 2014
1a	Trunk Training with Visual Biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	4	Shin et al. 2020; Jung et al. 2017a; Chung et al. 2014; Chae et al. 2011
1a	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	4	Jonsdottir et al. 2010; Bradley et al. 1998; Intiso et al. 1994; Cozean et al. 1988
1b	Overground Gait Training with Auditory Feedback may produce greater improvements in biomechanical gait measures than Gait Training.	2	Sungkarat et al. 2011; Aruin et al. 2003
1b	Verbal Cues and Feedback During Walking may not have a difference in efficacy when compared to Tactile Cues and Feedback During Walking for improving biomechanical gait measures.	1	Ploughman et al. 2018
1b	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training or Conventional Therapy for improving biomechanical gait measures.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may not have a difference in efficacy when compared to Unstable surface balance training for improving biomechanical gait measures.	1	Yeo et al. 2023
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving biomechanical gait measures.	1	Tamburella et al. 2019
1b	Neurofeedback may produce greater improvements in biomechanical gait measures than Sham.	1	Lee et al. 2015g
1b	Weight support feedback cane (WSFC) gait training + conventional care may produce greater improvements in biomechanical gait measures than Regular cane gait training + conventional care.	1	Kang et al. 2021a
2	100% performance feedback and scatter plot visual feedback may not have a difference in efficacy when compared to No performance feedback for improving biomechanical gait measures.	1	Powers et al. 2021
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Ambrosini et al. 2020
2	EMG biofeedback from the affected-side soleus muscle (EMG) may not have a difference in efficacy when compared to Physical therapy (PT) for improving biomechanical gait measures.	1	Colborne et al. 1993
1b	3D balance training using visual feedback with Conventional therapy may produce greater improvements in biomechanical gait measures than Conventional therapy.	1	Noh et al. 2019
1b	Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may not have a difference in efficacy when compared to Trunk stabilization exercises for improving biomechanical gait measures.	1	Jung et al. 2017a
1b	Gaming Assisted Visual feedback for balance training with Conventional therapy may produce greater improvements in	1	James et al. 2017

	biomechanical gait measures than Balance training exercises with Conventional therapy.		
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in biomechanical gait measures than Treadmill training.	1	Yang et al. 2016
2	Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care may not have a difference in efficacy when compared to Botulinum Toxin A injection (under ultrasound guidance) with conventional care for improving biomechanical gait measures.	1	Chen et al. 2015b
1b	Force platform biofeedback balance training with Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Yavuzer et al. 2006a
1b	Visual feedback with Nottingham Balance Platform training and physical therapy may produce greater improvements in biomechanical gait measures than Sham visual feedback with Nottingham Balance Platform training and physical therapy.	1	Sackley & Lincoln 1997
2	Standing practice with Force platform biofeedback may produce greater improvements in biomechanical gait measures than Standing training table.	1	Wong et al. 1997
1b	There is conflicting evidence about the effect of Gait training with functional electrical stimulation when compared to care for improving biomechanical gait measures.	1	Cozean et al. 1988

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical balance measures.	1	Druzbicki et al. 2016b
1b	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving biomechanical balance measures.	1	Balci et al. 2013
1b	There is conflicting evidence about the effect of Rehabilitation with electromyography biofeedback when compared to Conventional Therapy for improving biomechanical balance measures.	1	Tsaih et al. 2018
1b	There is conflicting evidence about the effect of Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy when compared to Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy for improving biomechanical balance measures.	1	Tsaih et al. 2018
1b	Gait training with auditory feedback caused by active weight bearing on their paralyzed foot may produce greater improvements in biomechanical balance measures than General gait training over the ground.	1	Choi et al. 2019
2	Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical balance measures.	1	Cheng et al. 2001
1b	Balance Training with Biofeedback may produce greater improvements in biomechanical balance measures than Balance Training or Conventional Therapy.	2	Lupo et al. 2018; Hung et al. 2016b

1b	Target or Reach Visual Feedback Training may produce greater improvements in biomechanical balance measures than Conventional Rehabilitation.	2	Pak et al. 2020; Khumsapsiri et al. 2018
1b	Perceptual Feedback may not have a difference in efficacy when compared to Conventional Treatment for improving biomechanical balance measures.	1	Morioka et al. 2003
1b	There is conflicting evidence about the effect of Knowledge of Results (Real-time visual feedback) when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) for improving biomechanical balance measures.	1	Kwon et al. 2024
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Jeong et al. 2024
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may produce greater improvements in biomechanical balance measures than Visual Feedback Balance Training Group with Conventional Therapy.	1	Jeong et al. 2024
1b	Pressure sensor-based vibrotactile biofeedback may produce greater improvements in biomechanical balance measures than Standing without biofeedback.	1	Kim et al. 2022e
1b	Visual biofeedback providing posture information may produce greater improvements in biomechanical balance measures than Standing without biofeedback.	1	Kim et al. 2022e
1b	Pressure sensor-based vibrotactile biofeedback may produce greater improvements in biomechanical balance measures than Visual biofeedback providing posture information.	1	Kim et al. 2022e
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in biomechanical balance measures than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
1b	There is conflicting evidence about the effect of Gaming Assisted Visual feedback for balance training with Conventional therapy when compared to Balance training exercises with Conventional therapy for improving biomechanical balance measures.	1	James et al. 2017
2	Balance training using Biodex stability system with visual biofeedback may not have a difference in efficacy when compared to Balance training for improving biomechanical balance measures.	1	Ghomashchi 2016
1b	Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not have a difference in efficacy when compared to Rehabilitation program with postural training with physiotherapy for improving biomechanical balance measures.	1	De Nunzio et al. 2014
2	Balance training with self- controlled postural control visual biofeedback may produce greater improvements in biomechanical balance measures than Balance training with no control over postural control visual biofeedback.	1	Yoon et al. 2013
2	There is conflicting evidence about the effect of Usual rehabilitation with Sit-to- Stand training and visual feedback when compared to Usual rehabilitation with Arm task training for improving biomechanical balance measures.	1	Britton et al. 2008
1b	Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) may produce greater improvements in biomechanical balance measures than Conventional rehabilitation.	1	Alptekin et al. 2008

2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical balance measures.	1	Chen et al. 2002
2	Balance training with Visual feedback may not have a difference in efficacy when compared to Balance training with Verbal and tactile cues for improving biomechanical balance measures.	1	Walker et al. 2000
1b	Visual feedback with Nottingham Balance Platform training and physical therapy may produce greater improvements in biomechanical balance measures than Sham visual feedback with Nottingham Balance Platform training and physical therapy.	1	Sackley & Lincoln 1997
2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in biomechanical balance measures than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993
1b	Visual biofeedback training with Conventional rehabilitation may produce greater improvements in biomechanical balance measures than Conventional rehabilitation.	1	Elshinnawy et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving muscle strength.	2	Pignolo et al. 2020; Byl et al. 2015
2	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving muscle strength.	1	Mandel et al. 1990
1b	There is conflicting evidence about the effect of Trunk Training with Visual Biofeedback when compared to Conventional Therapy for improving muscle strength.	1	Jung et al. 2017a
1b	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Gamez et al. 2019
1b	Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not have a difference in efficacy when compared to Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy for improving muscle strength.	1	Tsaih et al. 2018
1b	Constant-force EMG- biofeedback Tibalis anterior training with general Physiotherapy or Variable-force EMG- biofeedback Tibalis anterior training with general Physiotherapy may produce greater improvements in muscle strength than Upper extremity exercise with general Physiotherapy.	1	Tsaih et al. 2018
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in muscle strength than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
2	There is conflicting evidence about the effect of Balance Training with Biofeedback when compared to Balance Training or Conventional Therapy for improving muscle strength.	1	Hung et al. 2016b
1b	Strength Training with Visual Feedback may produce greater improvements in muscle strength than Physical Therapy.	1	Cho et al. 2021
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving muscle strength.	1	Ambrosini et al. 2020

1b	There is conflicting evidence about the effect of Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) when compared to Trunk stabilization exercises for improving muscle strength.	1	Jung et al. 2017a
2	There is conflicting evidence about the effect of Stepper Exercise with Visual Feedback (with mirror) when compared to Stepper Exercise for improving muscle strength.	1	Choi et al. 2015c
1b	Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may not have a difference in efficacy when compared to Conventional neurorehabilitation for improving muscle strength.	1	De Seze et al. 2001

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	3	Dost Surucu & Tezen 2021; Bradley et al. 1998; Intiso et al. 1994
1b	Cycling Training with Biofeedback may produce greater improvements in spasticity than Conventional Rehabilitation.	1	Yang et al. 2014
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving spasticity.	1	Tamburella et al. 2019
1b	Visual Biofeedback with Orthotic Devices may produce greater improvements in spasticity than Sham Feedback.	1	Tamburella et al. 2017
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in spasticity than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
2	Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care may not have a difference in efficacy when compared to Botulinum Toxin A injection (under ultrasound guidance) with conventional care for improving spasticity.	1	Chen et al. 2015b
1b	Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not have a difference in efficacy when compared to Stand-up task with physiotherapy for improving spasticity.	1	Varoqui et al. 2011
1b	Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may not have a difference in efficacy when compared to Conventional neurorehabilitation for improving spasticity.	1	De Seze et al. 2001

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving range of motion.	1	Byl et al. 2015
1a	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving range of motion.	2	Druzbicki et al. 2016a; Brasileiro et al. 2015

1a	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	4	Dost Surucu & Tezen 2021; Jonsdottir et al. 2010; Cozean et al. 1988; Mulder et al. 1986
1b	Balance Training with Biofeedback may produce greater improvements in range of motion than Balance Training or Conventional Therapy.	1	Yeo et al. 2023
1b	There is conflicting evidence about the effect of Visual feedback with Unstable surface balance training when compared to Unstable surface balance training for improving range of motion.	1	Yeo et al. 2023
1b	Visual Biofeedback with Orthotic Devices may not have a difference in efficacy when compared to Sham Feedback for improving range of motion.	1	Tamburella et al. 2017
2	EMG biofeedback from the affected-side soleus muscle (EMG) may not have a difference in efficacy when compared to Physical therapy (PT) for improving range of motion.	1	Colborne et al. 1993
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may produce greater improvements in range of motion than Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy.	1	Mihai et al. 2022
1b	There is conflicting evidence about the effect of Gaming Assisted Visual feedback for balance training with Conventional therapy when compared to Balance training exercises with Conventional therapy for improving range of motion.	1	James et al. 2017
1b	Gait training with functional electrical stimulation may produce greater improvements in range of motion than care.	1	Cozean et al. 1988

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Rehabilitation with electromyography biofeedback may produce greater improvements in neurophysiological measures than Conventional Therapy.	4	Dost Surucu & Tezen 2021; Gamez et al. 2019; Intiso et al. 1994; Mulder et al. 1986
1a	Overground Gait Training with Auditory Feedback may produce greater improvements in neurophysiological measures than Gait Training.	2	Jung et al. 2020a; Jung et al. 2015
1b	Verbal Cues and Feedback During Walking may not have a difference in efficacy when compared to Tactile Cues and Feedback During Walking for improving neurophysiological measures.	1	Ploughman et al. 2018
1b	Target or Reach Visual Feedback Training may produce greater improvements in neurophysiological measures than Conventional Rehabilitation.	2	Pak et al. 2020; Khumsapsiri et al. 2018
1b	Robot-Assisted Gait Training with Biofeedback may produce greater improvements in neurophysiological measures than No Biofeedback or Conventional Biofeedback.	1	Maggio et al. 2021
1b	Weight support feedback cane (WSFC) gait training + conventional care may produce greater improvements in neurophysiological measures than Regular cane gait training + conventional care.	1	Kang et al. 2021a
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving neurophysiological measures.	1	Inoue et al. 2022a

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving aerobic measures.	1	Mandel et al. 1990

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving sensory and proprioceptive function.	1	Bradley et al. 1998
2	Balance Training with Biofeedback may produce greater improvements in sensory and proprioceptive function than Balance Training or Conventional Therapy.	1	Hung et al. 2016b
1b	There is conflicting evidence about the effect of Strength Training with Visual Feedback when compared to Physical Therapy for improving sensory and proprioceptive function.	1	Cho et al. 2021
1b	Neurofeedback may produce greater improvements in sensory and proprioceptive function than Sham.	1	Lee et al. 2015g

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving pain.	1	Tamburella et al. 2019

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Visual Feedback may produce greater improvements in activities of daily living than Gait Training or Conventional Therapy.	1	Pignolo et al. 2020
1b	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving activities of daily living.	1	Druzbicki et al. 2015
1a	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	3	Gamez et al. 2019; Bradley et al. 1998; Intiso et al. 1994
1b	Balance Training with Biofeedback may not have a difference in efficacy when compared to Balance Training or Conventional Therapy for improving activities of daily living.	1	Lupo et al. 2018
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving activities of daily living.	1	Tamburella et al. 2019
1b	Electromyography Biofeedback During Single Support Phase may produce greater improvements in activities of daily living than Stance Phase.	1	Skvortsov et al. 2024
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional	1	Ambrosini et al. 2020

	rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.		
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving activities of daily living.	1	Inoue et al. 2022a
1b	Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D) may produce greater improvements in activities of daily living than General Postural Training.	1	An et al. 2021
1b	Neurofeedback facilitation with motor imagery may not have a difference in efficacy when compared to Sham neurofeedback with motor imagery for improving activities of daily living.	1	Mihara et al. 2021
2	Balance training with postural control visual biofeedback and conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Ordahan et al. 2015
1b	Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not have a difference in efficacy when compared to Rehabilitation program with postural training with physiotherapy for improving activities of daily living.	1	De Nunzio et al. 2014
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional physical therapy with balance training for improving activities of daily living.	1	Rao et al. 2013
1b	Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Alptekin et al. 2008
2	Balance training with force platform biofeedback and Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Eser et al. 2008
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Chen et al. 2002
1b	Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may not have a difference in efficacy when compared to Conventional neurorehabilitation for improving activities of daily living.	1	De Seze et al. 2001
2	Continuous Auditory Feedback During Sit-to-Stand Training may not have a difference in efficacy when compared to No Feedback During Sit-to- stand Training for improving activities of daily living.	1	Engardt et al. 1993

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving gait speed.	3	Evron et al. 2024; Kim et al. 2020b; Byl et al. 2015
1a	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	3	Shin et al. 2022; Druzbicki et al. 2018; Druzbicki et al. 2015

1a	Gait Training with Activity Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving gait speed.	4	Phonthee et al. 2020; Danks et al. 2016; Dorsch et al. 2015; Mansfield et al. 2015
1b	There is conflicting evidence about the effect of Gait Training with Postural Control Visual Feedback when compared to Gait Training or electromyography Biofeedback for improving gait speed.	2	Balci et al. 2013; Mandel et al. 1990
1b	Trunk Training with Visual Biofeedback may produce greater improvements in gait speed than Conventional Therapy.	3	Shin et al. 2020; Chung et al. 2014; Chae et al. 2011
1a	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	5	Tsaih et al. 2018; Jonsdottir et al. 2010; Bradley et al. 1998; Intiso et al. 1994; Mulder et al. 1986
1b	Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not have a difference in efficacy when compared to Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy for improving gait speed.	1	Tsaih et al. 2018
1b	Cycling Training with Biofeedback may produce greater improvements in gait speed than Conventional Rehabilitation.	1	Yang et al. 2014
1a	Overground Gait Training with Auditory Feedback may produce greater improvements in gait speed than Gait Training.	3	Jung et al. 2015; Sungkarat et al. 2011; Dobkin et al. 2010
1b	Gait training with auditory feedback caused by active weight bearing on their paralyzed foot may produce greater improvements in gait speed than General gait training over the ground.	1	Choi et al. 2019
1b	Verbal Cues and Feedback During Walking may produce greater improvements in gait speed than Tactile Cues and Feedback During Walking.	1	Ploughman et al. 2018
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in gait speed than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
1b	Balance Training with Biofeedback may produce greater improvements in gait speed than Balance Training or Conventional Therapy.	1	Yeo et al. 2023
1b	Visual feedback with Unstable surface balance training may not have a difference in efficacy when compared to Unstable surface balance training for improving gait speed.	1	Yeo et al. 2023
1b	Target or Reach Visual Feedback Training may not have a difference in efficacy when compared to Conventional Rehabilitation for improving gait speed.	2	Pak et al. 2020; Khumsapsiri et al. 2018
1b	Strength Training with Visual Feedback may not have a difference in efficacy when compared to Physical Therapy for improving gait speed.	1	Cho et al. 2021
1b	There is conflicting evidence about the effect of Visual Biofeedback with Orthotic Devices when compared to Sham Feedback for improving gait speed.	1	Tamburella et al. 2017
1b	Neurofeedback may produce greater improvements in gait speed than Sham.	1	Lee et al. 2015g
1b	Knowledge of Results (Real-time visual feedback) may not have a difference in efficacy when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) for improving gait speed.	1	Kwon et al. 2024
1b	Weight support feedback cane (WSFC) gait training + conventional care may not have a difference in efficacy when compared to Regular cane gait training + conventional care for improving gait speed.	1	Kang et al. 2021a

2	100% performance feedback and scatter plot visual feedback may not have a difference in efficacy when compared to No performance feedback for improving gait speed.	1	Powers et al. 2021
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait speed.	1	Ambrosini et al. 2020
2	EMG biofeedback from the affected-side soleus muscle (EMG) may not have a difference in efficacy when compared to Physical therapy (PT) for improving gait speed.	1	Colborne et al. 1993
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving gait speed.	1	Inoue et al. 2022a
1b	Pressure sensor-based vibrotactile biofeedback may produce greater improvements in gait speed than Standing without biofeedback.	1	Kim et al. 2022e
1b	Neurofeedback facilitation with motor imagery may not have a difference in efficacy when compared to Sham neurofeedback with motor imagery for improving gait speed.	1	Mihara et al. 2021
1b	3D balance training using visual feedback with Conventional therapy may produce greater improvements in gait speed than Conventional therapy.	1	Noh et al. 2019
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in gait speed than Treadmill training.	1	Yang et al. 2016
2	Stepper Exercise with Visual Feedback (with mirror) may produce greater improvements in gait speed than Stepper Exercise.	1	Choi et al. 2015c
2	Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care may not have a difference in efficacy when compared to Botulinum Toxin A injection (under ultrasound guidance) with conventional care for improving gait speed.	1	Chen et al. 2015b
2	3D balance exercises (3D Thera-Balance) with visual feedback may not have a difference in efficacy when compared to Weight shifting exercises for improving gait speed.	1	Jung et al. 2011
1b	Force platform biofeedback balance training with Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait speed.	1	Yavuzer et al. 2006a
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait speed.	1	Chen et al. 2002
2	Balance training with Visual feedback may not have a difference in efficacy when compared to Balance training with Verbal and tactile cues for improving gait speed.	1	Walker et al. 2000

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving gait endurance.	1	Byl et al. 2015
1a	There is conflicting evidence about the effect of Treadmill Training with Visual Biofeedback when compared to Treadmill Training for improving gait endurance.	2	Druzbicki et al. 2018; Druzbicki et al. 2015

1a	Gait Training with Activity Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving gait endurance.	5	Waddell et al. 2022; Phonthee et al. 2020; Danks et al. 2016; Dorsch et al. 2015; Mansfield et al. 2015
1b	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving gait endurance.	1	Tsaih et al. 2018
1b	Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not have a difference in efficacy when compared to Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy for improving gait endurance.	1	Tsaih et al. 2018
1b	Cycling Training with Biofeedback may produce greater improvements in gait endurance than Conventional Rehabilitation.	1	Yang et al. 2014
1b	Overground Gait Training with Auditory Feedback may not have a difference in efficacy when compared to Gait Training for improving gait endurance.	1	Dobkin et al. 2010
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving gait endurance.	1	Ambrosini et al. 2020

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving functional mobility.	4	Evron et al. 2024; Kim et al. 2020b; Pignolo et al. 2020; Byl et al. 2015
1a	Treadmill Training with Visual Biofeedback may not have a difference in efficacy when compared to Treadmill Training for improving functional mobility.	4	Shin et al. 2022; Druzbicki et al. 2018; Druzbicki et al. 2016b; Druzbicki et al. 2015
1a	There is conflicting evidence about the effect of Gait Training with Activity Feedback when compared to Gait Training or Conventional Therapy for improving functional mobility.	2	Phonthee et al. 2020; Dorsch et al. 2015
1b	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving functional mobility.	1	Balci et al. 2013
1b	Trunk Training with Visual Biofeedback may produce greater improvements in functional mobility than Conventional Therapy.	3	Shin & Song 2016; Chung et al. 2014; Chae et al. 2011
1b	There is conflicting evidence about the effect of Rehabilitation with electromyography biofeedback when compared to Conventional Therapy for improving functional mobility.	4	Dost Surucu & Tezen 2021; Tsaih et al. 2018; Xu et al. 2015; Bradley et al. 1998
1b	Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not have a difference in efficacy when compared to Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy for improving functional mobility.	1	Tsaih et al. 2018
1a	Overground Gait Training with Auditory Feedback may not have a difference in efficacy when compared to Gait Training for improving functional mobility.	4	Jung et al. 2020a; Cha et al. 2018; Sungkarat et al. 2011; Dobkin et al. 2010
1b	Gait training with auditory feedback caused by active weight bearing on their paralyzed foot may produce greater improvements in functional mobility than General gait training over the ground.	1	Choi et al. 2019

2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in functional mobility than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
1a	Balance Training with Biofeedback may produce greater improvements in functional mobility than Balance Training or Conventional Therapy.	5	Lu et al. 2024; Yeo et al. 2023; Lupo et al. 2018; Hung et al. 2016b; Maciaszek et al. 2014
1b	Visual feedback with Unstable surface balance training may produce greater improvements in functional mobility than Unstable surface balance training.	1	Yeo et al. 2023
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving functional mobility.	1	Liao et al. 2018
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving functional mobility.	1	Tamburella et al. 2019
1b	Neurofeedback may produce greater improvements in functional mobility than Sham.	1	Lee et al. 2015g
1b	Electromyography Biofeedback During Single Support Phase may produce greater improvements in functional mobility than Stance Phase.	1	Skvortsov et al. 2024
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may produce greater improvements in functional mobility than Visual Feedback Balance Training Group with Conventional Therapy.	1	Jeong et al. 2024
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving functional mobility.	1	Inoue et al. 2022a
1b	There is conflicting evidence about the effect of Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy for improving functional mobility.	1	Mihai et al. 2022
1b	Neurofeedback facilitation with motor imagery may produce greater improvements in functional mobility than Sham neurofeedback with motor imagery.	1	Mihara et al. 2021
2	Posturographic platform biofeedback training may produce greater improvements in functional mobility than hospital treatment.	1	Maciaszek. 2018
1b	Smartphone visual feedback for trunk control training with Conventional care may produce greater improvements in functional mobility than Conventional care.	1	Shin & Song 2016
1b	Treadmill training with Rhythmic auditory feedback may produce greater improvements in functional mobility than Treadmill training.	1	Yang et al. 2016
2	Balance training with postural control visual biofeedback and conventional rehabilitation may produce greater improvements in functional mobility than Conventional rehabilitation.	1	Ordahan et al. 2015
2	Space balance 3D training using visual feedback program with Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Ko et al. 2015

2	Stepper Exercise with Visual Feedback (with mirror) may not have a difference in efficacy when compared to Stepper Exercise for improving functional mobility.	1	Choi et al. 2015c
1b	Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not have a difference in efficacy when compared to Rehabilitation program with postural training with physiotherapy for improving functional mobility.	1	De Nunzio et al. 2014
1b	Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not have a difference in efficacy when compared to Stand-up task with physiotherapy for improving functional mobility.	1	Varoqui et al. 2011
2	Usual rehabilitation with Sit-to- Stand training and visual feedback may not have a difference in efficacy when compared to Usual rehabilitation with Arm task training for improving functional mobility.	1	Britton et al. 2008
2	Balance training with force platform biofeedback and Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Eser et al. 2008
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Chen et al. 2002
1b	Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may produce greater improvements in functional mobility than Conventional neurorehabilitation.	1	De Seze et al. 2001
2	Physical therapy with visual biofeedback (SMART Balance master forceplate) may not have a difference in efficacy when compared to Physical therapy for improving functional mobility.	1	Geiger et al. 2001
2	Balance training with Visual feedback may not have a difference in efficacy when compared to Balance training with Verbal and tactile cues for improving functional mobility.	1	Walker et al. 2000
2	Continuous Auditory Feedback During Sit-to-Stand Training may produce greater improvements in functional mobility than No Feedback During Sit-to- stand Training.	1	Engardt et al. 1993

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving balance.	2	Pignolo et al. 2020; Byl et al. 2015
1a	There is conflicting evidence about the effect of Treadmill Training with Visual Biofeedback when compared to Treadmill Training for improving balance.	2	Shin et al. 2022; Druzbicki et al. 2016b
1b	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving balance.	1	Balci et al. 2013
1a	Trunk Training with Visual Biofeedback may produce greater improvements in balance than Conventional Therapy.	3	Shin et al. 2020; Jung et al. 2017a; Shin & Song 2016
2	Galvanic vestibular stimulation may not have a difference in efficacy when compared to Lokomat gait training or Physiotherapy with visual feedback for improving balance.	1	Krewer et al. 2013
2	There is conflicting evidence about the effect of Lokomat gait training when compared to Physiotherapy with visual feedback for improving balance.	1	Krewer et al. 2013

1b	Balance Training with Computer-based Visual Feedback may produce greater improvements in balance than Mirror Feedback.	1	Yang et al. 2015
1a	Overground Gait Training with Auditory Feedback may not have a difference in efficacy when compared to Gait Training for improving balance.	2	Jung et al. 2020a; Sungkarat et al. 2011
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in balance than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
1a	Balance Training with Biofeedback may produce greater improvements in balance than Balance Training or Conventional Therapy.	3	Lu et al. 2024; Yeo et al. 2023; Lupo et al. 2018
1b	Visual feedback with Unstable surface balance training may produce greater improvements in balance than Unstable surface balance training.	1	Yeo et al. 2023
1b	Rehabilitation with Balance training and Visual biofeedback may not have a difference in efficacy when compared to rehabilitation program with lateral wedge insole for improving balance.	1	Liao et al. 2018
1b	Target or Reach Visual Feedback Training may not have a difference in efficacy when compared to Conventional Rehabilitation for improving balance.	2	Pak et al. 2020; Khumsapsiri et al. 2018
1b	Strength Training with Visual Feedback may not have a difference in efficacy when compared to Physical Therapy for improving balance.	1	Cho et al. 2021
1b	Perceptual Feedback may produce greater improvements in balance than Conventional Treatment.	1	Rao et al. 2023
2	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving balance.	1	Tamburella et al. 2019
1b	Knowledge of Results (Real-time visual feedback) may not have a difference in efficacy when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) for improving balance.	1	Kwon et al. 2024
1b	Electromyography Biofeedback During Single Support Phase may produce greater improvements in balance than Stance Phase.	1	Skvortsov et al. 2024
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving balance.	1	Ambrosini et al. 2020
2	Visual Deprivation Group Balance Training Group with Conventional Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	1	Jeong et al. 2024
2	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not have a difference in efficacy when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time for improving balance.	1	Inoue et al. 2022a
1b	Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may produce greater improvements in balance than Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).	1	Chaudhary et al. 2022
1b	Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may not have a difference in efficacy when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy for improving balance.	1	Mihai et al. 2022

1b	Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D) may produce greater improvements in balance than General Postural Training.	1	An et al. 2021
1b	Neurofeedback facilitation with motor imagery may produce greater improvements in balance than Sham neurofeedback with motor imagery.	1	Mihara et al. 2021
1b	3D balance training using visual feedback with Conventional therapy may produce greater improvements in balance than Conventional therapy.	1	Noh et al. 2019
2	Posturographic platform biofeedback training may produce greater improvements in balance than hospital treatment.	1	Maciaszek. 2018
1b	Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may produce greater improvements in balance than Trunk stabilization exercises.	1	Jung et al. 2017a
1b	There is conflicting evidence about the effect of Gaming Assisted Visual feedback for balance training with Conventional therapy when compared to Balance training exercises with Conventional therapy for improving balance.	1	James et al. 2017
1b	Wii Fit balance training may not have a difference in efficacy when compared to Tetrax biofeedback balance training for improving balance.	1	Hung et al. 2017
1b	Smartphone visual feedback for trunk control training with Conventional care may produce greater improvements in balance than Conventional care.	1	Shin & Song 2016
2	Balance training using Biodex stability system with visual biofeedback may not have a difference in efficacy when compared to Balance training for improving balance.	1	Ghomashchi 2016
2	Balance training with postural control visual biofeedback and conventional rehabilitation may produce greater improvements in balance than Conventional rehabilitation.	1	Ordahan et al. 2015
2	Space balance 3D training using visual feedback program with Conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving balance.	1	Ko et al. 2015
1b	Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not have a difference in efficacy when compared to Rehabilitation program with postural training with physiotherapy for improving balance.	1	De Nunzio et al. 2014
2	Balance training with postural control visual biofeedback may produce greater improvements in balance than Conventional physiotherapy.	1	Lee et al. 2013e
1b	Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not have a difference in efficacy when compared to Stand-up task with physiotherapy for improving balance.	1	Varoqui et al. 2011
2	3D balance exercises (3D Thera-Balance) with visual feedback may produce greater improvements in balance than Weight shifting exercises.	1	Jung et al. 2011
2	Balance training with postural control visual biofeedback (SMART Balance master) may not have a difference in efficacy when compared to Conventional rehabilitation for improving balance.	1	Chen et al. 2002
1b	Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may produce greater improvements in balance than Conventional neurorehabilitation.	1	De Seze et al. 2001

2	Physical therapy with visual biofeedback (SMART Balance master forceplate) may not have a difference in efficacy when compared to Physical therapy for improving balance.	1	Geiger et al. 2001
2	Balance training with Visual feedback may not have a difference in efficacy when compared to Balance training with Verbal and tactile cues for improving balance.	1	Walker et al. 2000
1b	Visual feedback with Nottingham Balance Platform training and physical therapy may produce greater improvements in balance than Sham visual feedback with Nottingham Balance Platform training and physical therapy.	1	Sackley & Lincoln 1997

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Gait Training with Visual Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving falls and fear of falling.	1	Evron et al. 2024
2	Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving falls and fear of falling.	1	Cheng et al. 2001
1b	Knowledge of Results (Real-time visual feedback) may not have a difference in efficacy when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues) for improving falls and fear of falling.	1	Kwon et al. 2024
1b	Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not have a difference in efficacy when compared to Conventional rehabilitation for improving falls and fear of falling.	1	Ambrosini et al. 2020
1b	3D balance training using visual feedback with Conventional therapy may produce greater improvements in falls and fear of falling than Conventional therapy.	1	Noh et al. 2019

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Activity Feedback may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving quality of life.	1	Dorsch et al. 2015
1b	Gait Training with Postural Control Visual Feedback may not have a difference in efficacy when compared to Gait Training or electromyography Biofeedback for improving quality of life.	1	Balci et al. 2013
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in quality of life than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
1b	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving quality of life.	1	Maggio et al. 2021

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Robot-Assisted Gait Training with Biofeedback may produce greater improvements in mood than No Biofeedback or Conventional Biofeedback.	1	Maggio et al. 2021

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving cognition.	1	Bradley et al. 1998
1b	Robot-Assisted Gait Training with Biofeedback may not have a difference in efficacy when compared to No Biofeedback or Conventional Biofeedback for improving cognition.	1	Maggio et al. 2021
1b	Wii Fit balance training may not have a difference in efficacy when compared to Tetrax biofeedback balance training for improving cognition.	1	Hung et al. 2017
1b	There is conflicting evidence about the effect of Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation when compared to Conventional neurorehabilitation for improving cognition.	1	De Seze et al. 2001

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Rehabilitation with electromyography biofeedback may not have a difference in efficacy when compared to Conventional Therapy for improving upper extremity function.	1	Gamez et al. 2019
1b	Balance Training with Computer-based Visual Feedback may not have a difference in efficacy when compared to Mirror Feedback for improving upper extremity function.	1	Yang et al. 2015
2	Target or Reach Visual Feedback Training may not have a difference in efficacy when compared to Conventional Rehabilitation for improving upper extremity function.	1	Pak et al. 2020
1b	Weight support feedback cane (WSFC) gait training + conventional care may not have a difference in efficacy when compared to Regular cane gait training + conventional care for improving upper extremity function.	1	Kang et al. 2021a
1b	Neurofeedback facilitation with motor imagery may not have a difference in efficacy when compared to Sham neurofeedback with motor imagery for improving upper extremity function.	1	Mihara et al. 2021

Key Points

- Gait Training with Visual Feedback may be beneficial for improving biomechanical gait measures and activities of daily living, but not motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Gait Training or Conventional Therapy.
- Treadmill Training with Visual Biofeedback may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, activities of daily living, gait speed, and

functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding gait endurance and balance.

- Gait Training with Activity Feedback may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and quality of life after stroke when compared to Gait Training or Conventional Therapy; the literature is mixed regarding functional mobility.
- Gait Training with Postural Control Visual Feedback may be beneficial for improving biomechanical gait measures, but not biomechanical balance measures, muscle strength, aerobic measures, functional mobility, balance, and quality of life, after stroke when compared to Gait Training or electromyography Biofeedback; the literature is mixed regarding gait speed.
- Trunk Training with Visual Biofeedback may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Conventional Therapy; the literature is mixed regarding muscle strength.
- Rehabilitation with electromyography biofeedback may be beneficial for improving neurophysiological measures, but not motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, sensory and proprioceptive function, activities of daily living, gait speed, and gait endurance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical balance measures and functional mobility.
- Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not be beneficial for improving muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to Variable-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy; the literature is mixed regarding biomechanical balance measures.
- Galvanic vestibular stimulation may not be beneficial for improving balance after stroke when compared to Lokomat gait training or Physiotherapy with visual feedback.
- The literature is mixed regarding the effect of Lokomat gait training on balance after stroke when compared to Physiotherapy with visual feedback.
- Balance Training with Computer-based Visual Feedback may be beneficial for improving motor recovery and balance after stroke when compared to Mirror Feedback.
- Cycling Training with Biofeedback may be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Conventional Rehabilitation.
- Overground Gait Training with Auditory Feedback may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed, but not gait endurance, functional mobility, and balance, after stroke when compared to Gait Training.
- Gait training with auditory feedback caused by active weight bearing on their paralyzed foot may be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to General gait training over the ground.
- Verbal Cues and Feedback During Walking may be beneficial for improving gait speed, but not biomechanical gait measures and neurophysiological measures, after stroke when compared to Tactile Cues and Feedback During Walking.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit-to-stand Training with physiotherapy.
- Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Conventional rehabilitation.
- Balance Training with Biofeedback may be beneficial for improving biomechanical balance measures, range of motion, sensory and proprioceptive function, gait speed, functional mobility, and balance, but not biomechanical gait measures and activities of daily living, after stroke when compared to Balance Training or Conventional Therapy; the literature is mixed regarding motor recovery and muscle strength.
- Visual feedback with Unstable surface balance training may be beneficial for improving functional mobility and balance, but not biomechanical gait measures and gait speed, after stroke when compared to Unstable surface balance training; the literature is mixed regarding range of motion.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.

- Target or Reach Visual Feedback Training may be beneficial for improving biomechanical balance measures and neurophysiological measures, but not gait speed and balance, after stroke when compared to Conventional Rehabilitation.
- Strength Training with Visual Feedback may be beneficial for improving motor recovery and muscle strength, but not gait speed and balance, after stroke when compared to Physical Therapy; the literature is mixed regarding sensory and proprioceptive function.
- Perceptual Feedback may be beneficial for improving balance, but not biomechanical balance measures, after stroke when compared to Conventional Treatment.
- Robot-Assisted Gait Training with Biofeedback may be beneficial for improving neurophysiological measures, but not biomechanical gait measures, spasticity, pain, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to No Biofeedback or Conventional Biofeedback; the literature is mixed regarding motor recovery.
- Visual Biofeedback with Orthotic Devices may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Sham Feedback; the literature is mixed regarding gait speed.
- Neurofeedback may be beneficial for improving biomechanical gait measures, sensory and proprioceptive function, gait speed, and functional mobility after stroke when compared to Sham.
- Knowledge of Results (Real-time visual feedback) may not be beneficial for improving motor recovery, gait speed, balance, and falls and fear of falling after stroke when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues); the literature is mixed regarding biomechanical balance measures.
- Electromyography Biofeedback During Single Support Phase may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Stance Phase.
- Weight support feedback cane (WSFC) gait training + conventional care may be beneficial for improving biomechanical gait measures and neurophysiological measures, but not gait speed, after stroke when compared to Regular cane gait training + conventional care.
- 100% performance feedback and scatter plot visual feedback may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No performance feedback.
- Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not be beneficial for improving biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Conventional rehabilitation.
- EMG biofeedback from the affected-side soleus muscle (EMG) may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Physical therapy (PT).
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures, but not balance, after stroke when compared to Conventional Therapy.
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures and functional mobility after stroke when compared to Visual Feedback Balance Training Group with Conventional Therapy.
- Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Standing without biofeedback.
- Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may be beneficial for improving balance after stroke when compared to Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).
- Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham Radial

Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy; the literature is mixed regarding functional mobility.

- Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D) may be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to General Postural Training.
- Neurofeedback facilitation with motor imagery may be beneficial for improving functional mobility and balance, but not motor recovery, activities of daily living, and gait speed, after stroke when compared to Sham neurofeedback with motor imagery.
- 3D balance training using visual feedback with Conventional therapy may be beneficial for improving biomechanical gait measures, gait speed, balance, and falls and fear of falling after stroke when compared to Conventional therapy.
- Posturographic platform biofeedback training may be beneficial for improving functional mobility and balance after stroke when compared to hospital treatment.
- Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may be beneficial for improving balance, but not biomechanical gait measures, after stroke when compared to Trunk stabilization exercises; the literature is mixed regarding muscle strength.
- Gaming Assisted Visual feedback for balance training with Conventional therapy may be beneficial for improving biomechanical gait measures after stroke when compared to Balance training exercises with Conventional therapy; the literature is mixed regarding biomechanical balance measures, range of motion, and balance.
- Wii Fit balance training may not be beneficial for improving balance after stroke when compared to Tetrax biofeedback balance training.
- Smartphone visual feedback for trunk control training with Conventional care may be beneficial for improving functional mobility and balance after stroke when compared to Conventional care.
- Balance training using Biodex stability system with visual biofeedback may not be beneficial for improving biomechanical balance measures and balance after stroke when compared to Balance training.
- Treadmill training with Rhythmic auditory feedback may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Balance training with postural control visual biofeedback and conventional rehabilitation may be beneficial for improving functional mobility and balance, but not activities of daily living, after stroke when compared to Conventional rehabilitation.
- Space balance 3D training using visual feedback program with Conventional rehabilitation may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional rehabilitation.
- Stepper Exercise with Visual Feedback (with mirror) may be beneficial for improving gait speed, but not functional mobility, after stroke when compared to Stepper Exercise; the literature is mixed regarding muscle strength.
- Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care may not be beneficial for improving biomechanical gait measures, spasticity, and gait speed after stroke when compared to Botulinum Toxin A injection (under ultrasound guidance) with conventional care.
- Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not be beneficial for improving biomechanical balance measures, activities of daily living, functional mobility, and balance after stroke when compared to Rehabilitation program with postural training with physiotherapy.
- Balance training with postural control visual biofeedback (SMART Balance master) may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional physical therapy with balance training.
- Balance training with postural control visual biofeedback may be beneficial for improving balance after stroke when compared to Conventional physiotherapy.
- Balance training with self- controlled postural control visual biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Balance training with no control over postural control visual biofeedback.

- Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not be beneficial for improving motor recovery, spasticity, functional mobility, and balance after stroke when compared to Stand-up task with physiotherapy.
- 3D balance exercises (3D Thera-Balance) with visual feedback may be beneficial for improving balance, but not gait speed, after stroke when compared to Weight shifting exercises.
- Usual rehabilitation with Sit-to- Stand training and visual feedback may not be beneficial for improving functional mobility after stroke when compared to Usual rehabilitation with Arm task training; the literature is mixed regarding biomechanical balance measures.
- Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) may be beneficial for improving biomechanical balance measures, but not motor recovery and activities of daily living, after stroke when compared to Conventional rehabilitation.
- Balance training with force platform biofeedback and Conventional rehabilitation may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Conventional rehabilitation.
- Force platform biofeedback balance training with Conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional rehabilitation.
- Balance training with postural control visual biofeedback (SMART Balance master) may not be beneficial for improving biomechanical balance measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional rehabilitation.
- Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may be beneficial for improving functional mobility and balance, but not muscle strength, spasticity, and activities of daily living, after stroke when compared to Conventional neurorehabilitation.
- Physical therapy with visual biofeedback (SMART Balance master forceplate) may not be beneficial for improving functional mobility and balance after stroke when compared to Physical therapy.
- Balance training with Visual feedback may not be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Balance training with Verbal and tactile cues.
- Visual feedback with Nottingham Balance Platform training and physical therapy may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, and balance after stroke when compared to Sham visual feedback with Nottingham Balance Platform training and physical therapy.
- Standing practice with Force platform biofeedback may be beneficial for improving biomechanical gait measures after stroke when compared to Standing training table.
- Continuous Auditory Feedback During Sit-to-Stand Training may be beneficial for improving motor recovery, biomechanical balance measures, and functional mobility, but not activities of daily living, after stroke when compared to No Feedback During Sit-to- stand Training.
- Gait training with functional electrical stimulation may be beneficial for improving range of motion after stroke when compared to care; the literature is mixed regarding biomechanical gait measures.
- Visual biofeedback providing posture information may be beneficial for improving biomechanical balance measures after stroke when compared to Standing without biofeedback.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Visual biofeedback providing posture information.
- Constant-force EMG- biofeedback Tibalis anterior training with general Physiotherapy may be beneficial for improving muscle strength after stroke when compared to Upper extremity exercise with general Physiotherapy.
- Visual biofeedback training with Conventional rehabilitation may be beneficial for improving biomechanical balance measures after stroke when compared to Conventional rehabilitation.
- Variable-force EMG- biofeedback Tibalis anterior training with general Physiotherapy may be beneficial for improving muscle strength after stroke when compared to Upper extremity exercise with general Physiotherapy.

Summary of Key Points: Biofeedback

Intervention	Control(s)	Function domain(s)	Effect
Gait Training with Visual Feedback	Gait Training or Conventional Therapy	Biomechanical gait measures, activities of daily living	+
Gait Training with Visual Feedback	Gait Training or Conventional Therapy	Motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, balance, falls and fear of falling	−
Treadmill Training with Visual Biofeedback	Treadmill Training	Biomechanical gait measures, biomechanical balance measures, range of motion, activities of daily living, gait speed, functional mobility	−
Treadmill Training with Visual Biofeedback	Treadmill Training	Gait endurance, balance	=
Gait Training with Activity Feedback	Gait Training or Conventional Therapy	Biomechanical gait measures, gait speed, gait endurance, quality of life	−
Gait Training with Activity Feedback	Gait Training or Conventional Therapy	Functional mobility	=
Gait Training with Postural Control Visual Feedback	Gait Training or electromyography Biofeedback	Biomechanical gait measures	+
Gait Training with Postural Control Visual Feedback	Gait Training or electromyography Biofeedback	Biomechanical balance measures, muscle strength, aerobic measures, functional mobility, balance, quality of life	−
Gait Training with Postural Control Visual Feedback	Gait Training or electromyography Biofeedback	Gait speed	=
Trunk Training with Visual Biofeedback	Conventional Therapy	Gait speed, functional mobility, balance	+
Trunk Training with Visual Biofeedback	Conventional Therapy	Biomechanical gait measures	−
Trunk Training with Visual Biofeedback	Conventional Therapy	Muscle strength	=
Rehabilitation with electromyography biofeedback	Conventional Therapy	Neurophysiological measures	+
Rehabilitation with electromyography biofeedback	Conventional Therapy	Motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance	−
Rehabilitation with electromyography biofeedback	Conventional Therapy	Biomechanical balance measures, functional mobility	=
Constant-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy	Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy	Muscle strength, gait speed, gait endurance, functional mobility	−
Constant-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy	Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy	Biomechanical balance measures	=
Galvanic vestibular stimulation	Lokomat gait training or Physiotherapy with visual feedback	Balance	−

Lokomat gait training	Physiotherapy with visual feedback	Balance	=
Balance Training with Computer-based Visual Feedback	Mirror Feedback	Motor recovery, balance	+
Cycling Training with Biofeedback	Conventional Rehabilitation	Motor recovery, spasticity, gait speed, gait endurance	+
Overground Gait Training with Auditory Feedback	Gait Training	Biomechanical gait measures, neurophysiological measures, gait speed	+
Overground Gait Training with Auditory Feedback	Gait Training	Gait endurance, functional mobility, balance	−
Gait training with auditory feedback caused by active weight bearing on their paralyzed foot	General gait training over the ground	Biomechanical balance measures, gait speed, functional mobility	+
Verbal Cues and Feedback During Walking	Tactile Cues and Feedback During Walking	Gait speed	+
Verbal Cues and Feedback During Walking	Tactile Cues and Feedback During Walking	Biomechanical gait measures, neurophysiological measures	−
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit-to-stand Training with physiotherapy	Muscle strength, gait speed, functional mobility, balance, quality of life	+
Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation	Conventional rehabilitation	Biomechanical balance measures, falls and fear of falling	−
Balance Training with Biofeedback	Balance Training or Conventional Therapy	Biomechanical balance measures, range of motion, sensory and proprioceptive function, gait speed, functional mobility, balance	+
Balance Training with Biofeedback	Balance Training or Conventional Therapy	Biomechanical gait measures, activities of daily living	−
Balance Training with Biofeedback	Balance Training or Conventional Therapy	Motor recovery, muscle strength	=
Visual feedback with Unstable surface balance training	Unstable surface balance training	Functional mobility, balance	+
Visual feedback with Unstable surface balance training	Unstable surface balance training	Biomechanical gait measures, gait speed	−
Visual feedback with Unstable surface balance training	Unstable surface balance training	Range of motion	=
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole	Functional mobility, balance	−
Target or Reach Visual Feedback Training	Conventional Rehabilitation	Biomechanical balance measures, neurophysiological measures	+
Target or Reach Visual Feedback Training	Conventional Rehabilitation	Gait speed, balance	−
Strength Training with Visual Feedback	Physical Therapy	Motor recovery, muscle strength	+
Strength Training with Visual Feedback	Physical Therapy	Gait speed, balance	−
Strength Training with Visual Feedback	Physical Therapy	Sensory and proprioceptive function	=

Perceptual Feedback	Conventional Treatment	Balance	+
Perceptual Feedback	Conventional Treatment	Biomechanical balance measures	–
Robot-Assisted Gait Training with Biofeedback	No Biofeedback or Conventional Biofeedback	Neurophysiological measures	+
Robot-Assisted Gait Training with Biofeedback	No Biofeedback or Conventional Biofeedback	Biomechanical gait measures, spasticity, pain, activities of daily living, functional mobility, balance, quality of life	–
Robot-Assisted Gait Training with Biofeedback	No Biofeedback or Conventional Biofeedback	Motor recovery	=
Visual Biofeedback with Orthotic Devices	Sham Feedback	Spasticity	+
Visual Biofeedback with Orthotic Devices	Sham Feedback	Range of motion	–
Visual Biofeedback with Orthotic Devices	Sham Feedback	Gait speed	=
Neurofeedback	Sham	Biomechanical gait measures, sensory and proprioceptive function, gait speed, functional mobility	+
Knowledge of Results (Real-time visual feedback)	Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues)	Motor recovery, gait speed, balance, falls and fear of falling	–
Knowledge of Results (Real-time visual feedback)	Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues)	Biomechanical balance measures	=
Electromyography Biofeedback During Single Support Phase	Stance Phase	Activities of daily living, functional mobility, balance	+
Weight support feedback cane (WSFC) gait training + conventional care	Regular cane gait training + conventional care	Biomechanical gait measures, neurophysiological measures	+
Weight support feedback cane (WSFC) gait training + conventional care	Regular cane gait training + conventional care	Gait speed	–
100% performance feedback and scatter plot visual feedback	No performance feedback	Biomechanical gait measures, gait speed	–
Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation	Conventional rehabilitation	Biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, balance, falls and fear of falling	–
EMG biofeedback from the affected-side soleus muscle (EMG)	Physical therapy (PT)	Biomechanical gait measures, range of motion, gait speed	–
Visual Deprivation Group Balance Training Group with Conventional Therapy	Conventional Therapy	Biomechanical balance measures	+
Visual Deprivation Group Balance Training Group with Conventional Therapy	Conventional Therapy	Balance	–
Visual Deprivation Group Balance Training Group with Conventional Therapy	Visual Feedback Balance Training Group with Conventional Therapy	Biomechanical balance measures, functional mobility	+

Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time	Motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, balance	–
Pressure sensor-based vibrotactile biofeedback	Standing without biofeedback	Biomechanical balance measures, gait speed	+
Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training)	Visual feedback via Mirror with Conventional treatment (static and dynamic balance training)	Balance	+
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Motor recovery, biomechanical balance measures, spasticity, range of motion	+
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Balance	–
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Functional mobility	=
Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D)	General Postural Training	Motor recovery, activities of daily living, balance	+
Neurofeedback facilitation with motor imagery	Sham neurofeedback with motor imagery	Functional mobility, balance	+
Neurofeedback facilitation with motor imagery	Sham neurofeedback with motor imagery	Motor recovery, activities of daily living, gait speed	–
3D balance training using visual feedback with Conventional therapy	Conventional therapy	Biomechanical gait measures, gait speed, balance, falls and fear of falling	+
Posturographic platform biofeedback training	hospital treatment	Functional mobility, balance	+
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Balance	+
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Biomechanical gait measures	–
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises	Muscle strength	=
Gaming Assisted Visual feedback for balance training with Conventional therapy	Balance training exercises with Conventional therapy	Biomechanical gait measures	+
Gaming Assisted Visual feedback for balance training with Conventional therapy	Balance training exercises with Conventional therapy	Biomechanical balance measures, range of motion, balance	=
Wii Fit balance training	Tetrax biofeedback balance training	Balance	–
Smartphone visual feedback for trunk control training with Conventional care	Conventional care	Functional mobility, balance	+

Balance training using Biodex stability system with visual biofeedback	Balance training	Biomechanical balance measures, balance	–
Treadmill training with Rhythmic auditory feedback	Treadmill training	Biomechanical gait measures, gait speed, functional mobility	+
Balance training with postural control visual biofeedback and conventional rehabilitation	Conventional rehabilitation	Functional mobility, balance	+
Balance training with postural control visual biofeedback and conventional rehabilitation	Conventional rehabilitation	Activities of daily living	–
Space balance 3D training using visual feedback program with Conventional rehabilitation	Conventional rehabilitation	Functional mobility, balance	–
Stepper Exercise with Visual Feedback (with mirror)	Stepper Exercise	Gait speed	+
Stepper Exercise with Visual Feedback (with mirror)	Stepper Exercise	Functional mobility	–
Stepper Exercise with Visual Feedback (with mirror)	Stepper Exercise	Muscle strength	=
Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care	Botulinum Toxin A injection (under ultrasound guidance) with conventional care	Biomechanical gait measures, spasticity, gait speed	–
Balance Platform Training with Audio-visual Feedback with Rehabilitation program	Rehabilitation program with postural training with physiotherapy	Biomechanical balance measures, activities of daily living, functional mobility, balance	–
Balance training with postural control visual biofeedback (SMART Balance master)	Conventional physical therapy with balance training	Motor recovery, activities of daily living	–
Balance training with postural control visual biofeedback	Conventional physiotherapy	Balance	+
Balance training with self- controlled postural control visual biofeedback	Balance training with no control over postural control visual biofeedback	Biomechanical balance measures	+
Balance training with postural control visual biofeedback from unaffected side and physiotherapy	Stand-up task with physiotherapy	Motor recovery, spasticity, functional mobility, balance	–
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises	Balance	+
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises	Gait speed	–
Usual rehabilitation with Sit-to- Stand training and visual feedback	Usual rehabilitation with Arm task training	Functional mobility	–
Usual rehabilitation with Sit-to- Stand training and visual feedback	Usual rehabilitation with Arm task training	Biomechanical balance measures	=
Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback)	Conventional rehabilitation	Biomechanical balance measures	+
Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback)	Conventional rehabilitation	Motor recovery, activities of daily living	–

Balance training with force platform biofeedback and Conventional rehabilitation	Conventional rehabilitation	Motor recovery, activities of daily living, functional mobility	–
Force platform biofeedback balance training with Conventional rehabilitation	Conventional rehabilitation	Biomechanical gait measures, gait speed	–
Balance training with postural control visual biofeedback (SMART Balance master)	Conventional rehabilitation	Biomechanical balance measures, activities of daily living, gait speed, functional mobility, balance	–
Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation	Conventional neurorehabilitation	Functional mobility, balance	+
Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation	Conventional neurorehabilitation	Muscle strength, spasticity, activities of daily living	–
Physical therapy with visual biofeedback (SMART Balance master forceplate)	Physical therapy	Functional mobility, balance	–
Balance training with Visual feedback	Balance training with Verbal and tactile cues	Biomechanical balance measures, gait speed, functional mobility, balance	–
Visual feedback with Nottingham Balance Platform training and physical therapy	Sham visual feedback with Nottingham Balance Platform training and physical therapy	Motor recovery, biomechanical gait measures, biomechanical balance measures, balance	+
Standing practice with Force platform biofeedback	Standing training table	Biomechanical gait measures	+
Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to- stand Training	Motor recovery, biomechanical balance measures, functional mobility	+
Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to- stand Training	Activities of daily living	–
Gait training with functional electrical stimulation	care	Range of motion	+
Gait training with functional electrical stimulation	care	Biomechanical gait measures	=
Visual biofeedback providing posture information	Standing without biofeedback	Biomechanical balance measures	+
Pressure sensor-based vibrotactile biofeedback	Visual biofeedback providing posture information	Biomechanical balance measures	+
Constant-force EMG- biofeedback Tibalis anterior training with general Physiotherapy	Upper extremity exercise with general Physiotherapy	Muscle strength	+
Visual biofeedback training with Conventional rehabilitation	Conventional rehabilitation	Biomechanical balance measures	+
Variable-force EMG- biofeedback Tibalis anterior training with general Physiotherapy	Upper extremity exercise with general Physiotherapy	Muscle strength	+

Dual-Task Training



Adapted from: https://link.springer.com/chapter/10.1007/978-3-030-23762-2_40

Dual-tasking training requires subjects to simultaneously perform complex tasks, such as cognitive and motor tasks, allowing them to improve their coordination of various tasks (Kim et al., 2014a). Cognitive-motor tasks are important for various activities of daily living, such as walking while holding a conversation (Liu et al. 2017). Additionally, dual tasks can be two motor tasks to allow for different motor processes to occur simultaneously to further stimulate the damaged brain.

A total of 28 RCTs were found that evaluated Dual-Task training for lower extremity motor rehabilitation. Five RCTs compared Cognitive Dual Motor Task with Conventional Therapy or No Treatment (Iqbal et al. 2020; Kannan et al. 2019; Park & Lee 2019; Liu et al. 2017; Yang et al. 2007). Ten RCTs compared Dual Task with Single Task Training or Control (Jung et al. 2023; Plummer et al. 2022; Baek et al. 2021; Fishbein et al. 2019; Meester et al. 2019; Pang et al. 2018; Choi et al. 2015a; Cho et al. 2015b; Shim et al. 2012; Durfee et al. 2011). Four RCTs compared Dual Cognitive-Motor Task with Balance Training (Hong et al. 2020; Choi et al. 2015b; Jiejiao et al. 2012; Seo et al. 2012). One RCT compared Problem-Oriented Willed-Movement Therapy with Conventional Treatment (Tang et al. 2005). One RCT compared Dual-Task and Resistance Exercise with Aerobic and Resistance Exercise (Antonio et al. 2022). One RCT evaluated Dual-task with Various Instructional Sets (Sengar et al. 2019). One RCT compared Cognitive and Motor Dual-Task Training with Motor Imagery (Mishra et al. 2015). One RCT compared Dual-Task Training with Vestibular Rehabilitation (Saleem et al. 2019). One RCT compared Cognitive Task with Motor Task vs No Task in Various Settings (Lord et al. 2006). One RCT compared Cognitive Therapeutic Exercise Combined with Goal-Directed Training with Goal-Directed Training Alone (Abdelfadil et al. 2024). One RCT compared Cognitive Training with Conventional Therapy (Tahoon et al. 2024). One RCT compared Dual-Task Training with Motor Imagery with Dual-Task Training Alone (Zafar et al. 2024).

In addition, three RCTs in which Dual-Task training formed part of a combined or comparative intervention are cross-referenced at the end of Table 16; their primary listings appear in other tables.

The methodological details and results of all 28 RCTs are presented in Table 16.

Table 16. RCTs Evaluating Dual-Task Training for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Study design		
Cognitive Dual Motor Task vs Conventional Therapy or No Treatment		
Iqbal et al. (2020) RCT (4) Nstart=64 Nend=64 TPS=Chronic A vs 0	E: Dual task training C: Conventional physiotherapy Duration: 40min/d, 4d/wk, 4wks	E vs C: Timed Up and Go Test (+exp) 10-meter walk test (+exp) Step length (+exp) Stride length (+exp) Cycle time (+exp) Cadence (+exp)
Kannan et al. (2019) RCT (4) Nstart=25 Nend=23 TPS=Chronic A vs 0 Also in Table 26 (Virtual Reality)	E: Cognitive motor exergaming training C: Conventional training (stretching, strengthening, balance and endurance training) Duration: 90min/d, 10d, 6wk	E vs C: Limit of Stability (+exp) Movement velocity (+exp) Postural center of mass (-) Letter-number sequencing (No stats) 10min Walk test (No stats) Berg balance scale (No stats) 6min Walk test (No stats) Timed Up and Go (No stats) Wii Gaming scores (-)
Park & Lee (2019c) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Cognitive-motor dual task program C: Conventional occupational therapy Duration: 30min/d, 3dwk, for 6wks	E vs C: Fugl-Meyer Assessment (-) Modified Functional Reach Test Forward (-) Affected (-) Nonaffected (-) Berg Balance Scale (+exp) Trail Making Test A (-) B (-) Digit Span Test Forward (+exp) Backward (+exp) Stroop Test Colour (+exp) Word (-)
Liu et al. (2017) RCT (5) Nstart=28 Nend=28 TPS=Chronic A vs A + B vs 0	E1: Cognitive dual task training (Gait training + cognitive task) E2: Motor dual task training (Gait training + motor task) C: Conventional therapy Duration: 30min/d, 3d/wk for 4wk	E1 vs E2/C: Gait speed (-) Cadence (+exp1) Stride time (-) Stride length (-)
Yang et al. (2007) RCT (7) Nstart=25 Nend=25 TPS=Chronic A vs B	E: Dual-task based training (ball exercise) C: No intervention Duration: 30min/d, 3d/wk for 4wk	E vs C: Single-Task Measures 10-m walk Speed (+exp) Cadence (+exp) Stride time (+exp) Stride length (+exp) Temporal symmetry index (-) Dual-Task Measures 10-m walk Speed (+exp) Cadence (-) Stride time (+exp)

		Stride length (+exp) Temporal symmetry index (-)
Dual Task vs Single Task Training or Control		
Jung et al. (2023) RCT (9) Nstart=34 Nend=28 TPS=Subacute A vs B	E: Dual-task walking C: Overground walking Duration: 6min 2x/d, 3d/wk, 4wks	E vs C: 10MWT (-) 6MWT (-) TUG (-) BBS (-) ABC-K (+exp)
Plummer et al. (2022) RCT (8) Nstart=37 Nend=36 TPS=Chronic A vs B	E1: Dual-task gait training C: Single-task gait training Duration: 30min/d, 3d/wk, for 4wks	E1 vs C: Single-task Gait speed (preferred/fast) (-) Dual-task Stroop Gait speed (preferred/fast) (-) Dual-task clock Gait speed (preferred/fast) (-) 10-m walk speed (-) Timed Up and Go (-) Lower Extremity Fugl-Meyer (-) Activities-specific Balance Confidence scale (-) Stroke Impact Scale (-) Computerized Stroop, reaction time interference (-) Computerized Stroop, accuracy interference (+exp)
Baek et al. (2021) RCT (7) Nstart=34 Nend=31 TPS=Chronic A1 vs A2 Also in Table 9 (Treadmill Training)	E: Dual-task gait training with treadmill C: Single-task gait training with treadmill Duration: 30min, 2d/wk, 6wks	E vs C: Gait Measures in Single-task Condition Speed (-) Stride Length (-) Stance Phase Variability (-) Cadence (-) Correct response rate (-) Gait Measures in Dual-task Condition Speed (+exp) Stride Length (+exp) Stance Phase Variability (+exp) Cadence (-) Correct response rate (-) Dual-task Cost-motor task Speed (+exp) Stride Length (-) Stance Phase Variability (+exp) Cadence (-) Dual-task Cost-cognition task (-) Fall Efficacy Scale (-)
Fishbein et al. (2019) RCT (6) Nstart=22 Nend=22 TPS=Chronic A vs B Also in Table 9 (Treadmill Training); Table 26 (Virtual Reality)	E: Dual-task (VR-based UL training while walking on treadmill) C: Single task treadmill walking	E vs C: 10 m walk test Time (+exp) Steps (+exp) Timed Up and Go (-) Functional Reach Test (+exp) Lateral Reach Test (+exp)

		Activities Specific Balance confidence (+exp) Berg Balance Scale (+exp)
Meester et al. (2019) RCT (6) Nstart=50 Nend=43 TPS=Chronic A vs B	E: Walking training with simultaneous cognitive demand (dual task) C: Treadmill walking training Duration: 30min/d, 2d/wk, 10wks	E vs C: 2-Minute Walk Test Distance (-) Distance with dual task (-) Walking distance change (-) Number of cognitive responses (-) Step activity (-) Physical Activity Scale for Elderly (-) SF-36 (-) EQ-5D (-) Community walking confidence (-)
Pang et al. (2018) RCT (8) Nstart=84 Nend=78 TPS=Chronic A1 vs A2 vs B	E1: Dual-task balance/mobility E2: Single-task balance/mobility C: Upper limb exercise Duration: 60min/d, 3d/wk, for 8wks	E1 vs E2/C: Percent dual-task effect(%DTE) in walking time When forward walking + verbal fluency (+exp1) When forward walking + serial-3-subtractions (+exp1) When TUG + verbal fluency (+exp1) When TUG + serial-3-subtractions (-) %DTE in correct response rate When forward walking + verbal fluency (-) When forward walking+ serial-3-subtractions (-) When TUG + verbal fluency (-) When TUG + serial-3-subtractions (-) Activities-specific Balance Confidence Scale (-) Frenchay Activities Index (-) Stroke-specific Quality of Life Scale (-) E2 v C: DTE%-all tasks (-) DTE% in correct response rate-all tasks (-) Activities-specific Balance Confidence Scale (-) Frenchay Activities Index (-) Stroke-specific Quality of Life Scale (-)
Choi et al. (2015a) RCT (7) Nstart=37 Nend=37 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E: Cognitive-motor dual task training while treadmill walking + Conventional rehabilitation C: Single task training on Treadmill walking + Conventional rehabilitation Duration: 15min/d, 3d/wk, 4wk task training & 5d/wk, 4wk conventional rehabilitation	E vs C: Static Balance Anteroposterior sway velocity with eyes open (-) Mediolateral sway velocity with eyes open (+exp) Anteroposterior sway velocity with eyes closed (+exp) Mediolateral sway velocity with eyes closed (+exp) Timed Up & Go Test (-)
Cho et al. (2015b) RCT (8) Nstart=24	E: Virtual reality with cognitive load + conventional rehabilitation C: Treadmill walking with virtual environment + conventional rehabilitation	E vs C: Under single task condition Gait velocity (-)

Nend=22 TPS=Chronic A vs B Also in Table 26 (Virtual Reality)	Duration: 30min/d, 5d/wk, 4wk Virtual reality training and 60min/d, 5d/wk, 4wk conventional therapy	Cadence (-) Paretic side step length (-) Stride length (-) Under dual task condition Gait velocity (+exp) Cadence (+exp) Paretic side step length (+exp) Stride length (+exp)
Shim et al. (2012) RCT (5) Nstart=35 Nend=33 TPS=Chronic A vs 0	E: Motor dual task training + conventional therapy C: Conventional therapy Duration: 30min/d, 3d/wk for 6wks dual task training & 30min/d, 5d/wk, for 6wks conventional physical therapy	E vs C: Gait speed (+exp) Cadence (+exp) Stride length (+exp) Step length (+exp) Single limb support (+exp) Double limb support (-)
Durfee et al. (2011) RCT (4) Nstart=19 Nend=16 TPS=Chronic A + B vs A	E: Ankle movements + following a target waveform (cognitively demanding task) C: Ankle movements Duration: 180 movements/d, 5d/wk, for 4wks	E vs C: Ankle DF/PF angle (+exp) Clearance (-) Gait temporal symmetry ratio (-) Stride length (-) 10-Meter Walking Test (-) Cortical activation by fMRI (-)
Dual Cognitive-Motor Task vs Balance Training		
Hong et al. (2020) RCT (4) Nstart=24 Nend=17 TPS=Chronic A1 vs A2	E: Dual task of balance and cognition C: Balance training Duration: 30min/d, 3d/wk, 4wks	E vs C: Timed Up and Go (+exp) Berg Balance scale (-) Stride velocity (-) Stride length (-) Double support time (-)
Choi et al. (2015b) RCT (5) Nstart=21 Nend=21 TPS=Subacute A + B vs A Also in Table 11 (Balance Training)	E: Balance training + cognitive training C: Balance training with balance board Duration: 1hr/d, 3d/wk for 4wk	E vs C: Berg Balance Scale (-) Fugl-Meyer Assessment (-) Modified Barthel Index (-)
Jiejiao et al. (2012) RCT (8) Nstart=92 Nend=85 TPS=Chronic A + B vs A Also in Table 11 (Balance Training)	E: Balance training + cognitive training C: Balance training Duration: 40min/d, 5d/wk for 8wks	E vs C: Center of Pressure (-) Mediolateral Sway Distance (+exp) Anteroposterior Eyes Open (+exp) Eyes Closed (-)
Seo et al. (2012) RCT (4) Nstart=40 Nend=40 TPS=Chronic A vs B Also in Table 11 (Balance Training)	E: Dual-task balance training C: Single-task balance training Duration: 30min/d, 5d/wk for 4wks	E vs C: Sway path (-) Sway area (+exp) Max velocity (+exp)

Problem-Oriented Willed-Movement Therapy vs Conventional Treatment		
Tang et al. (2005) RCT (6) Nstart=48 Nend=47 TPS=Subacute A vs B	E: Problem-oriented willed- movement therapy C: Neurodevelopmental treatment Duration: 50min/d, 5-6d/wk, for 8wks	E vs C: Rehabilitation Assessment of Movement (+exp) Upper Extremity (+exp) Lower Extremity (+exp) Basic Mobility (+exp) Mini-Mental State Examination (-)
Dual-Task vs Aerobic and Resistance Exercise		
Antonio et al. (2022) RCT (8) Nstart=26 Nend=26 TPS=Chronic A vs B Also in Table 21 (Strength and Resistance Training)	E: Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) C: Aerobic and Resistance Exercises, without Performing Cognitive Task Duration: 60–90min, 2d/wk, 15wks	E vs C: Timed-up-and-go Test (+exp) Cognitive Performance in TUG Dual Task (-) Dual Task Cost in in TUG (-) 10-M Walk Test (-) 10MWT Dual Task (-) Cognitive Performance in 10MWT Dual Task (-) Dual Task Cost in 10MWT (-) 6-M Walk Test (-) Maximum Ballistic Voluntary Isometric Contraction (-) Montreal Cognitive Assessment (-) Falls Efficacy Scale (FES-I) (-) Stroke Impact Scale (-) Mini-BESTest (-)
Dual-task with Various Instructional Sets		
Sengar et al. (2019) RCT (4) Nstart=30 Nend=30 TPS=Chronic A1 vs A2	E: Dual-task training with variable priority instructional sets C: Dual-task training with fixed priority instructional sets Duration: 45min/d, 3d/wk, for 4wks	E vs C: 10-m walk test Comfortable speed (+exp) Maximal speed (+exp) Step length (+exp) Stride Length (+exp)
Cognitive and Motor Dual-Task Training vs Motor Imagery		
Mishra et al. (2015) RCT (5) Nstart=15 Nend=15 TPS=Not reported A1 vs A2 vs B Also in Table 17 (Mental Practice)	E1: Motor dual task training + Conventional care E2: Cognitive dual task training + Conventional care E3: Motor imagery + Conventional care Duration: 15min/session, 5d/wk for 2wks	E1 v E2/E3: Berg Balance scale (-) Functional gait assessment scale (+exp1)
Dual-Task Training vs Vestibular Rehabilitation		
Saleem et al. (2019) RCT (4) Nstart=30 Nend=30 TPS=Subacute A vs B	E: Vestibular Rehabilitation + Conventional PT C: Dual Task training + Conventional PT Duration: 45min/d, 3d/wk, 4wks interventions & 45min/d, 5d/wk, 4wks Conventional PT	E vs C: Wisconsin Gait Scale (+exp) Mini-BEST (+exp)
Cognitive Task vs Motor Task vs No Task in Various Settings		
Lord et al. (2006) RCT (6)	E1: No task in suburban street E2: Cognitive task in suburban street	E1 vs E2 vs E3 vs E4 vs E5 vs E6 vs C1 vs C2 vs C3:

Nstart=27 Nend=27 TPS=Chronic A1 vs A2 vs A3 vs B1 vs B2 vs B3 vs A4 vs C1 vs C2	E3: Motor task in suburban street E4: No task in shopping mall E5: Cognitive task in shopping mall E6: Motor task in shopping mall C1: No task in clinic C2: Motor task in clinic C3: cognitive task in clinic Duration: 6 min walk	6-minute walk test (-) Cadence (-) Step Length (-)
Cognitive Therapeutic Exercise Combined with Goal-Directed Training vs Goal-Directed Training Alone		
Abdelfadil et al. (2024) RCT (7) Nstart=40 Nend=40 TPS=Chronic A + B vs B	E: Systematic desensitzation + goal-directed paradigm C: Goal-directed paradigm Duration: E: 90 mins/d (20 mins of Jacobson's technique + 30 mins of guided imagery training + 40 mins of goal-directed paradigm training), 3ds/wk, 8wks; C: 40 mins/d, 3ds/wk, 8wks	E vs C: TUG (+exp) Dynamic gait index (+exp) Berg balance scale (+exp) Biodex Fall Risk Index (+exp) 16-item fall efficacy scale-international (+exp)
Cognitive Training vs Conventional Therapy		
Tahoon et al. (2024) RCT (7) Nstart=40 Nend=40 TPS=Chronic A vs 0	E: Rehacom cognitive training + Conventional physiotherapy C: Conventional physiotherapy Duration: E: 60min Rehacom + 60min Conventional care/d, 3d/wk, 8wks	E vs C: MoCA (+exp) step length (+exp) walking speed (-)
Dual-Task Training with Motor Imagery vs Dual-Task Training Alone		
Zafar et al. (2024) RCT (7) Nstart=30 Nend=29 TPS=Subacute A + B vs A Also in Table 17 (Mental Practice)	E: Dual-task training + motor imagery C: Dual-task training Duration: 28min (7 task x 4min)/d, 8wks	E vs C: Functional Reach Test (-) TUG (+exp) BBS (+exp) Movement Imagery Questionnaire-3 (+exp) internal imagery (+exp) external imagery (+exp) kinesthetic (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Ahmed et al. (2021) RCT (8) Nstart=84 Nend=84 TPS=Chronic A + B vs A Primary listing: Table 4 (Trunk Training)	E: High-intensity multiplanar trunk training + dual-task training + conventional rehabilitation C: Trunk training + conventional rehabilitation. Duration: 45min/d, 5d/wk for 3mo	E vs C: Trunk Impairment Scale (+exp) Dynamic Control(+exp) Coordination (+exp) Timed-Up-And-Go (+exp) Cognitive (+exp) 10-Metre Walk Test (+exp) Berg Balance Scale (+exp) Stroke Impact Scale (+exp)
Saleh et al. (2019) RCT (6) Nstart=50 Nend=50 TPS=Chronic A1 vs A2 Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic-based Dual-task Motor Training C: Land-based Dual-task Motor Training Duration: 45min, 3d/wk, for 6wks	E vs C: Overall Stability Index (+exp) Anteroposterior Stability Index (+exp) Mediolateral Stability Index (+exp) Walking speed (+exp) Step length affected side (+exp) non affected side (+exp) Support time affected side (+exp)

Kim et al. (2016a) RCT (4) Nstart=20 Nend=NR TPS=Chronic A vs B Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic therapy (Dual-task training with upper extremity tasks) C: Neurodevelopmental techniques Duration: 1h/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Five-Time Sit to Stand Test (+exp) Functional Reach Test (+exp) 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp) Functional Gait Assessment (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cognitive Dual Motor Task may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving motor recovery.	1	Park & Lee 2019c
1b	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving motor recovery.	1	Plummer et al. 2022
2	Dual Cognitive-Motor Task may not have a difference in efficacy when compared to Balance Training for improving motor recovery.	1	Choi et al. 2015b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cognitive Dual Motor Task may produce greater improvements in biomechanical gait measures than Conventional Therapy or No Treatment.	3	Iqbal et al. 2020; Liu et al. 2017; Yang et al. 2007
1a	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving biomechanical gait measures.	5	Baek et al. 2021; Pang et al. 2018; Cho et al. 2015b; Shim et al. 2012; Durfee et al. 2011
2	Dual Cognitive-Motor Task may not have a difference in efficacy when compared to Balance Training for improving biomechanical gait measures.	1	Hong et al. 2020
2	Dual-task training with variable priority instructional sets may produce greater improvements in biomechanical gait measures than Dual-task training with fixed priority instructional sets.	1	Sengar et al. 2019
1b	Cognitive Task may not have a difference in efficacy when compared to Motor Task or No Task in Various Settings for improving biomechanical gait measures.	1	Lord et al. 2006
1b	Cognitive Training may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Tahoon et al. 2024
1b	Aquatic-based Dual-task Motor Training may produce greater improvements in biomechanical gait measures than Land-based Dual-task Motor Training.	1	Saleh et al. 2019

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Cognitive Dual Motor Task may produce greater improvements in biomechanical balance measures than Conventional Therapy or No Treatment.	1	Kannan et al. 2019
1b	There is conflicting evidence about the effect of Dual Cognitive-Motor Task when compared to Balance Training for improving biomechanical balance measures.	2	Jiejiao et al. 2012; Seo et al. 2012
1b	Aquatic-based Dual-task Motor Training may produce greater improvements in biomechanical balance measures than Land-based Dual-task Motor Training.	1	Saleh et al. 2019

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving muscle strength.	1	Antonio et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving neurophysiological measures.	1	Durfee et al. 2011

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving activities of daily living.	1	Pang et al. 2018
2	Dual Cognitive-Motor Task may not have a difference in efficacy when compared to Balance Training for improving activities of daily living.	1	Choi et al. 2015b

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Cognitive Dual Motor Task when compared to Conventional Therapy or No Treatment for improving gait speed.	4	Iqbal et al. 2020; Kannan et al. 2019; Liu et al. 2017; Yang et al. 2007
1a	Dual Task may produce greater improvements in gait speed than Single Task Training or Control.	8	Jung et al. 2023; Plummer et al. 2022; Baek et al. 2021; Fishbein et al. 2019; Choi et al. 2015a; Cho et al. 2015b; Shim et al. 2012; Durfee et al. 2011
2	There is conflicting evidence about the effect of Dual Cognitive-Motor Task when compared to Balance Training for improving gait speed.	2	Hong et al. 2020; Seo et al. 2012
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving gait speed.	1	Antonio et al. 2022

2	Dual-task training with variable priority instructional sets may produce greater improvements in gait speed than Dual-task training with fixed priority instructional sets.	1	Sengar et al. 2019
1b	Cognitive Training may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	1	Tahoon et al. 2024
1b	High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may produce greater improvements in gait speed than Trunk training with conventional rehabilitation.	1	Ahmed et al. 2021
1b	Aquatic-based Dual-task Motor Training may produce greater improvements in gait speed than Land-based Dual-task Motor Training.	1	Saleh et al. 2019
2	Aquatic therapy (Dual-task training with upper extremity tasks) may produce greater improvements in gait speed than Neurodevelopmental techniques.	1	Kim et al. 2016a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Cognitive Dual Motor Task may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving gait endurance.	1	Kannan et al. 2019
1a	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving gait endurance.	2	Jung et al. 2023; Meester et al. 2019
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving gait endurance.	1	Antonio et al. 2022
1b	Cognitive Task may not have a difference in efficacy when compared to Motor Task or No Task in Various Settings for improving gait endurance.	1	Lord et al. 2006

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Cognitive Dual Motor Task when compared to Conventional Therapy or No Treatment for improving functional mobility.	3	Iqbal et al. 2020; Kannan et al. 2019; Yang et al. 2007
1a	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving functional mobility.	7	Jung et al. 2023; Plummer et al. 2022; Baek et al. 2021; Fishbein et al. 2019; Meester et al. 2019; Pang et al. 2018; Choi et al. 2015a
2	Dual Cognitive-Motor Task may produce greater improvements in functional mobility than Balance Training.	1	Hong et al. 2020
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving functional mobility.	1	Antonio et al. 2022
2	Motor dual task training with Conventional care may produce greater improvements in functional mobility than Cognitive dual task training with Conventional care or Motor imagery and Conventional care.	1	Mishra et al. 2015
2	Dual-Task Training may produce greater improvements in functional mobility than Vestibular Rehabilitation.	1	Saleem et al. 2019
1b	Cognitive Therapeutic Exercise Combined with Goal-Directed Training may produce greater improvements in functional mobility than Goal-Directed Training Alone.	1	Abdelfadil et al. 2024

1b	Dual-Task Training with Motor Imagery may produce greater improvements in functional mobility than Dual-Task Training Alone.	1	Zafar et al. 2024
1b	High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may produce greater improvements in functional mobility than Trunk training with conventional rehabilitation.	1	Ahmed et al. 2021
2	Aquatic therapy (Dual-task training with upper extremity tasks) may produce greater improvements in functional mobility than Neurodevelopmental techniques.	1	Kim et al. 2016a

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cognitive Dual Motor Task may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving balance.	2	Kannan et al. 2019; Park & Lee 2019c
1a	Dual Task may produce greater improvements in balance than Single Task Training or Control.	2	Jung et al. 2023; Fishbein et al. 2019
2	Dual Cognitive-Motor Task may not have a difference in efficacy when compared to Balance Training for improving balance.	2	Hong et al. 2020; Choi et al. 2015b
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving balance.	1	Antonio et al. 2022
2	Motor dual task training with Conventional care may not have a difference in efficacy when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care for improving balance.	1	Mishra et al. 2015
2	Dual-Task Training may produce greater improvements in balance than Vestibular Rehabilitation.	1	Saleem et al. 2019
1b	Cognitive Therapeutic Exercise Combined with Goal-Directed Training may produce greater improvements in balance than Goal-Directed Training Alone.	1	Abdelfadil et al. 2024
1b	Dual-Task Training with Motor Imagery may produce greater improvements in balance than Dual-Task Training Alone.	1	Zafar et al. 2024
1b	High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may produce greater improvements in balance than Trunk training with conventional rehabilitation.	1	Ahmed et al. 2021
2	Aquatic therapy (Dual-task training with upper extremity tasks) may produce greater improvements in balance than Neurodevelopmental techniques.	1	Kim et al. 2016a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving falls and fear of falling.	3	Baek et al. 2021; Fishbein et al. 2019; Pang et al. 2018
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving falls and fear of falling.	1	Antonio et al. 2022
1b	Cognitive Therapeutic Exercise Combined with Goal-Directed Training may produce greater improvements in falls and fear of falling than Goal-Directed Training Alone.	1	Abdelfadil et al. 2024

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Dual Task may not have a difference in efficacy when compared to Single Task Training or Control for improving quality of life.	3	Plummer et al. 2022; Meester et al. 2019; Pang et al. 2018
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving quality of life.	1	Antonio et al. 2022
1b	High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may produce greater improvements in quality of life than Trunk training with conventional rehabilitation.	1	Ahmed et al. 2021

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Cognitive Dual Motor Task when compared to Conventional Therapy or No Treatment for improving cognition.	1	Park & Lee 2019c
1b	There is conflicting evidence about the effect of Dual Task when compared to Single Task Training or Control for improving cognition.	1	Plummer et al. 2022
1b	Problem-Oriented Willed-Movement Therapy may not have a difference in efficacy when compared to Conventional Treatment for improving cognition.	1	Tang et al. 2005
1b	Dual-Task and Resistance Exercise may not have a difference in efficacy when compared to Aerobic and Resistance Exercise for improving cognition.	1	Antonio et al. 2022
1b	Cognitive Training may produce greater improvements in cognition than Conventional Therapy.	1	Tahoon et al. 2024

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Problem-Oriented Willed-Movement Therapy may produce greater improvements in upper extremity function than Conventional Treatment.	1	Tang et al. 2005

Key Points

- Cognitive Dual Motor Task may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not motor recovery, gait endurance, and balance, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding gait speed and functional mobility.
- Dual Task may be beneficial for improving gait speed and balance, but not motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Single Task Training or Control.
- Dual Cognitive-Motor Task may be beneficial for improving functional mobility, but not motor recovery, biomechanical gait measures, activities of daily living, and balance, after stroke when compared to Balance Training; the literature is mixed regarding biomechanical balance measures and gait speed.

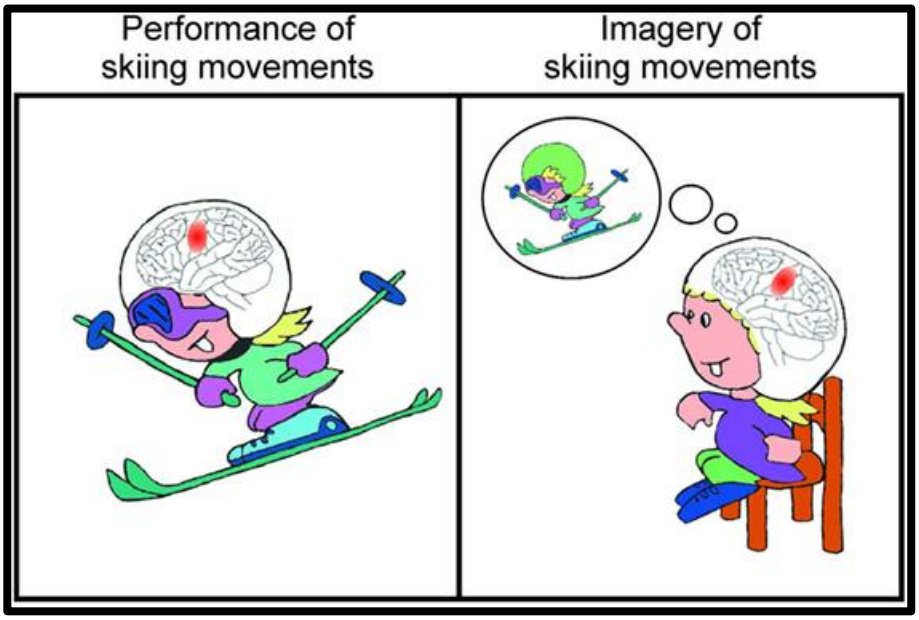
- Dual-Task and Resistance Exercise may not be beneficial for improving muscle strength, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Aerobic and Resistance Exercise.
- Dual-task training with variable priority instructional sets may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Dual-task training with fixed priority instructional sets.
- Motor dual task training with Conventional care may be beneficial for improving functional mobility, but not balance, after stroke when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care.
- Dual-Task Training may be beneficial for improving functional mobility and balance after stroke when compared to Vestibular Rehabilitation.
- Cognitive Task may not be beneficial for improving biomechanical gait measures and gait endurance after stroke when compared to Motor Task or No Task in Various Settings.
- Cognitive Therapeutic Exercise Combined with Goal-Directed Training may be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Goal-Directed Training Alone.
- Cognitive Training may be beneficial for improving biomechanical gait measures, but not gait speed, after stroke when compared to Conventional Therapy.
- Dual-Task Training with Motor Imagery may be beneficial for improving functional mobility and balance after stroke when compared to Dual-Task Training Alone.
- High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may be beneficial for improving gait speed, functional mobility, balance, and quality of life after stroke when compared to Trunk training with conventional rehabilitation.
- Aquatic-based Dual-task Motor Training may be beneficial for improving biomechanical gait measures, biomechanical balance measures, and gait speed after stroke when compared to Land-based Dual-task Motor Training.
- Aquatic therapy (Dual-task training with upper extremity tasks) may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Neurodevelopmental techniques.

Summary of Key Points: Dual-Task Training

Intervention	Control(s)	Function domain(s)	Effect
Cognitive Dual Motor Task	Conventional Therapy or No Treatment	Biomechanical gait measures, biomechanical balance measures	+
Cognitive Dual Motor Task	Conventional Therapy or No Treatment	Motor recovery, gait endurance, balance	–
Cognitive Dual Motor Task	Conventional Therapy or No Treatment	Gait speed, functional mobility	=
Dual Task	Single Task Training or Control	Gait speed, balance	+
Dual Task	Single Task Training or Control	Motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, falls and fear of falling, quality of life	–
Dual Cognitive-Motor Task	Balance Training	Functional mobility	+
Dual Cognitive-Motor Task	Balance Training	Motor recovery, biomechanical gait measures, activities of daily living, balance	–
Dual Cognitive-Motor Task	Balance Training	Biomechanical balance measures, gait speed	=

Dual-Task and Resistance Exercise	Aerobic and Resistance Exercise	Muscle strength, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Dual-task training with variable priority instructional sets	Dual-task training with fixed priority instructional sets	Biomechanical gait measures, gait speed	+
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care	Functional mobility	+
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care	Balance	–
Dual-Task Training	Vestibular Rehabilitation	Functional mobility, balance	+
Cognitive Task	Motor Task vs No Task in Various Settings	Biomechanical gait measures, gait endurance	–
Cognitive Therapeutic Exercise Combined with Goal-Directed Training	Goal-Directed Training Alone	Functional mobility, balance, falls and fear of falling	+
Cognitive Training	Conventional Therapy	Biomechanical gait measures	+
Cognitive Training	Conventional Therapy	Gait speed	–
Dual-Task Training with Motor Imagery	Dual-Task Training Alone	Functional mobility, balance	+
High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation	Trunk training with conventional rehabilitation	Gait speed, functional mobility, balance, quality of life	+
Aquatic-based Dual-task Motor Training	Land-based Dual-task Motor Training	Biomechanical gait measures, biomechanical balance measures, gait speed	+
Aquatic therapy (Dual-task training with upper extremity tasks)	Neurodevelopmental techniques	Gait speed, functional mobility, balance	+

Mental Practice



Adopted from: https://www.ucbmsh.com/motor-imagery-for-improvement-of-gait-in-stroke-patient/

Mental practice as the name suggests, involves cognitively rehearsing a specific task by repetitively imagining oneself performing the precise movements involved in the task in the absence of performing the physical movement (Page & Peters, 2014). Mental practice is speculated to be effective because of its ability to use the same motor schema as when physically practicing the same task through the activation of similar neural regions and networks during mental practice (Page & Peters, 2014). The use of mental practice was adapted from the field of sports psychology where the technique has been shown to improve athletic performance, when used as an adjunct to standard training methods (Page & Peters, 2014). The technique is believed to be advantageous in stroke survivors because certain motor skills may be difficult to physically practice; stroke survivors spend a majority of their time inactive and alone; and repetitive task- specific practice is a prerequisite for cortical plasticity and subsequent motor changes (Page & Peters, 2014). Mental practice can be used to supplement conventional therapy and can be used at any stage of recovery.

A total of 27 RCTs were found that evaluated mental practice for lower extremity motor rehabilitation. Three RCTs compared Gait Training with Motor Imagery or Mental Practice with Gait Training (Anwar et al. 2022; Sawant 2020; Cho et al. 2013b). One RCT compared Task-Specific Training with Mental Practice with Task-Specific Training (Kumar et al. 2016). Two RCTs compared Task-Specific Training with Mental Practice with Conventional Training or No Treatment (Verma et al. 2011; Malouin et al. 2009). One RCT compared Proprioception Training + Motor Imagery with Proprioception Training (Lee et al. 2015a). One RCT compared Action Observation with Motor Imagery vs Conventional Therapy (Kim et al. 2013). Two RCTs compared Neurofeedback Facilitation with Motor Imagery with Sham (Mihara et al. 2024; Mihara et al. 2021). One RCT compared Mental Practice with Muscle Relaxation (Oostra et al. 2015). Two RCTs compared Circuit Training with Mental Practice with Circuit Training with Education (Aung et al. 2022; Bovonsunthonchai et al. 2020). One RCT compared Mental Imagery with Mental Imagery with Auditory Stimulation (Kim et al. 2011). Eight RCTs compared Mental Imagery with Conventional Training or Sham (Diaz-Lopez et al. 2022; Yin et al. 2021; Dickstein et al. 2013; Braun et al. 2012; Schuster et al. 2012; Hosseini et al. 2012; Bovend'Eerdt et al. 2010; Liu et al. 2004). One RCT compared Body Awareness Therapy with Continuing Usual Daily Activities (Lindvall et al. 2014). One RCT compared Cognitive and Motor Dual-Task Training with Motor Imagery (Mishra et al. 2015). One RCT compared Cognitive Sensory Motor Training with Conventional Therapy (Kim et al. 2021a). One RCT compared Mental Practice with Cognitive Training (Guerra et al. 2022). One RCT compared Motor Imagery with Virtual Reality with Virtual Reality Alone (Masood et al. 2024).

In addition, four RCTs in which mental practice formed part of a combined or comparative intervention are cross-referenced at the end of Table 17; their primary listings appear in other tables.

The methodological details and results of all 27 RCTs are presented in Table 17.

Table 17. RCTs Evaluating Mental Practice for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Gait Training with Motor Imagery or Mental Practice vs Gait Training		
Anwar et al. (2022) RCT (6) Nstart=44 Nend=44 TPS=Subacute A vs 0	E: Motor imagery + gait training C: Gait training Duration: 30min/d motor imagery & 30min/d gait training 3d/wk, 6wks	E vs C: 10 metre Walk test (-) Fugl-Meyer Assessment (-) Motor Imagery Questionnaire visual (+exp) kinesthetic (+exp) Imagery/actual walking time ratio (-)
Sawant (2020) RCT (4) Nstart=82 Nend=82 TPS=Not reported A vs B1 vs 0 vs B2	E: Gait training + guided motor imagery + conventional exercises C: Gait training + conventional exercises Duration: E: 20min/d, 3d/wk, 4wks gait training + 10min/d, 3d/wk, 4wks motor imagery C: 30min/d, 3d/wk, 4wks gait training	E vs C: Functional Gait Assessment (+exp) 10-Meter Walk Test (+exp)
Cho et al. (2013b) RCT (7) Nstart=28 Nend=28 TPS=Chronic A vs 0	E: Gait training + Mental practice C: Gait training Duration: 15min/d, mental practice & 30min gait training, 3d/wk, 6wks	E vs C: Fugl-Meyer Assessment (+exp) 10-Metre Walk Test (+exp) Timed Up & Go Test (+exp) Functional Reach Test (+exp)
Task-Specific Training with Mental Practice vs Task-Specific Training		
Kumar et al. (2016) RCT (7) Nstart=40 Nend=40 TPS=Chronic A + B vs A Also in Table 5 (Task-Specific Training)	E: Task-specific training + Mental practice (Motor Imagery) C: Task-specific training Duration: 45-60min/d, 4d/wk for 3wks task-specific training & 15min/d, 4d/wk, for 3wks motor imagery	E vs C: Muscle Strength Hip Flexors (+exp) Hip Extensors (+exp) Knee Flexors (-) Knee Extensors (+exp) Ankle -Dorsiflexors (+exp) Ankle Plantarfelxors (-) 10m walk test (+exp)
Task-Specific Training with Mental Practice vs Conventional Training or No Treatment		
Verma et al. (2011) RCT (8) Nstart=30 Nend=30 TPS=Subacute A + B vs C + A vs D vs C	E: Task-oriented circuit class training + Motor imagery C: Standard rehabilitation based on Bobath techniques Duration: E: 15min/d, 7d/wk, 2wks mental imagery + 25min/d, 7d/wk, 2wks task-oriented circuit class training C: 40min/d, 7d/wk, 2wks standard rehabilitation	E vs C: Functional ambulation category (+exp) Rivermead Visual gait assessment (+exp) Step length asymmetry (-) Cadence (+exp) Stride length asymmetry (-) 10m Walk test Maximum speed (-) Comfortable speed (+exp) 6min Walk test (+exp)
Malouin et al. (2009) RCT (6)	E1: Task-specific training + Mental practice E2 Task-specific training + Cognitive training	E1v E2 vs C: Limb loading (+exp1)

Nstart=12 Nend=12 TPS=Chronic A + B vs C Also in Table 5 (Task-Specific Training)	C: No training Duration: 3d/wk for 4wk	kinesthetic visual imagery questionnaire (No stats) gait speed (No stats) Timed Up and Go (No stats)
Proprioception Training + Motor Imagery vs Proprioception Training		
Lee et al. (2015a) RCT (5) Nstart=36 Nend=36 TPS=Chronic A + B vs A	E: Proprioception training + Motor imagery C: Proprioception training Duration: 30min/d, 5d/wk, for 8wks proprioception training & (25+5min/d) proprioception training and motor imagery	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (-) Weight Bearing Ratio (+exp) Joint Position Sense Error (+exp)
Action Observation vs Motor Imagery vs Conventional Therapy		
Kim et al. (2013) RCT (6) Nstart=30 Nend=27 TPS=Chronic A vs B vs 0 Also in Table 18 (Action Observation)	E1: Action observation training + physical training E2: Motor imagery training + physical training C: physical training Duration: 30min/d action observation and motor imagery & 1h/d, physical training, 5d/wk for 4wks	E1 vs C: Timed Up and Go (+exp1) Functional Reach test (-) Walking Ability questionnaire (-) Functional ambulation category (-) Gait speed (+exp1) Cadence (+exp1) Step length (-) Single limb support (+exp1) Double limb support (-) E2 v E1/C: Timed Up and Go (-) Functional Reach test (-) Walking Ability questionnaire (-) Functional ambulation category (-) Gait speed (-) Cadence (-) Step length (-) Single limb support (-) Double limb support (-)
Neurofeedback Facilitation with Motor Imagery vs Sham		
Mihara et al. (2024) RCT (8) Nstart=57 Nend=54 TPS=Chronic A vs 0	E: fNIRS-NFB C: Sham neurofeedback Duration: 10-20mins/d, 3ds/wk, 2wks	E vs C: TUG (+exp) Berg Balance Scale (-) Gait speed (-) FIM (-) FMA-UE (-) FMA-LE (-)
Mihara et al. (2021) RCT (8) Nstart=57 Nend=54 TPS=Chronic A + B vs B Also in Table 15 (Biofeedback)	E: Neurofeedback facilitation + motor imagery C: Sham neurofeedback + motor imagery Duration: 3 session/wk, 2wks	E vs C: Timed Up and Go (+exp) Functional Independence measure (-) Fugl-Meyer assessment Upper extremity (-) Lower extremity (-) Berg Balance scale (+exp) Gait speed (-)

Mental Practice vs Muscle Relaxation		
Oostra et al. (2015) RCT (6) Nstart=44 Nend=44 TPS=Subacute A vs B	E: Motor imagery training + standard rehabilitation program C: Muscle relaxation + Standard rehabilitation program Duration: 180min/d, 5d/wk, 6wks & 30min/d, 5d/wk, 6wks MIT or MR	E vs C: Movement Imagery Questionnaire-revised Visual (-) Kinesthetic (+exp) Walking trajectory test (imagery walking time/actual walking time) (-) 10-m walk test (+exp) Lower-extremity Fugl-Meyer assessment scale (-)
Circuit Training with Mental Practice vs Circuit Training with Education		
Aung et al. (2022) RCT (7) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B	E: Motor imagery + Progressive circuit class therapy C: Health education + Structured progressive circuit class therapy Duration: 90 mins/d (25 mins of motor imagery/health education + 65 mins of structured progressive circuit class therapy), 3ds/wk, 4wks	E vs C: step test affected limb (+exp) unaffected limb (+exp) 6 minute walk test (-) TUG (+exp)
Bovonsunthonchai et al. (2020) RCT (8) Nstart=40 Nend=40 TPS=Chronic A + B vs A + C	E: Structured Progressive Circuit Training (SPCCT) + Motor Imagery (MI) C: Structured Progressive Circuit Training + Health Education (HE) Duration: 25min HE or MI + 65min SPCCT) 90min/d, 3d/wk, 4wks	E vs C: Step Length (-) Stride Length (-) Step Time affected (-) unaffected (+exp) Gait Speed (-) Cadence (-) Symmetry index step length (-) step time (-) Mximum voluntary isometric contraction Hip flexor (+exp) Hip extensor (-) knee flexor (-) knee extensor (+exp) Ankle dorsiflexor (-) Ankle plantar flexor (-)
Mental Imagery vs Mental Imagery with Auditory Stimulation		
Kim et al. (2011) RCT crossover (4) Nstart=18 Nend=15 TPS=Chronic A1 vs A2 vs B1 vs B2	E1: Visual Locomotor Imagery Training E2: Kinesthetic Locomotor Imagery Training E3: Visual Locomotor Training with Auditory Step Rhythm E4: Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm Duration: 15 min/condition, 24 hr washout	E1 vs E2: Timed Up and Go Test (-) E1 vs E3: Timed Up and Go Test (-) E1 vs E4: Timed Up and Go Test (+exp4) Muscle Activation by EMG Parameter (+exp4) E2 vs E3: Timed Up and Go Test (-) E2 vs E4: Timed Up and Go Test (-) E3 vs E4: Timed Up and Go Test (-)

Mental Imagery vs Conventional Training or Sham		
Diaz-Lopez et al. (2022) RCT (5) Nstart=49 Nend=38 TPS=Subacute A vs B	E: Recognition of laterality using implicit motor imagery + conventional rehab C: Recognition of body parts + conventional rehab Duration: Intervention: 5-10 mins/d, 3ds/wk, 4wks; conventional rehab: 40 min/d,5d/wk,4wks	E vs C: Area swing area (+exp) Long oscillation path length (-) DIFLOAD percentage of difference in weightload between lower limbs (-) Berg balance scale (+exp) Barthel Index (-) TUG (-) Functional ambulatory categories (+exp) Quality of life scale for stroke (+exp)
Yin et al. (2021) RCT (5) Nstart=39 Nend=32 TPS=Subacute A vs 0	E: Motor imagery training + conventional care C: Conventional care Duration: 20min/d, 5d/wk, 6wks MT & 180min/d, 5d/wk, 6wks conventional care	E vs C: Fugl Meyer Assessment (+exp) Functional Independence Measure (+exp) Berg Balance Scale (+exp)
Dickstein et al. (2013) RCT crossover (6) Nstart=25 Nend=23 TPS=Chronic A vs B	E: Integrated imagery practice C: Conventional care for upper extremity Duration: 15min/d, 3d/wk, 4wks	E vs C: Falls-efficacy scale - Swedish version (-) Step Activity monitor (-) 10m Walk test (+exp)
Braun et al. (2012) RCT (7) Nstart=36 Nend=34 TPS=Subacute A + B vs C	E: Mental practice + multi- professional rehabilitation C: multi-professional rehabilitation Duration: 6wks	E vs C: Motricity Index (-) Barthel Index (-) 9 Hole Peg test (-) Berg Balance scale (-) Rivermead Mobility index (-) 10m Walk Test (-)
Schuster et al. (2012) RCT (7) Nstart=41 Nend=41 TPS=Chronic A1 vs A2 vs 0	E1: Conventional rehabilitation + Embedded mental practice E2: Conventional rehabilitation + Added mental practice C: Conventional rehabilitation + listen to a sham tape Duration: 45-50min total (25-30 min PT + 20min MI/taping)/session, 6 sessions/ 2wks	E1 vs E2 vs C: Chedoke-McMaster Stroke Assessment (-) Time needed to perform the motor task (-) Barthel index (-) Berg Balance Scale (-) Computer-based Imaprax questionnaire (-) Kinesthetic and Visual Imagery Questionnaire (-) Activities-Specific Balance Confidence Scale (-) Edinburgh Handedness Inventory (-) Mini-Mental State Examination (-)
Hosseini et al. (2012) RCT (8) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Mental Practice + Conventional Treatment C: Conventional Treatment Duration: 45min/d, 3d/wk, 5wks	E vs C: Timed Up and Go Test (+exp) Berg Balance Test (+exp)
Bovend'Eerdt et al. (2010) RCT (8) Nstart=30 Nend=30	E: Motor imagery + Conventional therapy C: Sham + Conventional therapy Duration: 120min/d, 2-3d/wk, 5- 6wks	E vs C: Goal Attainment Scaling (-) Barthel index (-) Rivermead Mobility Index (-)

TPS=Subacute A vs 0		Timed UP and GO (-) Action Research Arm Test (-) Nottingham Extended ADL scale (-) Imagery Questionnaire (-)
Liu et al. (2004) RCT (7) Nstart=49 Nend=46 TPS=Acute A vs B	E: Mental imagery program C: Conventional functional training Duration: 60min/d, 5d/wk, for 3wks	E vs C: Task Performance Trained (+exp) Untrained (+exp) Color Trails Test (+exp) Fugl-Meyer Assessment Upper Extremity (-) Lower Extremity (-) Sensation (-)
Body Awareness Therapy vs Continuing Usual Daily Activities		
Lindvall et al. (2014) RCT (7) Nstart=46 Nend=43 TPS=Chronic A vs B	E: Body awareness therapy C: Continuing usual daily activities Duration: 60min/d, 1d/wk, 8wks	E vs C: Berg Balance Scale (-) Timed Up and Go Test (-) cognitive (-) 6-minute walk test (-) Timed-Stands Test (-) Activities-specific Balance Confidence Scale (-) Short Form 36 (SF36) (-)
Cognitive and Motor Dual-Task Training vs Motor Imagery		
Mishra et al. (2015) RCT (5) Nstart=15 Nend=15 TPS=Not reported A1 vs A2 vs B Also in Table 16 (Dual-Task Training)	E1: Motor dual task training + Conventional care E2: Cognitive dual task training + Conventional care E3: Motor imagery + Conventional care Duration: 15min/session, 5d/wk for 2wks	E1 v E2/E3: Berg Balance scale (-) Functional gait assessment scale (+exp1)
Cognitive Sensory Motor Training vs Conventional Therapy		
Kim et al. (2021a) RCT (6) Nstart=39 Nend=35 TPS=Chronic A vs 0 vs B	E: Cognitive Sensory Motor Training + conventional physical therapy C: Conventional physical therapy Duration: E: 30min/d CSMT + 30min/d Conventional PT, 5d/wk, 6wks C: 30min, 2sessions/d, 5d/wk, 6wks conventional physical therapy	E vs C: Lower extremity muscle strength of tibialis anterior (+exp) Medical research council (+exp) Romberg balance test Eye open surface area (+exp) Eye open average speed (+exp) Eye close surface area (+exp) Eye close average speed (+exp) Limits of stability (+exp)
Mental Practice vs Cognitive Training		
Guerra et al. (2022) RCT (6) Nstart=18 Nend=16 TPS=Acute A + B vs C + B	E: Mental Practice + physical exercise protocol C: Cognitive training + Physical exercise protocol Duration: 70min/d(30min mental practice, 40min physical activity), 3d/wk, 4wks	E vs C: TUG(-) Gait speed(-) Muscle strength(-) DASS-21(-) WHOQOL(-)

Motor Imagery with Virtual Reality vs Virtual Reality Alone		
Masood et al. (2024) RCT (8) Nstart=30 Nend=28 TPS=Not reported A + B vs B Also in Table 26 (Virtual Reality)	E: Motor imagery + VR training C: VR training + Conventional therapy Duration: 45-50min/d, 3d/wk, 6wks	E vs C: FMA-LE (+exp) BBS (+exp) WGS (+exp) TUG (+exp) 10MWT (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Zafar et al. (2024) RCT (7) Nstart=30 Nend=29 TPS=Subacute A + B vs A Primary listing: Table 16 (Dual-Task Training)	E: Dual-task training + motor imagery C: Dual-task training Duration: 28min (7 task x 4min)/d, 8wks	E vs C: Functional Reach Test (-) TUG (+exp) BBS (+exp) Movement Imagery Questionnaire-3 (+exp) internal imagery (+exp) external imagery (+exp) kinesthetic (+exp)
Suchetha et al. (2018) RCT (5) Nstart=30 Nend=28 TPS=Subacute A vs 0 Primary listing: Table 2 (Sit-to-Stand Training)	E: Modified sit-to-stand training with mental practice + conventional therapy C: Conventional Treatment Duration: 1h/d, 5d/wk, 2wks	E vs C: Berg Balance Scale (+exp) Dynamic Gait Index (+exp)
Verma et al. (2011) RCT (8) Nstart=30 Nend=30 TPS=Subacute A + B vs 0 Primary listing: Table 5 (Task-Specific Training)	E: Task-oriented circuit class training + Motor imagery C: Standard rehabilitation (Bobath) Duration: 15min/d, 7d/wk, 2wks motor imagery, 25min/d, 7d/wk, 2wks task-oriented circuit class training, 40min/d, 7d/wk, 2wks standard rehabilitation	E vs C: Functional ambulation category (+exp) Rivermead Visual gait assessment (+exp) Step length asymmetry (-) Cadence (+exp) Stride length asymmetry (-) 10-meter Walk test Maximum speed (-) Comfortable speed (+exp) 6-Minute Walk test (+exp)
Kim et al. (2011) RCT crossover (4) Nstart=18 Nend=15 TPS=Chronic A1 vs A2 vs B1 vs B2 Primary listing: Table 22 (Rhythmic Auditory Stimulation)	E1: Visual Locomotor Imagery Training E2: Kinesthetic Locomotor Imagery Training E3: Visual Locomotor Training with Auditory Step Rhythm E4: Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm Duration: 15 min/condition, 24 hr washout	E1 vs E2: Timed Up and Go Test (-) E1 vs E3: Timed Up and Go Test (-) E1 vs E4: Timed Up and Go Test (+exp4) muscle activation by EMG parameter (+exp4) E2 vs E3: Timed Up and Go Test (-) E2 vs E4: Timed Up and Go Test (-) E3 vs E4: Timed Up and Go Test (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Gait Training with Motor Imagery or Mental Practice may produce greater improvements in motor recovery than Gait Training.	2	Anwar et al. 2022; Cho et al. 2013b
1b	Task-Specific Training with Mental Practice may not have a difference in efficacy when compared to Conventional Training or No Treatment for improving motor recovery.	1	Malouin et al. 2009
1a	Neurofeedback Facilitation with Motor Imagery may not have a difference in efficacy when compared to Sham for improving motor recovery.	2	Mihara et al. 2024; Mihara et al. 2021
1b	Mental Practice may not have a difference in efficacy when compared to Muscle Relaxation for improving motor recovery.	1	Oostra et al. 2015
1a	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving motor recovery.	3	Yin et al. 2021; Schuster et al. 2012; Liu et al. 2004
1b	Motor Imagery with Virtual Reality may produce greater improvements in motor recovery than Virtual Reality Alone.	1	Masood et al. 2024

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training with Mental Practice may not have a difference in efficacy when compared to Conventional Training or No Treatment for improving biomechanical gait measures.	1	Verma et al. 2011
1b	Action Observation may not have a difference in efficacy when compared to Motor Imagery or Conventional Therapy for improving biomechanical gait measures.	1	Kim et al. 2013
1b	Circuit Training with Mental Practice may not have a difference in efficacy when compared to Circuit Training with Education for improving biomechanical gait measures.	1	Bovonsunthonchai et al. 2020
2	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving biomechanical gait measures.	1	Diaz-Lopez et al. 2022
1b	Task-oriented circuit class training with Motor imagery may not have a difference in efficacy when compared to rehabilitation (Bobath) for improving biomechanical gait measures.	1	Verma et al. 2011

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training with Mental Practice may produce greater improvements in biomechanical balance measures than Conventional Training or No Treatment.	1	Malouin et al. 2009
2	Proprioception Training with Motor Imagery may produce greater improvements in biomechanical balance measures than Proprioception Training.	1	Lee et al. 2015a

1b	Cognitive Sensory Motor Training may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Kim et al. 2021a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training with Mental Practice may produce greater improvements in muscle strength than Task-Specific Training.	1	Kumar et al. 2016
1b	Circuit Training with Mental Practice may not have a difference in efficacy when compared to Circuit Training with Education for improving muscle strength.	1	Bovonsunthonchai et al. 2020
1b	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving muscle strength.	1	Braun et al. 2012
1b	Cognitive Sensory Motor Training may produce greater improvements in muscle strength than Conventional Therapy.	1	Kim et al. 2021a
1b	Mental Practice may not have a difference in efficacy when compared to Cognitive Training for improving muscle strength.	1	Guerra et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.	1	Kim et al. 2011

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Proprioception Training with Motor Imagery may produce greater improvements in sensory and proprioceptive function than Proprioception Training.	1	Lee et al. 2015a

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Neurofeedback Facilitation with Motor Imagery may not have a difference in efficacy when compared to Sham for improving activities of daily living.	2	Mihara et al. 2024; Mihara et al. 2021
1b	Mental Practice may not have a difference in efficacy when compared to Muscle Relaxation for improving activities of daily living.	1	Oostra et al. 2015
1a	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving activities of daily living.	6	Diaz-Lopez et al. 2022; Yin et al. 2021; Braun et al. 2012; Schuster et al. 2012; Bovend'Eerdt et al. 2010; Liu et al. 2004

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Gait Training with Motor Imagery or Mental Practice may produce greater improvements in gait speed than Gait Training.	3	Anwar et al. 2022; Sawant 2020; Cho et al. 2013b

1b	Task-Specific Training with Mental Practice may produce greater improvements in gait speed than Task-Specific Training.	1	Kumar et al. 2016
1a	Task-Specific Training with Mental Practice may not have a difference in efficacy when compared to Conventional Training or No Treatment for improving gait speed.	2	Verma et al. 2011; Malouin et al. 2009
1b	There is conflicting evidence about the effect of Action Observation when compared to Motor Imagery or Conventional Therapy for improving gait speed.	1	Kim et al. 2013
1a	Neurofeedback Facilitation with Motor Imagery may not have a difference in efficacy when compared to Sham for improving gait speed.	2	Mihara et al. 2024; Mihara et al. 2021
1b	Mental Practice may produce greater improvements in gait speed than Muscle Relaxation.	1	Oostra et al. 2015
1b	Circuit Training with Mental Practice may not have a difference in efficacy when compared to Circuit Training with Education for improving gait speed.	1	Bovonsunthonchai et al. 2020
1a	There is conflicting evidence about the effect of Mental Imagery when compared to Conventional Training or Sham for improving gait speed.	2	Dickstein et al. 2013; Braun et al. 2012
1b	Cognitive Sensory Motor Training may produce greater improvements in gait speed than Conventional Therapy.	1	Kim et al. 2021a
1b	Mental Practice may not have a difference in efficacy when compared to Cognitive Training for improving gait speed.	1	Guerra et al. 2022
1b	Motor Imagery with Virtual Reality may produce greater improvements in gait speed than Virtual Reality Alone.	1	Masood et al. 2024
1b	There is conflicting evidence about the effect of Task-oriented circuit class training with Motor imagery when compared to rehabilitation (Bobath) for improving gait speed.	1	Verma et al. 2011

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Task-Specific Training with Mental Practice may produce greater improvements in gait endurance than Conventional Training or No Treatment.	1	Verma et al. 2011
1b	Circuit Training with Mental Practice may not have a difference in efficacy when compared to Circuit Training with Education for improving gait endurance.	1	Aung et al. 2022
1b	Body Awareness Therapy may not have a difference in efficacy when compared to Continuing Usual Daily Activities for improving gait endurance.	1	Lindvall et al. 2014
1b	Task-oriented circuit class training with Motor imagery may produce greater improvements in gait endurance than rehabilitation (Bobath).	1	Verma et al. 2011

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Motor Imagery or Mental Practice may produce greater improvements in functional mobility than Gait Training.	2	Sawant 2020; Cho et al. 2013b
1a	Task-Specific Training with Mental Practice may produce greater improvements in functional mobility than Conventional Training or No Treatment.	2	Verma et al. 2011; Malouin et al. 2009

2	Proprioception Training with Motor Imagery may not have a difference in efficacy when compared to Proprioception Training for improving functional mobility.	1	Lee et al. 2015a
1b	Action Observation may not have a difference in efficacy when compared to Motor Imagery or Conventional Therapy for improving functional mobility.	1	Kim et al. 2013
1a	Neurofeedback Facilitation with Motor Imagery may produce greater improvements in functional mobility than Sham.	2	Mihara et al. 2024; Mihara et al. 2021
1b	Circuit Training with Mental Practice may produce greater improvements in functional mobility than Circuit Training with Education.	1	Aung et al. 2022
2	Visual Locomotor Imagery Training may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Imagery Training may not have a difference in efficacy when compared to Visual Locomotor Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Imagery Training may result in lesser improvements in functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.	1	Kim et al. 2011
2	Kinesthetic Locomotor Imagery Training may not have a difference in efficacy when compared to Visual Locomotor Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Kinesthetic Locomotor Imagery Training may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Training with Auditory Step Rhythm may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
1a	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving functional mobility.	4	Diaz-Lopez et al. 2022; Braun et al. 2012; Hosseini et al. 2012; Bovend'Eerdt et al. 2010
1b	Body Awareness Therapy may not have a difference in efficacy when compared to Continuing Usual Daily Activities for improving functional mobility.	1	Lindvall et al. 2014
2	Motor dual task training with Conventional care may produce greater improvements in functional mobility than Cognitive dual task training with Conventional care or Motor imagery and Conventional care.	1	Mishra et al. 2015
1b	Mental Practice may not have a difference in efficacy when compared to Cognitive Training for improving functional mobility.	1	Guerra et al. 2022
1b	Motor Imagery with Virtual Reality may produce greater improvements in functional mobility than Virtual Reality Alone.	1	Masood et al. 2024
1b	Dual-task training with motor imagery may produce greater improvements in functional mobility than Dual-task training.	1	Zafar et al. 2024
2	Modified sit-to-stand training with mental practice with conventional therapy may produce greater improvements in functional mobility than Conventional Treatment.	1	Suchetha et al. 2018
1b	Task-oriented circuit class training with Motor imagery may produce greater improvements in functional mobility than rehabilitation (Bobath).	1	Verma et al. 2011

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Gait Training with Motor Imagery or Mental Practice may produce greater improvements in balance than Gait Training.	1	Cho et al. 2013b
2	Proprioception Training with Motor Imagery may produce greater improvements in balance than Proprioception Training.	1	Lee et al. 2015a
1b	Action Observation may not have a difference in efficacy when compared to Motor Imagery or Conventional Therapy for improving balance.	1	Kim et al. 2013
1a	There is conflicting evidence about the effect of Neurofeedback Facilitation with Motor Imagery when compared to Sham for improving balance.	2	Mihara et al. 2024; Mihara et al. 2021
1a	Mental Imagery may produce greater improvements in balance than Conventional Training or Sham.	5	Diaz-Lopez et al. 2022; Yin et al. 2021; Braun et al. 2012; Schuster et al. 2012; Hosseini et al. 2012
1b	Body Awareness Therapy may not have a difference in efficacy when compared to Continuing Usual Daily Activities for improving balance.	1	Lindvall et al. 2014
2	Motor dual task training with Conventional care may not have a difference in efficacy when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care for improving balance.	1	Mishra et al. 2015
1b	Cognitive Sensory Motor Training may produce greater improvements in balance than Conventional Therapy.	1	Kim et al. 2021a
1b	Motor Imagery with Virtual Reality may produce greater improvements in balance than Virtual Reality Alone.	1	Masood et al. 2024
1b	Dual-task training with motor imagery may produce greater improvements in balance than Dual-task training.	1	Zafar et al. 2024
2	Modified sit-to-stand training with mental practice with conventional therapy may produce greater improvements in balance than Conventional Treatment.	1	Suchetha et al. 2018

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving falls and fear of falling.	2	Dickstein et al. 2013; Schuster et al. 2012
1b	Body Awareness Therapy may not have a difference in efficacy when compared to Continuing Usual Daily Activities for improving falls and fear of falling.	1	Lindvall et al. 2014

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Mental Imagery may produce greater improvements in quality of life than Conventional Training or Sham.	1	Diaz-Lopez et al. 2022
1b	Body Awareness Therapy may not have a difference in efficacy when compared to Continuing Usual Daily Activities for improving quality of life.	1	Lindvall et al. 2014

1b	Mental Practice may not have a difference in efficacy when compared to Cognitive Training for improving quality of life.	1	Guerra et al. 2022

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving cognition.	1	Schuster et al. 2012

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Neurofeedback Facilitation with Motor Imagery may not have a difference in efficacy when compared to Sham for improving upper extremity function.	2	Mihara et al. 2024; Mihara et al. 2021
1a	Mental Imagery may not have a difference in efficacy when compared to Conventional Training or Sham for improving upper extremity function.	2	Bovend'Eerdt et al. 2010; Liu et al. 2004

Key Points

- Gait Training with Motor Imagery or Mental Practice may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to Gait Training.
- Task-Specific Training with Mental Practice may be beneficial for improving muscle strength and gait speed after stroke when compared to Task-Specific Training.
- Task-Specific Training with Mental Practice may be beneficial for improving biomechanical balance measures, gait endurance, and functional mobility, but not motor recovery, biomechanical gait measures, and gait speed, after stroke when compared to Conventional Training or No Treatment.
- Proprioception Training with Motor Imagery may be beneficial for improving biomechanical balance measures, sensory and proprioceptive function, and balance, but not functional mobility, after stroke when compared to Proprioception Training.
- Action Observation may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Motor Imagery or Conventional Therapy; the literature is mixed regarding gait speed.
- Neurofeedback Facilitation with Motor Imagery may be beneficial for improving functional mobility, but not motor recovery, activities of daily living, and gait speed, after stroke when compared to Sham; the literature is mixed regarding balance.
- Mental Practice may be beneficial for improving gait speed, but not motor recovery and activities of daily living, after stroke when compared to Muscle Relaxation.
- Circuit Training with Mental Practice may be beneficial for improving functional mobility, but not biomechanical gait measures, muscle strength, gait speed, and gait endurance, after stroke when compared to Circuit Training with Education.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures and functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.

- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Visual Locomotor Training with Auditory Step Rhythm may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Mental Imagery may be beneficial for improving balance and quality of life, but not motor recovery, biomechanical gait measures, muscle strength, activities of daily living, functional mobility, and falls and fear of falling, after stroke when compared to Conventional Training or Sham; the literature is mixed regarding gait speed.
- Body Awareness Therapy may not be beneficial for improving gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Continuing Usual Daily Activities.
- Motor dual task training with Conventional care may be beneficial for improving functional mobility, but not balance, after stroke when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care.
- Cognitive Sensory Motor Training may be beneficial for improving biomechanical balance measures, muscle strength, gait speed, and balance after stroke when compared to Conventional Therapy.
- Mental Practice may not be beneficial for improving muscle strength, gait speed, functional mobility, and quality of life after stroke when compared to Cognitive Training.
- Motor Imagery with Virtual Reality may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to Virtual Reality Alone.
- Dual-task training with motor imagery may be beneficial for improving functional mobility and balance after stroke when compared to Dual-task training.
- Modified sit-to-stand training with mental practice with conventional therapy may be beneficial for improving functional mobility and balance after stroke when compared to Conventional Treatment.
- Task-oriented circuit class training with Motor imagery may be beneficial for improving gait endurance and functional mobility, but not biomechanical gait measures, after stroke when compared to rehabilitation (Bobath); the literature is mixed regarding gait speed.

Summary of Key Points: Mental Practice

Intervention	Control(s)	Function domain(s)	Effect
Gait Training with Motor Imagery or Mental Practice	Gait Training	Motor recovery, gait speed, functional mobility, balance	+
Task-Specific Training with Mental Practice	Task-Specific Training	Muscle strength, gait speed	+
Task-Specific Training with Mental Practice	Conventional Training or No Treatment	Biomechanical balance measures, gait endurance, functional mobility	+
Task-Specific Training with Mental Practice	Conventional Training or No Treatment	Motor recovery, biomechanical gait measures, gait speed	–
Proprioception Training with Motor Imagery	Proprioception Training	Biomechanical balance measures, sensory and proprioceptive function, balance	+
Proprioception Training with Motor Imagery	Proprioception Training	Functional mobility	–
Action Observation	Motor Imagery vs Conventional Therapy	Biomechanical gait measures, functional mobility, balance	–
Action Observation	Motor Imagery vs Conventional Therapy	Gait speed	=
Neurofeedback Facilitation with Motor Imagery	Sham	Functional mobility	+

Neurofeedback Facilitation with Motor Imagery	Sham	Motor recovery, activities of daily living, gait speed	–
Neurofeedback Facilitation with Motor Imagery	Sham	Balance	=
Mental Practice	Muscle Relaxation	Gait speed	+
Mental Practice	Muscle Relaxation	Motor recovery, activities of daily living	–
Circuit Training with Mental Practice	Circuit Training with Education	Functional mobility	+
Circuit Training with Mental Practice	Circuit Training with Education	Biomechanical gait measures, muscle strength, gait speed, gait endurance	–
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training	Functional mobility	–
Visual Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm	Functional mobility	–
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Neurophysiological measures, functional mobility	–
Kinesthetic Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm	Functional mobility	–
Kinesthetic Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Functional mobility	–
Visual Locomotor Training with Auditory Step Rhythm	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Functional mobility	–
Mental Imagery	Conventional Training or Sham	Balance, quality of life	+
Mental Imagery	Conventional Training or Sham	Motor recovery, biomechanical gait measures, muscle strength, activities of daily living, functional mobility, falls and fear of falling	–
Mental Imagery	Conventional Training or Sham	Gait speed	=
Body Awareness Therapy	Continuing Usual Daily Activities	Gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care	Functional mobility	+
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care	Balance	–
Cognitive Sensory Motor Training	Conventional Therapy	Biomechanical balance measures, muscle strength, gait speed, balance	+
Mental Practice	Cognitive Training	Muscle strength, gait speed, functional mobility, quality of life	–
Motor Imagery with Virtual Reality	Virtual Reality Alone	Motor recovery, gait speed, functional mobility, balance	+
Dual-task training with motor imagery	Dual-task training	Functional mobility, balance	+

Modified sit-to-stand training with mental practice with conventional therapy	Conventional Treatment	Functional mobility, balance	+
Task-oriented circuit class training with Motor imagery	rehabilitation (Bobath)	Gait endurance, functional mobility	+
Task-oriented circuit class training with Motor imagery	rehabilitation (Bobath)	Biomechanical gait measures	−
Task-oriented circuit class training with Motor imagery	rehabilitation (Bobath)	Gait speed	=

Action Observation



Adopted from: https://www.youtube.com/watch?v=QE3CUhmKi7U

Action observation is a form of therapy whereby an individual observes another individual performing a motor task, either on a video or a real demonstration, and then may attempt to perform the same task themselves. For example, the patient may be instructed to watch a video showing an adult stretching out his hand to pick up a cup, bringing the cup to his mouth, and then returning the cup to its initial position - the act of drinking. After observing the video sequence for a time, the participants may or may not be asked to perform the same action (Borges et al., 2018). The therapy is considered a multisensory approach designed to increase cortical excitability in the primary motor cortex by activating central representations of actions through the mirror neuron system (Kim & Kim, 2015). Although action observation has been evaluated mainly in healthy volunteers, a few studies have evaluated its benefit in motor relearning following stroke.

A total of fourteen RCTs were found that evaluated action observation for lower extremity motor rehabilitation. Two RCTs compared Backward Walking Action Observation with Sham or Conventional therapy (Moon et al. 2022; Moon & Bae 2019). Two RCTs compared Action Observation Physical Training with Sham Action Observation Training (Shamsi et al. 2022; Kim et al. 2018b). One RCT compared Functional Action Observation with General Action Observation (Oh et al. 2019). Five RCTs compared Action Observation Training with Gait Training with Gait Training (Park et al. 2017b; Park et al. 2015c; Park et al. 2014b; Kim et al. 2013; Kim & Kim 2012a). One RCT compared Action Observation with Treadmill Training with Treadmill Training (Bang et al. 2013). Two RCTs compared Action Observation with FES and Gait Training with Gait Training and FES (Bae et al. 2017; Park & Kang 2013a). One RCT evaluated Action Observation with Rhythmic Auditory Stimulation (Cho et al. 2020a).

In addition, three RCTs in which action observation formed part of a combined or comparative intervention are cross-referenced at the end of Table 18; their primary listings appear in other tables.

The methodological details and results of all fourteen RCTs are presented in Table 18.

Table 18. RCTs Evaluating Action Observation for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Backward Walking Action Observation vs Sham or Conventional therapy		
Moon et al. (2022) RCT (6) Nstart=29 Nend=24 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Backward walking observational training & Conventional therapy C: Landscape observational training (sham) & Conventional therapy Duration: 30min/d, 3d/wk, for 4wks observational training & 30min/d, 5d/wk, for 4wks conventional therapy	E vs C: Gait velocity (+exp) Step length (+exp) Stride length (+exp) 5 timed sit-to stand(+exp) Activities-specific balance confidence scale(+exp) Affected side Weight distribution (+exp) Center of pressure displacement (+exp) Velocity (+exp) Length (+exp)
Moon & Bae (2019) RCT (6) Nstart=17 Nend=14 TPS=Chronic A vs B + A Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Action observation of backward walking C: Landscape video + Backward walking training Duration: 30min/d, 5d/wk for 4wks - Conventional therapy, 10min/d - Action observation or Landscape video, 20min/d - Backwards walking training	E vs C: Dynamic Gait Index (+exp) 10-Metre Walking Test (+exp) Timed Up and Go Test (+exp)
Action Observation Physical Training vs Sham Action Observation Training		
Shamsi et al. (2022) RCT (8) Nstart=14 Nend=14 TPS=Chronic A vs B	E: Observation training depicting exercises C: Observation nature pictures (sham) Duration: 40min/d, 3d/wk, 4wks conventional PT & 12min/d, 3d/wk, 4wks action observation training/sham	E vs C: Stride length (Affected/Unaffected) (-) Step length (Affected/Unaffected) (-) Gait Velocity (Affected/Unaffected) (-) Stance phase Affected (-) Unaffected (+exp) Peaks of vertical ground reaction force (Affected/Unaffected) (-) Gait asymmetry index (-)
Kim et al. (2018b) RCT crossover (5) Nstart=24 Nend=21 TPS=Chronic A vs B	E: Action observation physical training C: Landscape imagery observation physical training (Sham) Duration: 30min/d, 3d/wk, for 6wks - no washout	E vs C: Limit of Stability (+exp) Weight Distribution Index (-) Timed-up-and go (-) Dynamic Gait Index (-)
Functional Action Observation vs General Action Observation		
Oh et al. (2019) RCT (4) Nstart=40 Nend=35 TPS=Subacute A1 vs A2	E: Functional Action Observation C: General Action Observation Duration: 30min/d, 5d/wk, for 4wks	E vs C: Velocity (+exp) Step length (+exp) Stride length (+exp) Cadence (+exp) Functional Gait Assessment (+exp)

Action Observation Training with Gait Training vs Gait Training		
Park et al. (2017b) RCT (6) Nstart=26 Nend=25 TPS=Chronic A + B vs C + B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Action observation of community ambulation + Functional training based on neurodevelopmental techniques C: Landscape observation + Functional training based on neurodevelopmental techniques Duration: 30min/d, 5sessions/d for 4wks Functional training & 30min/d, 3d/wk for 4wks Action or landscape observation	E vs C: 10-meter Walk Test (+exp) Community Walk Test (+exp) Activity-specific Balance Confidence Scale (+exp) Gait Cycle Time (-) Stride Length (+exp) Single Support (+exp) Double Support (-) Gait Velocity (+exp) Symmetry Index (-) Swing (-) Stance (-) Step (-)
Park et al. (2015c) RCT (4) Nstart=40 Nend=40 TPS=Chronic A vs B	E: Gait training + Action observation + General physical therapy C: Gait training + Nature video + General physical therapy Duration: 70min/d, 5d/wk for 8wks	E vs C: 10-Metre Walk Test (+exp) Timed Up & Go Test (+exp) Limit of stability (+exp) Sway speed (+exp) Sway area (-)
Park et al. (2014b) RCT (7) Nstart=24 Nend=21 TPS=Chronic A vs 0	E: Action observation + Gait training C: Sham + Gait training Duration: 30min/d, 3d/wk, 4wks	E vs C: 10m Walk Test (+exp) Figure-of-8 Walk Test (+exp) Dynamic Gait Index (+exp) Gait Symmetry Scores (-)
Kim et al. (2013) RCT (6) Nstart=30 Nend=27 TPS=Chronic A vs B vs 0 Also in Table 17 (Mental Practice)	E1: Action observation training + physical training E2: Motor imagery training + physical training C: physical training Duration: 30min/d action observation and motor imagery & 1h/d, physical training, 5d/wk for 4wks	E1 vs C: Timed Up and Go (+exp1) Functional Reach test (-) Walking Ability questionnaire (-) Functional ambulation category (-) Gait speed (+exp1) Cadence (+exp1) step length (-) Single limb support (+exp1) Double limb support (-) E2 vs E1/C: Timed Up and Go (-) Functional Reach test (-) Walking Ability questionnaire (-) Functional ambulation category (-) Gait speed (-) Cadence (-) step length (-) Single limb support (-) Double limb support (-)
Kim & Kim (2012a) RCT (5) Nstart=30 Nend=30 TPS=Subacute	E: Physical therapy + Action observation C: Sham + Physical therapy Duration: 10min action observation & 30min physical therapy	E vs C: Gait speed (+exp) Step length (+exp) Stride length (+exp) Single support time (+exp)

A vs 0		Double support time (+exp) Cadence (+exp)
Action Observation with Treadmill Training vs Treadmill Training		
Bang et al. (2013) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: Action observational training + Treadmill training C: Sham action observational training + Treadmill training Duration: 40min/d, 5d/wk for 4wks	E vs C: Timed Up and Go test (+exp) 10m Walk test (+exp) 6min Walk test (+exp) Max Knee Angle in Swing Phase (+exp)
Action Observation with FES and Gait Training vs Gait Training and FES		
Bae et al. (2017) RCT (6) Nstart=18 Nend=18 TPS=Chronic A + B vs C Also in Table 28 (Functional Electrical Stimulation); Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Dual-afferent sensory input (EMG-triggered FES + Action Observation) C: Functional electric stimulation (FES) Duration: 20min/d, 5d/wk, for 4wks	E vs C: Movement-related Cortical Potential Bereitschafts Potential (-) Negative Slope (-) Motor Potential (+exp) Muscle Activity Tibialis Anterior (-) Medial Gastrocnemius (-) H-reflex (-) Balance Surface Area Ellipse (-) Surface Area Length (-) Limit Of Stability (+exp)
Park & Kang (2013a) RCT (5) Nstart=20 Nend=20 TPS=Chronic A + B vs A Also in Table 28 (Functional Electrical Stimulation)	E: Gait training + FES + Action observation C: Gait training + FES Duration: 15min/d, 5d/wk for 6wks	E vs C: Weight distribution Right Left (+exp) Anterior Posterior (-) Stability index (+exp) Gait speed (+exp)
Action Observation with Rhythmic Auditory Stimulation		
Cho et al. (2020a) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs A Also in Table 22 (Rhythmic Auditory Stimulation)	E: Action observation training + Rhythmic auditory stimulation + PT C: Action observation + PT Duration: 15min, 2sessions/d, 3d/wk, for 8wks action observation & 5d/wk, for 8wks PT	E vs C: Postural stability test Overall balance index (+exp) Anteroposterior balance index (+exp) Mediolateral balance index (+exp) Fall Risk (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Backward Walking Action Observation may produce greater improvements in biomechanical gait measures than Sham or Conventional therapy.	1	Moon et al. 2022
1b	Action Observation Physical Training may not have a difference in efficacy when compared to Sham Action Observation Training for improving biomechanical gait measures.	1	Shamsi et al. 2022
2	Functional Action Observation may produce greater improvements in biomechanical gait measures than General Action Observation.	1	Oh et al. 2019
1a	Action Observation Training with Gait Training may not have a difference in efficacy when compared to Gait Training for improving biomechanical gait measures.	4	Park et al. 2017b; Park et al. 2014b; Kim et al. 2013; Kim & Kim 2012a
1b	Action Observation with Treadmill Training may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Bang et al. 2013

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Backward Walking Action Observation may produce greater improvements in biomechanical balance measures than Sham or Conventional therapy.	1	Moon et al. 2022
2	Action Observation Physical Training may not have a difference in efficacy when compared to Sham Action Observation Training for improving biomechanical balance measures.	1	Kim et al. 2018b
2	Action Observation Training with Gait Training may produce greater improvements in biomechanical balance measures than Gait Training.	1	Park et al. 2015c
1b	Action Observation with functional electrical stimulation and Gait Training may produce greater improvements in biomechanical balance measures than Gait Training and functional electrical stimulation.	2	Bae et al. 2017; Park & Kang 2013a
1b	Action observation training with Rhythmic auditory stimulation and physical therapy may produce greater improvements in biomechanical balance measures than Action observation with physical therapy.	1	Cho et al. 2020a

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Action Observation with functional electrical stimulation and Gait Training may not have a difference in efficacy when compared to Gait Training and functional electrical stimulation for improving neurophysiological measures.	1	Bae et al. 2017

2. Activities

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Backward Walking Action Observation may produce greater improvements in gait speed than Sham or Conventional therapy.	1	Moon et al. 2022
1b	Action Observation Physical Training may not have a difference in efficacy when compared to Sham Action Observation Training for improving gait speed.	1	Shamsi et al. 2022
2	Functional Action Observation may produce greater improvements in gait speed than General Action Observation.	1	Oh et al. 2019
1a	Action Observation Training with Gait Training may produce greater improvements in gait speed than Gait Training.	5	Park et al. 2017b; Park et al. 2015c; Park et al. 2014b; Kim et al. 2013; Kim & Kim 2012a
1b	Action Observation with Treadmill Training may produce greater improvements in gait speed than Treadmill Training.	1	Bang et al. 2013
2	Action Observation with functional electrical stimulation and Gait Training may produce greater improvements in gait speed than Gait Training and functional electrical stimulation.	1	Park & Kang 2013a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Action Observation with Treadmill Training may produce greater improvements in gait endurance than Treadmill Training.	1	Bang et al. 2013

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Backward Walking Action Observation may produce greater improvements in functional mobility than Sham or Conventional therapy.	2	Moon et al. 2022; Moon & Bae 2019
2	Action Observation Physical Training may not have a difference in efficacy when compared to Sham Action Observation Training for improving functional mobility.	1	Kim et al. 2018b
2	Functional Action Observation may produce greater improvements in functional mobility than General Action Observation.	1	Oh et al. 2019
1a	Action Observation Training with Gait Training may not have a difference in efficacy when compared to Gait Training for improving functional mobility.	4	Park et al. 2017b; Park et al. 2015c; Park et al. 2014b; Kim et al. 2013
1b	Action Observation with Treadmill Training may produce greater improvements in functional mobility than Treadmill Training.	1	Bang et al. 2013

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Action Observation Training with Gait Training may not have a difference in efficacy when compared to Gait Training for improving balance.	1	Kim et al. 2013
1b	Action Observation with functional electrical stimulation and Gait Training may not have a difference in efficacy when compared to Gait Training and functional electrical stimulation for improving balance.	1	Bae et al. 2017

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Backward Walking Action Observation may produce greater improvements in falls and fear of falling than Sham or Conventional therapy.	1	Moon et al. 2022
1b	Action Observation Training with Gait Training may produce greater improvements in falls and fear of falling than Gait Training.	1	Park et al. 2017b
1b	Action observation training with Rhythmic auditory stimulation and physical therapy may produce greater improvements in falls and fear of falling than Action observation with physical therapy.	1	Cho et al. 2020a

Key Points

- Backward Walking Action Observation may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and falls and fear of falling after stroke when compared to Sham or Conventional therapy.
- Action Observation Physical Training may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Sham Action Observation Training.
- Functional Action Observation may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to General Action Observation.
- Action Observation Training with Gait Training may be beneficial for improving biomechanical balance measures, gait speed, and falls and fear of falling, but not biomechanical gait measures, functional mobility, and balance, after stroke when compared to Gait Training.
- Action Observation with Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Action Observation with functional electrical stimulation and Gait Training may be beneficial for improving biomechanical balance measures and gait speed, but not neurophysiological measures and balance, after stroke when compared to Gait Training and functional electrical stimulation.
- Action observation training with Rhythmic auditory stimulation and physical therapy may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Action observation with physical therapy.

Summary of Key Points: Action Observation

Intervention	Control(s)	Function domain(s)	Effect
Backward Walking Action Observation	Sham or Conventional therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, falls and fear of falling	+
Action Observation Physical Training	Sham Action Observation Training	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility	−
Functional Action Observation	General Action Observation	Biomechanical gait measures, gait speed, functional mobility	+
Action Observation Training with Gait Training	Gait Training	Biomechanical balance measures, gait speed, falls and fear of falling	+
Action Observation Training with Gait Training	Gait Training	Biomechanical gait measures, functional mobility, balance	−
Action Observation with Treadmill Training	Treadmill Training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+

Action Observation with functional electrical stimulation and Gait Training	Gait Training and functional electrical stimulation	Biomechanical balance measures, gait speed	+
Action Observation with functional electrical stimulation and Gait Training	Gait Training and functional electrical stimulation	Neurophysiological measures, balance	–
Action observation training with Rhythmic auditory stimulation and physical therapy	Action observation with physical therapy	Biomechanical balance measures, falls and fear of falling	+

Mirror Therapy



Adopted from: https://en.wikipedia.org/wiki/Mirror_box

In mirror therapy, a mirror is placed beside the unaffected limb, blocking view of the affected limb and creating an illusion of two limbs as if they are both functioning normally. Mirror therapy functions through a process known as mirror visual feedback wherein the movement of one limb is perceived as movement from the other limb (Deconinck et al., 2015). In the brain, mirror therapy is thought to induce neuroplastic changes that promote recovery by increasing excitability of the ipsilateral motor cortex which projects to the paretic limb (Deconinck et al. 2015). Ramachandran et al. (1995) first used this method to understand the effect of vision on phantom sensation and pain in arm amputees. Only recently has it been explored as method for lower limb rehabilitation in stroke survivors (Li et al., 2018).

A total of 26 RCTs were found that evaluated mirror therapy for lower extremity motor rehabilitation. Thirteen RCTs compared Mirror Therapy with Conventional Therapy or Sham Therapy (Cui et al. 2022; Armat et al. 2022; Verma et al. 2021; Ikizler May et al. 2020; Arya et al. 2019; Simpson et al. 2019; Bhoraniya et al. 2018; Wang et al. 2017; Kim et al. 2016b; Ji & Kim 2015; Salem et al. 2015; Mohan et al. 2013; Sütbeyaz et al. 2007). One RCT compared Treadmill Training Combined with Mirror Therapy with Treadmill Training (Broderick et al. 2019). Two RCTs compared Mirror Therapy with Task Oriented Training with Task Oriented Training (Cha et al. 2016; Choi et al. 2015c). Two RCTs compared Mirror Therapy with Stimulation with Mirror Therapy or Task Oriented Training (Lee et al. 2015c; Lin et al. 2014a). Two RCTs compared Mirror Therapy combined with NMES with Mirror Therapy with Sham NMES or Conventional Therapy (Xu et al. 2017; Lee et al. 2016). Two RCTs compared Mirror Therapy combined with FES with Conventional Therapy (Li et al. 2024a; Salhab et al. 2016). One RCT compared Mirror Therapy with rTMS with Mirror Therapy with Sham Stimulation (Cha & Kim 2015). One RCT compared Mirror Therapy with Virtual Reality with Conventional therapy (Miclaus et al. 2021). One RCT compared Mirror Therapy with Verbal Feedback with Mirror Therapy Alone (Chaudhary et al. 2022).

In addition, six RCTs in which mirror therapy formed part of a combined or comparative intervention are cross-referenced at the end of Table 19; their primary listings appear in other tables.

The methodological details and results of all 26 RCTs are presented in Table 19.

Table 19. RCTs Evaluating Mirror Therapy for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Mirror Therapy vs Conventional Therapy or Sham Therapy		
Cui et al. (2022) RCT (4) Nstart=40 Nend=32 TPS=Acute A vs 0	E: Mirror Therapy (MT) + conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 5d/wk, for 3wks	E vs C: Fugl-Meyer Assessment-Lower Extremity (+exp) Berg Balance Scale (+exp) Modified Rivermead mobility index (+exp) Modified Barthel Index (+exp) Functional connectivity (+exp) Regional homogeniety (+exp) Fractional amplitude of low-frequency fluctuations (+exp)
Armat et al. (2022) RCT (6) Nstart=40 Nend=38 TPS=Not reported A1 vs A2	E: Balance and Mirror therapy C: Balance exercise + sham mirror therapy Duration: 30min/d, 5d/wk, 4wks	E vs C: BBS(+exp)
Verma et al. (2021) RCT (5) Nstart=64 Nend=56 TPS=Chronic A vs B	E: Mirror therapy + conventional rehabilitation C: Comprehensive rehabilitation + sham therapy Duration: 30min/d, 6d/wk, for 6wks	E vs C: Brunnstrom stages (no stat) Modified Ashworth Scale (no stat) Functional Ambulation Category (+exp) Berg Balance Scale (+exp)
Ikizler May et al. (2020) RCT (6) Nstart=42 Nend=42 TPS=Subacute A vs 0	E: Mirror Therapy (MT) + Conventional rehabilitation (CR) C: Conventional Rehabilitation (CT) Duration: 60-120min/d conventional care & 30min/d - mirror therapy, 5d/wk, for 4wks	E vs C: Brunnstrom (+exp) Functional Independence Measure (+exp) Motor (+exp) Berg Balance Scale (+exp) Motricity Index (+exp) 6-minute walking test (+exp) Functional Ambulation Category (+exp) Modified Ashworth Scale (-)
Arya et al. (2019) RCT (8) Nstart=36 Nend=36 TPS=Chronic A vs 0	E: Activity-based Mirror Therapy + Conventional Therapy C: Conventional Therapy Duration: 60min (30min Mirror therapy + 30min conventional /60 min conventional therapy), 30 sessions, 3-4d/wk, for 12wks	E vs C: Brunnstrom recovery stages-LE (+exp) Fugl-Meyer assessment-LE (+exp) Rivermead visual gait assessment (+exp) 10-metre walk test comfortable speed (-) Maximum speed (-)
Simpson et al. (2019) RCT (7)	E: Home-based isometric unilateral strength training + mirror therapy	E vs C:

Nstart=35 Nend=31 TPS=Chronic A + B vs A Also in Table 21 (Strength and Resistance Training); Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	C: Home-based isometric unilateral strength training Duration: 20min/d, 3d/wk, for 4wks	Trained ankle maximum voluntary contraction (-) Untrained ankle maximum voluntary contraction (-) 10-Metre Walk Test (-) Timed Up & Go Test (-) Modified Ashworth Scale (-) London Handicap Scale (-)
Bhoraniya et al. (2018) RCT (4) Nstart=26 Nend=26 TPS=Chronic A vs 0	E: Mirror therapy + Conventional Therapy C: Conventional therapy Duration: 45min/d, 5d/wk, for 4wks	E vs C: Step length Paretic side (+exp) Non-paretic Side (+exp) Stride length Paretic side (+exp) Non-paretic Side (+exp) Cadence (+exp) Velocity (+exp)
Wang et al. (2017) RCT (4) Nstart=36 Nend=36 TPS=Acute A vs 0	E: Mirror therapy C: Conventional therapy Duration: 40min/d, 5d/wk for 6wks	E vs C: Brunnstrom Staging Score (+exp) Berg Balance Scale (+exp) Functional Ambulation Category (+exp) Functional Independence Measure (+exp)
Kim et al. (2016b) RCT (7) Nstart=34 Nend=33 TPS=Subacute A vs 0	E: Mirror therapy + Conventional rehabilitation C: Sham mirror therapy + Conventional rehabilitation Duration: 30 min/d, 5d/wk, for 4wks MT/Sham MT + 30 min/d, 5d/wk, for 4wks conventional rehabilitation	E vs C: Balance Index Overall stability index (+exp) Anterior and posterior index (-) Medial and lateral stability index (+exp)
Ji & Kim (2015) RCT (7) Nstart=34 Nend=31 TPS=Subacute A vs 0	E: Mirror therapy + Conventional therapy C: Sham mirror therapy + Conventional therapy Duration: 15min/d, 5d/wk, for 4wks mirror/sham therapy & 30min/d, 5d/wk, for 4wks conventional therapy	E vs C: Single stance (+exp) Step length (+exp) Stride length (+exp) Velocity (-) Stance phase (-) Swing phase (-) Step width (-) Cadence (-)
Salem et al. (2015) RCT (4) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Mirror therapy + Conventional therapy C: Conventional therapy + Sham mirror therapy Duration: 2-5h/d, 5d/wk for 4wks Conventional therapy & 30min/d, 5d/wk for 4wks Mirror/sham therapy	E vs C: Passive ankle dorsiflexion range of motion (+exp) Modified Ashworth scale (-) Brunnstrom stages for the lower extremity (+exp) 10-Metre Walk Test (+exp)
Mohan et al. (2013) RCT (7) Nstart=22 Nend=22 TPS=Acute A vs 0	E: Mirror therapy + conventional therapy C: Sham mirror therapy + conventional therapy Duration: 60min/d, 6d/wk, 2wks conventional therapy 30min/d, 6d/wk, 2wks mirror therapy	E vs C: Fugl-Meyer assessment of lower extremity (-) Brunel Balance assessment (-) Functional ambulation categories (+exp)
Sütbeyaz et al. (2007)	E: Mirror therapy + conventional therapy	E vs C:

RCT (7) Nstart=40 Nend=40 TPS=Subacute A vs 0	C: Sham mirror therapy + conventional therapy Duration: 30min/d, 5d/wk, for 4wks mirror/placebo therapy & 120-300min/d, 5d/wk, for 4wks conventional therapy	Brunnstrom stages of motor recovery (No stats) Modified Ashworth Scale (No stats) Functional Ambulation Categories (No stats) Functional Independence Measure (motor) (No stats)
Treadmill Training Combined with Mirror Therapy vs Treadmill Training		
Broderick et al. (2019) RCT (6) Nstart=30 Nend=23 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill Training + Mirror Therapy C: Treadmill Training + Sham Duration: 30min, 3d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Ashworth Scale Hip flexion (-) Hip extension (-) Hip abduction (-) Hip adduction (-) Knee flexion (-) Knee extension (-) Ankle dorsiflexion (+exp) Ankle plantarflexion (+exp) Fugl-Meyer Assessment (-)
Mirror Therapy with Task Oriented Training vs Task Oriented Training		
Cha et al. (2016) RCT (6) Nstart=25 Nend=20 TPS=Chronic A + B vs C Also in Table 5 (Task-Specific Training)	E: Task-oriented training + mirror therapy C: Task oriented training Duration: 30min/d, 2sessions/d, 5d/wk for 4wks	E vs C: Berg Balance scale (+exp) Timed Up-and-Go test (+exp) Balance index (+exp) Dynamic limit of stability (+exp)
Choi et al. (2015c) RCT (4) Nstart=26 Nend=24 TPS=Chronic A + B vs A Also in Table 15 (Biofeedback)	E: Stepper Exercise + Visual Feedback (with mirror) C : Stepper Exercise Duration: 30min/d, 3d/wk, 6wks	E vs C: Muscle Strength Hip joint extensor muscle (+exp) Knee joint extensor muscle (-) 10-Meter Walking Test (+exp) 11 Stair Climbing Test (-)
Mirror Therapy with Stimulation vs Mirror Therapy or Task Oriented Training		
Lee et al. (2015c) RCT (7) Nstart=48 Nend=47 TPS=Chronic A1 vs A + B vs A2	E1: Mirror therapy E2: Mirror therapy + Mesh glove (afferent stimulation) C: Mirror therapy + Sham mesh glove Duration: 90min/d, 5d/wk, for 4wks	E1 vs E2: ED muscle tone (+exp2) FCR muscle tone (-) muscle stiffness (-) box and block test (+exp2) FIM motor (+exp2) Fugl-Meyer Assessment (-) revised Nottingham Sensory Assessment (-) 10-meter walk test (-) E2 vs C: ED muscle tone (-) FCR muscle tone (+con) ED muscle stiffness (-)

		FCR muscle stiffness (+exp2) box and block test (-) FIM motor (-) Fugl-Meyer Assessment (-) revised Nottingham Sensory Assessment (-) 10-meter walk test (-) E1 vs C: ED muscle tone (-) FCR muscle tone (-) muscle stiffness (-) box and block test (+con) FIM motor (+con Fugl-Meyer Assessment (-) revised Nottingham Sensory Assessment (-) 10-meter walk test (-)
Lin et al. (2014a) RCT (7) Nstart=43 Nend=42 TPS=Chronic A + B vs B vs C	E1: Mesh glove providing afferent sensory stimulation + Mirror Therapy + Conventional care E2: Mirror Therapy + Conventional care C: Task-oriented training + Conventional care Duration: 1.5h/d, 5d/wk, for 4wks	E1 vs C: Fugl-Meyer assessment-upper extremity Proximal (-) Distal (-) Total (+exp1) Muscle tone using Myoton Biceps (-) Flexor carpi radialis (-) flexor carpi ulnaris (-) Box and Block test (+exp1) 10m Walk test self paced Gait velocity (+exp1) self paced Stride length (+exp1) as quick as possible velocity (+exp1) as quick as possible stride length (-) Motor Activity log Amount of Use (-) Quality of movement (-) ABILHAND (-) Kinematics Wrist normalized movement time (-) Wrist normalized multiple motor unit(-) normalized shoulder flexion (-) normalized elbow extension (-) max shoulder abduction (+exp1) E2 vs C: Fugl-Meyer assessment-upper extremity Proximal (-) Distal (-) Total (+exp2) Muscle tone using Myoton Biceps (-) Flexor carpi radialis (-) flexor carpi ulnaris (-) Box and Block test (+con) 10m Walk test self paced Gait velocity (+con)

		self paced Stride length (+con) as quick as possible velocity (+con) as quick as possible stride length (-) Motor Activity log Amount of Use (-) Quality of movement (-) ABILHAND (-) Kinematics Wrist normalized movement time (-) Wrist normalized multiple motor unit(-) normalized shoulder flexion (+con) normalized elbow extension (-) max shoulder abduction (+exp2) E1 vs E2: Fugl-Meyer assessment-upper extremity Proximal (-) Distal (-) Total (-) Muscle tone using Myoton Biceps (-) Flexor carpi radialis (-) flexor carpi ulnaris (-) Box and Block test (+exp1) 10m Walk test self paced Gait velocity (+exp1) self paced Stride length (+exp1) as quick as possible velocity (+exp1) as quick as possible stride length (-) Motor Activity log Amount of Use (-) Quality of movement (-) ABILHAND (-) Kinematics Wrist normalized movement time (-) Wrist normalized multiple motor unit(-) normalized shoulder flexion (-) normalized elbow extension (-) max shoulder abduction (-)
Mirror Therapy combined with NMES vs Mirror Therapy with Sham NMES or Conventional Therapy		
Xu et al. (2017) RCT (7) Nstart=69 Nend=69 TPS=Subacute A + B vs A vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E1: conventional rehabilitation + mirror therapy + neuromuscular electrical stimulation E2: conventional rehabilitation + mirror therapy C: conventional rehabilitation + Sham mirror therapy Duration: 240min/d, 5d/wk, for 4wks conventional rehabilitation + 30min/d mirror/sham/mirror+NMES	E1/E2 v C: 10-meter walk test (+exp1, +exp2) Brunnstrom stages of lower extremity (+exp1, +exp2) Modified Ashworth Scale (+exp1) Passive ROM (+exp1, +exp2) E1 v E2: 10-meter walk test (+exp1) Brunnstrom stages of lower extremity (-) Modified Ashworth Scale (-) Passive ROM (-)
Lee et al. (2016) RCT (6) Nstart=30	E: Mirror therapy + cyclical neuromuscular electrical stimulation + conventional physical therapy C: Conventional therapy	E vs C: Ankle Dorsiflexor Strength (+exp) Modified Ashworth Scale (-)

Nend=27 TPS=Chronic A + B vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	Duration: 60min/d, 5d/wk, for 4wks conventional PT & 1session/d, 5d/wk, for 4wks MT + NNES	Berg Balance Scale (+exp) Timed-up-and-go (-) 6-minute Walk Test (-)
Mirror Therapy combined with FES vs Conventional Therapy		
Li et al. (2024a) RCT (6) Nstart=106 Nend=102 TPS=Subacute A + B vs B Also in Table 28 (Functional Electrical Stimulation)	E: Mirror feedback + FES C: Conventional rehab + FES Duration: 50min(20min FES, 30min Mirror), 1d/wk, 4wks	E vs C: Grounding angle of the affected foot (+exp) Single-support phase(+exp) step length(+exp) Step rate (+exp) Lindmark score(+exp) FMA(+exp) Falls index(+exp) Berg score(+exp) TUGT(+exp)
Salhab et al. (2016) RCT crossover (5) Nstart=18 Nend=18 TPS=Subacute A + B vs 0 vs C Also in Table 28 (Functional Electrical Stimulation)	E: Mirror therapy + Functional electrical stimulation C: Conventional therapy C: 50 min, 4d/wk, for 2wks CT 1wk washout Duration: E: 50 min, 4d/wk, 2 wks MT + 16min/session ES treatment C: 50 min, 4d/wk, 2 wks CT 1 wk washout	E vs C: Ankle dorsiflexion range of motion (+exp) Fugl-Meyer assessment-lower extremity (+exp) 10m Walk test (+exp)
Mirror Therapy with rTMS vs Mirror Therapy with Sham Stimulation		
Cha & Kim (2015) RCT (6) Nstart=36 Nend=31 TPS=Subacute A + B vs A Also in Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: Mirror therapy + Repetitive transcranial magnetic stimulation C: Mirror therapy + Sham stimulation Duration: 30min/d, 5d/wk for 4wks Mirror therapy & 10min/d, 5d/wk, for 4wks rTMS or Sham	E vs C: Dynamic limits of stability (+exp) Berg Balance Scale (-) Timed Up & Go Test (-) Balance Index (+exp)
Mirror Therapy with Virtual Reality vs Conventional therapy		
Miclaus et al. (2021) RCT (7) Nstart=64 Nend=64 TPS=Chronic A vs B Also in Table 26 (Virtual Reality)	E: Virtual reality (VR) therapy and mirror therapy (MT) exercises C: Standard lower extremity rehabilitation Duration: 70min/d, 5d/wk, for 2wks	E vs C: Functional Independence Measure (-) Modified Rankin Scale (-) Modified Ashworth Scale (-) Fugl Meyer Lower Extremity Assessment Motor (+exp) Passive (+exp) Pain (-) Manual Muscle Testing (+exp) Active Range of Motion (+exp) Functional Reach Test (+exp) Time Up to Go (-)
Mirror Therapy with Verbal Feedback vs Mirror Therapy Alone		
Chaudhary et al. (2022) RCT (7) Nstart=30	E: Visual feedback via Mirror + Verbal feedback + Conventional treatment (static and dynamic balance training)	E vs C: BBS (+exp)

Nend=30 TPS=Chronic A + B vs A Also in Table 11 (Balance Training); Table 15 (Biofeedback)	C: Visual feedback via Mirror + Conventional treatment (static and dynamic balance training) Duration: 30 min/d, 3d/wk, 8 wks	
Additional Comparisons from the Source Dataset		
Tyson et al. (2015) RCT (8) Nstart=94 Nend=85 TPS=Acute A vs B	E: At home Mirror therapy + Usual care C: At home Lower limb exercises + Usual care Duration: 30min/d, 7d/wk, 4wks	E vs C: Motricity Index (-) Grip strength (-) Rivermead Assessment of Sensory Perception (-) Modified Ashworth Scale (-) Star Cancellation test (-) Box and Block (-) Action Research Arm Test (-) Rivermead Mobility Index (-) Brunel Balance Assessment (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Broderick et al. (2019) RCT (6) Nstart=30 Nend=23 TPS=Chronic A + B vs A Primary listing: Table 9 (Treadmill Training)	E: Treadmill Training + Mirror Therapy C: Treadmill Training + Sham Duration: 30min, 3d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Ashworth Scale Hip flexion (-) Hip extension (-) Hip abduction (-) Hip adduction (-) Knee flexion (-) Knee extension (-) Ankle dorsiflexion (+exp) Ankle plantarflexion (+exp) Fugl-Meyer Assessment (-)
Lee & Lee (2019b) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B vs 0 Primary listing: Table 32 (Additional Afferent and Peripheral Stimulation Methods)	E: Electrical stimulation + mirror therapy C: Sham electrical stimulation + sham mirror therapy Duration: 60min/d, 5d/wk, for 4wks	E vs C: Muscle strength (+exp) Modified ashworth scale (-) Berg Balance Scale (+exp) Gait Velocity (+exp) Cadence (-) Step length (+exp) Stride length (+exp) Single Support time (-) Double Support time (-)
Hsieh et al. (2018) RCT crossover (5) Nstart=26 Nend=18 TPS=Chronic A1 vs A2 Primary listing: Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E1: Home rehabilitation, then Clinic rehabilitation E2: Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice Duration: 45-60min functional task training+ 30-45min mirror therapy/d, 3d/wk, for 4wks - 4wk washout	E1 vs E2: Motor Activity Log Amount of Use (+exp1) Quality of Movement (-) 10-meter walk test (-) Sit to stand test (+exp1) COPM Satisfaction (-) Performance (-) EuroQOL Index (+exp1)

		EQ-VAS (-)
Cha et al. (2017a) RCT (7) Nstart=52 Nend=30 TPS=Subacute A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) + mirror therapy C: Sham rTMS + mirror therapy Duration: 15min/d rTMS + 30min/d mirror therapy, 5d/wk, 4 wks	E vs C: Postural Sway (+exp) Wisconsin Gait Scale (+exp) 6-Minute Walk Test (+exp) Timed Up and Go Test (+exp)
Salhab et al. (2016) RCT crossover (5) Nstart=18 Nend=18 TPS=Subacute A + B vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E: Mirror therapy + Functional electrical stimulation C: Conventional therapy Duration: E: 50 min, 4d/wk, 2 wks MT + 16min/session ES treatment C: 50 min, 4d/wk, 2 wks CT 1 wk washout	E vs C: Ankle dorsiflexion range of motion (+exp) Fugl-Meyer assessment-lower extremity (+exp) 10m Walk test (+exp)
Lee et al. (2016) RCT (6) Nstart=30 Nend=27 TPS=Chronic A + B vs 0 Primary listing: Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Mirror therapy + cyclical NMES + conventional physical therapy C: Conventional therapy Duration: 60min/d, 5d/wk, for 4wks conventional PT & 1x/d, 5d/wk, for 4wks MT + NNES	E vs C: Ankle Dorsiflexor Strength (+exp) Modified Ashworth Scale (-) Berg Balance Scale (+exp) Timed-up-and-go (-) 6-minute Walk Test (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may produce greater improvements in motor recovery than Conventional Therapy or Sham Therapy.	7	Cui et al. 2022; Ikizler May et al. 2020; Arya et al. 2019; Wang et al. 2017; Salem et al. 2015; Mohan et al. 2013; Sütbeyaz et al. 2007
1b	Treadmill Training Combined with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving motor recovery.	1	Broderick et al. 2019
1b	Mirror therapy may not have a difference in efficacy when compared to Mirror therapy with Mesh glove (afferent stimulation) for improving motor recovery.	1	Lee et al. 2015c

1a	Mirror Therapy with Stimulation may not have a difference in efficacy when compared to Mirror Therapy or Task Oriented Training for improving motor recovery.	2	Lee et al. 2015c; Lin et al. 2014a
1b	Mirror therapy with Mesh glove (afferent stimulation) may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving motor recovery.	1	Lee et al. 2015c
1b	Mirror therapy may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving motor recovery.	1	Lee et al. 2015c
1b	Mirror Therapy combined with neuromuscular electrical stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy for improving motor recovery.	1	Xu et al. 2017
1b	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in motor recovery than Conventional Therapy.	2	Li et al. 2024a; Salhab et al. 2016
1b	Mirror Therapy with Virtual Reality may produce greater improvements in motor recovery than Conventional therapy.	1	Miclaus et al. 2021
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving motor recovery.	1	Broderick et al. 2019
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in motor recovery than Conventional therapy.	1	Salhab et al. 2016

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy may produce greater improvements in biomechanical gait measures than Conventional Therapy or Sham Therapy.	2	Bhoraniya et al. 2018; Ji & Kim 2015
1b	There is conflicting evidence about the effect of Mirror Therapy with Stimulation when compared to Mirror Therapy or Task Oriented Training for improving biomechanical gait measures.	1	Lin et al. 2014a
1b	There is conflicting evidence about the effect of Mirror Therapy with Conventional care when compared to Task-oriented training with Conventional care for improving biomechanical gait measures.	1	Lin et al. 2014a
1b	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Li et al. 2024a
1b	Electrical stimulation with mirror therapy may not have a difference in efficacy when compared to Sham electrical stimulation with sham mirror therapy for improving biomechanical gait measures.	1	Lee & Lee 2019b

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy may produce greater improvements in biomechanical balance measures than Conventional Therapy or Sham Therapy.	1	Kim et al. 2016b
1b	Mirror Therapy with Task Oriented Training may produce greater improvements in biomechanical balance measures than Task Oriented Training.	1	Cha et al. 2016
1b	Mirror Therapy with repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical balance measures than Mirror Therapy with Sham Stimulation.	1	Cha & Kim 2015

1b	Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy may produce greater improvements in biomechanical balance measures than Sham repetitive transcranial magnetic stimulation with mirror therapy.	1	Cha et al. 2017a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may not have a difference in efficacy when compared to Conventional Therapy or Sham Therapy for improving muscle strength.	2	Ikizler May et al. 2020; Simpson et al. 2019
2	There is conflicting evidence about the effect of Mirror Therapy with Task Oriented Training when compared to Task Oriented Training for improving muscle strength.	1	Choi et al. 2015c
1b	Mirror Therapy combined with neuromuscular electrical stimulation may produce greater improvements in muscle strength than Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy.	1	Lee et al. 2016
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving muscle strength.	1	Tyson et al. 2015
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving muscle strength.	1	Simpson et al. 2019
1b	Electrical stimulation with mirror therapy may produce greater improvements in muscle strength than Sham electrical stimulation with sham mirror therapy.	1	Lee & Lee 2019b
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may produce greater improvements in muscle strength than Conventional therapy.	1	Lee et al. 2016

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may not have a difference in efficacy when compared to Conventional Therapy or Sham Therapy for improving spasticity.	4	Ikizler May et al. 2020; Simpson et al. 2019; Salem et al. 2015; Sütbeyaz et al. 2007
1b	Treadmill Training Combined with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving spasticity.	1	Broderick et al. 2019
1b	There is conflicting evidence about the effect of Mirror therapy when compared to Mirror therapy with Mesh glove (afferent stimulation) for improving spasticity.	1	Lee et al. 2015c
1b	Mirror Therapy with Stimulation may not have a difference in efficacy when compared to Mirror Therapy or Task Oriented Training for improving spasticity.	1	Lee et al. 2015c
1b	Mirror therapy may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving spasticity.	1	Lee et al. 2015c
1b	There is conflicting evidence about the effect of Mirror therapy with Mesh glove (afferent stimulation) when compared to Mirror therapy with Sham mesh glove for improving spasticity.	1	Lee et al. 2015c
1a	Mirror Therapy combined with neuromuscular electrical stimulation may not have a difference in efficacy when compared to Mirror	2	Xu et al. 2017; Lee et al. 2016

	Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy for improving spasticity.		
1b	Mirror Therapy with Virtual Reality may not have a difference in efficacy when compared to Conventional therapy for improving spasticity.	1	Miclaus et al. 2021
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving spasticity.	1	Tyson et al. 2015
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving spasticity.	1	Broderick et al. 2019
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving spasticity.	1	Simpson et al. 2019
1b	Electrical stimulation with mirror therapy may not have a difference in efficacy when compared to Sham electrical stimulation with sham mirror therapy for improving spasticity.	1	Lee & Lee 2019b
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving spasticity.	1	Lee et al. 2016

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Mirror Therapy may produce greater improvements in range of motion than Conventional Therapy or Sham Therapy.	1	Salem et al. 2015
1b	There is conflicting evidence about the effect of Mirror Therapy with Stimulation when compared to Mirror Therapy or Task Oriented Training for improving range of motion.	1	Lin et al. 2014a
1b	Mirror Therapy combined with neuromuscular electrical stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy for improving range of motion.	1	Xu et al. 2017
2	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in range of motion than Conventional Therapy.	1	Salhab et al. 2016
1b	Mirror Therapy with Virtual Reality may produce greater improvements in range of motion than Conventional therapy.	1	Miclaus et al. 2021
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in range of motion than Conventional therapy.	1	Salhab et al. 2016

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Mirror Therapy may produce greater improvements in neurophysiological measures than Conventional Therapy or Sham Therapy.	1	Cui et al. 2022

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror therapy may not have a difference in efficacy when compared to Mirror therapy with Mesh glove (afferent stimulation) for improving sensory and proprioceptive function.	1	Lee et al. 2015c
1b	Mirror Therapy with Stimulation may not have a difference in efficacy when compared to Mirror Therapy or Task Oriented Training for improving sensory and proprioceptive function.	1	Lee et al. 2015c
1b	Mirror therapy or Mirror therapy with Mesh glove (afferent stimulation) may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving sensory and proprioceptive function.	1	Lee et al. 2015c
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving sensory and proprioceptive function.	1	Tyson et al. 2015

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may produce greater improvements in activities of daily living than Conventional Therapy or Sham Therapy.	4	Cui et al. 2022; Ikizler May et al. 2020; Wang et al. 2017; Sütbeyaz et al. 2007
1b	Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Mesh glove (afferent stimulation).	1	Lee et al. 2015c
1b	Mirror Therapy with Stimulation may not have a difference in efficacy when compared to Mirror Therapy or Task Oriented Training for improving activities of daily living.	1	Lee et al. 2015c
1b	Mirror therapy with Mesh glove (afferent stimulation) may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving activities of daily living.	1	Lee et al. 2015c
1b	Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Sham mesh glove.	1	Lee et al. 2015c
1b	Mirror Therapy with Virtual Reality may not have a difference in efficacy when compared to Conventional therapy for improving activities of daily living.	1	Miclaus et al. 2021
2	Home rehabilitation, then Clinic rehabilitation may not have a difference in efficacy when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving activities of daily living.	1	Hsieh et al. 2018

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may not have a difference in efficacy when compared to Conventional Therapy or Sham Therapy for improving gait speed.	5	Arya et al. 2019; Simpson et al. 2019; Bhoraniya et al. 2018; Ji & Kim 2015; Salem et al. 2015
1b	Treadmill Training Combined with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving gait speed.	1	Broderick et al. 2019
2	Mirror Therapy with Task Oriented Training may produce greater improvements in gait speed than Task Oriented Training.	1	Choi et al. 2015c

1b	Mirror therapy may not have a difference in efficacy when compared to Mirror therapy with Mesh glove (afferent stimulation) for improving gait speed.	1	Lee et al. 2015c
1a	There is conflicting evidence about the effect of Mirror Therapy with Stimulation when compared to Mirror Therapy or Task Oriented Training for improving gait speed.	2	Lee et al. 2015c; Lin et al. 2014a
1b	Mirror therapy or Mirror therapy with Mesh glove (afferent stimulation) may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving gait speed.	1	Lee et al. 2015c
1b	Mirror Therapy with Conventional care may result in lesser improvements in gait speed when compared to Task-oriented training with Conventional care.	1	Lin et al. 2014a
1b	Mirror Therapy combined with neuromuscular electrical stimulation may produce greater improvements in gait speed than Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy.	1	Xu et al. 2017
2	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in gait speed than Conventional Therapy.	1	Salhab et al. 2016
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving gait speed.	1	Broderick et al. 2019
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving gait speed.	1	Simpson et al. 2019
1b	Electrical stimulation with mirror therapy may produce greater improvements in gait speed than Sham electrical stimulation with sham mirror therapy.	1	Lee & Lee 2019b
2	Home rehabilitation, then Clinic rehabilitation may not have a difference in efficacy when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving gait speed.	1	Hsieh et al. 2018
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in gait speed than Conventional therapy.	1	Salhab et al. 2016

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy may produce greater improvements in gait endurance than Conventional Therapy or Sham Therapy.	1	Ikizler May et al. 2020
1b	Treadmill Training Combined with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Broderick et al. 2019
1b	Mirror Therapy combined with neuromuscular electrical stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy for improving gait endurance.	1	Lee et al. 2016
1b	Treadmill Training with Mirror Therapy may not have a difference in efficacy when compared to Treadmill Training with Sham for improving gait endurance.	1	Broderick et al. 2019
1b	Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy may produce greater improvements in gait endurance than Sham repetitive transcranial magnetic stimulation with mirror therapy.	1	Cha et al. 2017a

1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving gait endurance.	1	Lee et al. 2016

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may produce greater improvements in functional mobility than Conventional Therapy or Sham Therapy.	8	Cui et al. 2022; Verma et al. 2021; Ikizler May et al. 2020; Arya et al. 2019; Simpson et al. 2019; Wang et al. 2017; Mohan et al. 2013; Sütbeyaz et al. 2007
1b	There is conflicting evidence about the effect of Mirror Therapy with Task Oriented Training when compared to Task Oriented Training for improving functional mobility.	2	Cha et al. 2016; Choi et al. 2015c
1b	Mirror Therapy combined with neuromuscular electrical stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy for improving functional mobility.	1	Lee et al. 2016
1b	Mirror Therapy with repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham Stimulation for improving functional mobility.	1	Cha & Kim 2015
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving functional mobility.	1	Tyson et al. 2015
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving functional mobility.	1	Simpson et al. 2019
2	Home rehabilitation, then Clinic rehabilitation may produce greater improvements in functional mobility than Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice.	1	Hsieh et al. 2018
1b	Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy may produce greater improvements in functional mobility than Sham repetitive transcranial magnetic stimulation with mirror therapy.	1	Cha et al. 2017a
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving functional mobility.	1	Lee et al. 2016

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Mirror Therapy may produce greater improvements in balance than Conventional Therapy or Sham Therapy.	6	Cui et al. 2022; Armat et al. 2022; Verma et al. 2021; Ikizler May et al. 2020; Wang et al. 2017; Mohan et al. 2013
1b	Mirror Therapy with Task Oriented Training may produce greater improvements in balance than Task Oriented Training.	1	Cha et al. 2016
1b	Mirror Therapy combined with neuromuscular electrical stimulation may produce greater improvements in balance than Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy.	1	Lee et al. 2016

1b	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in balance than Conventional Therapy.	1	Li et al. 2024a
1b	Mirror Therapy with repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Mirror Therapy with Sham Stimulation for improving balance.	1	Cha & Kim 2015
1b	There is conflicting evidence about the effect of Mirror Therapy with Virtual Reality when compared to Conventional therapy for improving balance.	1	Miclaus et al. 2021
1b	Mirror Therapy with Verbal Feedback may produce greater improvements in balance than Mirror Therapy Alone.	1	Chaudhary et al. 2022
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving balance.	1	Tyson et al. 2015
1b	Electrical stimulation with mirror therapy may produce greater improvements in balance than Sham electrical stimulation with sham mirror therapy.	1	Lee & Lee 2019b
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may produce greater improvements in balance than Conventional therapy.	1	Lee et al. 2016

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy combined with functional electrical stimulation may produce greater improvements in falls and fear of falling than Conventional Therapy.	1	Li et al. 2024a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy may not have a difference in efficacy when compared to Conventional Therapy or Sham Therapy for improving quality of life.	1	Simpson et al. 2019
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving quality of life.	1	Simpson et al. 2019
2	There is conflicting evidence about the effect of Home rehabilitation, then Clinic rehabilitation when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving quality of life.	1	Hsieh et al. 2018

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving cognition.	1	Tyson et al. 2015

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror therapy may result in lesser improvements in upper extremity function when compared to Mirror therapy with Mesh glove (afferent stimulation).	1	Lee et al. 2015c
1a	Mirror Therapy with Stimulation may not have a difference in efficacy when compared to Mirror Therapy or Task Oriented Training for improving upper extremity function.	2	Lee et al. 2015c; Lin et al. 2014a
1b	Mirror therapy with Mesh glove (afferent stimulation) may not have a difference in efficacy when compared to Mirror therapy with Sham mesh glove for improving upper extremity function.	1	Lee et al. 2015c
1b	Mirror therapy may result in lesser improvements in upper extremity function when compared to Mirror therapy with Sham mesh glove.	1	Lee et al. 2015c
1b	There is conflicting evidence about the effect of Mirror Therapy with Conventional care when compared to Task-oriented training with Conventional care for improving upper extremity function.	1	Lin et al. 2014a
1b	At home Mirror therapy + Usual care may not have a difference in efficacy when compared to At home Lower limb exercises + Usual care for improving upper extremity function.	1	Tyson et al. 2015
2	There is conflicting evidence about the effect of Home rehabilitation, then Clinic rehabilitation when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving upper extremity function.	1	Hsieh et al. 2018

Key Points

- Mirror Therapy may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, range of motion, neurophysiological measures, activities of daily living, gait endurance, functional mobility, and balance, but not muscle strength, spasticity, gait speed, and quality of life, after stroke when compared to Conventional Therapy or Sham Therapy.
- Treadmill Training Combined with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training.
- Mirror Therapy with Task Oriented Training may be beneficial for improving biomechanical balance measures, gait speed, and balance after stroke when compared to Task Oriented Training; the literature is mixed regarding muscle strength and functional mobility.
- Mirror therapy may not be beneficial for improving motor recovery, sensory and proprioceptive function, and gait speed after stroke when compared to Mirror therapy with Mesh glove (afferent stimulation); the literature is mixed regarding spasticity; Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Mesh glove (afferent stimulation).
- Mirror Therapy with Stimulation may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, and activities of daily living after stroke when compared to Mirror Therapy or Task Oriented Training; the literature is mixed regarding biomechanical gait measures, range of motion, and gait speed.
- Mirror Therapy combined with neuromuscular electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance, but not motor recovery, spasticity, range of motion, gait endurance, and functional mobility, after stroke when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy.
- Mirror Therapy combined with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, gait speed, balance, and falls and fear of falling after stroke when compared to Conventional Therapy.
- Mirror Therapy with repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, but not functional mobility and balance, after stroke when compared to Mirror Therapy with Sham Stimulation.

- Mirror Therapy with Virtual Reality may be beneficial for improving motor recovery and range of motion, but not spasticity and activities of daily living, after stroke when compared to Conventional therapy; the literature is mixed regarding balance.
- Mirror Therapy with Verbal Feedback may be beneficial for improving balance after stroke when compared to Mirror Therapy Alone.
- At home Mirror therapy + Usual care may not be beneficial for improving muscle strength, spasticity, sensory and proprioceptive function, functional mobility, and balance after stroke when compared to At home Lower limb exercises + Usual care.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training with Sham.
- Home based Isometric Unilateral Strength Training with Mirror Therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home based Isometric Unilateral Strength Training.
- Electrical stimulation with mirror therapy may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Sham electrical stimulation with sham mirror therapy.
- Home rehabilitation, then Clinic rehabilitation may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice; the literature is mixed regarding quality of life.
- Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy may be beneficial for improving biomechanical balance measures, gait endurance, and functional mobility after stroke when compared to Sham repetitive transcranial magnetic stimulation with mirror therapy.
- Mirror therapy with Functional electrical stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional therapy.
- Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may be beneficial for improving muscle strength and balance, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Conventional therapy.
- Mirror therapy may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, and gait speed after stroke when compared to Mirror therapy with Sham mesh glove; Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Sham mesh glove.
- Mirror therapy with Mesh glove (afferent stimulation) may not be beneficial for improving motor recovery, sensory and proprioceptive function, activities of daily living, and gait speed after stroke when compared to Mirror therapy with Sham mesh glove; the literature is mixed regarding spasticity.
- Mirror Therapy with Conventional care may result in lesser improvements in gait speed when compared to Task-oriented training with Conventional care; the literature is mixed regarding biomechanical gait measures.

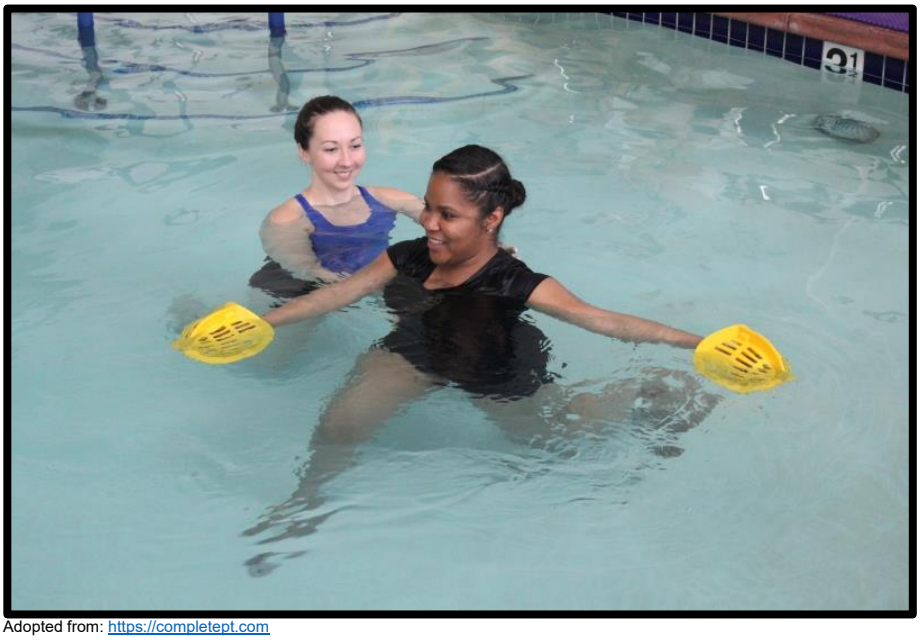
Summary of Key Points: Mirror Therapy

Intervention	Control(s)	Function domain(s)	Effect
Mirror Therapy	Conventional Therapy or Sham Therapy	Motor recovery, biomechanical gait measures, biomechanical balance measures, range of motion, neurophysiological measures, activities of daily living, gait endurance, functional mobility, balance	+
Mirror Therapy	Conventional Therapy or Sham Therapy	Muscle strength, spasticity, gait speed, quality of life	–
Treadmill Training Combined with Mirror Therapy	Treadmill Training	Motor recovery, spasticity, gait speed, gait endurance	–
Mirror Therapy with Task Oriented Training	Task Oriented Training	Biomechanical balance measures, gait speed, balance	+

Mirror Therapy with Task Oriented Training	Task Oriented Training	Muscle strength, functional mobility	=
Mirror therapy	Mirror therapy with Mesh glove (afferent stimulation)	Motor recovery, sensory and proprioceptive function, activities of daily living, gait speed	–
Mirror therapy	Mirror therapy with Mesh glove (afferent stimulation)	Activities of daily living	–
Mirror Therapy with Stimulation	Mirror Therapy or Task Oriented Training	Motor recovery, spasticity, sensory and proprioceptive function, activities of daily living	–
Mirror Therapy with Stimulation	Mirror Therapy or Task Oriented Training	Biomechanical gait measures, range of motion, gait speed	=
Mirror Therapy with Stimulation	Mirror Therapy or Task Oriented Training	Motor recovery	–
Mirror Therapy with Stimulation	Mirror Therapy or Task Oriented Training	Biomechanical gait measures	=
Mirror Therapy combined with neuromuscular electrical stimulation	Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy	Muscle strength, gait speed, balance	+
Mirror Therapy combined with neuromuscular electrical stimulation	Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy	Motor recovery, spasticity, range of motion, gait endurance, functional mobility	–
Mirror Therapy combined with functional electrical stimulation	Conventional Therapy	Motor recovery, biomechanical gait measures, range of motion, gait speed, balance, falls and fear of falling	+
Mirror Therapy with repetitive transcranial magnetic stimulation	Mirror Therapy with Sham Stimulation	Biomechanical balance measures	+
Mirror Therapy with repetitive transcranial magnetic stimulation	Mirror Therapy with Sham Stimulation	Functional mobility, balance	–
Mirror Therapy with Virtual Reality	Conventional therapy	Motor recovery, range of motion	+
Mirror Therapy with Virtual Reality	Conventional therapy	Spasticity, activities of daily living	–
Mirror Therapy with Virtual Reality	Conventional therapy	Balance	=
Mirror Therapy with Verbal Feedback	Mirror Therapy Alone	Balance	+
At home Mirror therapy + Usual care	At home Lower limb exercises + Usual care	Muscle strength, spasticity, sensory and proprioceptive function, functional mobility, balance	–
Treadmill Training with Mirror Therapy	Treadmill Training with Sham	Motor recovery, spasticity, gait speed, gait endurance	–
Home based Isometric Unilateral Strength Training with Mirror Therapy	Home based Isometric Unilateral Strength Training	Muscle strength, spasticity, gait speed, functional mobility, quality of life	–
Electrical stimulation with mirror therapy	Sham electrical stimulation with sham mirror therapy	Muscle strength, gait speed, balance	+
Electrical stimulation with mirror therapy	Sham electrical stimulation with sham mirror therapy	Biomechanical gait measures, spasticity	–
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings	Functional mobility	+

	involved mirror therapy and functional task practice		
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice	Activities of daily living, gait speed	–
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice	Quality of life	=
Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy	Sham repetitive transcranial magnetic stimulation with mirror therapy	Biomechanical balance measures, gait endurance, functional mobility	+
Mirror therapy with Functional electrical stimulation	Conventional therapy	Motor recovery, range of motion, gait speed	+
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy	Muscle strength, balance	+
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy	Spasticity, gait endurance, functional mobility	–
Mirror therapy	Mirror therapy with Sham mesh glove	Motor recovery, spasticity, sensory and proprioceptive function, activities of daily living, gait speed	–
Mirror therapy with Mesh glove (afferent stimulation)	Mirror therapy with Sham mesh glove	Motor recovery, sensory and proprioceptive function, activities of daily living, gait speed	–
Mirror Therapy with Conventional care	Task-oriented training with Conventional care	Biomechanical gait measures	=
Mirror Therapy with Conventional care	Task-oriented training with Conventional care	Gait speed	–
Mirror therapy	Mirror therapy with Mesh glove (afferent stimulation)	Spasticity	=
Mirror therapy with Mesh glove (afferent stimulation)	Mirror therapy with Sham mesh glove	Spasticity	=

Aquatic Therapy



Adopted from: https://completept.com

Aquatic therapy employs the natural properties of water (i.e. buoyancy, hydrostatic pressure, hydrodynamic forces, thermodynamics and viscosity) to act as a rehabilitation intervention in supporting weight and offsetting gravity during exercises related to balance and gait performed in water (Becker, 2009).

Aquatic therapies may vary, with some forms including traditional exercises, neurodevelopmental techniques, proprioceptive neuromuscular facilitation, and task-specific training. The Halliwick Method is an example of a motor rehabilitation program that is based on neurodevelopmental techniques, in which core stability is a major focus (Martin, 1981). The Bad Ragaz Ring Method is an example of a motor rehabilitation program that is based on proprioceptive neuromuscular facilitation techniques, in which improving range of motion is a major focus (Boyle, 1981). Alternative and complementary medicine techniques have also been integrated into aquatic therapy programs, examples include Ai chi, which is derived from tai chi, as well as Watsu, which is derived from shiatsu (Lutz, 1999; Ross & Presswalla, 1998).

A total of 29 RCTs were found that evaluated aquatic therapy for lower extremity motor rehabilitation. Fourteen RCTs compared Aquatic Therapy with Conventional Therapy (Bei et al. 2023; Vakilian et al. 2021; Ku et al. 2020; Eyvaz et al. 2018; Cha et al. 2017b; Chan et al. 2017a; Park et al. 2016; Zhu et al. 2016a; Kim et al. 2015b; Kim et al. 2015b; Furnari et al. 2014; Tripp et al. 2014; Park et al. 2011a; Noh et al. 2008). One RCT compared Aquatic Therapy with Land-Based Upper Extremity Exercises (Chu et al. 2004). Seven RCTs compared Aquatic Treadmill Walking or Aerobic Therapy with Overground or Treadmill Walking or Cycle Ergometer (Kim et al. 2022a; Kim et al. 2020d; Franciulli et al. 2019; Lee et al. 2018d; Han et al. 2018; Zhang et al. 2016; Park et al. 2012). Two RCTs compared Aquatic Ai Chi Therapy with Dry Land Therapy with Aquatic Ai Chi Therapy (Perez-de la Cruz et al. 2021; Perez-de la Cruz et al. 2020). Two RCTs compared Dual-Task Aquatic Training with Neurodevelopmental Techniques or Land-Based Dual Motor Task (Saleh et al. 2019; Kim et al. 2016a). One RCT compared Aquatic Therapy with Strength Training with Aquatic Therapy (Gu et al. 2023). One RCT compared Sequential Preparatory Approach Aquatic Therapy with Standard Aquatic Therapy (Temperoni et al. 2020).

In addition, two RCTs in which aquatic therapy formed part of a combined or comparative intervention are cross-referenced at the end of Table 20; their primary listings appear in other tables.

The methodological details and results of all 29 RCTs are presented in Table 20.

Table 20. RCTs Evaluating Aquatic Therapy for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Time post stroke category Study design		
Aquatic Therapy vs Conventional Therapy		
Bei et al. (2023) RCT (4) Nstart=160 Nend=160 TPS=Acute A vs 0	E: Hydrotherapy C: Conventional rehab Duration: 60min/d(30min conventional, 30min Hydrotherapy), 6d/wk, 8wks	E vs C: FMA(+exp) FAC(+exp): BBS(+exp): MBI(+exp): NIHSS(+exp) MRS(+exp)
Vakilian et al. (2021) RCT (5) Nstart=36 Nend=36 TPS=Chronic A1 vs A2 vs 0	E1: Aqua therapy in shallow water E2: Aqua therapy in deep water C: Usual treatment Duration: 30min/d, 3d/wk, for 6wks	E1 v C: Static balance (+exp1) Semi-dynamic balance (+exp1) E2 v C: Static balance (+exp2) Semi-dynamic balance (+exp2) E1 v E2: Static balance (-) Semi-dynamic balance (-)
Ku et al. (2020) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Ai Chi (modified aquatic therapy) C: Conventional Water Based Exercise Duration: 60min/d, 3d/wk, for 6wks	E vs C: Berg Balance Scale (-) Limit of Stability: Movement velocity (-) Directed control (-) Max excursion (-) End excursion-AP (+exp) Fugl-Meyer Assessment Lower Extremity (+exp) Gait speed (-) Stride length (-) Stride time (-) Cadence (-)
Eyvaz et al. (2018) RCT (5) Nstart=65 Nend=60 TPS=Chronic A + B vs B vs C	E: Water based exercise (WBE) therapy + Land based exercise (LBE) C: Land based exercise Duration: E: WBE for 3d/wk, 6 wk+ LBE for 40min/d, 5d/wk, for 6wks C: LBE for 40min/d, 5d/wk, for 6wks	E vs C: Berg Balance Scale (+con) Functional Independence Measure (-) Timed Up and Go scale (-) Static Balance Index (-) Dynamic Balance Index (-) Isokinetic Peak torque affected side quadriceps 90(-) affected side quadriceps 120 (-) unaffected side quadriceps 90(-) unaffected side quadriceps 120 (-) affected side hamstrings 90 (-) affected side hamstrings 120 (-) unaffected side hamstrings 90(-) unaffected side hamstrings 120 (-) Short Form 36 physical function (-) role limitations due to physical functioning (-) social function (-) general mental health (-)

		role limitations due to emotional problems (-) vitality (+exp) pain (-) general health (-) pain (-)
Cha et al. (2017b) RCT (8) Nstart=22 Nend=22 TPS=Chronic A vs 0	E: Aquatic therapy (Bad Ragaz Ring Method) + conventional therapy C: Conventional therapy Duration: 60min/d, 3d/wk for 6wks	E vs C: Muscle activation by EMG (+exp) Balance index (+exp) Timed Up and Go (-)
Chan et al. (2017a) RCT (5) Nstart=32 Nend=25 TPS=Subacute A + B vs B	E: In-water exercise training + Land exercise training C: Land exercise training Duration: 60min/d, 2d/wk, for 6wks	E vs C: Berg Balance Score (-) Community Balance and Mobility Score (-) Timed Up and Go Test (-) 2-Minute Walk Test (-)
Park et al. (2016) RCT (5) Nstart=28 Nend=28 TPS=Chronic A vs B Also in Table 4 (Trunk Training)	E: Aquatic therapy (Halliwick, Watsu, and Trunk Training) C: Trunk control exercises Duration: 30min/d, 3d/wk, 4wks	E vs C: Gait Speed (-) Walking cycle (+con) Affected side stance phase (-) Affected side stride length (+con) Symmetry index of stance phase (-) Symmetry index of stride length (-)
Zhu et al. (2016a) RCT (8) Nstart=28 Nend=28 TPS=Chronic A vs 0	E: Aquatic therapy C: Conventional therapy Duration: 45min/d, 5d/wk for 4wks	E vs C: Berg Balance Scale (-) Functional Reach Test (+exp) Timed Up and Go Test (-) 2-Minute Walk Test (+exp)
Kim et al. (2015f) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Aquatic therapy (based on proprioceptive neuromuscular facilitation) C: Proprioceptive neuromuscular facilitation on the ground Duration: 30min/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go Test (+exp) Functional Reach Test (+exp) One Leg Stand Test (+exp) Functional Independence Measure (+exp)
Kim et al. (2015b) RCT (4) Nstart=20 Nend=20 TPS=Chronic A vs 0 Also in Table 12 (Stretching or Mobilization Exercises)	E: Aquatic therapy (based on proprioceptive neuromuscular facilitation) C: Conventional therapy Duration: 30min/d, 5d/wk for 6wks conventional rehabilitation for both groups	E vs C: Berg Balance Scale (+exp) Functional Reach Test (+exp) 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp)
Furnari et al. (2014) RCT (5) Nstart=40 Nend=40 TPS=Chronic	E: Hydrokinesytherapy + Conventional PT C: Conventional PT Duration: E: 60min/d, 3d/wk, for 8wks hydrokinesytherapy + 60min/d, 3d/wk, for	E vs C: Plantar surface eyes open (-) eyes closed (-) Plantar load

A vs 0	8wks conventional PT; C: 60min/d, 6d/wk, for 8wks conventional PT	eyes open (-) eyes closed (-) Length of ball eyes open (+exp) eyes closed (+exp) Speed (+exp) Semistep length (+exp) Cadence (+exp) Stance phase (+exp) Swing phase (+exp) Double support phase (+exp)
Tripp et al. (2014) RCT (7) Nstart=30 Nend=27 TPS=Subacute A vs 0	E: Aquatic therapy (Halliwick therapy) + conventional therapy C: Conventional therapy Duration: E: 45min/d, 2d/wk, for 2wks conventional PT + 45min/d, 3d/wk, for 2wks aquatic therapy ; C: 45min/d, 5d/wk, for 2wks conventional PT	E vs C: Berg Balance Scale (-) Functional reach (-) Functional Ambulation Categories (+exp) Rivermead Mobility Index (-)
Park et al. (2011a) RCT (4) Nstart=44 Nend=44 TPS=Chronic A vs 0	E: Aquatic therapy C: Conventional therapy Duration: 35min/d, 6d/wk for 6wks	E vs C: Performance-Oriented Mobility Assessment (+exp) Joint Position Sense (+exp)
Noh et al. (2008) RCT (4) Nstart=25 Nend=20 TPS=Chronic A vs 0	E: Aquatic therapy (Halliwick and Ai Chi methods) C: Conventional therapy Duration: 60min/d, 3d/wk for 8wks	E vs C: Berg Balance Scale (+exp) Balance assessment Rising from a chair affected (-) Rising from a chair intact (-) Weight shift laterally affected (-) Weight shift laterally intact (-) Weight shift forward affected (+exp) Weight shift forward intact (-) Weight shift backward affected (+exp) Weight shift backward intact (-) Modified Motor Assessment Scale (-) Muscle strength Knee extensor peak torque affected (-) Knee extensor peak torque intact (-) Knee flexor peak torque affected (+exp) Knee flexor peak torque intact (-) Back extensor (-) Back flexor (-)
Aquatic Therapy vs Land-Based Upper Extremity Exercises		
Chu et al. (2004) RCT (6) Nstart=13 Nend=12 TPS=Chronic A vs B	E: Group aqua therapy C: Arm function program Duration: 60min/d, 3d/wk, for 8wks	E vs C: VO2 Max (+exp) Maximal Workload (+exp) 8 Meter Walk Test Self Selected Gait Speed (+exp) Berg Balance Scale (-) Isokinetic Muscle Strength of Knee and Hip Paretic Side (+exp) Nonparetic Side (-)

Aquatic Treadmill Walking or Aerobic Therapy vs Overground or Treadmill Walking or Cycle Ergometer		
Kim et al. (2022a) RCT (7) Nstart=22 Nend=22 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E: Underwater Treadmill gait training + conventional rehabilitation C: Overground gait training + conventional rehabilitation Duration: 60min/d, 5d/wk, 12 wks conventional rehabilitation & 30min/d, 2d/wk, 12 wks gait training	E vs C: Step length (-) Step length difference (-) Stance time (-) Swing time (-) Step time difference (+exp) Walking velocity (-) Maximal Voluntary Volume (+exp)
Kim et al. (2020d) RCT (7) Nstart=22 Nend=21 TPS=Chronic A vs B	E: Underwater gait training + conventional therapy C: Overground gait training + conventional rehabilitation 60min/d, 5d/wk, for 12wks conventional therapy & Duration: 60min/d, 5d/wk, 12 wks conventional therapy & 30min/d, 2d/wk, 12 wks gait training	E vs C: Postural Assessment Stroke Scale (+exp) Center of Pressure - Path length (-) Path velocity (-) Stance time (second) (-) Swing time (second) (-) Step time difference (second) (-) Step length (cm) (-) Step length difference (cm) (-) Walking velocity (cm/second) (-)
Franciulli et al. (2019) RCT (5) Nstart=12 Nend=12 TPS=Chronic A vs B	E: Aerobic Aquatic therapy C: Aerobic Treadmill training Duration: 40min/d, 3d/wk, for 9wks	E vs C: Berg Balance scale (-) Timed Up and Go (-) EMG root mean squared change (+con)
Lee et al. (2018d) RCT (7) Nstart=37 Nend=32 TPS=Subacute A1 vs A2 Also in Table 9 (Treadmill Training)	E: Water-based aerobic exercise on a motorized aquatic treadmill + Conventional rehabilitation therapy C: Aerobic Exercise (by upper and lower body ergometers) + Conventional rehabilitation therapy Duration: 60min/d, 5d/wk, for 4wks conventional therapy (30min PT + 30min OT) & 30 min/d, 5d/wk, for 4wks Water-based aerobic exercise / Land- based aerobic exercise	E vs C: Fugl Meyer Assessment (-) LE (-) Berg Balance Scale (-) Korean- Modified Barthel Index (-) Maximal Isometric strength (torque) of Knee Flexors Paretic (+exp) Non Paretic (-) Maximal Isometric strength (torque) of Knee Extensors Paretic (+exp) Non Paretic (-) EQ-5D (-) Cardiovascular parameters-stress test (-) baPWV test for arterial stiffness (-)
Han et al. (2018) RCT (6) Nstart=20 Nend=20 TPS=Subacute A vs B Also in Table 9 (Treadmill Training)	E: Aquatic-based treadmill aerobic training + conventional care C: Land-based aerobic exercises on cycle ergometer + conventional care Duration: 50min aerobic exercise (aquatic or land)/d + conventional care (duration/d not specified), 5d/wk, for 6wks	E vs C: Modified Barthel index (-) 6min Walk test (-) V02 peak (+exp) Rate Pressure product (-) Heart rate Peak (+exp) Resting (-) Age predicted Maximum heart rate (+exp) Exercise tolerance test (+exp) Respiratory exchange ratio (-)

Zhang et al. (2016) RCT (7) Nstart=36 Nend=33 TPS=Subacute A vs B Also in Table 9 (Treadmill Training)	E: Aquatic therapy (PT exercises) + aquatic treadmill C: Conventional PT exercise + land-based treadmill Duration: 40min/d, 5d/wk, for 8wks	E vs C: Maximum isometric voluntary contraction and Co-contraction Ratio Knee Extension Torque (+exp) Knee Flexion Torque (-) Knee Extension co-contraction Ratio (+exp) Knee Flexion co-contraction Ratio (-) Anke dorsiflexion Torque (-) Ankle plantarfelxion Torque (+exp) Ankle dosifelxion co-contraction Ratio (-) Ankle plantarlfexion co-contraction Ratio (-) Modified Ashworth Knee (-) Ankle (-) Functional ambulation category (+exp) Barthel Index (+exp)
Park et al. (2012) RCT (4) Nstart=20 Nend=20 TPS=Chronic A1 vs A2 Also in Table 9 (Treadmill Training)	E: Underwater treadmill walking C: Overground treadmill walking Duration: 30min/d, 4d/wk for 6wks	E vs C: Body weight on foot (+exp) Short Physical Performance Battery (-) Joint flex Hip (+exp) Knee (+exp) Ankle (-)
Aquatic Ai Chi Therapy with Dry Land Therapy vs Aquatic Ai Chi Therapy		
Perez-de la Cruz et al. (2021) RCT (8) Nstart=45 Nend=45 TPS=Chronic A + B vs A vs B	E1: Aquatic Ai Chi therapy + Dry land therapy E2: Aquatic Ai Chi therapy C: training on dry land Duration: 45min/d, 2d/wk, for 12wks	E1 vs E2: Berg balance scale(+exp2) tandem stance (-) five time sit-to-stand test (+exp2) timed up and go test (-) E1/E2 vs C: Berg balance scale(+exp2) tandem stance (+exp1)(+exp2) five time sit-to-stand test (+exp1)(+exp2) timed up and go test (+exp1)(+exp2)
Perez-de la Cruz et al. (2020) RCT (8) Nstart=40 Nend=40 TPS=Chronic A + B vs A vs B	E1: Aquatic Ai Chi therapy + Dry land therapy E2: Aquatic Ai Chi therapy C: Training on dry land Duration: 45-50min/d, 2d/wk, for 12wks dry land therapy/aquatic therapy & 45-50min/d, 4d/wk, for 12wks combined group alternating dry and aquatic training	E1 vs E2: Pain Visual Analog Scale (-) Tinetti test (-) 360 degrees turn test (+exp2) 30-Second Sit-to-Stand Test (+exp1) Single leg stance (no stat) E1/E2 vs C: Pain Visual Analog Scale (+exp1, +exp2) Tinetti test (+exp1, +exp2) 360 degrees turn test (+exp1, +exp2) 30-Second Sit-to-Stand Test (+exp1) Single leg stance (no stat)
Dual-Task Aquatic Training vs Neurodevelopmental Techniques or Land-Based Dual Motor Task		
Saleh et al. (2019) RCT (6) Nstart=50 Nend=50	E: Aquatic-based Dual-task Motor Training C: Land-based Dual-task Motor Training Duration: 45min, 3d/wk, for 6wks	E vs C: Overall Stability Index (+exp) Anteroposterior Stability Index (+exp) Mediolateral Stability Index (+exp)

TPS=Chronic A1 vs A2 Also in Table 16 (Dual-Task Training)		Walking speed (+exp) Step length affected side (+exp) non affected side (+exp) Support time affected side (+exp)
Kim et al. (2016a) RCT (4) Nstart=20 Nend=NR TPS=Chronic A vs B Also in Table 16 (Dual-Task Training)	E: Aquatic therapy (Dual-task training with upper extremity tasks) C: Neurodevelopmental techniques Duration: 1h/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Five-Time Sit to Stand Test (+exp) Functional Reach Test (+exp) 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp) Functional Gait Assessment (+exp)
Aquatic Therapy with Strength Training vs Aquatic Therapy		
Gu et al. (2023) RCT (7) Nstart=61 Nend=61 TPS=Subacute A + B vs A Also in Table 21 (Strength and Resistance Training)	E: Aquatic training + under water strength training C: Aquatic training Duration: 45min/d, 5d/wk for 6wks	E vs C: Timed up and go (+exp) Berg Balance scale (+exp) 2-minute walk test (+exp) Stride length (+exp) Stride width (+exp) Stride frequency (+exp) Walking speed (+exp)
Sequential Preparatory Approach Aquatic Therapy vs Standard Aquatic Therapy		
Temperoni et al. (2020) RCT (7) Nstart=33 Nend=28 TPS=Chronic A vs B	E: Sequential preparatory approach aquatic therapy C: Standard aquatic therapy Duration: 45min/d, 2d/wk, for 4wks	E vs C: Berg Balance scale (+exp) Modified Barthel index (-) Tinetti Balance and Gait scale (-) Stroke specific QoL (+exp) Modified Ashworth scale upper limb (+exp) lower limb (+exp)
Additional Comparisons from the Source Dataset		
Lim et al. (2020) RCT (7) Nstart=22 Nend=22 TPS=Chronic A1 vs A2	E1: Waterjet resistance aquatic treadmill training + conventional PT ; E2: Ankle weight aquatic treadmill training + conventional PT Duration: 30min/d, 5d/wk for 4wks conventional PT + 30min/d, 5d/wk intervention sessions	E1 vs E2: Static balance (+exp1) Dynamic balance (+exp1) Gait velocity (+exp1) Cadence (+exp1) Step length (+exp1) Stride length (+exp1) Swing phase (+exp1)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Duran et al. (2023) RCT (7) Nstart=39 Nend=39 TPS=Chronic A vs B vs 0 Primary listing: Table 9 (Treadmill Training)	E1: anti gravity treadmill E2: underwater walking therapy C: Conventional therapy Duration: 45min/d, 3d/wk, 4wks	E1 vs C vs E2: BI(-) BBS(-) 6MWT RestingHR(-) MaxHR(+exp1) Walking distance(+exp1) Borg scale(-) Cycle ergometer Resting HR(-)

		MaxHR(+exp1) test duration(+exp1) borg scale(-) MET level(+exp1) VO2 max(+exp1)
Park et al. (2019b) RCT (7) Nstart=30 Nend=29 TPS=Chronic A vs 0 vs B Primary listing: Table 4 (Trunk Training)	E: Land-based and aquatic trunk exercises + conventional physiotherapy C: Conventional physiotherapy Duration: E: 30min/d, 5d/wk, for 4wks land/aquatic trunk exercises + 30min/d, 5d/wk, 4wks conventional physiotherapy C: 60min/d, 5d/wk, 4wks conventional physiotherapy	E vs C: Korean Trunk Impairment Scale (+exp) 5-item, 3-level Postural Assessment Scale for Stroke (+exp) 7-item, 3-level Berg Balance Scale (+exp) Functional reach test (+exp) Modified Barthel index (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Therapy may produce greater improvements in motor recovery than Conventional Therapy.	2	Bei et al. 2023; Ku et al. 2020
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving motor recovery.	1	Lee et al. 2018d

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Aquatic Therapy when compared to Conventional Therapy for improving biomechanical gait measures.	3	Ku et al. 2020; Park et al. 2016; Furnari et al. 2014
1a	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving biomechanical gait measures.	3	Kim et al. 2022a; Kim et al. 2020d; Park et al. 2012
1b	There is conflicting evidence about the effect of Aquatic Ai Chi Therapy with Dry Land Therapy when compared to Aquatic Ai Chi Therapy for improving biomechanical gait measures.	1	Perez-de la Cruz et al. 2021
1b	Dual-Task Aquatic Training may produce greater improvements in biomechanical gait measures than Neurodevelopmental Techniques or Land-Based Dual Motor Task.	1	Saleh et al. 2019
1b	Aquatic Therapy with Strength Training may produce greater improvements in biomechanical gait measures than Aquatic Therapy.	1	Gu et al. 2023

1b	Waterjet resistance aquatic treadmill training with conventional PT may produce greater improvements in biomechanical gait measures than Ankle weight aquatic treadmill training with conventional PT.	1	Lim et al. 2020

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical balance measures.	2	Eyvaz et al. 2018; Cha et al. 2017b
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving biomechanical balance measures.	1	Kim et al. 2020d
1b	Dual-Task Aquatic Training may produce greater improvements in biomechanical balance measures than Neurodevelopmental Techniques or Land-Based Dual Motor Task.	1	Saleh et al. 2019

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	2	Eyvaz et al. 2018; Noh et al. 2008
1b	There is conflicting evidence about the effect of Aquatic Therapy when compared to Land-Based Upper Extremity Exercises for improving muscle strength.	1	Chu et al. 2004
1a	There is conflicting evidence about the effect of Aquatic Treadmill Walking or Aerobic Therapy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving muscle strength.	2	Lee et al. 2018d; Zhang et al. 2016

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving spasticity.	1	Zhang et al. 2016
1b	Sequential Preparatory Approach Aquatic Therapy may produce greater improvements in spasticity than Aquatic Therapy.	1	Temperoni et al. 2020

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Aquatic Treadmill Walking or Aerobic Therapy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving range of motion.	1	Zhang et al. 2016

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Therapy may produce greater improvements in neurophysiological measures than Conventional Therapy.	1	Cha et al. 2017b
1b	There is conflicting evidence about the effect of Aquatic Treadmill Walking or Aerobic Therapy when compared to Overground or	3	Franciulli et al. 2019; Zhang et al. 2016; Park et al. 2012

	Treadmill Walking or Cycle Ergometer for improving neurophysiological measures.		

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Therapy may produce greater improvements in aerobic measures than Land-Based Upper Extremity Exercises.	1	Chu et al. 2004
1a	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving aerobic measures.	2	Lee et al. 2018d; Han et al. 2018
1b	Anti gravity treadmill may produce greater improvements in aerobic measures than Conventional therapy.	1	Duran et al. 2023

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Aquatic Therapy may produce greater improvements in sensory and proprioceptive function than Conventional Therapy.	1	Park et al. 2011a

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving pain.	1	Eyvaz et al. 2018
1b	Aquatic Ai Chi Therapy with Dry Land Therapy may not have a difference in efficacy when compared to Aquatic Ai Chi Therapy for improving pain.	1	Perez-de la Cruz et al. 2020
1b	Aquatic Ai Chi therapy with Dry land therapy or Aquatic Ai Chi therapy may produce greater improvements in pain than Training on dry land.	1	Perez-de la Cruz et al. 2020

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Aquatic Therapy may produce greater improvements in activities of daily living than Conventional Therapy.	3	Bei et al. 2023; Eyvaz et al. 2018; Kim et al. 2015f
1a	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving activities of daily living.	3	Lee et al. 2018d; Han et al. 2018; Zhang et al. 2016
1b	Sequential Preparatory Approach Aquatic Therapy may not have a difference in efficacy when compared to Aquatic Therapy for improving activities of daily living.	1	Temperoni et al. 2020
1b	Anti gravity treadmill may not have a difference in efficacy when compared to Conventional therapy for improving activities of daily living.	1	Duran et al. 2023
1b	Land-based and aquatic trunk exercises with conventional physiotherapy may produce greater improvements in activities of daily living than Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy.	1	Park et al. 2019b

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	4	Ku et al. 2020; Park et al. 2016; Kim et al. 2015b; Furnari et al. 2014
1b	Aquatic Therapy may produce greater improvements in gait speed than Land-Based Upper Extremity Exercises.	1	Chu et al. 2004
1a	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving gait speed.	2	Kim et al. 2022a; Kim et al. 2020d
1b	Dual-Task Aquatic Training may produce greater improvements in gait speed than Neurodevelopmental Techniques or Land-Based Dual Motor Task.	2	Saleh et al. 2019; Kim et al. 2016a
1b	Aquatic Therapy with Strength Training may produce greater improvements in gait speed than Aquatic Therapy.	1	Gu et al. 2023
1b	Waterjet resistance aquatic treadmill training with conventional PT may produce greater improvements in gait speed than Ankle weight aquatic treadmill training with conventional PT.	1	Lim et al. 2020

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Aquatic Therapy when compared to Conventional Therapy for improving gait endurance.	2	Chan et al. 2017a; Zhu et al. 2016a
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving gait endurance.	1	Han et al. 2018
1b	Aquatic Therapy with Strength Training may produce greater improvements in gait endurance than Aquatic Therapy.	1	Gu et al. 2023
1b	Anti gravity treadmill may produce greater improvements in gait endurance than Conventional therapy.	1	Duran et al. 2023

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	9	Eyvaz et al. 2018; Cha et al. 2017b; Chan et al. 2017a; Zhu et al. 2016a; Kim et al. 2015f; Kim et al. 2015b; Tripp et al. 2014; Park et al. 2011a; Noh et al. 2008
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving functional mobility.	3	Franciulli et al. 2019; Zhang et al. 2016; Park et al. 2012
1a	There is conflicting evidence about the effect of Aquatic Ai Chi Therapy with Dry Land Therapy when compared to Aquatic Ai Chi Therapy for improving functional mobility.	2	Perez-de la Cruz et al. 2021; Perez-de la Cruz et al. 2020
1a	Aquatic Ai Chi therapy with Dry land therapy may produce greater improvements in functional mobility than Training on dry land.	2	Perez-de la Cruz et al. 2021; Perez-de la Cruz et al. 2020
1a	Aquatic Ai Chi therapy may not have a difference in efficacy when compared to Training on dry land for improving functional mobility.	2	Perez-de la Cruz et al. 2021; Perez-de la Cruz et al. 2020

2	Dual-Task Aquatic Training may produce greater improvements in functional mobility than Neurodevelopmental Techniques or Land-Based Dual Motor Task.	1	Kim et al. 2016a
1b	Aquatic Therapy with Strength Training may produce greater improvements in functional mobility than Aquatic Therapy.	1	Gu et al. 2023
1b	Sequential Preparatory Approach Aquatic Therapy may not have a difference in efficacy when compared to Aquatic Therapy for improving functional mobility.	1	Temperoni et al. 2020

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Aquatic Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	9	Vakilian et al. 2021; Ku et al. 2020; Eyvaz et al. 2018; Chan et al. 2017a; Zhu et al. 2016a; Kim et al. 2015f; Kim et al. 2015b; Tripp et al. 2014; Noh et al. 2008
1b	Aquatic Therapy may not have a difference in efficacy when compared to Land-Based Upper Extremity Exercises for improving balance.	1	Chu et al. 2004
1a	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving balance.	3	Kim et al. 2020d; Franciulli et al. 2019; Lee et al. 2018d
1b	Aquatic Ai Chi Therapy with Dry Land Therapy may result in lesser improvements in balance when compared to Aquatic Ai Chi Therapy.	1	Perez-de la Cruz et al. 2021
1b	Aquatic Ai Chi therapy with Dry land therapy may not have a difference in efficacy when compared to Training on dry land for improving balance.	1	Perez-de la Cruz et al. 2021
1b	Aquatic Ai Chi therapy may produce greater improvements in balance than Training on dry land.	1	Perez-de la Cruz et al. 2021
2	Dual-Task Aquatic Training may produce greater improvements in balance than Neurodevelopmental Techniques or Land-Based Dual Motor Task.	1	Kim et al. 2016a
1b	Aquatic Therapy with Strength Training may produce greater improvements in balance than Aquatic Therapy.	1	Gu et al. 2023
1b	Sequential Preparatory Approach Aquatic Therapy may produce greater improvements in balance than Aquatic Therapy.	1	Temperoni et al. 2020
1b	Waterjet resistance aquatic treadmill training with conventional PT may produce greater improvements in balance than Ankle weight aquatic treadmill training with conventional PT.	1	Lim et al. 2020
1b	Anti gravity treadmill may not have a difference in efficacy when compared to Conventional therapy for improving balance.	1	Duran et al. 2023
1b	Land-based and aquatic trunk exercises with conventional physiotherapy may produce greater improvements in balance than Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy.	1	Park et al. 2019b

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Aquatic Treadmill Walking or Aerobic Therapy may not have a difference in efficacy when compared to Overground or Treadmill Walking or Cycle Ergometer for improving quality of life.	1	Lee et al. 2018d
1b	Sequential Preparatory Approach Aquatic Therapy may produce greater improvements in quality of life than Aquatic Therapy.	1	Temperoni et al. 2020

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Sequential Preparatory Approach Aquatic Therapy may produce greater improvements in upper extremity function than Aquatic Therapy.	1	Temperoni et al. 2020

Key Points

- Aquatic Therapy may be beneficial for improving motor recovery, neurophysiological measures, sensory and proprioceptive function, and activities of daily living, but not biomechanical balance measures, muscle strength, pain, gait speed, functional mobility, and balance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical gait measures and gait endurance.
- Aquatic Therapy may be beneficial for improving aerobic measures and gait speed, but not balance, after stroke when compared to Land-Based Upper Extremity Exercises; the literature is mixed regarding muscle strength.
- Aquatic Treadmill Walking or Aerobic Therapy may not be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Overground or Treadmill Walking or Cycle Ergometer; the literature is mixed regarding muscle strength, range of motion, and neurophysiological measures.
- Aquatic Ai Chi Therapy with Dry Land Therapy may not be beneficial for improving pain after stroke when compared to Aquatic Ai Chi Therapy; the literature is mixed regarding biomechanical gait measures and functional mobility; Aquatic Ai Chi Therapy with Dry Land Therapy may result in lesser improvements in balance when compared to Aquatic Ai Chi Therapy.
- Dual-Task Aquatic Training may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Neurodevelopmental Techniques or Land-Based Dual Motor Task.
- Aquatic Therapy with Strength Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Aquatic Therapy.
- Sequential Preparatory Approach Aquatic Therapy may be beneficial for improving spasticity, balance, and quality of life, but not activities of daily living and functional mobility, after stroke when compared to Aquatic Therapy.
- Anti gravity treadmill may be beneficial for improving aerobic measures and gait endurance, but not activities of daily living and balance, after stroke when compared to Conventional therapy.
- Land-based and aquatic trunk exercises with conventional physiotherapy may be beneficial for improving activities of daily living and balance after stroke when compared to Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy.
- Aquatic Ai Chi therapy with Dry land therapy may be beneficial for improving functional mobility and pain, but not balance, after stroke when compared to Training on dry land.

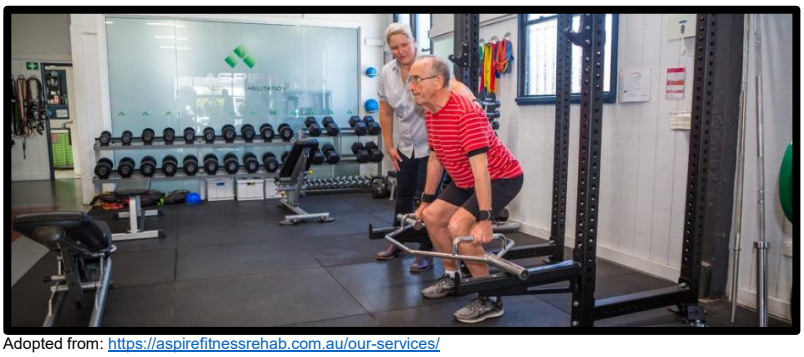
- Aquatic Ai Chi therapy may be beneficial for improving balance and pain, but not functional mobility, after stroke when compared to Training on dry land.
- Waterjet resistance aquatic treadmill training with conventional PT may be beneficial for improving biomechanical gait measures, gait speed, and balance after stroke when compared to Ankle weight aquatic treadmill training with conventional PT.

Summary of Key Points: Aquatic Therapy

Intervention	Control(s)	Function domain(s)	Effect
Aquatic Therapy	Conventional Therapy	Motor recovery, neurophysiological measures, sensory and proprioceptive function, activities of daily living	+
Aquatic Therapy	Conventional Therapy	Biomechanical balance measures, muscle strength, pain, gait speed, functional mobility, balance	−
Aquatic Therapy	Conventional Therapy	Biomechanical gait measures, gait endurance	=
Aquatic Therapy	Land-Based Upper Extremity Exercises	Aerobic measures, gait speed	+
Aquatic Therapy	Land-Based Upper Extremity Exercises	Balance	−
Aquatic Therapy	Land-Based Upper Extremity Exercises	Muscle strength	=
Aquatic Treadmill Walking or Aerobic Therapy	Overground or Treadmill Walking or Cycle Ergometer	Motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	−
Aquatic Treadmill Walking or Aerobic Therapy	Overground or Treadmill Walking or Cycle Ergometer	Muscle strength, range of motion, neurophysiological measures	=
Aquatic Ai Chi Therapy with Dry Land Therapy	Aquatic Ai Chi Therapy	Pain, balance	−
Aquatic Ai Chi Therapy with Dry Land Therapy	Aquatic Ai Chi Therapy	Biomechanical gait measures, functional mobility	=
Dual-Task Aquatic Training	Neurodevelopmental Techniques or Land-Based Dual Motor Task	Biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, balance	+
Aquatic Therapy with Strength Training	Aquatic Therapy	Biomechanical gait measures, gait speed, gait endurance, functional mobility, balance	+
Sequential Preparatory Approach Aquatic Therapy	Aquatic Therapy	Spasticity, balance, quality of life	+
Sequential Preparatory Approach Aquatic Therapy	Aquatic Therapy	Activities of daily living, functional mobility	−
Anti gravity treadmill	Conventional therapy	Aerobic measures, gait endurance	+
Anti gravity treadmill	Conventional therapy	Activities of daily living, balance	−
Land-based and aquatic trunk exercises with conventional physiotherapy	Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy	Activities of daily living, balance	+

Aquatic Ai Chi therapy with Dry land therapy	Training on dry land	Functional mobility, pain	+
Aquatic Ai Chi therapy	Training on dry land	Functional mobility	–
Aquatic Ai Chi therapy with Dry land therapy	Training on dry land	Balance	–
Aquatic Ai Chi therapy	Training on dry land	Balance, pain	+
Aquatic Ai Chi Therapy with Dry Land Therapy	Aquatic Ai Chi Therapy; Aquatic Ai Chi Therapy with Dry Land Therapy may result in lesser improvements in balance when compared to Aquatic Ai Chi Therapy	Biomechanical gait measures	–
Aquatic Ai Chi Therapy with Dry Land Therapy	Aquatic Ai Chi Therapy; Aquatic Ai Chi Therapy with Dry Land Therapy may result in lesser improvements in balance when compared to Aquatic Ai Chi Therapy	Functional mobility	=
Waterjet resistance aquatic treadmill training with conventional PT	Ankle weight aquatic treadmill training with conventional PT	Biomechanical gait measures, gait speed, balance	+

Strength and Resistance Training



Adopted from: https://aspirefitnessrehab.com.au/our-services/

Gray et al. (2012) found that individuals experience decreases in muscle fibre length and lean muscle mass post stroke. Neural input to muscle groups are reduced, resulting in weakness and a decrease in muscle fibre length, which the fibres may adapt to if the muscle is not moved through the full range of motion (Gray et al., 2012). In contrast, Klein et al. (2013) did not find any significant differences in muscle volume or atrophy between the contralesional and ipsilesional limbs in relation to weakness. However, the authors reported lower levels of maximal voluntary contraction torque in the contralesional limb, which was associated with deficits in muscle activation and electromyographic amplitude.

Muscle strengthening as an intervention is designed to improve the force-generation capacity of hemiplegic limbs and enhance functional abilities. Conventional physiotherapy rehabilitation programs may not include muscle strengthening as there is a belief that strength training may increase spasticity (Miller & Light, 1997). While the effectiveness of strength training is difficult to assess due to variability in training programs, it has been suggested that strength training should be recommended as part of a stroke rehabilitation program (Ada et al., 2006).

Strength or resistance training can take various forms in which eccentric, isometric, or concentric exercises are performed. The muscle lengthens during contraction in eccentric training, stays constant during isometric training, and shortens during concentric training. Other forms of strength or resistance training can include the way in which the exercise is performed. For example, in the case of isokinetic strength training, the exercise machines used produce a constant pace of work or speed regardless of the effort expended. Alternatively, functional strength training involves performing functional exercises that mimic common real-life activities and that require the muscles

to work together. Progressive resistance training involves performing exercises in which additional load is continuously added to facilitate adaptation. Strength or resistance training can also be coupled with other forms of exercises such as aerobic training, can be administered in various settings, and also at various intensities.

A total of 53 RCTs were found that evaluated strength and resistance training for lower extremity motor rehabilitation. 26 RCTs compared Strength or Resistance Training with Conventional Therapy or Educational Classes (Cho et al. 2024; Shao et al. 2023; Lattouf et al. 2021; Patel et al. 2021a; Wu et al. 2020a; Gambassi et al. 2019; Hendrey et al. 2018; Knox et al. 2018; Fernandez-Gonzalo et al. 2016; Şen et al. 2015; Zou et al. 2015; Mares et al. 2014; Son et al. 2014; Lee et al. 2013c; Lee & Kang 2013b; Sekhar et al. 2013; Patil et al. 2011; Cooke et al. 2010; Sims et al. 2009; Bale et al. 2008; Flansbjer et al. 2008; Akbari & Karimi, 2006; Yang et al. 2006; Moreland et al. 2003; Kwakkel et al. 1999; Glasser 1986). Five RCTs compared Strength or Resistance Training with Stretching or Relaxation (Ivey et al. 2017; Moore et al. 2016; Mead et al. 2007; Ouellette et al. 2004; Kim et al. 2001). Six RCTs compared Aerobic and Resistance Training with Conventional Therapy or Aerobic Training (Lund et al. 2018; Marzolini et al. 2018; Lee et al. 2015d; Severinsen et al. 2014; Lee et al. 2008; Teixeira-Salmela et al. 1999). Four RCTs evaluated Strength and Resistance Training Modalities (Alabdulwahab et al. 2015; Chen et al. 2015a; Pandian et al. 2015; Clark & Patten 2013). Two RCTs evaluated Strength and Resistance Training Intensity (Ahmed et al. 2024; Lamberti et al. 2017). One RCT evaluated Strength Training Combined with Mirror Therapy (Simpson et al. 2019). One RCT compared Strength Training with Visual Feedback with Physical Therapy (Cho et al. 2021). Two RCTs compared Resistance Training with Balance Training with Conventional Therapy (Vahlberg et al. 2017a; Vahlberg et al. 2017b). One RCT compared Resistance Training with and without rTMS with Resistance Training or rTMS Alone (Cha et al. 2017c). One RCT compared Dietary Supplements with Resistance training with Resistance Training Alone (Yoshimura et al. 2019). One RCT compared Muscle Strength Training to Paralytic Muscles with Muscle Strength Training to Non-paralytic Muscles (Park et al. 2021a). One RCT compared Strength Training with Neurodevelopmental Techniques with Neurodevelopmental Techniques Alone (Ostrowska et al. 2022).

In addition, 22 RCTs in which strength and resistance training formed part of a combined or comparative intervention are cross-referenced at the end of Table 21; their primary listings appear in other tables.

The methodological details and results of all 53 RCTs are presented in Table 21.

Table 21. RCTs Evaluating Strength and Resistance Training for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Strength or Resistance Training vs Conventional Therapy or Educational Classes		
Cho et al. (2024) Feasibility/pilot RCT (4) Nstart=32 Nend=24 TPS=Chronic A + B vs A + C vs D	E1: Lower limb resistance training + Abdominal draw-in maneuver (ADIM) + Conventional tailored physical therapy, E2: lower limb exercise + ADIM + Conventional tailored physical therapy C: Conventional tailored physical therapy Duration: 30min/d, 3d/wk, 4wks	E1/E2 vs C: TIS (+exp1) PASS (+exp1) Modified Functional Reach Test (+exp1) BBS (+exp1) Foot print (+exp1) MBI (+exp1) E1 vs E2: TIS (+exp1) PASS (+exp1) Modified Functional Reach Test (+exp1) BBS (-) Foot print (+exp1) MBI (+exp1)
Shao et al. (2023) RCT (6) Nstart=139	E: Strength training + ADL C: Conventional rehab	E vs C: BBS(+exp) 6MWT(+exp)

Nend=127 TPS=Acute A + B vs 0	Duration: 240 mins/d (45 mins of strength/conventional training + 15 mins of bicycle dynamometer + 30 mins of hand function training + 30 mins of electrotherapy), 5dsw/k, 6wks	MBI(-) Peak torque(+exp)
Lattouf et al. (2021) RCT (5) Nstart=37 Nend=37 TPS=Chronic A vs B	E: Eccentric muscle strengthening + Standard rehabilitative care C: Standard rehabilitative care Duration: 60min/d, 5d/wk, for 4wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (+exp) One-repetition maximum- paretic LE (+exp)
Patel et al. (2021a) RCT (6) Nstart=22 Nend=22 TPS=Chronic A vs B	E: Force-control training C: Ballistic ankle contraction strength training Duration: 90min/d, 2d/wk, for 2wks	E vs C: Post-hoc analysis (main effect) Stride variability stride length-paretic (-) stride length-nonparetic (-) stride length-mean both legs (-) stride time (-) Gait speed (-) Time * Training interaction Stride variability stride length-paretic (+exp) stride length-nonparetic (+exp) stride length-mean both legs (-) stride time (-) Gait speed (-) Ankle motor control accuracy: paretic (+exp) nonparetic (-) steadiness: paretic (-) nonparetic (+exp) Ankle strength paretic plantarflexion (+con) paretic dorsiflexion (-) nonparetic plantarflexion (+con) nonparetic dorsiflexion (-)
Wu et al. (2020a) RCT (7) Nstart=31 Nend=31 TPS=Acute A + B vs 0 Also in Table 10 (Physiotherapy and Exercise Programs)	E: Early conventional PT + intensive strength exercises C: Conventional physiotherapy Duration: 20-30min/d, 5d/wk conventional PT & 30min/d, 5d/wk, for 2wks strength exercises	E vs C: Fugl-Meyer Assessment (+exp) Functional Independence Measure - Ability to walk 50m (-) Berg Balance Scale (-) Barthel Index (-) Modified Rankin Scale (-)
Gambassi et al. (2019) RCT (6) Nstart=22 Nend=22 TPS=Chronic A vs 0	E: Resistance training + Conventional care (physical therapy) C: Conventional care (physical therapy) Duration: E: 2d/wk resistance training, 8wk + 2d/wk conventional care, for 8wks	E vs C: Isometric handgrip: paretic (-) non paretic (-) 10m Walk test (+exp) 5 repetition- Sit-to-Stand (+exp) Timed Up and Go (+exp) Hemodynamics: Systolic BP (-) Diastolic BP (-) Heart rate (+exp)

		Double product (+exp) Cardiac Autonomic Modulation: Time domain indexes (+exp) Nonlinear indexes (+exp) Oxidative stress markers (-)
Hendrey et al. (2018) RCT (8) Nstart=30 Nend=26 TPS=Subacute A vs 0	E: Ballistic Strength Training C: Conventional Therapy Duration: 45min/d, 3d/wk, for 6wks	E vs C: 10m Walk Test comfortable (+exp) fast (-) Timed Up and Go (-) Functional Ambulation category (no stats reported) Peak Jump height paretic (+exp) non paretic (-) Peak propulsive velocity paretic (+exp) non paretic (-) high level mobility assessment tool (no stats reported) Muscle torque non paretic hip flexors (-) paretic hip flexors (-) non paretic knee extensors (-) paretic knee extensors (-) non paretic knee flexors (-) paretic knee flexors (-) non paretic ankle plantar flexors (-) paretic ankle plantar flexors (-) non paretic ankle dorsiflexors (-) paretic ankle dorsiflexors (+exp) non paretic hip extensors prone knee straight (-) paretic hip extensors prone knee straight (-) non paretic hip extensors prone knee bent (-) paretic hip extensors prone knee bent (-) non paretic hip extensors supine (-) paretic hip extensors supine (-) Assessment of Quality of life 4D (no stats reported)
Knox et al. (2018) RCT (7) Nstart=144 Nend=128 TPS=Subacute A vs B vs C vs D	E1: Task oriented circuit gait training E2: Strength training of lower extremities C: Educational session on stroke management C: 90min/d, 1d Duration: E1/E2: 60min/d, 6d/12wk intervention sessions & C: 90min/d, 1d	E1/E2 vs C: Berg Balance Scale (+exp1) 10m walk Comfortable Gait Speed (+exp1) Fast gait speed (+exp1) Timed Up and Go test (+exp1) 6-minute walk test (+exp1, +exp2) E1 vs E2: Berg Balance Scale (+exp1) 10m walk Comfortable Gait Speed (+exp1) Fast gait speed (+exp1)

		Timed Up and Go test (+exp1) 6-minute walk test (+exp1)
Fernandez-Gonzalo et al. (2016) RCT (6) Nstart=32 Nend=29 TPS=Chronic A vs 0	E: Eccentric resistance training C: Conventional therapy (daily routine) Duration: 7reps/4sets, 2d/wk, for 12wks	E vs C: Timed Up-and-Go Test (+exp) Maximal Isometric force (-) Maximal dynamic force (+exp) Peak power (+exp) Magnetic Resonance Imaging Muscle Volume Quadriceps (+exp) Rectus Femoris (-) Vastus Lateralis (+exp) Vastus Intermedius (-) Vastus Medialis (+exp) Magnetic Resonance Imaging Cross sectional area Quadriceps greatest cross sectional area (+exp) Quadriceps mean cross sectional area (+exp) Modified Ashworth Scale (-) Berg Balance Scale (+exp) Talking while walking Single task circuit time (-) Dual task circuit time (+exp) Dual task cost of walking (+exp) Digits Span Forward subtest from the WAIS-III (+exp) Digits Span Backward subtest from the WAIS-III (+exp) Spatial Span Forward of the Wechsler Memory Scale (WMS-III) (-) Spatial Span Backward subtest of the Wechsler Memory Scale (WMS-III) (-) Conners Continuous Performance Test-II (CPT-II) (-) Rey Auditory Verbal Learning Test Learning (-) Long Term Recall (-) Stroop Test Color (+exp) Word (-) Word and Color (-) Verbal Fluency test (+exp) Trail Making test A (-) B (-) SF-36 Physical Function (-) Physical limitation (-) pain (exp) Social function (-) Mental Health (-) Emotional problems limitation (-) Vitality (-)

		General perception (-)
Sen et al. (2015) RCT (4) Nstart=50 Nend=50 TPS=Subacute A vs 0	E: Isokinetic strength training + Conventional rehabilitation C: Conventional rehabilitation Duration: 5d/wk for 3wks	E vs C: Functional Independence Measure (+exp) Stroke Specific Quality of Life Scale (+exp) 10-Meter Walking Test (+exp) 6-Minute Walking Test (+exp) Stair-Climbing Test (+exp) Timed Up and Go (+exp) Berg Balance Scale (+exp) Rivermead Mobility Index (+exp) Ankle Kinematics (+exp) Knee Kinematics (+exp)
Zou et al. (2015) RCT (8) Nstart=56 Nend=51 TPS=Chronic A vs 0	E: Lower Body Resistance Training C: Conventional therapy Duration: 40min/d, 3d/wk, for 8wks	E vs C: Fasting glucose level fasting insulin level (+exp) 2-hour blood glucose level during oral glucose tolerance test (+exp) homeostasis model assessment of insulin resistance (+exp) glycosylated hemoglobin (Hb A1c) total triglyceride level (-) total cholesterol level (+exp) high- density lipoprotein (+exp) cholesterol level low-density lipoprotein cholesterol level (+exp) body mass index (-) lower limb muscle strength(1RM) (+exp) Fugl-Meyer motor score (-)
Mares et al. (2014) RCT (6) Nstart=52 Nend=44 TPS=Chronic A1 vs A2	E1: Functional strength training - upper limb E2: Functional strength training - lower limb Duration: 60min/d, 4d/wk, for 6wks	E1 vs E2: Action Research Arm Test (+exp1) Functional Ambulation Category (-) Modified Rivermead Mobility Index (-) Timed Up and Go Test Time (+exp) Ability to complete (-) Nine Hole Peg Test (-)
Son et al. (2014) RCT (3) Nstart=28 Nend=28 TPS=Chronic A vs 0	E: Resistance training C: Conventional therapy Duration: 30min/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go Test (+exp) Sway Distance (+exp)
Lee et al. (2013c) RCT (4) Nstart=28 Nend=28 TPS=Chronic A + B vs 0	E: Progressive resistance training + Foot-ankle compression C: Conventional therapy Duration: 30min/d, 5d/wk for 6wks	E vs C: Gait velocity (+exp) Step time (+exp) Double limb support (+exp) Step length (+exp) Stride length (+exp) Heel-to-heel support (+exp)
Lee & Kang (2013b) RCT (5)	E: Isokinetic strength training C: Conventional therapy	E vs C: Gait velocity (+exp)

Nstart=20 Nend=20 TPS=Not reported A vs 0	Duration: 60min/d, 3d/wk for 6wks	Timed Up-and-Go Test (+exp) Stair up and down time (+exp) Peak torque flexion (+exp) Peak torque extension (+exp)
Sekhar et al. (2013) RCT (5) Nstart=40 Nend=40 TPS=Not reported A + B vs 0 Also in Table 11 (Balance Training)	E: Isokinetic strength training + balance exercises C: Conventional physiotherapy Duration: 6wks	E vs C: Isokinetic peak torque 30° (+exp) 60° (+exp) 90° (+exp) Berg balance scale (+exp)
Patil et al. (2011) RCT (2) Nstart=20 Nend=16 TPS=Subacute A vs 0	E: Theraband + conventional therapy + gait training C: Conventional Therapy + Gait Training Duration: 45min/d, 3d/wk, for 6wks	E vs C: Wisconsin Gait Scale (-) Rivermead Mobility Index (-)
Cooke et al. (2010) RCT (8) Nstart=109 Nend=99 TPS=Subacute A vs B vs C	E1: Functional strength training E2: High-intensity physiotherapy C: Low-intensity physiotherapy Duration: 60min/d, 4d/wk for 6wks	E1/E2 vs C: Walking speed (+exp2) Modified Rivermead index (-) step length (-) symmetry step time (-) knee peak torque flexion (+exp2) extension (-) EuroQuol Health state (-) EuroQuol Self-perceived health (-)
Sims et al. (2009) RCT (6) Nstart=45 Nend=43 TPS=Chronic A vs 0	E: Community-based progressive resistance training C: Conventional care Duration: 2d/wk, for 10wks	E vs C: Centre for Epidemiologic Studies for Depression scale (-) Assessment of Quality-of-Life Instrument (-) Short Form-12 Health Survey Questionnaire (-) stroke specific QOL (-) Stroke Impact Scale (-) Satisfaction with Life Scale (-) Social Support Survey (-) Life Orientation Test Revised (-) Self Esteem Scale (-) Recovery Locus of Control Scale (-)
Bale et al. (2008) RCT (7) Nstart=18 Nend=18 TPS=Subacute A vs 0	E: Functional strength training C: Conventional therapy Duration: 50min/d, 5d/wk for 4wks	E vs C: Habitual gait speed (+exp) Maximum gait speed (-) Knee muscle strength (-) Maximum weight bearing (-)
Flansbjer et al. (2008) RCT (6) Nstart=25 Nend=24	E: Progressive resistance training + Conventional therapy C: Conventional therapy Duration: 90min/d, 2d/wk for 10wks	E vs C: Dynamic Knee strength extension paretic (+exp) extension non paretic (+exp)

TPS=Chronic A vs 0		flexion paretic (+exp) flexion non paretic (+exp) Isokinetic knee strength extension paretic (-) extension non paretic (+exp) flexion paretic (-) flexion non paretic (+exp) Modified Ashworth scale (-) Timed Up and Go (-) 10meter walk test (-) 6min Walk test (-) Stroke Impact scale 3.0-Swedish version (-)
Akbari & Karimi (2006) RCT (5) Nstart=34 Nend=34 TPS=Chronic A + B + C vs A + B	E: Functional + balance + strengthening exercises C: Functional + balance exercises Duration: 3hrs/d, 3d/wk, for 4wks	E vs C: Modified Ashworth Scale (+exp) Muscle Strength (+exp) one-repetition maximum muscle groups of hip (+exp) -knee flexor (+exp) knee extensor (-) muscle groups of ankle (+exp)
Yang et al. (2006) RCT (7) Nstart=48 Nend=48 TPS=Chronic A vs 0	E: Task-oriented progressive resistance strength training C: No treatment Duration: 30min/d, 3d/wk for 4wks Task-oriented resistance training	E vs C: Muscle strength hip flexor (+exp) hip extensor (+exp) knee flexor (+exp) knee extensor (+exp) ankle dorsiflexor (+exp) ankle plantarflexor (+exp) 10m Walk velocity (+exp) cadence (+exp) stride length (+exp) 6min walk test (+exp) Step test (+exp) Timed Up and Go (+exp)
Moreland et al. (2003) RCT (8) Nstart=133 Nend=124 TPS=Subacute A1 vs A2	E: Progressive resistance exercises + Conventional therapy C: Exercises without progressive resistance + Conventional therapy Duration: 30min/d, 3d/wk for 4wks	E vs C: 2-Minute Walk Test (-) Chedoke-McMaster Stroke Assessment Disability Inventory (-) Days in the Program Before Discharge (-) Days before Discharge (-) Adverse Effects (-) Modified Ashworth Scale (-) Discharge Living Arrangements (-)
Kwakkel et al. (1999) RCT (7) Nstart=101 Nend=89 TPS=Acute A1 vs B vs A2	E1: Rehabilitation program with leg training E2: Rehabilitation program with Arm training C: Rehabilitation program with arm & leg immobilized Duration: 30min/d, 5d/wk, for 20wks	E1/E2 vs C: Barthel index (+exp1) Functional ambulation categories (+exp1) Action Research Arm test (+exp1, +exp2) 10m walk test (+exp1) Used walking aids (-) E1 vs E2: Barthel index (-) Functional ambulation categories (-)

		Action Research Arm test (-) 10m walk test (-) Used walking aids (-)
Glasser (1986) RCT (4) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: Isokinetic strength training (Kinetron) C: Conventional therapy Duration: 1hr/session, 2 sessions/d, 5d/wk for 5wks	E vs C: Functional Ambulation Profile (-) Ambulation time (-)
Strength or Resistance Training vs Stretching or Relaxation		
Ivey et al. (2017) RCT (4) Nstart=38 Nend=30 TPS=Chronic A vs 0	E: Bilateral strength training C: Conventional care (Supervised Stretching and ROM exercises) Duration: 45min/d, 3d/wk for 3mo	E vs C: 6min Walk test (+exp) VO2 peak (+exp) 10m Walking test Fastest comfortable speed (-) Self selected walking speed (-) One-repetition maximum paretic side(+exp) non paretic side (+exp) Skeletal muscle endurance (number of repetitions at 70% 1-RM): non paretic (+exp) paretic (+exp)
Moore et al. (2016) RCT (7) Nstart=40 Nend=40 TPS=Chronic A vs B	E: Progressive mixed exercise program (aerobic/strength/balance/flexibi lity) C: Stretching Duration: 45-60min/d, 3d/wk for 19wks	E vs C: 6-Minute Walk Test (+exp) 10-Metre Walk Test (+exp) Timed Up-and-Go Test (+exp) Berg Balance Scale (+exp) Peak Oxygen (+exp) Peak Work Rate (+exp)
Mead et al. (2007) RCT (7) Nstart=66 Nend=64 TPS=Subacute A vs B	E: Progressive endurance and resistance training C: Relaxation Duration: 75min/d, 3d/wk, for 12wks	E vs C: Functional Independence Measure (-) Nottingham Extended Activities of Daily Living (-) Rivermead Mobility Index (-) Functional Reach (-) Sit to Stand (-) Timed Up & Go (+exp) SF-36 Physical functioning (-) Role-physical (+exp) General health (-) Vitality (-) Mental health (-) Hospital Anxiety and Depression Score Anxiety (-) Depression (-) Comfortable walking speed (-) Walking economy (+exp) Leg extensor power affected leg (-) Leg extensor power unaffected leg (-)
Ouellette et al. (2004) RCT (7)	E: High-intensity resistance training C: Upper extremity stretching	E vs C:

Nstart=42 Nend=37 TPS=Chronic A vs B	Duration: 3d/wk, for 12wks	knee extensor strength (paretic/nonparetic) (+exp) leg press strength (paretic/nonparetic) (+exp) ankle dorsiflexor strength paretic (+exp) nonparetic (-) ankle plantarflexion strength (paretic/nonparetic) (+exp) Six-Minute Walk (-) Stair Climb (-) Chair-Rise(sit to stand) (-) Gait Velocity Habitual (-) Maximal (-) Geriatric Depression Scale(-) Sickness Impact Profile (-) Ewart's Self Efficacy Scale (-) PF 10 (-) Late Life Function and Disability Instrument Function Total(-) Upper Extremity(-) Basic Lower Extremity(-) Advanced Lower Extremity (+exp) Frequency Dimension Total (-) Social Role(-) Personal Role(-) Limitation Dimension Total (+exp) Instrumental Role (+exp) Management Role(-)
Kim et al. (2001) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B	E: Isokinetic strength exercises (active ROM) using dynamometer C: Passive range of motion exercises using dynamometer Duration: 30min/d, 3d/wk for 6wks	E vs C: Gait speed (-) Stair climbing (-) SF-36 (-) LE Muscles strength (-)
Aerobic and Resistance Training vs Conventional Therapy or Aerobic Training		
Lund et al. (2018) RCT (5) Nstart=43 Nend=43 TPS=Chronic A vs B vs 0 Also in Table 8 (Cycle Ergometer Training)	E1: Aerobic training on cycle ergometer E2: Resistance training of lower extremities C: Sham training of upper extremities Duration: 3sets/wk for 12wks	E1 vs E2 vs C: Berg Balance Scale (-) Peak oxygen consumption (No stats) maximal voluntary contractions (No stats) 6 min walking test (-) 10m walk speed (-)
Marzolini et al. (2018) RCT (6) Nstart=73 Nend=68 TPS=Chronic A + B vs A	E: Aerobic training + Resistance training C: Aerobic Training Duration: 20-60mins/d, 5d/wk for 6mo	E vs C: 6 minute walking distance (-) stair climb (-) sit-to-stand (-) cardiopulmonary assessment (-) resting heart rate (-) resting systolic BP (-) resting diastolic BP (-)

		VO2 peak (-) Peak RER (-) VO2 VT (+exp) Body composition Body mass index (-) Total body lean mass (+exp) Trunk (+exp) Appendicular Nonaffected-side limbs Affected-side limbs (+exp) Total body percentage fat (-) Trunk (-) Appendicular (-) Nonaffected-side limbs (-) Affected-side limbs (-) Muscular strength Elbow flexion, affected side (+exp) elbow flexion nonaffected side (+exp) knee extension, affected side knee extension nonaffected side (+exp) Dietary Analysis (-) kilocalories (-) protein (-)
Lee et al. (2015d) RCT (7) Nstart=30 Nend=26 TPS=Chronic A + B vs 0	E: Resistance training + Aerobic training C: Conventional therapy Duration: 1hr/d, 3d/wk for 16wks	E vs C: BP peripheral systolic/diastolic blood pressure (-) central systolic blood pressure (-) central diastolic blood pressure (+exp) augmentation index (+exp) Pulse wave velocity (+exp) 6-min walk test (+exp) 10-m walk test (+exp) Timed Up-and-Go Test (-) grip strength (+exp) flexibility (+exp) Functional Reach test (-) 30-sec chair stand test (+exp) chair sit and reach (+exp)
Severinsen et al. (2014) RCT (5) Nstart=48 Nend=43 TPS=Chronic A vs B vs C	E1: Aerobic training E2: Progressive resistance training C: Resistance training of the arms (sham) Duration: 65min/d, 3d/wk, for 12wks	E1 vs E2: 6-min walk test (-) 10m walk test (-) Peak aerobic capacity (+exp1) knee muscle strength (nonparetic/paretic) (+exp2) Short-Form 36(-) E1/E2 vs C: 6-min walk test (-) 10m walk test (-) Peak aerobic capacity (+exp1) knee muscle strength (nonparetic)(exp1) knee muscle strength(paretic) (-) Short-Form 36(-)

Teixeira-Salmela et al. (1999) RCT crossover (3) Nstart=13 Nend=13 TPS=Chronic A vs B	E: aerobic exercises and lower extremity muscle strengthening C: No intervention Duration: 60-90min/d, 3d/wk for 10wks	E vs C: Peak Isokinetic Torque of Muscle (Affected) (+exp) Pendulum Test (+exp) Nottingham Health Profile (+exp) Gait speed (+exp) Human Activity Profile (+exp) Stair Climbing (+exp)
Strength and Resistance Training Modalities		
Alabdulwahab et al. (2015) RCT (6) Nstart=26 Nend=23 TPS=Chronic A vs B	E: Functional task-oriented gait training with limb overloading C: Limb overloading resistance training Duration: 1hr/d, 3d/wk for 4wks	E vs C: Cadence (+exp1) Fast Gait Speed (+exp1) Slow Gait Speed (+exp1) Weight Bearing (+exp1) Stroke Impact Scale (+exp1)
Chen et al. (2015a) RCT (4) Nstart=31 Nend=24 TPS=Subacute A vs B	E: Isokinetic strengthening exercise C: Isometric strengthening exercise Duration: 3 sets/d, 5d/wk, for 4wks	E vs C: peak isometric torque of knees at 90° flexion sound side (-) flexion lesion side (-) extension sound side (-) extension lesion side (-) peak torque of isokinetic knee at angular velocities 60°/s extension lesion side (-) extension sound side (-) flexion lesion side (+exp) flexion sound side (-) peak torque of isokinetic knee at angular velocities 120°/s extension lesion side (-) extension sound side (-) flexion lesion side (+exp) flexion sound side (-) Short Form 36 (-) Timed Up and Go test (-) C-reactive protein (-) interleukin 6 (-) TNF-a (-)
Pandian et al. (2015) RCT (8) Nstart=35 Nend=35 TPS=Chronic A + B vs C	E: Motor therapy for Less Affected side (Progressive resistive and strengthening exercise + Bimanual-task training) C: neurophysiological-based conventional therapy Duration: 60min/d, 3d/wk for 8wks	E vs C: Affected side Brunnstrom Recovery Stage hand(+exp) arm (+exp) lower extremity (+exp) Fugl-Meyer Assessment upper extremity (+exp) upper arm(+exp) wrist & hand (-) lower extremity(+exp) Less-Affected side Minnesota Manual Dexterity Test(+exp) Purdue Peg Board Test(+exp) Manual Muscle Testing(+exp)

Clark & Patten (2013) RCT (6) Nstart=35 Nend=33 TPS=Chronic A vs B	E1: Eccentric resistance training + Gait training E2: Concentric resistance training + Gait training Duration: 90min/session, 3d/wk, for 5wks resistance training, then 90min/session, 3d/wk, for 3wks gait training.	E2 vs E1: Muscle power-paretic leg (+exp1) Walking speed (+exp1) neuromuscular activation (+exp1)
Strength and Resistance Training Intensity		
Ahmed et al. (2024) RCT (8) Nstart=32 Nend=30 TPS=Chronic A vs B	E: Low intensity resistance training with blood flow restriction (LIRT-BFR) C: High intensity resistance training (HIRT) Duration: 60min/d(40min resistance training, 10 min cycling, 10 mins treadmill), 3d/wk, 5wks	E vs C: 6MWT(-) FTSTST(-) TUG(-) BI(-) Cadence(-) Gait speed(-) Stride length(-) HADS(-)
Lamberti et al. (2017) RCT (7) Nstart=35 Nend=30 TPS=Chronic A1 vs A2	E1: Low intensity walking and resistance training program E2: High intensity walking and resistance training program Duration: 60min/d, 3d/wk, for 8wks	E1 vs E2: 6-minute walking distance test (+exp) SF-36 (+exp) peak power of the femoral quadriceps and biceps (+exp) 10-meter walk test (-) Berg balance scale (-) lower-limb strength (-) 5 sit-to-stand test (-)
Strength Training Combined with Mirror Therapy		
Simpson et al. (2019) RCT (7) Nstart=35 Nend=31 TPS=Chronic A + B vs A Also in Table 19 (Mirror Therapy); Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Home-based isometric unilateral strength training + mirror therapy C: Home-based isometric unilateral strength training Duration: 20min/d, 3d/wk, for 4wks	E vs C: Trained ankle maximum voluntary contraction (-) Untrained ankle maximum voluntary contraction (-) 10-Metre Walk Test (-) Timed Up & Go Test (-) Modified Ashworth Scale (-) London Handicap Scale (-)
Strength Training with Visual Feedback vs Physical Therapy		
Cho et al. (2021) RCT (8) Nstart=25 Nend=23 TPS=Chronic A + B vs C Also in Table 15 (Biofeedback)	E: Bi-axial ankle-resistive strengthening muscle training + visual feedback C: Ankle Physical therapy Duration: 40min/d, 5d/wk, for 4wks	E vs C: Fugl-Meyer Assessment lower extremity score (+exp) Berg balance Scale (-) 10-meter walking test (-) Ankle co-contraction index Dorsiflexion (+exp) Plantarflexion (+exp) Inversion (+exp) Eversion (+exp) Ankle proprioception (-) Ankle co-activation index (+exp)

Resistance Training with Balance Training vs Conventional Therapy		
Vahlberg et al. (2017a) RCT (7) Nstart=43 Nend=43 TPS=Chronic A + B vs 0 Also in Table 11 (Balance Training)	E: Progressive resistance + balance training and motivational session C: Usual activity Duration: 75min/d, 2d/wk, for 12wks	E vs C: Bergs balance scale (-) body mass index (-) fat-free mass index (-) fat mass index (-) fat-mass percent (+exp) physical activity scale for the elderly (-) six-minute walking (+exp) short physical performance test (-) Chair rise 5times (-) Plasma albumin (-) Plasma total cholesterol (-) Plasma HDL and LDL cholesterol (-) Serum IGF-1 (+exp) Plasma CRP (-)
Vahlberg et al. (2017b) RCT (8) Nstart=67 Nend=57 TPS=Chronic A + B vs 0 Also in Table 11 (Balance Training)	E: Progressive resistance + balance training and motivational session C: Usual activity Duration: 75min/d, 2d/wk, for 12wks	E vs C: Berg Balance Scale (+exp) Short Physical Performance Battery (-) Six-Minute Walk Test (+exp) 10 Meter Walk Test (+exp) Euro-QoL-5D (-) Fall-Related Self-Efficacy Scale (-) Geriatric Depression Scale (-) Physical Activity Scale for the Elderly (-)
Resistance Training with and without rTMS vs Resistance Training or rTMS Alone		
Cha et al. (2017c) RCT (7) Nstart=30 Nend=30 TPS=Subacute A1 vs A2 vs B Also in Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E1: Ankle Strengthening E2: Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: rTMS Duration: 10min/d, 5d/wk, for 8wks	E2 vs C: Motor evoked potential amplitude (+exp2) plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2) E2 vs E1: Motor evoked potential amplitude (+exp2) Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2)
Dietary Supplements with Resistance training vs Resistance Training Alone		
Yoshimura et al. (2019) RCT (6) Nstart=49 Nend=44 TPS=Acute A + B vs B Also in Table 52 (Supplements and Vitamins)	E1: Leucine enriched amino acid + resistant training E2: resistant training Duration: 1 session/d leucine, vitamin, carbohydrate supplement, & ≤3 hr/d rehabilitation, for 8wks	E1 vs E2: Functional independence measure motor (+exp) cognitive (-) Skeletal muscle mass index (+exp) Handgrip strength (+exp) Mini Nutritional Assessment-Short Form (-) Protein Intake (-) Energy intake (-) Serum albumin (-)
Muscle Strength Training to Paralytic Muscles vs Muscle Strength Training to Non-paralytic Muscles		
Park et al. (2021a) RCT (6) Nstart=21	E: Muscle strengthening training to non-paralytic dorsiflexion muscles + neurodevelopmental therapy	E vs C: EMG Dorsiflexor Muscle Activity (-) Timed Up & Go Test (-)

Nend=21 TPS=Chronic A1 + B vs A2 + B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	C: Muscle strengthening training to paralytic dorsiflexion muscles + neurodevelopmental therapy Duration: 60min/d, 5d/wk, for 6wks neurodevelopmental therapy & 30min/d, 3d/wk, for 6wks muscle strengthening exercises	10-Metre Walk Test (-)
Strength Training with Neurodevelopmental Techniques vs Neurodevelopmental Techniques Alone		
Ostrowska et al. (2022) RCT (4) Nstart=131 Nend=120 TPS=Chronic A + B vs B	E: SPIDER support belt exercise device strengthening program + Neurophysiological methods C: Neurophysiological methods Duration: E: 45min/d 1d/wk SPIDER system + 45min, 4d/wk for 2wks neurophysiological training; C: 45min/d 5d/wk for 2wks	E vs C: Pelvic tilt(+exp) Center of mass(no stat)
Additional Comparisons from the Source Dataset		
Lee et al. (2013d) RCT (3) Nstart=39 Nend=39 TPS=Chronic A vs 0	E1: progressive resistive training with closed-kinetic chain E2: progressive resistive training with Open-kinetic chain C: No training Duration: 5x/wk for 6wks kinetic chain training	E1 vs E2 vs C: Contact area Forefoot (-) Midfoot (-) Hindfoot (+exp1) Peak contact force Forefoot (-) Midfoot (-) Hindfoot (+exp1) Contact impulse (-)
Page et al. (2008) RCT crossover (4) Nstart=7 Nend=7 TPS=Chronic A vs B	E: Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus C: Home exercise program Duration: 30min/d, 3d/wk, 8wks - 1wk washout	E vs C: Fugl-Meyer Assessment of lower extremity (No stats) Berg Balance Scale(No stats)
Carr et al. (2003) RCT (3) Nstart=40 Nend=40 TPS=Chronic A + B vs X	E: Aerobic training (upper and lower body ergometer) + strength training C: Aerobic training Duration: 20-40min 3d/wk, 16wks aerobic exercise & 8 activities/session, 3x/wk, 16wks strength exercise	E vs C: Peak VO2 max (not stats) Peak torque knee (not stats) shoulder (not stats) Total Cholesterol level (not stats), HDL level (not stats) FBS level (not stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Nadeem et al. (2024) RCT (7) Nstart=74 Nend=74 TPS=Chronic A vs 0 Primary listing: Table 4 (Trunk Training)	E: Core strengthening exercises + Conventional rehab C: Conventional rehab Duration: 45-50 min/d (15-20 min/session + 30 min rehab), 4d/wk, 8wks	E vs C: TIS (+exp) TUG (+exp)
Rana et al. (2024) RCT (6) Nstart=40	E: Metronome training + core strengthening + general balance exercises	E vs C: TUG (+exp) Tinetti Test (+exp)

Nend=40 TPS=Chronic A + B + C vs B + C Primary listing: Table 22 (Rhythmic Auditory Stimulation)	C: Core strengthening + general balance exercises Duration: 8wks	
Nakagawa et al. (2024) RCT (6) Nstart=60 Nend=60 TPS=Not reported A + B vs B Primary listing: Table 52 (Supplements and Vitamins)	E: 120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) + resistance exercise training program C: Resistance training exercise program Duration: minimum 3d/wk, 12 wks (instructed to consume nutritional supplement within 1h of completing resistance exercise)	E vs C: 10mWT comfortable speed (-) maximum speed (-) 2min walking distance (-) 30s chair test (-) leg extensor torque paretic side (-) non-paretic side (-) FIM (-) motor (-) cognitive (-) blood pressure (-) serum levels/nutritional markers (-) BMI (-)
Hong et al. (2024) RCT (5) Nstart=60 Nend=60 TPS=Acute A + B vs B Primary listing: Table 53 (Acupuncture and Massage)	E: Acupuncture + trunk strengthening training + conventional rehab C: Conventional rehab + trunk strengthening training Duration: E: 75min/d (30 min acupuncture + 45 min rehab), 6d/wk, 8 wks; C: 45min/d, 6d/wk for 8wks	E vs C: holden walking scale (+exp) Berg Balance Scale (+exp) 10mWT step length (+exp) step width (+exp) gait speed (+exp)
Rizvi et al. (2023) RCT (7) Nstart=32 Nend=32 TPS=Subacute A vs B Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Individualized cardio rehabilitation (aerobic & resistance training) + Conventional stroke rehab C: Conventional Stroke Rehabilitation Duration: 30-45min/d aerobic exercise, 4d/wk, +2d/wk body resistance training, for 12 wks	E vs C: BBS (-) TUG (+exp) mean NN (+exp) RMSSD (+exp) LF/HR ratio (-) SDNN (-) pNN50 (-) LF power (-) HF power (-) VLF power (-) total power (-) normalized LF (-) normalized HF (-) resting HR (+exp) peak HR (+exp) SBP (-) DBP (-) VE peak (+exp) RR peak (-) PETCOT2 rest (-) PETCO2 peak (+exp) VE/CO2 slope (+exp) VE/O2 slope (+exp) RER (+exp)

		workload (-) RPE (-) exercise duration (no stat)
Nindorera et al. (2023) RCT crossover (8) Nstart=46 Nend=46 TPS=Chronic A vs B Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Circuit walking, balance, cycling and strength training (CBCS) C: Sociocultural intervention (board games, cultural discourse and drama) Duration: 120min/d, 3x/wk for 12wk	E vs C: ACTIVLIM Stroke Scale(+exp) Stroke Impairment Assessment Scale (SIAS) (+exp) Berg Balance Scale (BBS) (+exp) Hospital Anxiety and Depression Scale (HADS) (-) 6-Minute Walk Test (6MWT) (+exp) 10-Metre Walk Test (10MWT) (-) Participation Measurement Scale (PMscale) (+exp)
Zhu et al. (2023) RCT (6) Nstart=45 Nend=45 TPS=Chronic A vs B + C vs 0 Primary listing: Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E1: Extracorpeal shockwave therapy E2: ESWT + Isokinetic strength training C: conventional rehab Duration: ESWT: 1d/wk, 4wks Strength training: 30min/d, 5d/wk, 4wks	E1 vs E2: MAS(-) EMG(+exp) rPT(-) E1 vs C: MAS(+exp) EMG(+exp) rPT(-) E2 vs C: MAS(+exp) EMG(-) rPT(-)
Midan et al. (2022) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C Primary listing: Table 12 (Stretching or Mobilization Exercises)	E: Foot Mobilization + Intrinsic Foor Muscles Facilitation + (Strength and Resistance training including PNF, Gait training and Balance training through Pertubations) C: Strength and Resistance training including PNF, Gait training and Balance training through Pertubations Duration: 60 min/session, 3 session/wk, 4 wks	E vs C: Center of Pressure MediolaterI displacement (-) Mediolateral Speed (-) Mediolateral width (-) Anteroposterior speed (+exp) Anteroposterior displacement (+exp) Reverse Anteroposterior displacement (+exp)
Wang et al. (2022c) RCT (6) Nstart=21 Nend=19 TPS=Chronic A vs 0 Primary listing: Table 13 (Orthotic Devices)	E: Non-elastic taping + Exercise training (progressive resistance exercise, balance training and treadmill training) C: Sham taping + exercise training Duration: 50min/d, 2d/wk, for 6wks	E vs C: double support time (+exp) spatial symmetry index (-) temporal symmetry index (-) velocity (-) BBS (-) 6MWT (-) FES-I (-)
Antonio et al. (2022) RCT (8) Nstart=26 Nend=26 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) C: Aerobic and Resistance Exercises, without Performing Cognitive Task Duration: 60-90min, 2d/wk, for 15wks	E vs C: Timed-up-and-go Test (+exp) Cognitive Performance in TUG Dual Task (-) Dual Task Cost in in TUG (-) 10-M Walk Test (-) 10MWT Dual Task (-) Cognitive Performance in 10MWT Dual Task (-) Dual Task Cost in 10MWT (-)

		6-M Walk Test (-) Maximum Ballistic Voluntary Isometric Contraction (-) Montreal Cognitive Assessment (-) Falls Efficacy Scale (FES-I) (-) Stroke Impact Scale (-) Mini-BESTest (-)
Gu et al. (2023) RCT (7) Nstart=61 Nend=61 TPS=Subacute A + B vs A Primary listing: Table 20 (Aquatic Therapy)	E: Aquatic training + under water strength training C: Aquatic training Duration: 45min/d, 5d/wk for 6wks	E vs C: Timed up and go (+exp) Berg Balance scale (+exp) 2-minute walk test (+exp) Stride length (+exp) Stride width (+exp) Stride frequency (+exp) Walking speed (+exp)
Koch et al. (2020) RCT (5) Nstart=131 Nend=94 TPS=Subacute A + B + C vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Aerobic training (Stationary treadmill or bicycle ergometer) + resistance training + cognitive training C: Sham Combined aerobic and resistance training + Sham Cognitive training Duration: 80-100min/d, 3d/wk, 12wks	E vs C: Adverse Events (-) Feasibility (+exp) Montreal Cognitive Assessment (-) Hopkins Verbal Learning Test Revised (-) Hopkins Verbal Learning Test Revised Delayed Recall (-) Grooved Pegboard (-) Stroop delis Kaplan Executive function test (-) WAIS-IV Coding Digit Symbol Substitution Test (-) Brief Visuospatial Memory Test-R (-) Brief Visuospatial Memory Test-R Delayed Recall Digit Span Backwards (-) CogState Brief Battery (-) Center for Epidemiological Studies Depression Scale (-) Stroke Impact Scale (-) Timed Up and Go Test (-) 15 Meters Walk Speed (-) 6-minute walk test (-) 30-second chair stand repetition test (-) single repetition maximal leg (-) single repetition maximal chest press (-) grip strength affected grip strength non-affected (-)
Chung et al. (2020b) RCT (6) Nstart=26 Nend=25 TPS=Chronic A1 + B vs A2 + B Primary listing: Table 28 (Functional Electrical Stimulation)	E: Ankle strengthening training + BCI-based FES on TA C: Ankle strengthening training + FES on TA Duration: 30min/session, 3d/wk for 5wks	E vs C: Timed-up and-go (-) Berg Balance scale (-) Gait velocity (+exp) Gait cadence (+exp) Stride length (-) Step length (-) Single support time (-)
Yoshimura et al. (2019) RCT (6) Nstart=49 Nend=44	E1: Leucine enriched amino acid + resistance training + conventional therapy E2: Resistance training + conventional therapy	E1 vs E2: Functional independence measure Motor (+exp) Cognitive (-)

TPS=Acute A + B vs B Primary listing: Table 52 (Supplements and Vitamins)	Duration: 1/d leucine, vitamin, carbohydrate supplement, for 8wks	Skeletal muscle mass index (+exp) Handgrip strength (+exp) Mini Nutritional Assessment-Short Form (-) Protein Intake (-) Energy intake (-) Serum albumin (-)
Knox et al. (2018) RCT (7) Nstart=144 Nend=128 TPS=Subacute A vs B vs C Primary listing: Table 5 (Task-Specific Training)	E1: Task oriented circuit gait training E2: Strength training of lower extremities C: Educational session on stroke management Duration: E1/E2: 60min/d, 6d/12wk intervention sessions & C: 90min/d, 1d	E1/E2 vs C: Berg Balance Scale (+exp1) 10m walk Comfortable Gait Speed (+exp1) Fast gait speed (+exp1) Timed Up and Go test (+exp1) 6-minute walk test (+exp1, +exp2) E1 vs E2: Berg Balance Scale (+exp1) 10-Meter Walk Test Comfortable Gait Speed (+exp1) Fast gait speed (+exp1) Timed Up and Go test (+exp1) 6-minute walk test (+exp1)
Lund et al. (2018) RCT (5) Nstart=43 Nend=43 TPS=Chronic A vs B vs 0 Primary listing: Table 8 (Cycle Ergometer Training)	E1: Aerobic training on cycle ergometer E2: Resistance training of lower extremities C: Sham training of upper extremities Duration: 3sessions/wk for 12wks	E1 vs E2 vs C: Berg Balance Scale (-) Peak oxygen consumption (No stats) maximal voluntary contractions (No stats) 6 min walking test (-) 10m walk speed (-)
Marzolini et al. (2018) RCT (6) Nstart=73 Nend=68 TPS=Chronic A + B vs A Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Aerobic training (over ground walking) + Resistance training C: Aerobic Training Duration: 20-60mins/d, 5d/wk for 24wks	E vs C: 6 minute walking distance (-) stair climb (-) sit-to-stand (-) cardiopulmonary assessment (-) resting heart rate (-) resting systolic BP (-) resting diastolic BP (-) VO2 peak (-) Peak RER (-) VO2 VT (+exp) Body composition Body mass index (-) Total body lean mass (+exp) Trunk (+exp) Appendicular Nonaffected-side limbs Affected-side limbs (+exp) Total body percentage fat (-) Trunk (-) Appendicular (-) Nonaffected-side limbs (-) Affected-side limbs (-) Muscular strength Elbow flexion, affected side (+exp)

		elbow flexion nonaffected side (+exp) knee extension, affected side knee extension nonaffected side (+exp) Dietary Analysis (-) kilocalories (-) protein (-)
Cha et al. (2017c) RCT (7) Nstart=30 Nend=30 TPS=Subacute A1 vs A2 vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E1: Ankle Strengthening E2: Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: rTMS Duration: 10min/d, 5d/wk, for 8wks	E2 vs C: Motor evoked potential amplitude (+exp2) Peak torque Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2) E2 vs E1: Motor evoked potential amplitude (+exp2) Peak torque Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2)
Lee et al. (2015d) RCT (7) Nstart=30 Nend=26 TPS=Chronic A + B vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Aerobic Training (fast walking and walking up-stairs) + Resistance Training C: Conventional care Duration: 60min/d, 3d/wk, 16wks	E vs C: BP peripheral systolic/diastolic blood pressure (-) central systolic blood pressure (-) central diastolic blood pressure (+exp) augmentation index (+exp) Pulse wave velocity (+exp) 6-min walk test (+exp) 10-m walk test (+exp) Timed Up-and-Go Test (-) grip strength (+exp) flexibility (+exp) Functional Reach test (-) 30-sec chair stand test (+exp) chair sit and reach (+exp)
Indurkar et al. (2013) RCT (4) Nstart=30 Nend=30 TPS=Chronic A vs 0 Primary listing: Table 5 (Task-Specific Training)	E: Task Oriented circuit LE strength training + physiotherapy C: Conventional physiotherapy Duration: 30min/d, 6dwk for 3wks circuit training & 60min physiotherapy	E vs C: 6-min Walk Test (+exp) 5m Walk Test (+exp) Berg Balance (+exp) Timed Up and Go (+exp)
Lee et al. (2008) RCT (8) Nstart=52 Nend=48 TPS=Chronic A + B vs A vs C vs 0 Primary listing: Table 8 (Cycle Ergometer Training)	E1: Aerobic cycling + progressive resistance training (PRT) E2: Aerobic cycling + sham PRT E3: Sham cycling + PRT C: Sham cycling + Sham PRT Duration: 60min/d, 3d/wk for 10wks	E2/E3 vs C: 6MWT distance (-) endurance-affected (+exp3) Endurance unaffected side (+exp2, +exp3) 10MWT fast speed (-) habitual speed (-) Stair climbing power (+exp3) Peak power output (+exp2, +exp3) Peak heart rate (-)

		Peak oxygen uptake (+exp2) Treadmill walking physical cost index (+exp2) Treadmill walking oxygen cost (-) 1RM in affected leg (+exp3) 1RM in unaffected leg (+exp3) Power in affected leg (+exp3) Power in unaffected leg (+exp3) SF-36 (-) Ewart self-efficacy walking (+exp3) Stair climbing (+exp3) E1 vs C: 6MWT distance (-) endurance-affected (+exp1) Endurance unaffected side (+exp1) 10MWT fast speed (-) habitual speed (+con) Stair climbing power (+exp1) Peak power output (+exp1) Peak heart rate (-) Peak oxygen uptake (+exp1) Treadmill walking physical cost index (+exp1) Treadmill walking oxygen cost (-) 1RM in affected leg (+exp1) 1RM in unaffected leg (+exp1) Power in affected leg (+exp1) Power in unaffected leg (+exp1) SF-36 (-) Ewart self-efficacy walking (-) Stair climbing (-)
Yang et al. (2006) RCT (7) Nstart=48 Nend=48 TPS=Chronic A vs 0 Primary listing: Table 5 (Task-Specific Training)	E: Task-oriented progressive resistance strength training C: No treatment Duration: 30min/d, 3d/wk for 4wks Task-oriented resistance training	E vs C: Muscle strength Hip flexor (+exp) Hip extensor (+exp) Knee flexor (+exp) Knee extensor (+exp) Ankle dorsiflexor (+exp) Ankle plantarflexor (+exp) 10-m Walk Velocity (+exp) Cadence (+exp) Stride length (+exp) 6-Minute Walk Test (+exp) Step Test (+exp) Timed Up-and-Go Test (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group
- indicates no statistically significant between groups differences at α=0.05
no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Strength or Resistance Training when compared to Conventional Therapy or Educational Classes for improving motor recovery.	3	Patel et al. 2021a; Wu et al. 2020a; Zou et al. 2015
1b	Strength and Resistance Training Modalities may produce greater improvements in motor recovery than Limb overloading resistance training.	1	Pandian et al. 2015
1b	Strength Training with Visual Feedback may produce greater improvements in motor recovery than Physical Therapy.	1	Cho et al. 2021
1b	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Vahlberg et al. 2017a
2	Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus may not have a difference in efficacy when compared to Home exercise program for improving motor recovery.	1	Page et al. 2008
1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in motor recovery than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	Early conventional physical therapy with intensive strength exercises may produce greater improvements in motor recovery than Conventional physiotherapy.	1	Wu et al. 2020a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may produce greater improvements in biomechanical gait measures than Conventional Therapy or Educational Classes.	6	Patel et al. 2021a; Hendrey et al. 2018; Şen et al. 2015; Lee et al. 2013c; Cooke et al. 2010; Yang et al. 2006
1b	Strength and Resistance Training Modalities may produce greater improvements in biomechanical gait measures than Limb overloading resistance training.	1	Alabdulwahab et al. 2015
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving biomechanical gait measures.	1	Ahmed et al. 2024
2	Strength Training with Neurodevelopmental Techniques may produce greater improvements in biomechanical gait measures than Neurodevelopmental Techniques Alone.	1	Ostrowska et al. 2022
2	Acupuncture with trunk strengthening training and conventional rehab may produce greater improvements in biomechanical gait measures than Conventional rehab with trunk strengthening training.	1	Hong et al. 2024
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving biomechanical gait measures.	1	Wang et al. 2022c

1b	Aquatic training with under water strength training may produce greater improvements in biomechanical gait measures than Aquatic training.	1	Gu et al. 2023
1b	Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA may not have a difference in efficacy when compared to Ankle strengthening training with functional electrical stimulation on TA for improving biomechanical gait measures.	1	Chung et al. 2020b
1b	Task-oriented progressive resistance strength training may produce greater improvements in biomechanical gait measures than No treatment.	1	Yang et al. 2006
2	There is conflicting evidence about the effect of Progressive resistive training with closed-kinetic chain when compared to Progressive resistive training with Open-kinetic chain or No training for improving biomechanical gait measures.	1	Lee et al. 2013d
2	Progressive resistive training with Open-kinetic chain may not have a difference in efficacy when compared to No training for improving biomechanical gait measures.	1	Lee et al. 2013d

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Strength or Resistance Training when compared to Conventional Therapy or Educational Classes for improving biomechanical balance measures.	2	Son et al. 2014; Bale et al. 2008
1b	Strength and Resistance Training Modalities may produce greater improvements in biomechanical balance measures than Limb overloading resistance training.	1	Alabdulwahab et al. 2015
1b	There is conflicting evidence about the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations for improving biomechanical balance measures.	1	Midan et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may produce greater improvements in muscle strength than Conventional Therapy or Educational Classes.	13	Shao et al. 2023; Lattouf et al. 2021; Gambassi et al. 2019; Hendrey et al. 2018; Fernandez-Gonzalo et al. 2016; Zou et al. 2015; Lee & Kang 2013b; Sekhar et al. 2013; Cooke et al. 2010; Bale et al. 2008; Flansbjer et al. 2008; Akbari & Karimi 2006; Yang et al. 2006
1a	Strength or Resistance Training may produce greater improvements in muscle strength than Stretching or Relaxation.	3	Ivey et al. 2017; Ouellette et al. 2004; Kim et al. 2001
2	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving muscle strength.	3	Lund et al. 2018; Severinsen et al. 2014; Teixeira-Salmela et al. 1999
2	Aerobic training may result in lesser improvements in muscle strength when compared to Progressive resistance training.	1	Severinsen et al. 2014

2	Progressive resistance training may not have a difference in efficacy when compared to Resistance training of the arms (sham) for improving muscle strength.	1	Severinsen et al. 2014
1b	There is conflicting evidence about the effect of Strength and Resistance Training Modalities when compared to Limb overloading resistance training for improving muscle strength.	2	Chen et al. 2015a; Pandian et al. 2015
1b	Eccentric resistance training with Gait training may result in lesser improvements in muscle strength when compared to Concentric resistance training with Gait training.	1	Clark & Patten 2013
1b	Low intensity walking and resistance training program may not have a difference in efficacy when compared to High intensity walking and resistance training program for improving muscle strength.	1	Lamberti et al. 2017
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving muscle strength.	1	Simpson et al. 2019
1b	Strength Training with Visual Feedback may produce greater improvements in muscle strength than Physical Therapy.	1	Cho et al. 2021
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in muscle strength than Ankle Strengthening.	1	Cha et al. 2017c
1b	Dietary Supplements with Resistance training may produce greater improvements in muscle strength than Resistance Training Alone.	1	Yoshimura et al. 2019
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving muscle strength.	1	Nakagawa et al. 2024
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving muscle strength.	1	Antonio et al. 2022
1b	Leucine enriched amino acid with resistant training may produce greater improvements in muscle strength than Resistant training.	1	Yoshimura et al. 2019
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving muscle strength.	1	Lund et al. 2018
1b	Aerobic cycling with progressive resistance training (PRT) may produce greater improvements in muscle strength than Sham cycling with Sham PRT.	1	Lee et al. 2008
1b	Task-oriented progressive resistance strength training may produce greater improvements in muscle strength than No treatment.	1	Yang et al. 2006

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving spasticity.	4	Fernandez-Gonzalo et al. 2016; Flansbjer et al. 2008; Akbari & Karimi 2006; Moreland et al. 2003
2	Aerobic and Resistance Training may produce greater improvements in spasticity than Conventional Therapy or Aerobic Training.	1	Teixeira-Salmela et al. 1999
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to	1	Simpson et al. 2019

	Home based Isometric Unilateral Strength Training for improving spasticity.		
1b	There is conflicting evidence about the effect of Extracorpeal shockwave therapy when compared to conventional rehab for improving spasticity.	1	Zhu et al. 2023
1b	Extracorpeal shockwave therapy may produce greater improvements in spasticity than extracorporeal shockwave therapy with Isokinetic strength training.	1	Zhu et al. 2023

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Strength or Resistance Training when compared to Conventional Therapy or Educational Classes for improving range of motion.	1	Patel et al. 2021a
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving range of motion.	1	Marzolini et al. 2018
1b	Aerobic training (over ground walking) with Resistance training may not have a difference in efficacy when compared to Aerobic Training for improving range of motion.	1	Marzolini et al. 2018

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving neurophysiological measures.	1	Zou et al. 2015
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving neurophysiological measures.	1	Marzolini et al. 2018
1b	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving neurophysiological measures.	1	Vahlberg et al. 2017a
1b	Resistance Training with and without repetitive transcranial magnetic stimulation may produce greater improvements in neurophysiological measures than Resistance Training or repetitive transcranial magnetic stimulation Alone.	1	Cha et al. 2017c
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in neurophysiological measures than Ankle Strengthening.	1	Cha et al. 2017c
1b	Dietary Supplements with Resistance training may not have a difference in efficacy when compared to Resistance Training Alone for improving neurophysiological measures.	1	Yoshimura et al. 2019
1b	Muscle Strength Training to Paralytic Muscles may not have a difference in efficacy when compared to Muscle Strength Training to Non-paralytic Muscles for improving neurophysiological measures.	1	Park et al. 2021a
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving neurophysiological measures.	1	Nakagawa et al. 2024

1b	There is conflicting evidence about the effect of Extracorpeal shockwave therapy when compared to conventional rehab for improving neurophysiological measures.	1	Zhu et al. 2023
1b	There is conflicting evidence about the effect of Extracorpeal shockwave therapy when compared to extracorporeal shockwave therapy with Isokinetic strength training for improving neurophysiological measures.	1	Zhu et al. 2023
1b	Leucine enriched amino acid with resistant training may not have a difference in efficacy when compared to Resistant training for improving neurophysiological measures.	1	Yoshimura et al. 2019
1b	Aerobic training (over ground walking) with Resistance training may not have a difference in efficacy when compared to Aerobic Training for improving neurophysiological measures.	1	Marzolini et al. 2018

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Strength or Resistance Training may produce greater improvements in aerobic measures than Conventional Therapy or Educational Classes.	1	Gambassi et al. 2019
1a	Strength or Resistance Training may produce greater improvements in aerobic measures than Stretching or Relaxation.	3	Ivey et al. 2017; Moore et al. 2016; Mead et al. 2007
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving aerobic measures.	4	Lund et al. 2018; Marzolini et al. 2018; Lee et al. 2015d; Severinsen et al. 2014
2	Aerobic training may produce greater improvements in aerobic measures than Progressive resistance training.	1	Severinsen et al. 2014
2	Progressive resistance training may not have a difference in efficacy when compared to Resistance training of the arms (sham) for improving aerobic measures.	1	Severinsen et al. 2014
2	Aerobic training may produce greater improvements in aerobic measures than Resistance training of the arms (sham).	1	Severinsen et al. 2014
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving aerobic measures.	1	Nakagawa et al. 2024
1b	Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab may not have a difference in efficacy when compared to Conventional Stroke Rehabilitation for improving aerobic measures.	1	Rizvi et al. 2023
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving aerobic measures.	1	Lund et al. 2018
1b	Aerobic training (over ground walking) with Resistance training may not have a difference in efficacy when compared to Aerobic Training for improving aerobic measures.	1	Marzolini et al. 2018
1b	There is conflicting evidence about the effect of Aerobic Training (fast walking and walking up-stairs) with Resistance Training when compared to Conventional care for improving aerobic measures.	1	Lee et al. 2015d
1b	There is conflicting evidence about the effect of Aerobic cycling with progressive resistance training (PRT) when compared to Sham cycling with Sham PRT for improving aerobic measures.	1	Lee et al. 2008

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Strength Training with Visual Feedback when compared to Physical Therapy for improving sensory and proprioceptive function.	1	Cho et al. 2021

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving pain.	1	Fernandez-Gonzalo et al. 2016

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving activities of daily living.	5	Cho et al. 2024; Shao et al. 2023; Wu et al. 2020a; Şen et al. 2015; Kwakkel et al. 1999
2	Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy may produce greater improvements in activities of daily living than lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy.	1	Cho et al. 2024
1b	Rehabilitation program with leg training may not have a difference in efficacy when compared to Rehabilitation program with Arm training for improving activities of daily living.	1	Kwakkel et al. 1999
1b	Rehabilitation program with leg training may produce greater improvements in activities of daily living than Rehabilitation program with arm & leg immobilized.	1	Kwakkel et al. 1999
1b	Rehabilitation program with Arm training may not have a difference in efficacy when compared to Rehabilitation program with arm & leg immobilized for improving activities of daily living.	1	Kwakkel et al. 1999
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving activities of daily living.	1	Mead et al. 2007
2	Aerobic and Resistance Training may produce greater improvements in activities of daily living than Conventional Therapy or Aerobic Training.	1	Teixeira-Salmela et al. 1999
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving activities of daily living.	1	Ahmed et al. 2024
1a	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	2	Vahlberg et al. 2017a; Vahlberg et al. 2017b
1b	There is conflicting evidence about the effect of Dietary Supplements with Resistance training when compared to Resistance Training Alone for improving activities of daily living.	1	Yoshimura et al. 2019
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving activities of daily living.	1	Nakagawa et al. 2024

1b	Early conventional physical therapy with intensive strength exercises may not have a difference in efficacy when compared to Conventional physiotherapy for improving activities of daily living.	1	Wu et al. 2020a
1b	There is conflicting evidence about the effect of Leucine enriched amino acid with resistant training when compared to Resistant training for improving activities of daily living.	1	Yoshimura et al. 2019

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may produce greater improvements in gait speed than Conventional Therapy or Educational Classes.	13	Lattouf et al. 2021; Patel et al. 2021a; Gambassi et al. 2019; Hendrey et al. 2018; Knox et al. 2018; Şen et al. 2015; Lee et al. 2013c; Lee & Kang 2013b; Cooke et al. 2010; Bale et al. 2008; Flansbjer et al. 2008; Yang et al. 2006; Kwakkel et al. 1999
1b	Task oriented circuit gait training may produce greater improvements in gait speed than Strength training of lower extremities.	1	Knox et al. 2018
1b	Rehabilitation program with leg training may not have a difference in efficacy when compared to Rehabilitation program with Arm training for improving gait speed.	1	Kwakkel et al. 1999
1b	Rehabilitation program with leg training may produce greater improvements in gait speed than Rehabilitation program with arm & leg immobilized.	1	Kwakkel et al. 1999
1b	Rehabilitation program with Arm training may not have a difference in efficacy when compared to Rehabilitation program with arm & leg immobilized for improving gait speed.	1	Kwakkel et al. 1999
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving gait speed.	5	Ivey et al. 2017; Moore et al. 2016; Mead et al. 2007; Ouellette et al. 2004; Kim et al. 2001
1b	Aerobic and Resistance Training may produce greater improvements in gait speed than Conventional Therapy or Aerobic Training.	4	Lund et al. 2018; Lee et al. 2015d; Severinsen et al. 2014; Teixeira-Salmela et al. 1999
2	Aerobic training may not have a difference in efficacy when compared to Progressive resistance training for improving gait speed.	1	Severinsen et al. 2014
2	Aerobic training or Progressive resistance training may not have a difference in efficacy when compared to Resistance training of the arms (sham) for improving gait speed.	1	Severinsen et al. 2014
1b	Strength and Resistance Training Modalities may produce greater improvements in gait speed than Limb overloading resistance training.	1	Alabdulwahab et al. 2015
1b	Eccentric resistance training with Gait training may result in lesser improvements in gait speed when compared to Concentric resistance training with Gait training.	1	Clark & Patten 2013
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving gait speed.	1	Ahmed et al. 2024
1b	Low intensity walking and resistance training program may not have a difference in efficacy when compared to High intensity walking and resistance training program for improving gait speed.	1	Lamberti et al. 2017
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to	1	Simpson et al. 2019

	Home based Isometric Unilateral Strength Training for improving gait speed.		
1b	Strength Training with Visual Feedback may not have a difference in efficacy when compared to Physical Therapy for improving gait speed.	1	Cho et al. 2021
1b	Resistance Training with Balance Training may produce greater improvements in gait speed than Conventional Therapy.	1	Vahlberg et al. 2017b
1b	Resistance Training with and without repetitive transcranial magnetic stimulation may produce greater improvements in gait speed than Resistance Training or repetitive transcranial magnetic stimulation Alone.	1	Cha et al. 2017c
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in gait speed than Ankle Strengthening.	1	Cha et al. 2017c
1b	Muscle Strength Training to Paralytic Muscles may not have a difference in efficacy when compared to Muscle Strength Training to Non-paralytic Muscles for improving gait speed.	1	Park et al. 2021a
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving gait speed.	1	Nakagawa et al. 2024
2	Acupuncture with trunk strengthening training and conventional rehab may produce greater improvements in gait speed than Conventional rehab with trunk strengthening training.	1	Hong et al. 2024
1b	Circuit walking, balance, cycling and strength training (CBCS) may not have a difference in efficacy when compared to Sociocultural intervention (board games, cultural discourse and drama) for improving gait speed.	1	Nindorera et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving gait speed.	1	Wang et al. 2022c
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving gait speed.	1	Antonio et al. 2022
1b	Aquatic training with under water strength training may produce greater improvements in gait speed than Aquatic training.	1	Gu et al. 2023
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait speed.	1	Koch et al. 2020
1b	Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA may produce greater improvements in gait speed than Ankle strengthening training with functional electrical stimulation on TA.	1	Chung et al. 2020b
1b	Task oriented circuit gait training may produce greater improvements in gait speed than Educational session on stroke management.	1	Knox et al. 2018
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving gait speed.	1	Lund et al. 2018

1b	Aerobic Training (fast walking and walking up-stairs) with Resistance Training may produce greater improvements in gait speed than Conventional care.	1	Lee et al. 2015d
2	Task Oriented circuit LE strength training with physiotherapy may produce greater improvements in gait speed than Conventional physiotherapy.	1	Indurkar et al. 2013
1b	There is conflicting evidence about the effect of Aerobic cycling with progressive resistance training (PRT) when compared to Sham cycling with Sham PRT for improving gait speed.	1	Lee et al. 2008
1b	Task-oriented progressive resistance strength training may produce greater improvements in gait speed than No treatment.	1	Yang et al. 2006

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving gait endurance.	6	Shao et al. 2023; Lattouf et al. 2021; Şen et al. 2015; Flansbjer et al. 2008; Yang et al. 2006; Moreland et al. 2003
1b	Task oriented circuit gait training may produce greater improvements in gait endurance than Strength training of lower extremities.	1	Knox et al. 2018
1b	Task oriented circuit gait training or Strength training of lower extremities may produce greater improvements in gait endurance than Educational session on stroke management.	1	Knox et al. 2018
1b	Strength or Resistance Training may produce greater improvements in gait endurance than Stretching or Relaxation.	2	Ivey et al. 2017; Moore et al. 2016
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving gait endurance.	4	Lund et al. 2018; Marzolini et al. 2018; Lee et al. 2015d; Severinsen et al. 2014
2	Aerobic training may not have a difference in efficacy when compared to Progressive resistance training for improving gait endurance.	1	Severinsen et al. 2014
2	Aerobic training or Progressive resistance training may not have a difference in efficacy when compared to Resistance training of the arms (sham) for improving gait endurance.	1	Severinsen et al. 2014
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving gait endurance.	1	Ahmed et al. 2024
1b	Low intensity walking and resistance training program may produce greater improvements in gait endurance than High intensity walking and resistance training program.	1	Lamberti et al. 2017
1b	Resistance Training with Balance Training may produce greater improvements in gait endurance than Conventional Therapy.	1	Vahlberg et al. 2017b
1b	120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not have a difference in efficacy when compared to Resistance training exercise program for improving gait endurance.	1	Nakagawa et al. 2024
1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in gait endurance than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving gait endurance.	1	Wang et al. 2022c

1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving gait endurance.	1	Antonio et al. 2022
1b	Aquatic training with under water strength training may produce greater improvements in gait endurance than Aquatic training.	1	Gu et al. 2023
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving gait endurance.	1	Koch et al. 2020
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving gait endurance.	1	Lund et al. 2018
1b	Aerobic training (over ground walking) with Resistance training may not have a difference in efficacy when compared to Aerobic Training for improving gait endurance.	1	Marzolini et al. 2018
1b	Aerobic Training (fast walking and walking up-stairs) with Resistance Training may produce greater improvements in gait endurance than Conventional care.	1	Lee et al. 2015d
2	Task Oriented circuit LE strength training with physiotherapy may produce greater improvements in gait endurance than Conventional physiotherapy.	1	Indurkar et al. 2013
1b	There is conflicting evidence about the effect of Aerobic cycling with progressive resistance training (PRT) when compared to Sham cycling with Sham PRT for improving gait endurance.	1	Lee et al. 2008
1b	Task-oriented progressive resistance strength training may produce greater improvements in gait endurance than No treatment.	1	Yang et al. 2006

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may produce greater improvements in functional mobility than Conventional Therapy or Educational Classes.	13	Gambassi et al. 2019; Hendrey et al. 2018; Knox et al. 2018; Fernandez-Gonzalo et al. 2016; Şen et al. 2015; Son et al. 2014; Lee & Kang 2013b; Patil et al. 2011; Sims et al. 2009; Flansbjer et al. 2008; Yang et al. 2006; Kwakkel et al. 1999; Glasser 1986
1b	Task oriented circuit gait training may produce greater improvements in functional mobility than Strength training of lower extremities.	1	Knox et al. 2018
1b	Functional strength training - upper limb may not have a difference in efficacy when compared to Functional strength training - lower limb for improving functional mobility.	1	Mares et al. 2014
1b	Rehabilitation program with leg training may not have a difference in efficacy when compared to Rehabilitation program with Arm training for improving functional mobility.	1	Kwakkel et al. 1999
1b	Rehabilitation program with leg training may produce greater improvements in functional mobility than Rehabilitation program with arm & leg immobilized.	1	Kwakkel et al. 1999
1b	Rehabilitation program with Arm training may not have a difference in efficacy when compared to Rehabilitation program with arm & leg immobilized for improving functional mobility.	1	Kwakkel et al. 1999

1a	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving functional mobility.	4	Moore et al. 2016; Mead et al. 2007; Ouellette et al. 2004; Kim et al. 2001
1a	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving functional mobility.	3	Marzolini et al. 2018; Lee et al. 2015d; Teixeira-Salmela et al. 1999
2	Strength and Resistance Training Modalities may not have a difference in efficacy when compared to Limb overloading resistance training for improving functional mobility.	1	Chen et al. 2015a
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving functional mobility.	1	Ahmed et al. 2024
1b	Low intensity walking and resistance training program may not have a difference in efficacy when compared to High intensity walking and resistance training program for improving functional mobility.	1	Lamberti et al. 2017
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving functional mobility.	1	Simpson et al. 2019
1b	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Vahlberg et al. 2017b
1b	Muscle Strength Training to Paralytic Muscles may not have a difference in efficacy when compared to Muscle Strength Training to Non-paralytic Muscles for improving functional mobility.	1	Park et al. 2021a
1b	Core strengthening exercises with Conventional rehab may produce greater improvements in functional mobility than Conventional rehab.	1	Nadeem et al. 2024
1b	Metronome training with core strengthening and general balance exercises may produce greater improvements in functional mobility than Core strengthening with general balance exercises.	1	Rana et al. 2024
2	Acupuncture with trunk strengthening training and conventional rehab may produce greater improvements in functional mobility than Conventional rehab with trunk strengthening training.	1	Hong et al. 2024
1b	Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab may not have a difference in efficacy when compared to Conventional Stroke Rehabilitation for improving functional mobility.	1	Rizvi et al. 2023
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving functional mobility.	1	Antonio et al. 2022
1b	Aquatic training with under water strength training may produce greater improvements in functional mobility than Aquatic training.	1	Gu et al. 2023
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving functional mobility.	1	Koch et al. 2020
1b	Task oriented circuit gait training may produce greater improvements in functional mobility than Educational session on stroke management.	1	Knox et al. 2018
1b	Aerobic training (over ground walking) with Resistance training may not have a difference in efficacy when compared to Aerobic Training for improving functional mobility.	1	Marzolini et al. 2018

1b	Aerobic Training (fast walking and walking up-stairs) with Resistance Training may produce greater improvements in functional mobility than Conventional care.	1	Lee et al. 2015d
2	Task Oriented circuit LE strength training with physiotherapy may produce greater improvements in functional mobility than Conventional physiotherapy.	1	Indurkar et al. 2013
1b	There is conflicting evidence about the effect of Aerobic cycling with progressive resistance training (PRT) when compared to Sham cycling with Sham PRT for improving functional mobility.	1	Lee et al. 2008
1b	Task-oriented progressive resistance strength training may produce greater improvements in functional mobility than No treatment.	1	Yang et al. 2006

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may produce greater improvements in balance than Conventional Therapy or Educational Classes.	8	Cho et al. 2024; Shao et al. 2023; Wu et al. 2020a; Knox et al. 2018; Fernandez-Gonzalo et al. 2016; Şen et al. 2015; Son et al. 2014; Sekhar et al. 2013
2	Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy may produce greater improvements in balance than lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy.	1	Cho et al. 2024
1b	Task oriented circuit gait training may produce greater improvements in balance than Strength training of lower extremities.	1	Knox et al. 2018
1a	There is conflicting evidence about the effect of Strength or Resistance Training when compared to Stretching or Relaxation for improving balance.	2	Moore et al. 2016; Mead et al. 2007
1b	Aerobic and Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Aerobic Training for improving balance.	2	Lund et al. 2018; Lee et al. 2015d
1b	Low intensity walking and resistance training program may not have a difference in efficacy when compared to High intensity walking and resistance training program for improving balance.	1	Lamberti et al. 2017
1b	Strength Training with Visual Feedback may not have a difference in efficacy when compared to Physical Therapy for improving balance.	1	Cho et al. 2021
1a	There is conflicting evidence about the effect of Resistance Training with Balance Training when compared to Conventional Therapy for improving balance.	2	Vahlberg et al. 2017a; Vahlberg et al. 2017b
2	Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus may not have a difference in efficacy when compared to Home exercise program for improving balance.	1	Page et al. 2008
1b	Core strengthening exercises with Conventional rehab may produce greater improvements in balance than Conventional rehab.	1	Nadeem et al. 2024
2	Acupuncture with trunk strengthening training and conventional rehab may produce greater improvements in balance than Conventional rehab with trunk strengthening training.	1	Hong et al. 2024
1b	Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab may not have a difference in efficacy when compared to Conventional Stroke Rehabilitation for improving balance.	1	Rizvi et al. 2023

1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in balance than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving balance.	1	Wang et al. 2022c
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving balance.	1	Antonio et al. 2022
1b	Aquatic training with under water strength training may produce greater improvements in balance than Aquatic training.	1	Gu et al. 2023
1b	Early conventional physical therapy with intensive strength exercises may not have a difference in efficacy when compared to Conventional physiotherapy for improving balance.	1	Wu et al. 2020a
1b	Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA may not have a difference in efficacy when compared to Ankle strengthening training with functional electrical stimulation on TA for improving balance.	1	Chung et al. 2020b
1b	Task oriented circuit gait training may produce greater improvements in balance than Educational session on stroke management.	1	Knox et al. 2018
2	Aerobic training on cycle ergometer may not have a difference in efficacy when compared to Sham training of upper extremities for improving balance.	1	Lund et al. 2018
1b	Aerobic Training (fast walking and walking up-stairs) with Resistance Training may not have a difference in efficacy when compared to Conventional care for improving balance.	1	Lee et al. 2015d
2	Task Oriented circuit LE strength training with physiotherapy may produce greater improvements in balance than Conventional physiotherapy.	1	Indurkar et al. 2013

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving falls and fear of falling.	1	Vahlberg et al. 2017b
1b	Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not have a difference in efficacy when compared to Sham taping with exercise training for improving falls and fear of falling.	1	Wang et al. 2022c
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving falls and fear of falling.	1	Antonio et al. 2022

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving quality of life.	4	Fernandez-Gonzalo et al. 2016; Şen et al. 2015; Sims et al. 2009; Flansbjer et al. 2008

1a	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving quality of life.	3	Mead et al. 2007; Ouellette et al. 2004; Kim et al. 2001
2	Aerobic and Resistance Training may produce greater improvements in quality of life than Conventional Therapy or Aerobic Training.	1	Teixeira-Salmela et al. 1999
1b	Strength and Resistance Training Modalities may produce greater improvements in quality of life than Limb overloading resistance training.	1	Alabdulwahab et al. 2015
1b	Low intensity walking and resistance training program may produce greater improvements in quality of life than High intensity walking and resistance training program.	1	Lamberti et al. 2017
1b	Home based Isometric Unilateral Strength Training with Mirror Therapy may not have a difference in efficacy when compared to Home based Isometric Unilateral Strength Training for improving quality of life.	1	Simpson et al. 2019
1b	Resistance Training with Balance Training may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Vahlberg et al. 2017b
1b	Circuit walking, balance, cycling and strength training (CBCS) may produce greater improvements in quality of life than Sociocultural intervention (board games, cultural discourse and drama).	1	Nindorera et al. 2023
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving quality of life.	1	Antonio et al. 2022
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving quality of life.	1	Koch et al. 2020
1b	There is conflicting evidence about the effect of Aerobic cycling with progressive resistance training (PRT) when compared to Sham cycling with Sham PRT for improving quality of life.	1	Lee et al. 2008
2	Aerobic training may not have a difference in efficacy when compared to Progressive resistance training for improving quality of life.	1	Severinsen et al. 2014
2	Aerobic training or Progressive resistance training may not have a difference in efficacy when compared to Resistance training of the arms (sham) for improving quality of life.	1	Severinsen et al. 2014

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving mood.	1	Sims et al. 2009
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving mood.	1	Mead et al. 2007
1b	Strength and Resistance Training Intensity may not have a difference in efficacy when compared to High intensity resistance training (HIRT) for improving mood.	1	Ahmed et al. 2024

1b	Circuit walking, balance, cycling and strength training (CBCS) may not have a difference in efficacy when compared to Sociocultural intervention (board games, cultural discourse and drama) for improving mood.	1	Nindorera et al. 2023

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Strength or Resistance Training may not have a difference in efficacy when compared to Conventional Therapy or Educational Classes for improving cognition.	2	Fernandez-Gonzalo et al. 2016; Sims et al. 2009
1b	Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not have a difference in efficacy when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task for improving cognition.	1	Antonio et al. 2022
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving cognition.	1	Koch et al. 2020

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional strength training - upper limb may produce greater improvements in upper extremity function than Functional strength training - lower limb.	1	Mares et al. 2014
1b	Rehabilitation program with leg training may not have a difference in efficacy when compared to Rehabilitation program with Arm training for improving upper extremity function.	1	Kwakkel et al. 1999
1b	Rehabilitation program with leg training or Rehabilitation program with Arm training may produce greater improvements in upper extremity function than Rehabilitation program with arm & leg immobilized.	1	Kwakkel et al. 1999
1b	Strength or Resistance Training may not have a difference in efficacy when compared to Stretching or Relaxation for improving upper extremity function.	1	Ouellette et al. 2004
1a	Aerobic and Resistance Training may produce greater improvements in upper extremity function than Conventional Therapy or Aerobic Training.	2	Marzolini et al. 2018; Lee et al. 2015d
1b	Strength and Resistance Training Modalities may produce greater improvements in upper extremity function than Limb overloading resistance training.	1	Pandian et al. 2015
1b	Dietary Supplements with Resistance training may not have a difference in efficacy when compared to Resistance Training Alone for improving upper extremity function.	1	Yoshimura et al. 2019
2	Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not have a difference in efficacy when compared to Sham Combined aerobic and resistance training with Sham Cognitive training for improving upper extremity function.	1	Koch et al. 2020
1b	Leucine enriched amino acid with resistant training may not have a difference in efficacy when compared to Resistant training for improving upper extremity function.	1	Yoshimura et al. 2019

1b	Aerobic training (over ground walking) with Resistance training may produce greater improvements in upper extremity function than Aerobic Training.	1	Marzolini et al. 2018
1b	Aerobic Training (fast walking and walking up-stairs) with Resistance Training may produce greater improvements in upper extremity function than Conventional care.	1	Lee et al. 2015d

Key Points

- Strength or Resistance Training may be beneficial for improving biomechanical gait measures, muscle strength, aerobic measures, gait speed, functional mobility, and balance, but not spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, and quality of life, after stroke when compared to Conventional Therapy or Educational Classes; the literature is mixed regarding motor recovery, biomechanical balance measures, and range of motion.
- Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy may be beneficial for improving activities of daily living and balance after stroke when compared to lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy.
- Task oriented circuit gait training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Strength training of lower extremities.
- Functional strength training - upper limb may not be beneficial for improving functional mobility after stroke when compared to Functional strength training - lower limb.
- Rehabilitation program with leg training may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with Arm training.
- Strength or Resistance Training may be beneficial for improving muscle strength, aerobic measures, and gait endurance, but not activities of daily living, gait speed, functional mobility, and quality of life, after stroke when compared to Stretching or Relaxation; the literature is mixed regarding balance.
- Aerobic and Resistance Training may be beneficial for improving spasticity, activities of daily living, gait speed, and quality of life, but not muscle strength, range of motion, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance, after stroke when compared to Conventional Therapy or Aerobic Training.
- Aerobic training may be beneficial for improving aerobic measures, but not gait speed, gait endurance, and quality of life, after stroke when compared to Progressive resistance training; Aerobic training may result in lesser improvements in muscle strength when compared to Progressive resistance training.
- Sham progressive resistance training with Cycling may be beneficial for improving gait endurance after stroke when compared to Sham progressive resistance training with Sham cycling.
- Strength and Resistance Training Modalities may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, quality of life, and motor recovery, but not functional mobility, after stroke when compared to Limb overloading resistance training; the literature is mixed regarding muscle strength.
- Eccentric resistance training with Gait training may result in lesser improvements in muscle strength and gait speed when compared to Concentric resistance training with Gait training.
- Strength and Resistance Training Intensity may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to High intensity resistance training (HIRT).
- Low intensity walking and resistance training program may be beneficial for improving gait endurance and quality of life, but not muscle strength, gait speed, functional mobility, and balance, after stroke when compared to High intensity walking and resistance training program.
- Home based Isometric Unilateral Strength Training with Mirror Therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home based Isometric Unilateral Strength Training.
- Strength Training with Visual Feedback may be beneficial for improving motor recovery and muscle strength, but not gait speed and balance, after stroke when compared to Physical Therapy; the literature is mixed regarding sensory and proprioceptive function.

- Resistance Training with Balance Training may be beneficial for improving gait speed and gait endurance, but not motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding balance.
- Resistance Training with and without repetitive transcranial magnetic stimulation may be beneficial for improving neurophysiological measures and gait speed after stroke when compared to Resistance Training or repetitive transcranial magnetic stimulation Alone.
- Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to Ankle Strengthening.
- Dietary Supplements with Resistance training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistance Training Alone; the literature is mixed regarding activities of daily living.
- Muscle Strength Training to Paralytic Muscles may not be beneficial for improving neurophysiological measures, gait speed, and functional mobility after stroke when compared to Muscle Strength Training to Non-paralytic Muscles.
- Strength Training with Neurodevelopmental Techniques may be beneficial for improving biomechanical gait measures after stroke when compared to Neurodevelopmental Techniques Alone.
- Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus may not be beneficial for improving motor recovery and balance after stroke when compared to Home exercise program.
- Core strengthening exercises with Conventional rehab may be beneficial for improving functional mobility and balance after stroke when compared to Conventional rehab.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.
- 120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not be beneficial for improving muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, and gait endurance after stroke when compared to Resistance training exercise program.
- Acupuncture with trunk strengthening training and conventional rehab may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Conventional rehab with trunk strengthening training.
- Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab may not be beneficial for improving aerobic measures, functional mobility, and balance after stroke when compared to Conventional Stroke Rehabilitation.
- Circuit walking, balance, cycling and strength training (CBCS) may be beneficial for improving motor recovery, gait endurance, balance, and quality of life, but not gait speed, after stroke when compared to Sociocultural intervention (board games, cultural discourse and drama).
- The literature is mixed regarding the effect of Extracorpeal shockwave therapy on spasticity and neurophysiological measures after stroke when compared to conventional rehab.
- Extracorpeal shockwave therapy may be beneficial for improving spasticity after stroke when compared to extracorporeal shockwave therapy with Isokinetic strength training; the literature is mixed regarding neurophysiological measures.
- The literature is mixed regarding the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) on biomechanical balance measures after stroke when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not be beneficial for improving muscle strength, gait speed, gait endurance, functional mobility, balance, falls

and fear of falling, and quality of life after stroke when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task.

- Aquatic training with under water strength training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Aquatic training.
- Early conventional physical therapy with intensive strength exercises may be beneficial for improving motor recovery, but not activities of daily living and balance, after stroke when compared to Conventional physiotherapy.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA may be beneficial for improving gait speed, but not biomechanical gait measures and balance, after stroke when compared to Ankle strengthening training with functional electrical stimulation on TA.
- Leucine enriched amino acid with resistant training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistant training; the literature is mixed regarding activities of daily living.
- Task oriented circuit gait training may be beneficial for improving gait speed, functional mobility, balance, and gait endurance after stroke when compared to Educational session on stroke management.
- Aerobic training on cycle ergometer may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and balance after stroke when compared to Sham training of upper extremities.
- Aerobic training (over ground walking) with Resistance training may not be beneficial for improving range of motion, neurophysiological measures, aerobic measures, gait endurance, and functional mobility after stroke when compared to Aerobic Training.
- Aerobic Training (fast walking and walking up-stairs) with Resistance Training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Conventional care; the literature is mixed regarding aerobic measures.
- Task Oriented circuit LE strength training with physiotherapy may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional physiotherapy.
- Aerobic cycling with progressive resistance training (PRT) may be beneficial for improving muscle strength after stroke when compared to Sham cycling with Sham PRT; the literature is mixed regarding gait speed, aerobic measures, gait endurance, quality of life, and functional mobility.
- Task-oriented progressive resistance strength training may be beneficial for improving biomechanical gait measures, muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to No treatment.
- Strength training of lower extremities may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Rehabilitation program with leg training may be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with arm & leg immobilized.
- Rehabilitation program with Arm training may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with arm & leg immobilized.
- Progressive resistance training may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and quality of life after stroke when compared to Resistance training of the arms (sham).
- Aerobic training may be beneficial for improving aerobic measures, but not gait speed, gait endurance, and quality of life, after stroke when compared to Resistance training of the arms (sham).
- Progressive resistive training with Open-kinetic chain may not be beneficial for improving biomechanical gait measures after stroke when compared to No training.

- The literature is mixed regarding the effect of Progressive resistive training with closed-kinetic chain on biomechanical gait measures after stroke when compared to Progressive resistive training with Open-kinetic chain or No training.

Summary of Key Points: Strength and Resistance Training

Intervention	Control(s)	Function domain(s)	Effect
Strength or Resistance Training	Conventional Therapy or Educational Classes	Biomechanical gait measures, muscle strength, aerobic measures, gait speed, functional mobility, balance	+
Strength or Resistance Training	Conventional Therapy or Educational Classes	Spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, quality of life	–
Strength or Resistance Training	Conventional Therapy or Educational Classes	Motor recovery, biomechanical balance measures, range of motion	=
Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy	lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy	Activities of daily living, balance	+
Task oriented circuit gait training	Strength training of lower extremities	Gait speed, gait endurance, functional mobility, balance	+
Functional strength training - upper limb	Functional strength training - lower limb	Functional mobility	–
Rehabilitation program with leg training	Rehabilitation program with Arm training	Activities of daily living, gait speed, functional mobility	–
Strength or Resistance Training	Stretching or Relaxation	Muscle strength, aerobic measures, gait endurance	+
Strength or Resistance Training	Stretching or Relaxation	Activities of daily living, gait speed, functional mobility, quality of life	–
Strength or Resistance Training	Stretching or Relaxation	Balance	=
Aerobic and Resistance Training	Conventional Therapy or Aerobic Training	Spasticity, activities of daily living, gait speed, quality of life	+
Aerobic and Resistance Training	Conventional Therapy or Aerobic Training	Muscle strength, range of motion, neurophysiological measures, aerobic measures, gait endurance, functional mobility, balance	–
Aerobic training	Progressive resistance training	Aerobic measures	+
Aerobic training	Progressive resistance training	Muscle strength, gait speed, gait endurance, quality of life	–
Sham progressive resistance training with Cycling	Sham progressive resistance training with Sham cycling	Gait endurance	+
Strength and Resistance Training Modalities	Limb overloading resistance training	Biomechanical gait measures, biomechanical balance measures, gait speed, quality of life, motor recovery	+
Strength and Resistance Training Modalities	Limb overloading resistance training	Functional mobility	–
Strength and Resistance Training Modalities	Limb overloading resistance training	Motor recovery	+
Eccentric resistance training with Gait training	Concentric resistance training with Gait training	Muscle strength, gait speed	–

Strength and Resistance Training Intensity	High intensity resistance training (HIRT)	Biomechanical gait measures, activities of daily living, gait speed, gait endurance, functional mobility	−
Low intensity walking and resistance training program	High intensity walking and resistance training program	Gait endurance, quality of life	+
Low intensity walking and resistance training program	High intensity walking and resistance training program	Muscle strength, gait speed, functional mobility, balance	−
Home based Isometric Unilateral Strength Training with Mirror Therapy	Home based Isometric Unilateral Strength Training	Muscle strength, spasticity, gait speed, functional mobility, quality of life	−
Strength Training with Visual Feedback	Physical Therapy	Motor recovery, muscle strength	+
Strength Training with Visual Feedback	Physical Therapy	Gait speed, balance	−
Strength Training with Visual Feedback	Physical Therapy	Sensory and proprioceptive function	=
Resistance Training with Balance Training	Conventional Therapy	Gait speed, gait endurance	+
Resistance Training with Balance Training	Conventional Therapy	Motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, quality of life	−
Resistance Training with Balance Training	Conventional Therapy	Balance	=
Resistance Training with and without repetitive transcranial magnetic stimulation	Resistance Training or repetitive transcranial magnetic stimulation Alone	Neurophysiological measures, gait speed	+
Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation	Ankle Strengthening	Muscle strength, neurophysiological measures, gait speed	+
Dietary Supplements with Resistance training	Resistance Training Alone	Muscle strength	+
Dietary Supplements with Resistance training	Resistance Training Alone	Neurophysiological measures	−
Dietary Supplements with Resistance training	Resistance Training Alone	Activities of daily living	=
Muscle Strength Training to Paralytic Muscles	Muscle Strength Training to Non-paralytic Muscles	Neurophysiological measures, gait speed, functional mobility	−
Strength Training with Neurodevelopmental Techniques	Neurodevelopmental Techniques Alone	Biomechanical gait measures	+
Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus	Home exercise program	Motor recovery, balance	−
Core strengthening exercises with Conventional rehab	Conventional rehab	Functional mobility, balance	+
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises	Functional mobility	+
120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program	Resistance training exercise program	Muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance	−

Acupuncture with trunk strengthening training and conventional rehab	Conventional rehab with trunk strengthening training	Biomechanical gait measures, gait speed, functional mobility, balance	+
Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab	Conventional Stroke Rehabilitation	Aerobic measures, functional mobility, balance	–
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)	Motor recovery, gait endurance, balance, quality of life	+
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)	Gait speed	–
Extracorpeal shockwave therapy	conventional rehab	Neurophysiological measures, spasticity	=
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training	Spasticity	+
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training	Neurophysiological measures	=
Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations)	Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations	Biomechanical balance measures	=
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training	Biomechanical gait measures, gait speed, gait endurance, balance, falls and fear of falling	–
Dual Task (Consisting aerobic and resistance exercises while performing cognitive task)	Aerobic and Resistance Exercises, without Performing Cognitive Task	Muscle strength, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Aquatic training with under water strength training	Aquatic training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, balance	+
Early conventional physical therapy with intensive strength exercises	Conventional physiotherapy	Motor recovery	+
Early conventional physical therapy with intensive strength exercises	Conventional physiotherapy	Activities of daily living, balance	–
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training	Gait speed, gait endurance, functional mobility, quality of life	–
Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA	Ankle strengthening training with functional electrical stimulation on TA	Gait speed	+
Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA	Ankle strengthening training with functional electrical stimulation on TA	Biomechanical gait measures, balance	–
Task oriented circuit gait training	Educational session on stroke management	Gait speed, functional mobility, balance, gait endurance	+
Aerobic training on cycle ergometer	Sham training of upper extremities	Muscle strength, aerobic measures, gait speed, gait endurance, balance	–

Aerobic training (over ground walking) with Resistance training	Aerobic Training	Range of motion, neurophysiological measures, aerobic measures, gait endurance, functional mobility	−
Aerobic Training (fast walking and walking up-stairs) with Resistance Training	Conventional care	Gait speed, gait endurance, functional mobility	+
Aerobic Training (fast walking and walking up-stairs) with Resistance Training	Conventional care	Balance	−
Aerobic Training (fast walking and walking up-stairs) with Resistance Training	Conventional care	Aerobic measures	=
Task Oriented circuit LE strength training with physiotherapy	Conventional physiotherapy	Gait speed, gait endurance, functional mobility, balance	+
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT	Muscle strength	+
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT	Aerobic measures, gait endurance, quality of life, gait speed, functional mobility	=
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT	Aerobic measures, gait speed, functional mobility	=
Task-oriented progressive resistance strength training	No treatment	Biomechanical gait measures, muscle strength, gait speed, gait endurance, functional mobility	+
Strength training of lower extremities	Educational session on stroke management	Gait endurance	+
Rehabilitation program with leg training	Rehabilitation program with arm & leg immobilized	Activities of daily living, gait speed, functional mobility	+
Rehabilitation program with Arm training	Rehabilitation program with arm & leg immobilized	Activities of daily living, gait speed, functional mobility	−
Progressive resistance training	Resistance training of the arms (sham)	Muscle strength, aerobic measures, gait speed, gait endurance, quality of life	−
Leucine enriched amino acid with resistant training	Resistant training	Muscle strength	+
Leucine enriched amino acid with resistant training	Resistant training	Neurophysiological measures	−
Leucine enriched amino acid with resistant training	Resistant training	Activities of daily living	=
Strength and Resistance Training Modalities	Limb overloading resistance training	Muscle strength	=
Aerobic training	Resistance training of the arms (sham)	Aerobic measures	+
Aerobic training	Resistance training of the arms (sham)	Gait speed, gait endurance, quality of life	−
Progressive resistive training with Open-kinetic chain	No training	Biomechanical gait measures	−
Progressive resistive training with closed-kinetic chain	Progressive resistive training with Open-kinetic chain or No training	Biomechanical gait measures	=

Rhythmic Auditory Stimulation



Adopted from: https://unsplash.com/
Adapted from: https://www.sciencedirect.com/science/article/abs/pii/S2211285518302337

Rhythmic auditory stimulation (RAS) is a form of gait training that involves the sensory cueing of motor systems. The rhythmic auditory stimulus provides a time reference for motor gait response, such that the gait response and auditory stimulus develop into a stable temporal relationship (Thaut et al. 1997). This is possible due to the strong connection between auditory and motor systems across cortical, subcortical and spinal levels.

RAS can be implemented through use of metronomes or music cues that set a tempo to which a patient follows during a training session. Various mechanisms have been proposed to explain how rhythm may influence motor rehabilitation, including through accelerating motor learning, providing a different type of motor learning process, acquiring or refining temporal skills, and lastly through improving emotional engagement and motivation (Schaefer, 2014).

A total of 27 RCTs were found that evaluated rhythmic auditory stimulation for lower extremity motor rehabilitation. Five RCTs compared Treadmill Training with Rhythmic Auditory Stimulation with Treadmill Training (Ahmed et al. 2023; Mainka et al. 2018; Song & Ryu 2016; Yang et al. 2016; Yoon & Kang 2016). Eleven RCTs compared Overground Gait Training with Rhythmic Auditory Stimulation with Overground Gait Training (Awad et al. 2024; Osundiya et al. 2023; Elsner et al. 2020; Lee et al. 2018b; Cha et al. 2014b; Suh et al. 2014b; Kim & Oh 2012b; Johannsen et al. 2010; Thaut et al. 2007; Schauer et al. 2003; Thaut et al. 1997). Five RCTs compared Physical Therapy with Rhythmic Auditory Feedback with Physical Therapy or Conventional Therapy (Rana et al. 2024; Young et al. 2021; Bunketorp-Käll et al. 2017; Raglio et al. 2017; Jeong & Kim 2007). One RCT compared Treadmill Training with Rhythmic Auditory Stimulation with Overground Gait with Rhythmic Auditory Stimulation (Park et al. 2015a). One RCT compared Auditory Stimulation with Robot Training with Virtual Reality with Robot Training or Conventional Training (Park et al. 2018a). One RCT compared Auditory Stimulation with Mental Imagery with Mental Imagery (Kim et al. 2011). One RCT compared Rhythmic Auditory Stimulation with Visual Cueing or Conventional Treatment (Chouhan et al. 2012). One RCT evaluated Action Observation with Rhythmic Auditory Stimulation (Cho et al. 2020a).

In addition, one RCT in which rhythmic auditory stimulation formed part of a combined or comparative intervention are cross-referenced at the end of Table 22; their primary listings appear in other tables.

The methodological details and results of all 27 RCTs are presented in Table 22.

Table 22. RCTs Evaluating Rhythmic Auditory Stimulation for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Treadmill Training with Rhythmic Auditory Stimulation vs Treadmill Training		
Ahmed et al. (2023) RCT (7) Nstart=30 Nend=30 TPS=Chronic A + B + C vs B + C Also in Table 9 (Treadmill Training)	E: Rhythmic Auditory Stimulation + Custom Physiotherapy program + Treadmill gait training C: Custom physiotherapy program + Treadmill gait training Duration: 30 mins/d, 3ds/wk, 6 wks	E vs C: Walking speed improvement (+exp) Step cycle improvement (+exp) Step length improvement affected side (+exp) non-affected (-) Percent of time on improvement affected side (+exp) non-affected side (-) Ambulation index improvement (+exp)
Mainka et al. (2018) RCT (6) Nstart=45 Nend=35 TPS=Subacute A + B vs B vs C Also in Table 9 (Treadmill Training)	E1: Rhythmic auditory stimulation + treadmill training + conventional PT E2: Treadmill training + conventional PT C: Neurodevelopmental treatment + conventional PT Duration: 15-20min/d, 5d/wk, for 4wks treadmill training with or without the Rhythmic auditory stimulation & 30min/d, 5d/wk, for 4wks Neurodevelopmental treatment & 30-60min/wk conventional PT	E1 vs E2: Fast gait speed test gait velocity(+exp1) cadence (+exp1) stride length(-) Gait analysis with the locometre gait velocity(-) cadence (-) stride length(-) 3-min walking test (+exp1) instrumental evaluation of balance (-) E1/E2 vs C: Fast gait speed test gait velocity(+exp1) cadence (+exp1) stride length(-) Gait analysis with the locometre gait velocity(-) cadence (+exp1) stride length(-) 3-min walking test (-) instrumental evaluation of balance (-)
Song & Ryu (2016) RCT (5) Nstart=40 Nend=40 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + Rhythmic auditory stimulation C: Treadmill training Duration: 30min/d, 5d/wk for 4wks	E vs C: 10-Metre Walk Test (+exp) Dynamic Gait Index (+exp) Cadence (+exp) Step length (+exp)
Yang et al. (2016) RCT (6) Nstart=24 Nend=22 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training); Table 15 (Biofeedback)	E: Treadmill training + Rhythmic auditory feedback C: Treadmill training Duration: 30min/d, 3d/wk for 4wks	E vs C: Gait speed (+exp) Cadence (+exp) Stride length (+exp) Step length (+exp) Limb support (+exp) Gait asymmetry (+exp) Timed Up & Go Test (+exp)
Yoon & Kang (2016) RCT (5) Nstart=30 Nend=28	E1: Inclined treadmill training + Rhythmic auditory stimulation E2: Inclined treadmill training C: Treadmill training	E vs C: E1 Vs C Timed Up and Go Test (+exp1) Berg Balance Scale (+exp1)

TPS=Chronic A + B vs A1 vs A2 Also in Table 9 (Treadmill Training)	Duration: 30min/d, 5d/wk for 4wks	Gait Speed (+exp1) Cadence (+exp1) Single Limb Support (+exp1) Symmetric Index (+exp1) 6-minute Walking Test (+exp1) E1 vs E2: Timed Up and Go Test (+exp1) Berg Balance Scale (+exp1) Gait Speed (+exp1) Cadence (+exp1) Single Limb Support (+exp1) Symmetric Index (+exp1) 6-minute Walking Test (+exp1) E2 vs C: Timed Up and Go Test (+exp2) Berg Balance Scale (+exp2) Gait Speed (+exp2) Cadence (-) Single Limb Support (-) Symmetric Index (+exp2) 6-minute Walking Test (+exp2)
Overground Gait Training with Rhythmic Auditory Stimulation vs Overground Gait Training		
Awad et al. (2024) RCT (5) Nstart=87 Nend=72 TPS=Chronic A vs B	E: InTandem neurorehabilitation program (auditory stimulation with gait training) C: Overground walking Duration: 30min/d, 3d/wk, 5wks	E vs C: 10MWT (+exp)
Osundiya et al. (2023) RCT (6) Nstart=28 Nend=25 TPS=Chronic A + B vs A Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 30min/d, 2x/wk, 6wks	E vs C: Lower Extremity Motor Coordination Test paretic limb (-) nonparetic limb (-) NEADL (-) mobility (-) kitchen (-) domestic (-) leisure (-)
Elsner et al. (2020) RCT (6) Nstart=12 Nend=12 TPS=Chronic A + B vs A Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 30min/d, 3d/wk, for 4wks	E vs C: 10-Meter Walk Test (-) 6-Min Walk Test (-) Berg Balance Scale (-) Stride Length (-)
Lee et al. (2018b) RCT (6) Nstart=45 Nend=44 TPS=Chronic A vs 0	E: Gait training + Rhythmic auditory cueing + Conventional rehabilitation C: Gait training + conventional rehabilitation Duration: 30min/d, 5d/wk, for 6wks	E vs C: Gait symmetry on step time (-) Gait symmetry on step length (-) Gait velocity (+exp) Cadence (+exp) Timed-up-and-go (-) Berg balance score (-)

		Fugl-Meyer Lower extremity (-)
Cha et al. (2014b) RCT (7) Nstart=20 Nend=20 TPS=Chronic A + B vs A	E: Intensive gait training + Rhythmic auditory stimulation C: Intensive gait training Duration: 30min/d, 5d/wk for 6wks	E vs C: Gait speed (+exp) Stride length Affected side (+exp) Less affected side (-) Double Support Period Affected side (+exp) Less affected side (-) Cadence (+exp) Berg Balance Scale (+exp) Stroke Specific Quality of Life Scale (+exp)
Suh et al. (2014b) RCT (6) Nstart=16 Nend=16 TPS=Chronic A vs 0 Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: gait training + Rhythmic auditory stimulation + conventional therapy (bobath) C: Gait training + conventional therapy (bobath) Duration: 15min/d, 5d/wk, for 3wks gait training with/without RAS & 30min/d, 5d/wk, for 3wks bobath	E vs C: Cadence (-) Stride strength (-) 10 metre-walk (-) Overall stability index (+exp) Anteroposterior Index (+exp) Mediolateral Index (+exp)
Kim & Oh (2012b) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs A Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground gait training + Rhythmic auditory stimulation C: Overground gait training Duration: 10min/d, 3d/wk for 6wks	E vs C: Gait speed (+exp) Stride length (+exp) Single support time (+exp)
Johannsen et al. (2010) RCT (7) Nstart=24 Nend=21 TPS=Chronic A1 vs A2	E: Bilateral leg training with rhythmic auditory cueing C: Bilateral arm training with rhythmic auditory cueing Duration: 45min/d, 2d/wk, for 5wks	E vs C: Fugl-Meyer Lower Extremity (+exp) Upper Extremity (+con) 10-meters walk test (-) Step length (-) repetitive aiming tasks for the hand and foot (-)
Thaut et al. (2007) RCT (7) Nstart=78 Nend=78 TPS=Acute A vs B	E: Rhythmic auditory stimulation + Gait training C: Neurodevelopmental techniques based on Bobath + Gait training Duration: 30min/d, 5d/wk for 3wks	E vs C: 10m Walk test (+exp) stride length (+exp) cadence (+exp) swing ratios symmetry (+exp) Participant satisfaction (+exp)
Schauer et al. (2003) RCT (4) Nstart=23 Nend=23 TPS=Subacute A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Musical motor feedback + Conventional gait therapy + Neurodevelopmental therapy C: Conventional gait therapy + Neurodevelopmental therapy Duration: 20min/d, 5d/wk for 3wks Gait therapy, 45min/d Neurodevelopmental therapy	E vs C: Gait Velocity (No stats) Stride Length (No stats) Cadence (No stats) Symmetry Deviation (+exp) Heel-on-toe-off Distance (+exp)

Thaut et al. (1997) RCT (6) Nstart=20 Nend=20 TPS=Acute A vs 0	E: Gait training + Rhythmic auditory stimulation C: Gait training Duration: 60min/d, 5d/wk, for 6wks	E vs C: Gait velocity (+exp) Stride length (+exp) Symmetry (-) Cadence (-) EMG variability (+exp)
Physical Therapy with Rhythmic Auditory Feedback vs Physical Therapy or Conventional Therapy		
Rana et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B + C vs B + C Also in Table 4 (Trunk Training); Table 11 (Balance Training); Table 21 (Strength and Resistance Training)	E: Metronome training + core strengthening + general balance exercises C: Core strengthening + general balance exercises Duration: 8wks	E vs C: TUG (+exp) Tinetti Test (+exp)
Young et al. (2021) RCT (7) Nstart=47 Nend=45 TPS=Chronic A vs B	E: Movement-to-music exercise C: Newsletters with information on overall health Duration: 60 min/d, 3d/wk, for 12wks Movement to music	E vs C: 6MWT (-) FTSST (-) TUG (-) Patient-Reported Outcomes Measurement Information System Fatigue (-) Pain (-)
Bunketorp-Käll et al. (2017) RCT (8) Nstart=123 Nend=117 TPS=Chronic A vs B vs 0 Also in Table 14 (Hippotherapy)	E1: Rhythm and Music-based therapy E2: Horse-riding therapy C: No treatment Duration: 2d/wk, for 12wks	E1/E2 vs C: Stroke Impact Scale (+exp1, +exp2) Timed Up and Go Test (+exp 2) Berg Balance Scale (+exp 2) Backstrand, Dahlberg and Liljenas Balance Scale (+exp1, +exp2) Grip Strength Right Hand Final (-) Right Hand Mean (-) Right Hand Max (+exp1) Left Hand Final (+exp1) Left Hand Mean (-) Left Hand Max (-) Barrow Neurological Institute Screen (+exp1) Letter Number Sequencing (+exp1)
Raglio et al. (2017) RCT (6) Nstart=38 Nend=38 TPS=Subacute A vs 0	E: Relational active music therapy + Standard rehabilitation C: Standard rehabilitation only Duration: 30min/d, 3d/wk, 20sessions music therapy & 7d/wk standard rehabilitation	E vs C: NIHSS-Italian (-) Functional independence measure (-) Grip pinch test Dominant hand grip (-) Nondominant hand grip (+exp) Dominant hand pinch (-) Nondominant hand pinch (-) 9Hole Peg test Dominant hand (-) Nondominant hand (-) Timed Up and Go (-) Hospital Anxiety and Depression scale

		Anxiety (-) Depression (+exp) McGill Quality of life questionnaire (-)
Jeong & Kim (2007) RCT (5) Nstart=36 Nend=33 TPS=Chronic A + B vs C	E: Movement exercise + Rhythmic auditory stimulation C: Referral information about usual care Duration: 2hr/wk, for 8wks	E vs C: Active Range of motion: Shoulder flexion (-) Ankle flexion (-) Ankle extension (+exp) Back scratch test Upward the affected arm (+exp) Downward the affected arm (+exp) Profile of Mood states (+exp) Relationship Change Scale (+exp) Stroke Specific Quality of life (-)
Treadmill Training with Rhythmic Auditory Stimulation vs Overground Gait with Rhythmic Auditory Stimulation		
Park et al. (2015a) RCT (5) Nstart=19 Nend=19 TPS=Chronic A + B vs C + B Also in Table 9 (Treadmill Training)	E: Treadmill training + Rhythmic auditory stimulation C: Overground training + Rhythmic auditory stimulation Duration: 30min/d, 5d/wk for 3wks	E vs C: Gait speed (+exp) 6-Minute Walk Test (+exp) Functional Gait Assessment (+exp) Step cycle (+exp) Step length Paretic side (-) Nonparetic side (+exp) Timed Up & Go Test (-)
Auditory Stimulation with Robot Training vs Virtual Reality with Robot Training or Conventional Training		
Park et al. (2018a) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B vs D Also in Table 9 (Treadmill Training); Table 26 (Virtual Reality); Table 27 (Electromechanical and Robotic Devices)	E1: Virtual reality + robot- assisted gait training (Treadmill)+ conventional physical therapy E2: Auditory stimulation + robot- assisted gait training (Treadmill) + conventional physical therapy C: Conventional physical therapy + treadmill training Duration: 45min/d, 3d/wk, for 6wks trainings & 30min/d, 5d/wk, for 6wks Conventional therapy	E1 vs E2: Medical Research Council (+exp1) Berg Balance Scale (-) Timed Up & Go Test (-) 10 Meter Walk test (-) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-) E1/ E2 vs C: Medical Research Council (+exp1+exp2) Berg Balance Scale (+exp1, +exp2) Timed Up & Go Test (+exp1, +exp2) 10 Meter Walk test (+exp1) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-)
Auditory Stimulation with Mental Imagery vs Mental Imagery		
Kim et al. (2011) RCT crossover (4) Nstart=18 Nend=15 TPS=Chronic A1 vs A2 vs B1 vs B2 Also in Table 17 (Mental Practice)	E1: Visual Locomotor Imagery Training E2: Kinesthetic Locomotor Imagery Training E3: Visual Locomotor Training with Auditory Step Rhythm E4: Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm Duration: 15 min/condition, 24 hr washout	E1 vs E2: Timed Up and Go Test (-) E1 vs E3: Timed Up and Go Test (-) E1 vs E4: Timed Up and Go Test (+exp4) muscle activation by EMG parameter (+exp4) E2 vs E3: Timed Up and Go Test (-) E2 vs E4: Timed Up and Go Test (-)

		E3 vs E4: Timed Up and Go Test (-)
Rhythmic Auditory Stimulation vs. Visual Cueing or Conventional Treatment		
Chouhan et al. (2012) RCT (6) Nstart=45 Nend=45 TPS=Subacute A vs B vs 0	E1: Rhythmic auditory stimulation + conventional treatment E2: Visual cueing + conventional treatment C: Conventional treatment Duration: 120min/d, 3d/wk, for 3wks	E1 vs E2: Dynamic gait index (+exp2) Fugl-Meyer Assessment (-) E1/E2 vs C: Dynamic gait index (+exp1, +exp2) Fugl-Meyer Assessment (+exp1, exp2)
Action Observation with Rhythmic Auditory Stimulation		
Cho et al. (2020a) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs A Also in Table 18 (Action Observation)	E: Action observation training + Rhythmic auditory stimulation + PT C: Action observation + PT Duration: 15min, 2sessions/d, 3d/wk, 8wks action observation & 5d/wk, for 8wks PT	E vs C: Postural stability test Overall balance index (+exp) Anteroposterior balance index (+exp) Mediolateral balance index (+exp) Fall Risk (+exp)
Additional Comparisons from the Source Dataset		
Jun et al. (2013) RCT (3) Nstart=40 Nend=30 TPS=Acute A vs 0	E: Music-movement therapy (MMT) C: Conventional care Duration: 60min/d, 3d/wk, 8wks	E vs C: Hip Range of Motion (-) Medical research council scale (-) Modified Barthel Index Profile of Mood States (+exp) Center for Epidemiological Studies of Depression scale (-).

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Overground Gait Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Overground Gait Training for improving motor recovery.	3	Osundiya et al. 2023; Lee et al. 2018b; Johannsen et al. 2010
1b	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving motor recovery.	1	Raglio et al. 2017
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in motor recovery than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Auditory Stimulation with Robot Training may produce greater improvements in motor recovery than Virtual Reality with Robot Training or Conventional Training.	1	Park et al. 2018a

1b	Rhythmic auditory stimulation with conventional treatment may not have a difference in efficacy when compared to Visual cueing with conventional treatment for improving motor recovery.	1	Chouhan et al. 2012
1b	Rhythmic auditory stimulation with conventional treatment or Visual cueing with conventional treatment may produce greater improvements in motor recovery than Conventional treatment.	1	Chouhan et al. 2012

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Treadmill Training with Rhythmic Auditory Stimulation when compared to Treadmill Training for improving biomechanical gait measures.	5	Ahmed et al. 2023; Mainka et al. 2018; Song & Ryu 2016; Yang et al. 2016; Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in biomechanical gait measures than Inclined treadmill training.	1	Yoon & Kang 2016
2	There is conflicting evidence about the effect of Inclined treadmill training when compared to Treadmill training for improving biomechanical gait measures.	1	Yoon & Kang 2016
1a	There is conflicting evidence about the effect of Overground Gait Training with Rhythmic Auditory Stimulation when compared to Overground Gait Training for improving biomechanical gait measures.	9	Elsner et al. 2020; Lee et al. 2018b; Cha et al. 2014b; Suh et al. 2014b; Kim & Oh 2012b; Johannsen et al. 2010; Thaut et al. 2007; Schauer et al. 2003; Thaut et al. 1997
2	There is conflicting evidence about the effect of Treadmill Training with Rhythmic Auditory Stimulation when compared to Overground Gait with Rhythmic Auditory Stimulation for improving biomechanical gait measures.	1	Park et al. 2015a

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical balance measures.	1	Mainka et al. 2018
1b	Overground Gait Training with Rhythmic Auditory Stimulation may produce greater improvements in biomechanical balance measures than Overground Gait Training.	1	Suh et al. 2014b
1b	Action observation training with Rhythmic auditory stimulation and physical therapy may produce greater improvements in biomechanical balance measures than Action observation with physical therapy.	1	Cho et al. 2020a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in muscle strength than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy or Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy may produce greater improvements in muscle strength than Conventional physical therapy with treadmill training.	1	Park et al. 2018a

2	Music-movement therapy (MMT) may not have a difference in efficacy when compared to Conventional care for improving muscle strength.	1	Jun et al. 2013

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Physical Therapy with Rhythmic Auditory Feedback when compared to Physical Therapy or Conventional Therapy for improving range of motion.	1	Jeong & Kim 2007
2	Music-movement therapy (MMT) may not have a difference in efficacy when compared to Conventional care for improving range of motion.	1	Jun et al. 2013

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Gait Training with Rhythmic Auditory Stimulation may produce greater improvements in neurophysiological measures than Overground Gait Training.	1	Thaut et al. 1997
2	Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.	1	Kim et al. 2011

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Gait Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Overground Gait Training for improving activities of daily living.	1	Osundiya et al. 2023
1b	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving activities of daily living.	1	Raglio et al. 2017
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving activities of daily living.	1	Park et al. 2018a
1b	Auditory Stimulation with Robot Training may not have a difference in efficacy when compared to Virtual Reality with Robot Training or Conventional Training for improving activities of daily living.	1	Park et al. 2018a

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Treadmill Training with Rhythmic Auditory Stimulation when compared to Treadmill Training for improving gait speed.	5	Ahmed et al. 2023; Mainka et al. 2018; Song & Ryu 2016; Yang et al. 2016; Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait speed than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in gait speed than Treadmill training.	1	Yoon & Kang 2016

1a	Overground Gait Training with Rhythmic Auditory Stimulation may produce greater improvements in gait speed than Overground Gait Training.	10	Awad et al. 2024; Elsner et al. 2020; Lee et al. 2018b; Cha et al. 2014b; Suh et al. 2014b; Kim & Oh 2012b; Johannsen et al. 2010; Thaut et al. 2007; Schauer et al. 2003; Thaut et al. 1997
2	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in gait speed than Overground Gait with Rhythmic Auditory Stimulation.	1	Park et al. 2015a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving gait speed.	1	Park et al. 2018a
1b	Auditory Stimulation with Robot Training may produce greater improvements in gait speed than Virtual Reality with Robot Training or Conventional Training.	1	Park et al. 2018a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in gait endurance than Treadmill Training.	2	Mainka et al. 2018; Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in gait endurance than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in gait endurance than Treadmill training.	1	Yoon & Kang 2016
1b	Overground Gait Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Overground Gait Training for improving gait endurance.	1	Elsner et al. 2020
1b	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving gait endurance.	1	Young et al. 2021
2	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in gait endurance than Overground Gait with Rhythmic Auditory Stimulation.	1	Park et al. 2015a

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in functional mobility than Treadmill Training.	4	Ahmed et al. 2023; Song & Ryu 2016; Yang et al. 2016; Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in functional mobility than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in functional mobility than Treadmill training.	1	Yoon & Kang 2016
1b	Overground Gait Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Overground Gait Training for improving functional mobility.	1	Lee et al. 2018b
1a	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving functional mobility.	3	Rana et al. 2024; Young et al. 2021; Raglio et al. 2017

2	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in functional mobility than Overground Gait with Rhythmic Auditory Stimulation.	1	Park et al. 2015a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving functional mobility.	1	Park et al. 2018a
2	Visual Locomotor Imagery Training may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Imagery Training may not have a difference in efficacy when compared to Visual Locomotor Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Kinesthetic Locomotor Imagery Training may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Kinesthetic Locomotor Imagery Training may not have a difference in efficacy when compared to Visual Locomotor Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Training with Auditory Step Rhythm may not have a difference in efficacy when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm for improving functional mobility.	1	Kim et al. 2011
2	Visual Locomotor Imagery Training may result in lesser improvements in functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.	1	Kim et al. 2011
1b	Rhythmic auditory stimulation with conventional treatment may result in lesser improvements in functional mobility when compared to Visual cueing with conventional treatment.	1	Chouhan et al. 2012
1b	Rhythmic auditory stimulation with conventional treatment or Visual cueing with conventional treatment may produce greater improvements in functional mobility than Conventional treatment.	1	Chouhan et al. 2012

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Treadmill Training with Rhythmic Auditory Stimulation may produce greater improvements in balance than Treadmill Training.	1	Yoon & Kang 2016
2	Inclined treadmill training with Rhythmic auditory stimulation may produce greater improvements in balance than Inclined treadmill training.	1	Yoon & Kang 2016
2	Inclined treadmill training may produce greater improvements in balance than Treadmill training.	1	Yoon & Kang 2016
1a	Overground Gait Training with Rhythmic Auditory Stimulation may not have a difference in efficacy when compared to Overground Gait Training for improving balance.	3	Elsner et al. 2020; Lee et al. 2018b; Cha et al. 2014b
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving balance.	1	Park et al. 2018a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Action observation training with Rhythmic auditory stimulation and physical therapy may produce greater improvements in falls and fear of falling than Action observation with physical therapy.	1	Cho et al. 2020a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Gait Training with Rhythmic Auditory Stimulation may produce greater improvements in quality of life than Overground Gait Training.	1	Cha et al. 2014b
1b	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving quality of life.	2	Raglio et al. 2017; Jeong & Kim 2007

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Physical Therapy with Rhythmic Auditory Feedback may produce greater improvements in mood than Physical Therapy or Conventional Therapy.	2	Raglio et al. 2017; Jeong & Kim 2007
2	There is conflicting evidence about the effect of Music-movement therapy (MMT) when compared to Conventional care for improving mood.	1	Jun et al. 2013

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving fatigue and sleep.	1	Young et al. 2021

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Overground Gait Training with Rhythmic Auditory Stimulation may result in lesser improvements in upper extremity function when compared to Overground Gait Training.	1	Johannsen et al. 2010
1a	Physical Therapy with Rhythmic Auditory Feedback may not have a difference in efficacy when compared to Physical Therapy or Conventional Therapy for improving upper extremity function.	3	Bunketorp-Käll et al. 2017; Raglio et al. 2017; Jeong & Kim 2007

Key Points

- Treadmill Training with Rhythmic Auditory Stimulation may be beneficial for improving gait endurance, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Overground Gait Training with Rhythmic Auditory Stimulation may be beneficial for improving biomechanical balance measures, neurophysiological measures, gait speed, and quality of life, but not

motor recovery, activities of daily living, gait endurance, functional mobility, and balance, after stroke when compared to Overground Gait Training; the literature is mixed regarding biomechanical gait measures.

- Physical Therapy with Rhythmic Auditory Feedback may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and quality of life after stroke when compared to Physical Therapy or Conventional Therapy; the literature is mixed regarding range of motion.
- Treadmill Training with Rhythmic Auditory Stimulation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Overground Gait with Rhythmic Auditory Stimulation; the literature is mixed regarding biomechanical gait measures.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.
- Auditory Stimulation with Robot Training may be beneficial for improving motor recovery and gait speed, but not activities of daily living, after stroke when compared to Virtual Reality with Robot Training or Conventional Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Visual Locomotor Training with Auditory Step Rhythm may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Action observation training with Rhythmic auditory stimulation and physical therapy may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Action observation with physical therapy.
- Music-movement therapy (MMT) may not be beneficial for improving muscle strength and range of motion after stroke when compared to Conventional care.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Inclined treadmill training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Inclined treadmill training.
- Rhythmic auditory stimulation with conventional treatment may not be beneficial for improving motor recovery after stroke when compared to Visual cueing with conventional treatment; Rhythmic auditory stimulation with conventional treatment may result in lesser improvements in functional mobility when compared to Visual cueing with conventional treatment.
- Rhythmic auditory stimulation with conventional treatment may be beneficial for improving motor recovery and functional mobility after stroke when compared to Conventional treatment.
- Visual cueing with conventional treatment may be beneficial for improving motor recovery and functional mobility after stroke when compared to Conventional treatment.

- Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures and functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.

Summary of Key Points: Rhythmic Auditory Stimulation

Intervention	Control(s)	Function domain(s)	Effect
Treadmill Training with Rhythmic Auditory Stimulation	Treadmill Training	Gait endurance, functional mobility, balance	+
Treadmill Training with Rhythmic Auditory Stimulation	Treadmill Training	Biomechanical balance measures	–
Treadmill Training with Rhythmic Auditory Stimulation	Treadmill Training	Gait endurance	+
Treadmill Training with Rhythmic Auditory Stimulation	Treadmill Training	Gait speed, biomechanical gait measures	=
Overground Gait Training with Rhythmic Auditory Stimulation	Overground Gait Training	Biomechanical balance measures, neurophysiological measures, gait speed, quality of life	+
Overground Gait Training with Rhythmic Auditory Stimulation	Overground Gait Training	Motor recovery, activities of daily living, gait endurance, functional mobility, balance	–
Overground Gait Training with Rhythmic Auditory Stimulation	Overground Gait Training	Biomechanical gait measures	=
Physical Therapy with Rhythmic Auditory Feedback	Physical Therapy or Conventional Therapy	Motor recovery, activities of daily living, gait endurance, functional mobility, quality of life	–
Physical Therapy with Rhythmic Auditory Feedback	Physical Therapy or Conventional Therapy	Range of motion	=
Treadmill Training with Rhythmic Auditory Stimulation	Overground Gait with Rhythmic Auditory Stimulation	Gait speed, gait endurance, functional mobility	+
Treadmill Training with Rhythmic Auditory Stimulation	Overground Gait with Rhythmic Auditory Stimulation	Biomechanical gait measures	=
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Motor recovery, muscle strength	+
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Activities of daily living, gait speed, functional mobility, balance	–
Auditory Stimulation with Robot Training	Virtual Reality with Robot Training or Conventional Training	Motor recovery, gait speed	+
Auditory Stimulation with Robot Training	Virtual Reality with Robot Training or Conventional Training	Activities of daily living	–
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training	Functional mobility	–
Visual Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm	Functional mobility	–
Kinesthetic Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Functional mobility	–
Kinesthetic Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm	Functional mobility	–

Visual Locomotor Training with Auditory Step Rhythm	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Functional mobility	−
Action observation training with Rhythmic auditory stimulation and physical therapy	Action observation with physical therapy	Biomechanical balance measures, falls and fear of falling	+
Music-movement therapy (MMT)	Conventional care	Muscle strength, range of motion	−
Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Inclined treadmill training	Treadmill training	Biomechanical gait measures	=
Inclined treadmill training	Treadmill training	Gait speed, gait endurance, functional mobility, balance	+
Inclined treadmill training with Rhythmic auditory stimulation	Inclined treadmill training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, balance	+
Rhythmic auditory stimulation with conventional treatment	Visual cueing with conventional treatment	Motor recovery, functional mobility	−
Rhythmic auditory stimulation with conventional treatment	Conventional treatment	Motor recovery, functional mobility	+
Visual cueing with conventional treatment	Conventional treatment	Motor recovery, functional mobility	+
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	Neurophysiological measures, functional mobility	−

Respiratory Training and Devices



Adopted from: https://unsplash.com/

After a stroke, not only are muscles of the upper and lower extremities impacted, but patients can also experience respiratory muscle weakness (Liaw et al., 2020). The respiratory muscle strength post-stroke can be less than half of what would be expected for a healthy adult (Menezes et al., 2016). This weakness impacts swallowing and cough ability, which in turn can lead to secondary complications such as aspiration, pneumonia or respiratory failure (Zhang et al., 2022a). To avoid these post-stroke complications, patients can participate in respiratory muscle training. Patients repeat breathing exercises with a device that provides a pressure threshold or flow- dependent resistance against exhalation or inhalation (Menezes et al., 2016; Zhang et al., 2024). This resistance stimulates the respiratory muscles, which in turn must adapt their structure (Zhang et al., 2024; Menezes et al., 2016). This training should increase muscle strength.

A total of ten RCTs were found that evaluated respiratory training and devices for lower extremity motor rehabilitation. Six RCTs compared Respiratory Muscle Training with Conventional Rehabilitation or Sham Respiratory Muscle Training (Dogan et al. 2024; Aydogan Arslan et al. 2022; Choi et al. 2021b; Vaz et al. 2021; Yoo et al. 2018b; Kim et al. 2014b). One RCT compared Respiratory Training with Conventional Rehabilitation with Liuzijue Qigong (Zheng et al. 2021). One RCT compared Continuous Positive Airway Pressure with Conventional Rehabilitation (Ryan et al. 2011). One RCT compared Respiratory Muscle Training with Cycle Ergometer Training (Jeong-MinYoon et al. 2022).

The methodological details and results of all ten RCTs are presented in Table 23.

Table 23. RCTs Evaluating Respiratory Training and Devices for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Respiratory Muscle Training vs Conventional Rehabilitation or Sham Respiratory Muscle Training		
Dogan et al. (2024) RCT (7) Nstart=60 Nend=50 TPS=Chronic A1 vs A2 vs 0	E1: 4 week inspiratory muscle training E2: 8 week inspiratory muscle training C: Sham inspiratory muscle training Duration: Experimental 1: 30 mins/d, 5ds/wk, 4wks; Experimental 2 and Control: 30 mins/d, 5ds/wk, 8wks	E1 vs E2: Maximum inspiratory pressure (+exp2) 6-minute walk test (+exp2) Nottingham extended activities of daily living index (-) E1 vs C: Maximum inspiratory pressure (+exp1) 6-minute walk test (+exp1) Nottingham extended activities of daily living index (-) E2 vs C: Maximum inspiratory pressure (+exp2) 6-minute walk test (+exp2) Nottingham extended activities of daily living index (-)
Aydogan Arslan et al. (2022) RCT (7) Nstart=21 Nend=21 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Inspiratory Muscle Training + Neurodevelopmental Bobath Treatment C: Neurodevelopmental Bobath Treatment Duration: IMT (30mins/d, 7ds/wk, 6wks)	E vs C: Respiratory measures Forced vital capacity (-) Forced expiratory volume in 1 second (-) Peak expiratory volume (+exp) FEV1/FVC Ratio (-) Maximum inspiratory pressure (+exp) Maximum expiratory pressure (-) TIS (+exp) TUG (-) Berg Balance Scale (-) 6MWT (-)
Choi et al. (2021b) RCT (3) Nstart=64 Nend=44 TPS=Subacute A vs 0	E: Respiratory muscle training + Conventional rehabilitation C: Conventional rehabilitation Duration: 30min/sessions, 5d/wk for 1mo RMT	E vs C: Pulmonary function test (-) Functional ambulation category (-) Modified Barthel Index (+exp) Manual Muscle test- Shoulder Abduction and Finger Extension (-) Grip strength right (-) left (+exp)

		occurrence of pneumonia (+exp)
Vaz et al. (2021) RCT (7) Nstart=50 Nend=42 TPS=Chronic A vs 0	E: Inspiratory Muscle Training + standard rehabilitation C: Sham Inspiratory Muscle Training + standard rehabilitation Duration: 15min/session, 2sessions/d, 5d/wk for 6wks	E vs C: 6-min Walking Test (-) Maximal Inspiratory Pressure (-) Maximal Expiratory Pressure (-) Inspiratory Muscle Endurance (+exp) Functional Independence Measure (-) Quality of Life (-)
Yoo et al. (2018b) RCT (5) Nstart=45 Nend=40 TPS=Acute A vs 0	E: Respiratory muscle training + conventional rehabilitation C: Conventional rehabilitation Duration: 60min/d, 7d/wk respiratory muscle training & 60min/d, 5d/wk, for 3wks conventional rehabilitation	E vs C: Forced Vital Capacity (-) Forced Expiratory Volume (+exp) FEV1/FVC (-) Peak Flow (+exp) National Institutes of Health Stroke Scale (-) Modified Barthel Index (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-) Mini-Mental State Examination (-) Incidence of pneumonia (-)
Kim et al. (2014b) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs A	E: Conventional exercise + automated full-body workout machine + respiratory training C: Conventional exercise + automated full-body workout machine Duration: 30min/d, 3d/wk, for 4wks conventional exercise & 20min/d, 3d/wk, for 4wks automated full-body workout machine & 20min/d respiratory training, 3d/wk, for 4wks	E vs C: Forced vital capacity (FVC) (+exp) Forced expiratory volume (FEV1) (+exp) FEV1/FVC (-) Peak expiratory flow (+exp) 6-Minute Walk Test (+exp) Shortness of Breath Modified Borg Dyspnea Scale (+exp)
Respiratory Training vs Conventional Rehabilitation with Liuzijue Qigong		
Zheng et al. (2021) RCT (8) Nstart=60 Nend=60 TPS=Acute A vs B	E: Conventional rehabilitation training with Liuzijue Qigong C: Respiratory relaxation training + conventional training Duration: 45min/d, 5d/wk, for 3wks	E vs C: Trunk Impairment Scale Static sitting balance (+exp) Dynamic sitting balance (+exp) Coordination of trunk movement (+exp) Maximum expiratory pressure (+exp) Maximum inspiratory pressure (+exp) Forced expiratory volume in the first second (-) Forced vital capacity (-) Peak expiratory flow (-) Maximum expiratory mid-flow (-) Diaphragmatic movement (-) Change of intra-abdominal pressure (+exp) Berg Balance Scale (-) Modified Barthel Index (+exp)
Continuous Positive Airway Pressure vs Conventional Rehabilitation		
Ryan et al. (2011) RCT (7) Nstart=48 Nend=44 TPS=Acute	E: Continuous positive airway pressure (CPAP) + standard rehabilitation C: Standard rehabilitation Duration: 6h/d, 4wks CPAP, 45min/d, 5d/wk, 4wks standard rehabilitation	E vs C: Canadian Neurologic scale (+exp) cognitive (+exp) motor (+exp) 6min Walk test (-)

A vs 0		Sustained attention response time (-) Digit/spatial span-backward (-) Functional Independence measure (-) motor (+exp) cognitive (-) Chedoke-McMaster Stroke assessment (+exp) Hand-grip affected/nonaffected ratio (-) Berg Balance scale (-) Epworth Sleepiness scale (+exp) Stanford Sleepiness scale (+exp) Perdue pegboard test (-) Beck Depression inventory-1 (-) somatic (-) affective (+exp)
Respiratory Muscle Training vs Cycle Ergometer Training		
Jeong-MinYoon et al. (2022) RCT (6) Nstart=32 Nend=32 TPS=Chronic A vs B	E: Breathing exercises C: Non-resistant cycle ergometer exercise Duration: 20min/d, 3d/wk, 4wks	E vs C: 6MWT (-) chest expansion (-) forced vital capacity (+exp) forced expiratory volume (+exp) peak expiratory flow (+exp)
Additional Comparisons from the Source Dataset		
Sütbeyaz et al. (2010) RCT (7) Nstart=45 Nend=45 TPS=Subacute A vs 0	E1: Inspiratory muscle training (IMT) E2: Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) C: Conventional rehabilitation Duration: 30mins/d, 6d/wk, 6wks	E1 vs E2: Respiratory Measures FEV (+exp1) FVC (+exp1) VC (+exp1) FEF 25-75% (+exp1) MVV (+exp1) PEF (+exp2) VO2peak (+exp1) Borg rating of perceived effort (+exp1) E1 vs C: Respiratory Measures FEV (+exp1) FVC (+exp1) VC (+exp1) FEF 25-75% (+exp1) MVV (+exp1) VO2peak (+exp1) Borg rating of perceived effort (+exp1) Barthel Index (+exp1) Functional Ambulation Category (+exp1) Short Form 36 physical role (+exp1) general health (+exp1) vitality (+exp1) E2 vs C ; ;Respiratory Measures ; - FEV (-) ; - FVC (-) VC (-) ; - FEF 25-75% (-) ; - MVV (-) ; - PEF (+exp2) ; - VO2peak (-); ; Borg rating of perceived effort (-)

		Barthel Index (-) Functional Ambulation Category (-) Short Form 36 ; - emotional role (+exp2) ; - general health (+exp2) ; - vitality (+exp2) ; - pain (+exp2)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving motor recovery.	1	Yoo et al. 2018b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Respiratory Muscle Training when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving muscle strength.	2	Choi et al. 2021b; Vaz et al. 2021

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	4 week inspiratory muscle training may result in lesser improvements in aerobic measures when compared to 8 week inspiratory muscle training.	1	Dogan et al. 2024
1a	Respiratory Muscle Training may produce greater improvements in aerobic measures than Conventional Rehabilitation or Sham Respiratory Muscle Training.	5	Dogan et al. 2024; Aydogan Arslan et al. 2022; Vaz et al. 2021; Yoo et al. 2018b; Kim et al. 2014b
1b	Respiratory Training may not have a difference in efficacy when compared to Conventional Rehabilitation with Liuzijue Qigong for improving aerobic measures.	1	Zheng et al. 2021
1b	Respiratory Muscle Training may produce greater improvements in aerobic measures than Cycle Ergometer Training.	1	Jeong-MinYoon et al. 2022
1b	Inspiratory muscle training (IMT) may produce greater improvements in aerobic measures than Conventional rehabilitation.	1	Sütbeyaz et al. 2010
1b	Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may not have a difference in efficacy when compared to Conventional rehabilitation for improving aerobic measures.	1	Sütbeyaz et al. 2010
1b	Inspiratory muscle training (IMT) may produce greater improvements in aerobic measures than Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT).	1	Sütbeyaz et al. 2010

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Inspiratory muscle training (IMT) may not have a difference in efficacy when compared to Conventional rehabilitation for improving pain.	1	Sütbeyaz et al. 2010
1b	Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may produce greater improvements in pain than Conventional rehabilitation.	1	Sütbeyaz et al. 2010

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	4 week inspiratory muscle training may not have a difference in efficacy when compared to 8 week inspiratory muscle training for improving activities of daily living.	1	Dogan et al. 2024
1a	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving activities of daily living.	4	Dogan et al. 2024; Choi et al. 2021b; Vaz et al. 2021; Yoo et al. 2018b
1b	Respiratory Training may produce greater improvements in activities of daily living than Conventional Rehabilitation with Liuzijue Qigong.	1	Zheng et al. 2021
1b	Continuous Positive Airway Pressure may not have a difference in efficacy when compared to Conventional Rehabilitation for improving activities of daily living.	1	Ryan et al. 2011
1b	There is conflicting evidence about the effect of Inspiratory muscle training (IMT) when compared to Conventional rehabilitation for improving activities of daily living.	1	Sütbeyaz et al. 2010
1b	Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may not have a difference in efficacy when compared to Conventional rehabilitation for improving activities of daily living.	1	Sütbeyaz et al. 2010

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	4 week inspiratory muscle training may result in lesser improvements in gait endurance when compared to 8 week inspiratory muscle training.	1	Dogan et al. 2024
1a	Respiratory Muscle Training may produce greater improvements in gait endurance than Conventional Rehabilitation or Sham Respiratory Muscle Training.	4	Dogan et al. 2024; Aydogan Arslan et al. 2022; Vaz et al. 2021; Kim et al. 2014b
1b	Continuous Positive Airway Pressure may not have a difference in efficacy when compared to Conventional Rehabilitation for improving gait endurance.	1	Ryan et al. 2011
1b	Respiratory Muscle Training may not have a difference in efficacy when compared to Cycle Ergometer Training for improving gait endurance.	1	Jeong-MinYoon et al. 2022

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving functional mobility.	2	Aydogan Arslan et al. 2022; Choi et al. 2021b
1b	Inspiratory muscle training (IMT) may produce greater improvements in functional mobility than Conventional rehabilitation.	1	Sütbeyaz et al. 2010
1b	Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may not have a difference in efficacy when compared to Conventional rehabilitation for improving functional mobility.	1	Sütbeyaz et al. 2010

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving balance.	2	Aydogan Arslan et al. 2022; Yoo et al. 2018b
1b	Respiratory Training may produce greater improvements in balance than Conventional Rehabilitation with Liuzijue Qigong.	1	Zheng et al. 2021
1b	Continuous Positive Airway Pressure may not have a difference in efficacy when compared to Conventional Rehabilitation for improving balance.	1	Ryan et al. 2011

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving quality of life.	1	Vaz et al. 2021

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Continuous Positive Airway Pressure may not have a difference in efficacy when compared to Conventional Rehabilitation for improving mood.	1	Ryan et al. 2011

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Continuous Positive Airway Pressure may produce greater improvements in fatigue and sleep than Conventional Rehabilitation.	1	Ryan et al. 2011

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Respiratory Muscle Training may not have a difference in efficacy when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training for improving cognition.	1	Yoo et al. 2018b

1b	Continuous Positive Airway Pressure may not have a difference in efficacy when compared to Conventional Rehabilitation for improving cognition.	1	Ryan et al. 2011

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Respiratory Muscle Training may produce greater improvements in upper extremity function than Conventional Rehabilitation or Sham Respiratory Muscle Training.	1	Choi et al. 2021b

Key Points

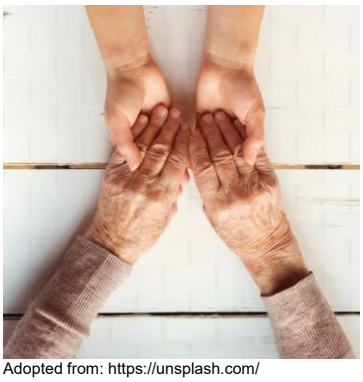
- 4 week inspiratory muscle training may not be beneficial for improving activities of daily living after stroke when compared to 8 week inspiratory muscle training; 4 week inspiratory muscle training may result in lesser improvements in aerobic measures and gait endurance when compared to 8 week inspiratory muscle training.
- Respiratory Muscle Training may be beneficial for improving aerobic measures and gait endurance, but not motor recovery, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training; the literature is mixed regarding muscle strength.
- Respiratory Training may be beneficial for improving activities of daily living and balance, but not aerobic measures, after stroke when compared to Conventional Rehabilitation with Liuzijue Qigong.
- Continuous Positive Airway Pressure may not be beneficial for improving activities of daily living, gait endurance, and balance after stroke when compared to Conventional Rehabilitation.
- Respiratory Muscle Training may be beneficial for improving aerobic measures, but not gait endurance, after stroke when compared to Cycle Ergometer Training.
- Inspiratory muscle training (IMT) may be beneficial for improving aerobic measures and functional mobility, but not pain, after stroke when compared to Conventional rehabilitation; the literature is mixed regarding activities of daily living.
- Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may be beneficial for improving pain, but not aerobic measures, activities of daily living, and functional mobility, after stroke when compared to Conventional rehabilitation.
- Inspiratory muscle training (IMT) may be beneficial for improving aerobic measures after stroke when compared to Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT).

Summary of Key Points: Respiratory Training and Devices

Intervention	Control(s)	Function domain(s)	Effect
4 week inspiratory muscle training	8 week inspiratory muscle training	Aerobic measures, activities of daily living, gait endurance	−
4 week inspiratory muscle training	8 week inspiratory muscle training	Aerobic measures, gait endurance	−
Respiratory Muscle Training	Conventional Rehabilitation or Sham Respiratory Muscle Training	Aerobic measures, gait endurance	+
Respiratory Muscle Training	Conventional Rehabilitation or Sham Respiratory Muscle Training	Motor recovery, activities of daily living, functional mobility, balance, quality of life	−
Respiratory Muscle Training	Conventional Rehabilitation or Sham Respiratory Muscle Training	Muscle strength	=
Respiratory Training	Conventional Rehabilitation with Liuzijue Qigong	Activities of daily living, balance	+

Respiratory Training	Conventional Rehabilitation with Liuzijue Qigong	Aerobic measures	−
Continuous Positive Airway Pressure	Conventional Rehabilitation	Activities of daily living, gait endurance, balance	−
Respiratory Muscle Training	Cycle Ergometer Training	Aerobic measures	+
Respiratory Muscle Training	Cycle Ergometer Training	Gait endurance	−
Inspiratory muscle training (IMT)	Conventional rehabilitation	Aerobic measures, functional mobility	+
Inspiratory muscle training (IMT)	Conventional rehabilitation	Pain	−
Inspiratory muscle training (IMT)	Conventional rehabilitation	Activities of daily living	=
Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT)	Conventional rehabilitation	Aerobic measures, activities of daily living, functional mobility	−
Inspiratory muscle training (IMT)	Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT)	Aerobic measures	+
Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT)	Conventional rehabilitation	Pain	+

Home-Based and Caregiver-Mediated Exercise Programs



Adopted from: https://unsplash.com/

Home-based and Caregiver-mediated programs are programs that allow a patient to receive exercise treatment in the comfort of their own home (van den Berg et al., 2016). These programs are run by a person who is not a licensed healthcare professional but instead more of a member of the patient's social network (Wang et al. 2015). This can help a patient feel more comfortable and may decrease their anxiety about starting a new program (van den Berg et al., 2016).

A total of 45 RCTs were found that evaluated Home-Based and Caregiver-Mediated exercise programs for lower extremity motor rehabilitation. 21 RCTs compared Home-Based Physiotherapy and Exercise Programs with Conventional Therapy or No Therapy (Mahmood et al. 2021; Jarbandhan et al. 2022; Guediri et al. 2022; Salgueiro et al. 2022; Mandigout et al. 2021; Saadatnia et al. 2020; Brouwer et al. 2018; Hsieh et al. 2018; Malagoni et al. 2016; Kara et al. 2015; Olaleye et al. 2014; Treger et al. 2014; Lin et al. 2004; McClellan & Ada 2004; Duncan et al. 2003; Roderick et al. 2001; Baskett et al. 1999; Walker et al. 1999; Duncan et al. 1998; Widen Holmqvist et al. 1998; Young et al. 1992). One RCT compared Home-based Oculomotor/Gaze Stability Exercises with Conventional Rehabilitation (Correia et al. 2021). Nine RCTs compared Caregiver-Mediated Programs with Conventional Care (Deng et al. 2024; Feldman et al. 2022; Nordin et al. 2019; Wang et al. 2015; Mudzi et al. 2012; Galvin et al. 2011; Sackley et al. 2006; Mayo et al. 2000; Mant et al. 2000). Seven RCTs compared Nursing Mediated Program with

Conventional Care (Chen et al. 2021a; Wang et al. 2021b; Zhang et al. 2021a; Guan et al. 2019; Zhang et al. 2018; Jones et al. 2005; Hui et al. 1995). One RCT compared Home Based Overground Walking with Home Based Cycling (Mayo et al. 2013). One RCT compared Early Discharged At-Home Supported Training with Conventional Post-Discharge Rehabilitation (Askim et al. 2006). One RCT compared Outpatient Clinic Care Follow-up with Conventional Control (Welin et al. 2010). One RCT compared Specialist Community Rehabilitation with Conventional Rehabilitation (Rudd et al. 1997).

In addition, ten RCTs in which Home-Based and Caregiver-Mediated exercise programs formed part of a combined or comparative intervention are cross-referenced at the end of Table 24; their primary listings appear in other tables.

The methodological details and results of all 45 RCTs are presented in Table 24.

Table 24. RCTs Evaluating Home-Based and Caregiver-Mediated Exercise Programs for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Home-Based Physiotherapy and Exercise Programs vs Conventional Therapy or No Therapy		
Jarbandhan et al. (2022) Feasibility/pilot RCT (3) Nstart=30 Nend=24 TPS=Chronic A vs 0	E: Home-based physiotherapy program supervised in the first 4wk and tele-supervised during the next 4wk C: Usual care Duration: 3d/wk, for 8wks	E vs C: 6MWD (-) DASH (-) Handgrip Paretic hand (-) Handgrip non paretic hand (-) BBS (-)
Guediri et al. (2022) RCT (4) Nstart=84 Nend=47 TPS=Subacute A vs 0	E: Regular individualized home based coaching on physical activity C: Conventional therapy Duration: E: Phone call, 1/wk, Home visit every 3 wks for 6 months; C: Medical appointment at 1 month and 6 months post hospital discharge	E vs C: Mean RR interval lying (-) orthostatic (-) SDNN lying (-) orthostatic (-) Mean heart rate lying (-) orthostatic (-) root mean square of successive RR interval differences lying (-) orthostatic (-) Relative power of the low-frequency band in normal units lying (-) orthostatic (-) relative power of the high-frequency band in normal unit lying (-) orthostatic (-) LF/HF Lying position (-) orthostatic position (-) Barthel index/100 (-) modified functional ambulation categories (-)

		motricity index/100 (-) 6 minute walking test (-) Lower limb strength non-hemiplegic side (-) hemiplegic side (-) Number of daily steps (no between-group stat) Total energy expenditure (no between-group stat) Active energy expenditure (no between-group stat) Physical activity time over 3 metablic equivalents (no between-group stat)
Salgueiro et al. (2022) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Home-based core-stability exercises + Conventional therapy C: Conventional therapy Duration: 60 mins/d, 2ds/wk, 12 wks	E vs C: TIS balance (+exp) coordination (-) total (+exp) Spanish function in sitting test (-) Spanish Postural Assessment Scale for Stroke Patients mobility (-) balance (-) total (-) Berg balance scale (-) falls (-) Stance phase % affected limb (-) less affected limb (-) Swing phase % affected limb (-) less affected limb (-) Double support. % affected limb (-) less affected limb (+exp) Single support % affected limb (-) less affected limb (-) Cadence (-) Speed (-) Stride (meters) affected limb (-) less affected limb (-)
Mahmood et al. (2021) RCT (7) Nstart=58 Nend=52 TPS=Acute A + B vs A	E: Standard in-hospital rehabilitation + individualized home exercises + Educating personalized adherence and facilitating strategies C: Standard in-hospital rehabilitation + individualized home exercises Duration: One-time 2hr active task practice + 45min/d, 5d/wk in-hospital rehabilitation & minimum of 60min/d, 12wks home exercises & 30-45min/session, 5x over 2wks adherence education	E vs C: Adherence proportion (+exp) Stroke-Specific Measure of Adherence to Home-based Exercises (SS-MAHE) (+exp) Mobility Disability Scale (+exp) Stroke Impact Scale (-)

Mandigout et al. (2021) RCT (6) Nstart=83 Nend=73 TPS=Subacute A vs 0	E: Individualized coaching on physical activity at home C: Standard physical activity Duration: E: 6mo individual coaching + 6mo conventional treatment; C: not specified	E vs C: six-minute walk test (-) Barthel index(-) motricity index(-): modified Functional Ambulatory Category (-) Body mass index (-) Maximal strength knee extension(paretic & non paretic) (-) Hospital Anxiety and Depression Scale anxiety (-) depression (+exp) Multidimensional fatigue inventory questionnaire(MFI-20) total (-) general fatigue (+exp) physical fatigue(-) mental fatigue(-) reduced activity (-) reduced motivation(-)
Saadatnia et al. (2020) RCT (4) Nstart=57 Nend=40 TPS=Acute A vs 0	E: Home-based exercise rehabilitation C: Conventional care Duration: 120min/d, for 12wks	E vs C: Barthel Index (+exp) Modified Rankin Scale (+exp) Fugl-Meyer Assessment (+exp)
Brouwer et al. (2018) RCT (6) Nstart=103 Nend=70 TPS=Chronic A vs 0	E: Tune Up sessions (patient- centered individualized home- based physical therapy) C: No treatment and natural progression Duration: 60min/d, 3d/wk, for 2wks at 6mo and at 12mo post-discharge (4wks total)	E vs C: Timed Up and Go test (-) Berg Balance Scale (-) 6 Minute Walk Test (-) Stair ascent test score (-) Stair descent test score (-) Subjective Index of Physical and Social Outcomes (-) Physical Integration (-) Social Integration (-) SF-36 Physical component (-) Mental component (-)
Hsieh et al. (2018) RCT crossover (5) Nstart=26 Nend=18 TPS=Chronic A1 vs A2 Also in Table 19 (Mirror Therapy)	E1: Home rehabilitation, then Clinic rehabilitation E2: Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice Duration: 45-60min functional task training+ 30-45min mirror therapy/d, 3d/wk, for 4wks - 4wk washout	E1 vs E2: Motor Activity Log Amount of Use (+exp1) Quality of Movement (-) 10-meter walk test (-) Sit to stand test (+exp1) COPM Satisfaction (-) Performance (-) EuroQOL Index (+exp1) EQ-VAS (-)
Malagoni et al. (2016) RCT (6) Nstart=12	E: Structured home-based exercise program C: Standard supervised rehabilitation	E vs C: Client Satisfaction Questionnaire (-) 6-Mminute Walk Test (-)

Nend=12 TPS=Chronic A vs B	Duration: 20min/d, 6d/wk, for 10wks home-based program, 60min/d, 3d/wk, for 10wks standard rehabilitation program	Timed Up-and -go test (-) Stair Climb test (-) Short Form-36 (-)
Kara et al. (2015) RCT (7) Nstart=42 Nend=36 TPS=Subacute A1 + B vs A2 + B	E: Written, pictorial and verbal at-home exercise instructions + exercise logbook to document adherence C: Verbal at-home exercise instructions + exercise logbook to document adherence Duration: 7d/wk, for 4wks	E vs C: Modified Rivermead Mobility Index (-) Barthel index (-) Adherence rate (-)
Olaleye et al. (2014) RCT (6) Nstart=56 Nend=52 TPS=Acute A vs B	E: Rehabilitation in patient's own home C: Rehabilitation at a primary health centre Duration: 45-60min/d, 2d/wk, for 10wks	E vs C: Modified Motor Assessment Scale (-) Short Form-Postural Assessment Scale for Stroke (-) Reintegration to normal living index (-) 10-metre walk (-)
Treger et al. (2014) RCT (8) Nstart=56 Nend=53 TPS=Subacute A vs B	E: Home-based exercise program C: No intervention Duration: 45min/d, 7d/wk, for 12wks	E vs C: 10-metre walk test (-) 6-minute walk test (+exp) Timed Up & Go (-) DUKE Health Profile general health (-) perceived health (-) self-esteem (+exp) anxiety (-) depression (-) pain (-) disability (-)
Lin et al. (2004) RCT crossover (6) Nstart=20 Nend=19 TPS=Chronic A vs B	E: Home-based Physical Therapy C: No therapy Duration: 50-60min/d, 1d/wk, for 10wks – 1wk washout	E vs C: Barthel Index (-) Stroke Rehabilitation Assessment of Movement (-)
McClellan & Ada (2004) RCT (7) Nstart=26 Nend=21 TPS=Chronic A vs 0	E: Home-based mobility exercise C: Home-based upper limb sham exercise Duration: 6wks	E vs C: Functional Reach Test (+exp) Modified Ashworth Scale-5 Item (-) Sickness Impact Profile-30 Item (-)
Duncan et al. (2003) RCT (8) Nstart=100 Nend=92 TPS=Subacute A vs 0	E: Home-based supervised exercise program C: Conventional rehabilitation Duration: 90min/d, 3d/wk for 12wks	E vs C: Ankle isometric dorsiflexion (-) Knee isometric extension (-) Fugl-Meyer- UE, LE (-) Wolf Motor Function test (-) Grip strength (-) 10m Walk test (+exp) 6min Walk test (+exp) Berg Balance scale (+exp) Peak VO2 (+exp) Functional reach test (-)
Roderick et al. (2001)	E: Domiciliary rehabilitation service	E vs C:

RCT (7) Nstart=140 Nend=112 TPS=Subacute A vs B	C: Day-hospital conventional therapy Duration: Not Reported	Barthel index (+exp) Rivermead mobility index (-) Philadelphia Geriatric morale scale (-) Frenchay Activities index (-) Short form-36 (-) Cost of program (-) Abbreviated Mental test (-)
Baskett et al. (1999) RCT (8) Nstart=100 Nend=90 TPS=Subacute A vs 0	E: Self-directed home-based exercise C: Conventional outpatient therapy Duration: Total intervention duration: 3mo, 5h/session, 2-3 sessions/wk, up to 13wks for controls in one of the sites.	E vs C: 10-m walking speed (-) Motor Assessment Score (-) Frenchay Arm Test (-) Nine-hole Peg Test (-) Grip strength (-) Barthel Index (-)
Walker et al. (1999) RCT (7) Nstart=185 Nend=163 TPS=Acute A vs B	E: Occupational therapy at home C: No intervention Duration: 24-90min/d, 1-15d/5 mo	E vs C: Extended activities of daily living (+exp) Barthel index (+exp) Rivermead motor assessment (gross function) (+exp) London handicap scale (+exp) General health questionnaire 28 (-) Carer strain index (+exp)
Duncan et al. (1998) RCT (7) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: Home-based exercise program C: Conventional therapy Duration: 90min/d, 3d/wk for 8wks with supervision, for 4wks without supervision	E vs C: Fugl-Meyer Assessment Upper Extremity (-) Lower Extremity (+exp) 10-Metre Walk Test (+exp) 6-Minute Walk Test (-) Berg Balance Scale (-) Barthel Index (-) Lawton IADL (-) Medical Outcomes Study-36 Health Status Measurement (-) Jebsen Test of Hand Function (-)
Widen Holmqvist et al. (1998) RCT (7) Nstart=83 Nend=81 TPS=Acute A vs B	E: Early supported discharge with continuity of rehabilitation at home C: Routine rehabilitation service Duration: 30min/d, 2d/wk, 3-4 months at-home rehabilitation	E vs C: Frenchay Social Activity Index (-) Extended Katz Index (-) Barthel Index (-) Lindmark Motor Capacity Assessment (-) Nine-Hole Peg Test (-) Walking speed over 10 m (-) Falls (-) Sickness Impact Profile (-)
Young et al. (1992) RCT (5) Nstart=124 Nend=108 TPS=Subacute A vs B	E: Home-based physiotherapy C: Day hospital-based physiotherapy Duration: 6mo	E vs C: Functional Ambulation Category (+exp) Barthel index (+exp) Motor Club assessment (+exp) Frenchay activities index (-) Nottingham Health Profile (-) General Health Questionnaire 28 (-)

Home-based Oculomotor/Gaze Stability Exercises vs Conventional Rehabilitation		
Correia et al. (2021) RCT (5) Nstart=79 Nend=68 TPS=Subacute A vs 0	E: Conventional rehabilitation + home-based Oculomotor/gaze stability exercises C: Conventional rehabilitation Duration: 2d/wk for 3wks	E vs C: Fall rate (-) Risk of fall (cumulative results of Berg Balance and Timed Up and Go tests) (+exp)
Caregiver-Mediated Programs vs Conventional Care		
Deng et al. (2024) RCT (8) Nstart=90 Nend=90 TPS=Subacute A vs 0	E: Multidiscplinary Caregiver-mediated rehab (Self-management home exercises and education) C: Conventional care Duration: NR	E vs C: FMA-LL (+exp) FMA-UE (+exp) SF36(+exp) MBI (+exp) Adverse reactions (+exp)
Feldman et al. (2022) Feasibility/pilot RCT (4) Nstart=60 Nend=47 TPS=Subacute A vs 0	E: Stroke Home Health Aide Recovery Program + Usual care C: Usual care Duration: E: 45-60 min/session, 4 sessions over 30 days C: not specified	E vs C: TUG (no stat) 4 meter walk gait test (no stat)
Nordin et al. (2019) RCT (8) Nstart=91 Nend=83 TPS=Chronic A vs B	E: Caregiver Mediated Home- based Therapy C: Conventional Hospital Outpatient Clinic Therapy Duration: 45-60min/d, 4d/wk, for 12wks at-home therapy, 120min/d, 1d/wk, for 12wks hospital therapy	E vs C: Rivermead mobility index (-) Berg balance scale (-) Five Times Sit to Stand (-) 10-m walk test (-) EQ5D-Health utility (-) EQ-VAS (-)
Wang et al. (2015) RCT (6) Nstart=51 Nend=51 TPS=Chronic A vs 0	E: Caregiver-mediated home- based intervention C: Conventional care Duration: 2-7d/wk, for 12wks Caregiver-Mediated Intervention	E vs C: 10-Meter Walk Test max speed(-) free-walking speed (+exp) 6-Minute Walk Test (+exp) Berg balance scale (+exp) Stroke Impact Scale Composite physical (+ex) Memory (-) Communication (+exp) Emotion (-) Social participation (+exp) General recovery (+exp) Barthel Index (+exp) Caregiver Burden Scale (-)
Mudzi et al. (2012) RCT (6) Nstart=200 Nend=200 TPS=Acute A vs B	E: Individualized hands-on training for carers + standard rehabilitation stroke care C: Standard rehabilitation stroke care Duration: 45-60min/d, 1d & 1d at 3mo follow up if needed carer training	E vs C: Barthel Index (-) Rivermead Mobility Index (-)
Galvin et al. (2011) RCT (8) Nstart=40	E: Family-Mediated Exercise Intervention (FAME) C: Conventional Care	E vs C: Fugl-Meyer Assessment (+exp) Modified Ashworth Scale (+exp)

Nend=35 TPS=Acute A vs 0	Duration: 35min/d, for 8wks	Berg Balance Scale (+exp) 6-Minute Walk Test (+exp) Barthel Index (+exp)
Sackley et al. (2006) RCT (8) Nstart=118 Nend=105 TPS=Not reported A vs 0	E: Occupational therapy + carer education C: Usual care Duration: 4.5hr/mo, for 3mo	E vs C: Barthel Index (-) Rivermead Mobility Index (-)
Mayo et al. (2000) RCT (6) Nstart=114 Nend=96 TPS=Acute A vs 0	E: Received home care which involved prompt discharge from hospital with immediate enrollment in follow-up services of nursing, physical therapy, occupational therapy, speech therapy and dietary consultation C: Conventional care Duration: 4wks	E vs C: SF-36 (+exp) Stroke Rehabilitation Assessment of Movement (-) Timed Up & Go (-) Barthel Index (-) Older Americans Resource Scale for Instrumental ADL (+exp)
Mant et al. (2000) RCT (6) Nstart=520 Nend=323 TPS=Acute A vs 0	E: Family-support group C: Conventional care Duration: 6mo	E vs C for Patients: Frenchay Activities Index (-) Barthel Index (-) Rivermead Mobility Index (-) London Handicap Scale (-) Hospital Anxiety and Depression Scale (-) E vs C for Carers: Frenchay Activities Index (+exp) Short Form-36 Energy and vitality (+exp) Mental health (+exp) Pain (+exp) Physical function (+exp) General health perception (+exp)
Nursing Mediated Program vs Conventional Care		
Chen et al. (2021a) RCT (5) Nstart=140 Nend=121 TPS=Subacute A vs 0 Also in Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Nurse-guided home-based PT exercise program + conventional rehabilitation C: Conventional Rehabilitation Duration: 30min/session, 3d/wk for first 3mo, 1d/wk for second 3mo, 1d/mo for the rest up to 12mo, home-based exercise	E vs C: Fugl-Meyer assessment (+exp) Modified Ashworth Scale (+exp) 10-Meter Walk Test (+exp) Barthel Index (+exp)
Wang et al. (2021b) RCT (6) Nstart=102 Nend=102 TPS=Acute A vs B	E: Comprehensive Rehabilitation Nursing C: Routine Nursing	E vs C: Fugl-Meyer assessment (+exp) Barthel index (+exp) Self-rated anxiety scale (+exp) Brunnstrom assessment (+exp) Complications (+con)
Zhang et al. (2021a) RCT (5) Nstart=84 Nend=84 TPS=Acute	E: Nursing Rehabilitation Program C: Conventional Nursing Practices Duration: 1mo	E vs C: Fugl-Meyer assessment (+exp) Barthel index (+exp) Self-rated anxiety scale (+exp) Self-rated depression scale (+exp)

A1 vs A2		National Institute of Health Stroke Scale (+exp)
Guan et al. (2019) RCT (5) Nstart=128 Nend=120 TPS=Acute A vs 0	E: Continuous care teams C: Standard treatment Duration: Intervention received treatment 3mo after discharge & control received treatment until discharge	E vs C: Fugl-Meyer Assessment (No stats) National Health Assessment Scale (+exp) Family Function (+exp)
Zhang et al. (2018) RCT (4) Nstart=143 Nend=143 TPS=Subacute A vs 0	E: High-quality nursing services + Conventional rehabilitation therapy C: Conventional rehabilitation therapy Duration: 3mo	E vs C: Clinical nerve function limitation score (+exp) Barthel index (+exp) SF-36 Physiological Function (+exp) Role Physical (+exp) Role Emotional (+exp) Vitality (+exp) Social Function (+exp) Bodily Pain (-) Mental Health (+exp) General Health (+exp) Manual muscle testing (+exp)
Jones et al. (2005) RCT (6) Nstart=120 Nend=83 TPS=Acute A1 vs A2	E: Patients treated by nursing staff who received patient positioning teaching package C: Patients treated by nursing staff without patient positioning care teaching package Duration: 1d studying package, 2.5d/mo workshop, 5mo nursing staff training, patient visits varied (upto 4visits/d, 30min apart each)	E vs C: Rivermead Mobility Index (-) Motricity Index (-) Ashworth Scale Shoulder Abduction (-) Elbow Flexion (-) Elbow Extension (-) Frenchay Arm Test (-) 6-m Walk (-) Sit to Stand (-)
Hui et al. (1995) RCT (5) Nstart=120 Nend=120 TPS=Acute A vs 0	E: Day hospital rehabilitation with geriatric team C: Conventional care Duration: Not Reported	E vs C: Barthel Index (-)
Home Based Overground Walking vs Home Based Cycling		
Mayo et al. (2013) RCT (7) Nstart=87 Nend=65 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training); Table 8 (Cycle Ergometer Training)	E1: Home-based cycle ergometer exercise E2: Home-based overground walking exercise Duration: 30min/d, 7d/wk for 12mo	E1 vs E2: 6min Walk test (-) 5-meter Walk test (No stats) Berg Balance scale (No stats) Community balance and mobility scale (No stats) Stroke impact scale physical (No stats) participation (No stats) Physical Function Index of the Medical Outcomes Study RAND-36 Item Health Survey (No stats): physical (No stats) emotional (No stats) social (No stats)

		EuroQoL-5D (No stats) Geriatric Depression scale-short form (No stats) Adherence to exercise program (No stats)
Early Discharged At-Home Supported Training vs Conventional Post-Discharge Rehabilitation		
Askim et al. (2006) RCT (7) Nstart=62 Nend=58 TPS=Acute A vs B	E: Early and intensive home- based task specific program (early supported discharge group) C: Standard follow-up rehabilitation Duration: 1-2wks standard inpatient care & 4wks post-discharge standard care or Early supported care	E vs C: Berg Balance Scale (-) Fast Walking Speed (-)
Outpatient Clinic Care Follow-up vs Conventional Control		
Welin et al. (2010) RCT (5) Nstart=163 Nend=115 TPS=Acute A vs B	E: Follow-up care at a stroke outpatient clinic C: Conventional control Follow-up at 12mo and 3-4yr	E vs C: Modified Rankin Scale (-) Barthel Index (-) Scandinavian Stroke Scale (-)
Specialist Community Rehabilitation vs Conventional Rehabilitation		
Rudd et al. (1997) RCT (7) Nstart=331 Nend=262 TPS=Acute A vs 0	E: Specialist community rehabilitation C: Conventional rehabilitation Duration: 3mo	E vs C: Modified Barthel Index (-) Rivermead Activities of Daily Living (-) 5-Meter Timed Walk (-) Motricity Index (-) Minimental State Examination (-) Hospital Anxiety and Depression Scale (-) Nottingham Health Profile (-) Caregiver Strain Index (-)
Additional Comparisons from the Source Dataset		
Xie et al. (2021b) RCT (4) Nstart=136 Nend=136 TPS=Subacute A vs 0	E: Rapid rehabilitation nursing with continuous nursing after discharge C: Routine nursing Duration: 6mo	E vs C: Modified Barthel Index (+exp) Motor Assessment Scale (+exp) Self-Rating Anxiety and Depression (+exp) Quality of Life Assessment Scale (+exp)
Yang et al. (2019) RCT (4) Nstart=128 Nend=128 TPS=Acute A vs 0	E: Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training) C: routine rehabilitation training Duration: In-patient stay duration	E vs C: Fugl-Meyer Assessment (+exp) Barthel Index (+exp) NIHSS (+exp) WHOQOL-BREF (+exp)
Dean et al. (2018) RCT (6) Nstart=45 Nend=40 TPS=Chronic A vs 0	E: home based physical activity and walking training program C: Conventional care Duration: 2hr, 2x/wk, 5wks group sessions + 2 individual sessions + 3 monthly drop-in sessions	E vs C: Rivermead Mobility Index (No stats) Timed Up and Go test (No stats) Modified Patient-specific functional scale (No stats) Fatigue Assessment Scale (No stats) Stroke Self-Efficacy Questionnaire (No stats) SF-12 (No stats) Modified Caregiver Strain Index (No stats)

		EQ-5D-5L (No stats) Stroke QoL Scale (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Lee et al. (2023d) RCT (7) Nstart=68 Nend=56 TPS=Subacute A + B vs B Primary listing: Table 26 (Virtual Reality)	E: Augmented reality + home based exercise program C: Home based exercise program Duration: 30min/d, 5d/wk, 4wks	E vs C: TUG(+exp) POMA(-) BBS(-) FES(+exp) GDS(-) EQ5D(-)
Prathum et al. (2022) RCT (6) Nstart=26 Nend=24 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Active dual-hemispheric tDCS + Home-based exercise C: Sham tDCS + Home-based exercise Duration: 20min/d, 3d/wk, 4wks	E vs C: FMA (-) UE (-) LE (-) WMFT FAS (-) Time (-) TUG (-) 6mWT (-) FTSST (-) grip strength (-) muscle strength wrist extensor (-) elbow extensor (-) ankle dorsiflexor (-) knee extensor (-) hip flexor (-) hip extensor (-)
Wright et al. (2021) RCT (7) Nstart=34 Nend=31 TPS=Chronic A vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Home-based overground Robot-assisted gait training (AlterG Bionic Leg) + Usual care E2: Physical Activity + Usual physiotherapy Duration: 30 min/d PT & minimum 30 min/d robot gait training, 6d/wk, for 10wks	E1 vs E2: 6min Walk test (+exp) Rating Perceived exertion (-) Timed Up and Go (-) Dynamic gait index (+exp) Berg balance scale (+exp) Functional ambulation category (+exp) Modified Rankin scale (no stats)
Esteki-Ghashghaei et al. (2020) RCT (5) Nstart=57 Nend=40 TPS=Acute A + B vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: BASNEF model motivational training + home-based rehabilitation C: Conventional Care Duration: 3 sessions of training	E vs C: Fugl-Meyer Assessment (+exp) Questionnaire based on BASNEF model (+exp)
Simpson et al. (2019) RCT (7) Nstart=35 Nend=31 TPS=Chronic A + B vs A	E: Home-based isometric unilateral strength training + mirror therapy C: Home-based isometric unilateral strength training Duration: 20min/d, 3d/wk, for 4wks	E vs C: Trained ankle maximum voluntary contraction (-) Untrained ankle maximum voluntary contraction (-) 10-Metre Walk Test (-)

Primary listing: Table 19 (Mirror Therapy); Table 21 (Strength and Resistance Training)		Timed Up & Go Test (-) Modified Ashworth Scale (-) London Handicap Scale (-)
Vloothuis et al. (2019) RCT (8) Nstart=66 Nend=62 TPS=Subacute A + B vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Caregiver-mediated exercise program with e-health support + telerehabilitation C: Conventional therapy Duration: 30min/d, 5d/wk for 8wks - Caregiver-mediated exercise program	E vs C: Stroke Impact Scale (-) Length of stay (-) Fugl-Meyer Assessment (-) Motricity Index (-) 6-Minute Walking Test (-) 10-Metre Walk Test (-) Timed Up & Go Test (-) Berg Balance Scale (-) Rivermead Mobility Index (-) Barthel Index (-) Nottingham Extended ADL scale (-) Modified Rankin Scale (-) Caregiver Strain Index (-) Carer Quality of Life Scale (-) Hospital Anxiety and Depression Scale Patient Anxiety (+exp) Patient Depression (-) Caregiver Anxiety (-) Caregiver Depression (+exp) Fatigue Severity Scale (-) General Self-Efficacy Scale (-)
Zhou et al. (2019) RCT (7) Nstart=246 Nend=244 TPS=Acute A vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) C: Usual care Duration: 15-30min/session, 2- 3d caregiver training sessions, outcome measured at 6mo	E vs C: Barthel index (-) Modified Rankin scale (-) Functional ambulation category (+con) Patient health questionnaire 9 (-) EuroQol-5-dimension (-) Caregiver burden index (-)
Van Den Berg et al. (2016) RCT (8) Nstart=63 Nend=60 TPS=Acute A + B vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Caregiver-mediated iPad exercise program + FitBit activity monitor (real-time feedback) C: Usual care Duration: 30min/d, 5x/wk for 8wks Caregiver-mediated program	E vs C: Stroke Impact scale (-) Rivermead mobility index (-) Barthel index (-) Nottingham extended ADL (+exp) Timed Up and Go (-) 10m timed walk (-) Fugl-Meyer assessment-lower extremity (-) Motricity index (-) Berg Balance scale (-) Hospital anxiety and depression scale patient (-) caregiver (-) General Self-efficacy scale patient (-) caregiver (-) Fatigue severity scale patient (-) caregiver (-)

		Carer QOL (-) Caregiver strain index (-) Modified Rankin Scale (No stats)
Sackley et al. (2015) RCT (8) Nstart=1042 Nend=908 TPS=Chronic A + B vs 0 Primary listing: Table 10 (Physiotherapy and Exercise Programs)	E: Custom Occupational therapy + Caregiver training workshop C: Usual care alone Duration: 3mo program, frequency and duration of visits depended on patient and therapist	E vs C: Barthel index (-) Rivermead Mobility index (-) Geriatric depression scale-15 (-) EuroQOL-5D-3L questionnaire (-)
Roche et al. (2015) RCT (4) Nstart=35 Nend=35 TPS=Chronic A + B vs A Primary listing: Table 46 (Botulinum Toxin)	E: Botulinum Toxin A Injection + Home-based task-oriented rehabilitation + Usual physiotherapy C: Botulinum Toxin A Injection Duration: 1 injection session – Botulinum toxin A, 30min/d, 7d/wk for 4wks – At-home task-oriented rehabilitation	E vs C: Medical research counsel scale (-) Modified Ashworth Scale (-) ABILOCO (-) 10m Walk test (+exp) Timed Up and Go (-) 6min Walk test Modified (+exp) With obstacles (+exp) Without obstacles (-) Stairs test Ascending (-) Descending (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may produce greater improvements in motor recovery than Conventional Therapy or No Therapy.	5	Saadatnia et al. 2020; Duncan et al. 2003; Walker et al. 1999; Duncan et al. 1998; Widen Holmqvist et al. 1998
1a	Caregiver-Mediated Programs may produce greater improvements in motor recovery than Conventional Care.	2	Deng et al. 2024; Galvin et al. 2011
1b	Nursing Mediated Program may produce greater improvements in motor recovery than Conventional Care.	4	Chen et al. 2021a; Wang et al. 2021b; Zhang et al. 2021a; Guan et al. 2019
2	Outpatient Clinic Care Follow-up may not have a difference in efficacy when compared to Conventional Control for improving motor recovery.	1	Welin et al. 2010
2	Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training)	1	Yang et al. 2019

	may produce greater improvements in motor recovery than routine rehabilitation training.		
1b	Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-based exercise for improving motor recovery.	1	Prathum et al. 2022
2	BASNEF model motivational training with home-based rehabilitation may produce greater improvements in motor recovery than Conventional Care.	1	Esteki-Ghashghaei et al. 2020
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving motor recovery.	1	Vloothuis et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving motor recovery.	1	Van Den Berg et al. 2016

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving biomechanical gait measures.	1	Salgueiro et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving muscle strength.	3	Guediri et al. 2022; Mandigout et al. 2021; Duncan et al. 2003
1b	Nursing Mediated Program may not have a difference in efficacy when compared to Conventional Care for improving muscle strength.	1	Jones et al. 2005
1b	Specialist Community Rehabilitation may not have a difference in efficacy when compared to Conventional Rehabilitation for improving muscle strength.	1	Rudd et al. 1997
1b	Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-based exercise for improving muscle strength.	1	Prathum et al. 2022
1b	Home-based isometric unilateral strength training with mirror therapy may not have a difference in efficacy when compared to Home-based isometric unilateral strength training for improving muscle strength.	1	Simpson et al. 2019
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving muscle strength.	1	Vloothuis et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving muscle strength.	1	Van Den Berg et al. 2016

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Home-Based Physiotherapy and Exercise Programs when compared to Conventional Therapy or No Therapy for improving spasticity.	2	McClellan & Ada 2004; Walker et al. 1999

1b	Caregiver-Mediated Programs may produce greater improvements in spasticity than Conventional Care.	1	Galvin et al. 2011
2	Nursing Mediated Program may produce greater improvements in spasticity than Conventional Care.	1	Chen et al. 2021a
1b	Home-based isometric unilateral strength training with mirror therapy may not have a difference in efficacy when compared to Home-based isometric unilateral strength training for improving spasticity.	1	Simpson et al. 2019
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving spasticity.	1	Roche et al. 2015

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving neurophysiological measures.	1	Mandigout et al. 2021

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving aerobic measures.	2	Guediri et al. 2022; Duncan et al. 2003
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may not have a difference in efficacy when compared to Physical Activity with Usual physiotherapy for improving aerobic measures.	1	Wright et al. 2021

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving activities of daily living.	13	Guediri et al. 2022; Mandigout et al. 2021; Saadatnia et al. 2020; Brouwer et al. 2018; Kara et al. 2015; Olaleye et al. 2014; Lin et al. 2004; Roderick et al. 2001; Baskett et al. 1999; Walker et al. 1999; Duncan et al. 1998; Widen Holmqvist et al. 1998; Young et al. 1992
2	Home rehabilitation, then Clinic rehabilitation may not have a difference in efficacy when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving activities of daily living.	1	Hsieh et al. 2018
1a	Caregiver-Mediated Programs may produce greater improvements in activities of daily living than Conventional Care.	7	Deng et al. 2024; Wang et al. 2015; Mudzi et al. 2012; Galvin et al. 2011; Sackley et al. 2006; Mayo et al. 2000; Mant et al. 2000
1b	Nursing Mediated Program may produce greater improvements in activities of daily living than Conventional Care.	5	Chen et al. 2021a; Wang et al. 2021b; Zhang et al. 2021a; Zhang et al. 2018; Hui et al. 1995

2	Outpatient Clinic Care Follow-up may not have a difference in efficacy when compared to Conventional Control for improving activities of daily living.	1	Welin et al. 2010
1b	Specialist Community Rehabilitation may not have a difference in efficacy when compared to Conventional Rehabilitation for improving activities of daily living.	1	Rudd et al. 1997
2	Rapid rehabilitation nursing with continuous nursing after discharge may produce greater improvements in activities of daily living than Routine nursing.	1	Xie et al. 2021b
2	Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training) may produce greater improvements in activities of daily living than routine rehabilitation training.	1	Yang et al. 2019
1b	Home based physical activity and walking training program may not have a difference in efficacy when compared to Conventional care for improving activities of daily living.	1	Dean et al. 2018
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may not have a difference in efficacy when compared to Physical Activity with Usual physiotherapy for improving activities of daily living.	1	Wright et al. 2021
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving activities of daily living.	1	Vloothuis et al. 2019
1b	Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) may not have a difference in efficacy when compared to Usual care for improving activities of daily living.	1	Zhou et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving activities of daily living.	1	Van Den Berg et al. 2016
1b	Custom Occupational therapy with Caregiver training workshop may not have a difference in efficacy when compared to Usual care alone for improving activities of daily living.	1	Sackley et al. 2015

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving gait speed.	7	Salgueiro et al. 2022; Olaleye et al. 2014; Treger et al. 2014; Duncan et al. 2003; Baskett et al. 1999; Duncan et al. 1998; Widen Holmqvist et al. 1998
2	Home rehabilitation, then Clinic rehabilitation may not have a difference in efficacy when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving gait speed.	1	Hsieh et al. 2018
1a	Caregiver-Mediated Programs may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	2	Nordin et al. 2019; Wang et al. 2015
2	Nursing Mediated Program may produce greater improvements in gait speed than Conventional Care.	1	Chen et al. 2021a
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait speed.	1	Mayo et al. 2013

1b	Early Discharged At-Home Supported Training may not have a difference in efficacy when compared to Conventional Post-Discharge Rehabilitation for improving gait speed.	1	Askim et al. 2006
1b	Home-based isometric unilateral strength training with mirror therapy may not have a difference in efficacy when compared to Home-based isometric unilateral strength training for improving gait speed.	1	Simpson et al. 2019
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving gait speed.	1	Vloothuis et al. 2019
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may produce greater improvements in gait speed than Botulinum Toxin A Injection.	1	Roche et al. 2015

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving gait endurance.	6	Guediri et al. 2022; Mandigout et al. 2021; Brouwer et al. 2018; Treger et al. 2014; Duncan et al. 2003; Duncan et al. 1998
1a	Caregiver-Mediated Programs may produce greater improvements in gait endurance than Conventional Care.	2	Wang et al. 2015; Galvin et al. 2011
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving gait endurance.	1	Mayo et al. 2013
1b	Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-based exercise for improving gait endurance.	1	Prathum et al. 2022
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in gait endurance than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving gait endurance.	1	Vloothuis et al. 2019
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving gait endurance.	1	Roche et al. 2015

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving functional mobility.	11	Guediri et al. 2022; Mahmood et al. 2021; Mandigout et al. 2021; Brouwer et al. 2018; Malagoni et al. 2016; Kara et al. 2015; Olaleye et al. 2014; Treger et al. 2014; Lin et al. 2004; Roderick et al. 2001; Young et al. 1992
2	Home rehabilitation, then Clinic rehabilitation may produce greater improvements in functional mobility than Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice.	1	Hsieh et al. 2018

2	Home-based Oculomotor/Gaze Stability Exercises may produce greater improvements in functional mobility than Conventional Rehabilitation.	1	Correia et al. 2021
1a	Caregiver-Mediated Programs may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	5	Nordin et al. 2019; Mudzi et al. 2012; Sackley et al. 2006; Mayo et al. 2000; Mant et al. 2000
1b	Nursing Mediated Program may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	1	Jones et al. 2005
2	Rapid rehabilitation nursing with continuous nursing after discharge may produce greater improvements in functional mobility than Routine nursing.	1	Xie et al. 2021b
1b	Home based physical activity and walking training program may not have a difference in efficacy when compared to Conventional care for improving functional mobility.	1	Dean et al. 2018
1b	There is conflicting evidence about the effect of Augmented reality with home based exercise program when compared to Home based exercise program for improving functional mobility.	1	Lee et al. 2023d
1b	Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-based exercise for improving functional mobility.	1	Prathum et al. 2022
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in functional mobility than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1b	Home-based isometric unilateral strength training with mirror therapy may not have a difference in efficacy when compared to Home-based isometric unilateral strength training for improving functional mobility.	1	Simpson et al. 2019
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving functional mobility.	1	Vloothuis et al. 2019
1b	There is conflicting evidence about the effect of Nurse-organized, family caregiver delivered rehabilitation (supported by a custom-designed smartphone application) when compared to Usual care for improving functional mobility.	1	Zhou et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving functional mobility.	1	Van Den Berg et al. 2016
1b	Custom Occupational therapy with Caregiver training workshop may not have a difference in efficacy when compared to Usual care alone for improving functional mobility.	1	Sackley et al. 2015
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving functional mobility.	1	Roche et al. 2015

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving balance.	7	Jarbandhan et al. 2022; Salgueiro et al. 2022; Brouwer et al. 2018; Olaleye et al. 2014; McClellan & Ada 2004; Duncan et al. 2003; Duncan et al. 1998

1a	Caregiver-Mediated Programs may produce greater improvements in balance than Conventional Care.	3	Nordin et al. 2019; Wang et al. 2015; Galvin et al. 2011
1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving balance.	1	Mayo et al. 2013
1b	Early Discharged At-Home Supported Training may not have a difference in efficacy when compared to Conventional Post-Discharge Rehabilitation for improving balance.	1	Askim et al. 2006
1b	Augmented reality with home based exercise program may not have a difference in efficacy when compared to Home based exercise program for improving balance.	1	Lee et al. 2023d
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in balance than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving balance.	1	Vloothuis et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving balance.	1	Van Den Berg et al. 2016

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving falls and fear of falling.	2	Salgueiro et al. 2022; Widen Holmqvist et al. 1998
2	Home-based Oculomotor/Gaze Stability Exercises may not have a difference in efficacy when compared to Conventional Rehabilitation for improving falls and fear of falling.	1	Correia et al. 2021
1b	Augmented reality with home based exercise program may produce greater improvements in falls and fear of falling than Home based exercise program.	1	Lee et al. 2023d

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving quality of life.	9	Mahmood et al. 2021; Brouwer et al. 2018; Malagoni et al. 2016; Treger et al. 2014; McClellan & Ada 2004; Roderick et al. 2001; Walker et al. 1999; Widen Holmqvist et al. 1998; Young et al. 1992
2	There is conflicting evidence about the effect of Home rehabilitation, then Clinic rehabilitation when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving quality of life.	1	Hsieh et al. 2018
1a	Caregiver-Mediated Programs may produce greater improvements in quality of life than Conventional Care.	5	Deng et al. 2024; Nordin et al. 2019; Wang et al. 2015; Mayo et al. 2000; Mant et al. 2000
2	Nursing Mediated Program may produce greater improvements in quality of life than Conventional Care.	1	Zhang et al. 2018

1b	Home-based cycle ergometer exercise may not have a difference in efficacy when compared to Home-based overground walking exercise for improving quality of life.	1	Mayo et al. 2013
1b	Specialist Community Rehabilitation may not have a difference in efficacy when compared to Conventional Rehabilitation for improving quality of life.	1	Rudd et al. 1997
2	Rapid rehabilitation nursing with continuous nursing after discharge may produce greater improvements in quality of life than Routine nursing.	1	Xie et al. 2021b
2	Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training) may produce greater improvements in quality of life than routine rehabilitation training.	1	Yang et al. 2019
1b	Home based physical activity and walking training program may not have a difference in efficacy when compared to Conventional care for improving quality of life.	1	Dean et al. 2018
1b	Augmented reality with home based exercise program may not have a difference in efficacy when compared to Home based exercise program for improving quality of life.	1	Lee et al. 2023d
1b	Home-based isometric unilateral strength training with mirror therapy may not have a difference in efficacy when compared to Home-based isometric unilateral strength training for improving quality of life.	1	Simpson et al. 2019
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving quality of life.	1	Vloothuis et al. 2019
1b	Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) may not have a difference in efficacy when compared to Usual care for improving quality of life.	1	Zhou et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving quality of life.	1	Van Den Berg et al. 2016
1b	Custom Occupational therapy with Caregiver training workshop may not have a difference in efficacy when compared to Usual care alone for improving quality of life.	1	Sackley et al. 2015

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving mood.	2	Mandigout et al. 2021; Roderick et al. 2001
1b	Caregiver-Mediated Programs may not have a difference in efficacy when compared to Conventional Care for improving mood.	1	Mant et al. 2000
1b	Nursing Mediated Program may produce greater improvements in mood than Conventional Care.	2	Wang et al. 2021b; Zhang et al. 2021a
1b	Specialist Community Rehabilitation may not have a difference in efficacy when compared to Conventional Rehabilitation for improving mood.	1	Rudd et al. 1997
2	Rapid rehabilitation nursing with continuous nursing after discharge may produce greater improvements in mood than Routine nursing.	1	Xie et al. 2021b

1b	Augmented reality with home based exercise program may not have a difference in efficacy when compared to Home based exercise program for improving mood.	1	Lee et al. 2023d
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving mood.	1	Vloothuis et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving mood.	1	Van Den Berg et al. 2016

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving fatigue and sleep.	1	Mandigout et al. 2021
1b	Home based physical activity and walking training program may not have a difference in efficacy when compared to Conventional care for improving fatigue and sleep.	1	Dean et al. 2018
1b	Caregiver-mediated exercise program with e-health support with telerehabilitation may not have a difference in efficacy when compared to Conventional therapy for improving fatigue and sleep.	1	Vloothuis et al. 2019
1b	Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not have a difference in efficacy when compared to Usual care for improving fatigue and sleep.	1	Van Den Berg et al. 2016

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Caregiver-Mediated Programs may not have a difference in efficacy when compared to Conventional Care for improving cognition.	1	Wang et al. 2015

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home-Based Physiotherapy and Exercise Programs may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving upper extremity function.	5	Jarbandhan et al. 2022; Duncan et al. 2003; Baskett et al. 1999; Duncan et al. 1998; Widen Holmqvist et al. 1998
2	There is conflicting evidence about the effect of Home rehabilitation, then Clinic rehabilitation when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice for improving upper extremity function.	1	Hsieh et al. 2018
1b	Caregiver-Mediated Programs may produce greater improvements in upper extremity function than Conventional Care.	1	Deng et al. 2024
1b	Nursing Mediated Program may not have a difference in efficacy when compared to Conventional Care for improving upper extremity function.	1	Jones et al. 2005
1b	Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-based exercise for improving upper extremity function.	1	Prathum et al. 2022

Key Points

- Home-Based Physiotherapy and Exercise Programs may be beneficial for improving motor recovery, but not biomechanical gait measures, muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Therapy; the literature is mixed regarding spasticity.
- Home rehabilitation, then Clinic rehabilitation may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice; the literature is mixed regarding quality of life.
- Home-based Oculomotor/Gaze Stability Exercises may be beneficial for improving functional mobility, but not falls and fear of falling, after stroke when compared to Conventional Rehabilitation.
- Caregiver-Mediated Programs may be beneficial for improving motor recovery, spasticity, activities of daily living, gait endurance, balance, and quality of life, but not gait speed and functional mobility, after stroke when compared to Conventional Care.
- Nursing Mediated Program may be beneficial for improving motor recovery, spasticity, activities of daily living, gait speed, and quality of life, but not muscle strength and functional mobility, after stroke when compared to Conventional Care.
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Early Discharged At-Home Supported Training may not be beneficial for improving gait speed and balance after stroke when compared to Conventional Post-Discharge Rehabilitation.
- Outpatient Clinic Care Follow-up may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Control.
- Specialist Community Rehabilitation may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Conventional Rehabilitation.
- Rapid rehabilitation nursing with continuous nursing after discharge may be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Routine nursing.
- Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training) may be beneficial for improving motor recovery, activities of daily living, and quality of life after stroke when compared to routine rehabilitation training.
- Home based physical activity and walking training program may not be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Conventional care.
- Augmented reality with home based exercise program may be beneficial for improving falls and fear of falling, but not balance and quality of life, after stroke when compared to Home based exercise program; the literature is mixed regarding functional mobility.
- Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not be beneficial for improving motor recovery, muscle strength, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Home-based exercise.
- Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may be beneficial for improving gait endurance, functional mobility, and balance, but not aerobic measures and activities of daily living, after stroke when compared to Physical Activity with Usual physiotherapy.
- BASNEF model motivational training with home-based rehabilitation may be beneficial for improving motor recovery after stroke when compared to Conventional Care.
- Home-based isometric unilateral strength training with mirror therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home-based isometric unilateral strength training.
- Caregiver-mediated exercise program with e-health support with telerehabilitation may not be beneficial for improving motor recovery, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional therapy.
- Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) may not be beneficial for improving activities of daily living and quality of life after stroke when compared to Usual care; the literature is mixed regarding functional mobility.

- Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not be beneficial for improving motor recovery, muscle strength, activities of daily living, functional mobility, balance, and quality of life after stroke when compared to Usual care.
- Custom Occupational therapy with Caregiver training workshop may not be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Usual care alone.
- Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may be beneficial for improving gait speed, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Botulinum Toxin A Injection.

Summary of Key Points: Home-Based and Caregiver-Mediated Exercise Programs

Intervention	Control(s)	Function domain(s)	Effect
Home-Based Physiotherapy and Exercise Programs	Conventional Therapy or No Therapy	Motor recovery	+
Home-Based Physiotherapy and Exercise Programs	Conventional Therapy or No Therapy	Biomechanical gait measures, muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Home-Based Physiotherapy and Exercise Programs	Conventional Therapy or No Therapy	Spasticity	=
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice	Functional mobility	+
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice	Activities of daily living, gait speed	–
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice	Quality of life	=
Home-based Oculomotor/Gaze Stability Exercises	Conventional Rehabilitation	Functional mobility	+
Home-based Oculomotor/Gaze Stability Exercises	Conventional Rehabilitation	Falls and fear of falling	–
Caregiver-Mediated Programs	Conventional Care	Motor recovery, spasticity, activities of daily living, gait endurance, balance, quality of life	+
Caregiver-Mediated Programs	Conventional Care	Gait speed, functional mobility	–
Nursing Mediated Program	Conventional Care	Motor recovery, spasticity, activities of daily living, gait speed, quality of life	+
Nursing Mediated Program	Conventional Care	Muscle strength, functional mobility	–
Home-based cycle ergometer exercise	Home-based overground walking exercise	Gait speed, gait endurance, balance, quality of life	–
Early Discharged At-Home Supported Training	Conventional Post-Discharge Rehabilitation	Gait speed, balance	–
Outpatient Clinic Care Follow-up	Conventional Control	Motor recovery, activities of daily living	–

Specialist Community Rehabilitation	Conventional Rehabilitation	Muscle strength, activities of daily living, quality of life	−
Rapid rehabilitation nursing with continuous nursing after discharge	Routine nursing	Activities of daily living, functional mobility, quality of life	+
Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training)	routine rehabilitation training	Motor recovery, activities of daily living, quality of life	+
Home based physical activity and walking training program	Conventional care	Activities of daily living, functional mobility, quality of life	−
Augmented reality with home based exercise program	Home based exercise program	Falls and fear of falling	+
Augmented reality with home based exercise program	Home based exercise program	Balance, quality of life	−
Augmented reality with home based exercise program	Home based exercise program	Functional mobility	=
Active dual-hemispheric transcranial direct current stimulation with Home-based exercise	Sham transcranial direct current stimulation with Home-based exercise	Motor recovery, muscle strength, gait endurance, functional mobility	−
BASNEF model motivational training with home-based rehabilitation	Conventional Care	Motor recovery	+
Home-based isometric unilateral strength training with mirror therapy	Home-based isometric unilateral strength training	Muscle strength, spasticity, gait speed, functional mobility, quality of life	−
Caregiver-mediated exercise program with e-health support with telerehabilitation	Conventional therapy	Motor recovery, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	−
Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application)	Usual care	Activities of daily living, quality of life	−
Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application)	Usual care	Functional mobility	=
Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback)	Usual care	Motor recovery, muscle strength, activities of daily living, functional mobility, balance, quality of life	−
Custom Occupational therapy with Caregiver training workshop	Usual care alone	Activities of daily living, functional mobility, quality of life	−
Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection	Gait speed	+
Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection	Spasticity, gait endurance, functional mobility	−
Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care	Physical Activity with Usual physiotherapy	Aerobic measures, activities of daily living	−
Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care	Physical Activity with Usual physiotherapy	Gait endurance, functional mobility, balance	+

Telerehabilitation and Technology-Based Home Exercise Programs



Adopted from: https://unsplash.com/

Telerehabilitation is the process of providing rehabilitation services remotely through information and communication technologies (e.g. a kiosk, telephone and computer) (Dodakian et al., 2017; Emmerson et al., 2017). This rehabilitation method is particularly useful for patients who cannot access a rehabilitation center (Benvenuti et al., 2014). Additionally, this intervention can be delivered for a longer duration and at a reduced cost when compared to therapies provided in the inpatient rehabilitation setting (Benvenuti et al., 2014).

A total of 24 RCTs were found that evaluated telerehabilitation and Technology-Based home exercise programs for lower extremity motor rehabilitation. Fourteen RCTs compared Home Based Therapy Using Technology and Telerehabilitation with Conventional Therapy or No Therapy (Mulder et al. 2024; Wang et al. 2024c; Guo et al. 2023; Garcia et al. 2022; Lee et al. 2022c; Chen et al. 2021a; Lim et al. 2021; Saywell et al. 2021; Vahlberg et al. 2021; Chen et al. 2021b; Chung et al. 2020a; Wu et al. 2020b; Lin et al. 2014b; Ada et al. 2003). One RCT compared Telerehabilitation Computerized Complex Repetitive Ankle Movement Training with Simple Ankle Movement Training (Deng et al. 2012). Two RCTs compared Telerehabilitation Physiotherapy Combined with EMG-NMES with Conventional Therapy Combined with EMG-NMES (Chen et al. 2020b; Chen et al. 2017). Four RCTs compared Caregiver-Mediated Programs using Telerehabilitation or Technology with Conventional Care (Esteki-Ghashghaei et al. 2020; Vloothuis et al. 2019; Zhou et al. 2019; Van Den Berg et al. 2016). One RCT compared Video-Based Home Exercise Training with Paper-Based Home Exercise Training (Ozden et al. 2024).

In addition, one RCT in which telerehabilitation and Technology-Based home exercise programs formed part of a combined or comparative intervention are cross-referenced at the end of Table 25; their primary listings appear in other tables.

The methodological details and results of all 24 RCTs are presented in Table 25.

Table 25. RCTs Evaluating Telerehabilitation and Technology-Based Home Exercise Programs for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Home Based Therapy Using Technology and Telerehabilitation vs Conventional Therapy or No Therapy		
Mulder et al. (2024) RCT (5) Nstart=41 Nend=37 TPS=Subacute A vs 0 Also in Table 5 (Task-Specific Training)	E: Armed4Stroke (Task-specific Exercise Telerehabilitation Program) + Usual Care C: Usual Care Duration: E: 30min/day, 5x/wk, for 8wks, C: Usual Care for 8wks	E vs C: Stroke Impact Scale (SIS) Strength (+exp) Rivermead Mobility Index (RMI) (-) Functional Ambulation Categories (FAC) (-) Change Assessment Questionnaire (CAQ) 5-Metre Walk Test (5MWT) (-) 6-Minute Walk Test (6MWT) (-)

		Berg Balance Scale (BBS) (-) Motricity Index (MI) (-) Nottingham Extended ADL (NEADL) NEADL-Leisure (+exp) Modified Rankin Scale (mRS) (-) Transition Preparedness Scale (TPS) (-) Stroke Self-Efficacy Questionnaire (SSEQ) (-) General Self-Efficacy Scale (GSES) (-) EuroQol 5 Dimensions (EQ5D) (-) Fatigue Severity Scale (FSS) (-) Family Assessment Device-General Functioning (FAD-GF) (-) Hospital Anxiety and Depression Scale (HADS) Anxiety (-) Depression (-) Patient Reported Outcome Measurement Information System (PROMIS) (-) Caregiver Strain Index (CSI) (-) Carer-related Quality of Life Instrument (CarerQoL) (-) Preparedness for Caregiving Scale (PCS) (-).
Wang et al. (2024c) RCT (7) Nstart=80 Nend=80 TPS=Subacute A + B vs 0	E: Internet-based remote home rehabilitation + lower limb Wearable device training C: Conventional Care (Home-based rehabilitation) Duration: E: 60min/d, 6d/wk, 12 wks ; C: 90min(60 min conventional rehab + 30mins life ability training)/d, 6d/wk, 12 wks	E vs C: FMA (+exp) MAS (+exp) BBS (+exp) MBI (+exp) Hamilton Rating Scale for Depression (+exp) Gait Stride length (+exp) walking speed (+exp) cadence (+exp) Serum neurocytokine BDNF (+exp) NT-3 (+exp) NGF (+exp)
Guo et al. (2023) Feasibility/pilot RCT (5) Nstart=120 Nend=109 TPS=Subacute A vs 0	E: Remote rehab training C: Conventional therapy Duration: 2hrs/d(1hr virtual training + 1hr conventional), 5d/wk, 3wks	E vs C: FMA total(+exp) UE(+exp) LE(-)
Garcia et al. (2022) Feasibility/pilot RCT (3) Nstart=10 Nend=6 TPS=Chronic A vs 0 Also in Table 26 (Virtual Reality)	E: Telerehabilitation video games C: Conventional rehab Duration: 30 min session/d, 3d/wk, 8 wks - 2wk washout	E vs C: VAS-pain(-) ROM(-) FIM(-) Berg(-) SF-36 PCS(-)
Lee et al. (2022c) Feasibility/pilot RCT (5)	E: Telerehab Dance procol + conventional therapy	E vs C: TIS(-)

Nstart=17 Nend=14 TPS=Subacute A vs 0	C: Conventional rehab Duration: 40min/d, 2d/wk, 3wks	K-MBI(-) BBS(-) TUG(-) FAC(-) EQ5D(-)
Chen et al. (2021b) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs 0 Also in Table 26 (Virtual Reality)	E: Telerehabilitation using a Kinect camera-based interactive telerehabilitation system C: Conventional physiotherapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: Berg Balance Scale (-) Timed up and Go test (-) Modified Falls Efficacy Scale (-) Motricity Index (-) Functional Ambulation Category (-)
Lim et al. (2021) RCT (6) Nstart=17 Nend=17 TPS=Chronic A vs B	E: Coordination exercises at home and telehealth C: Conventional Clinic-based exercises Duration: 5d/wk, for 6wks	E vs C: 10-meter walk test Comfortable (-) Fast (-) Figure of 8 walk test Speed (+exp) Step (-) Four-square step test (-) SF-36 (-)
Saywell et al. (2021) RCT (7) Nstart=95 Nend=91 TPS=Chronic A vs 0	E: Augmented Community Telerehabilitation Intervention (4 face-to-face visits, 5 structured phone calls, personalized text messages) C: Usual care Duration: 6mo	E vs C: Stroke Impact scale physical (-) strength (-) memory (-) emotion (-) communication (-) activities of daily living (-) mobility (-) use of hand (-) participation (+exp) Grip strength affected side (-) unaffected side (-) Step test affected side (-) unaffected side (-) Stroke Self-efficacy Questionnaire (-) EuroQOL-5D-Visual Analogue Scale (+exp) Adverse events (-)
Vahlberg et al. (2021) RCT (7) Nstart=79 Nend=71 TPS=Acute A vs 0	E: Standard care and daily mobile-phone delivered training messages C: Standard care Duration: 12wks	E vs C: 6-minute walking test (+exp) 5 time chair-stand test (+exp) 10-metre walk test (-) Short Physical Performance Battery (-)
Chen et al. (2021a) RCT (5) Nstart=140 Nend=121	E: Nurse-guided home-based PT exercise program + conventional rehabilitation C: Conventional Rehabilitation Duration: 30min/session, 3d/wk for first 3mo, 1d/wk for second 3mo, 1d/mo for	E vs C: Fugl-Meyer assessment (+exp) Modified Ashworth Scale (+exp) 10-Meter Walk Test (+exp)

TPS=Subacute A vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	the rest up to 12mo, home-based exercise	Barthel Index (+exp)
Chung et al. (2020a) RCT (7) Nstart=60 Nend=56 TPS=Subacute A1 vs A2	E: Customized video-guided home-exercise C: Customized paper-based (pamphlet) home-exercise Duration: 10-30min/d, for 3mo	E vs C: Self-efficacy for exercise-Chinese version (+Exp) Modified Barthel index-Chinese version (-) Modified Functional Ambulatory category (+exp) Adherence to program (+exp)
Wu et al. (2020b) RCT (7) Nstart=64 Nend=61 TPS=Subacute A vs 0	E: Home remote rehabilitation based on a collaborative care model C: Routine rehabilitation Duration: 1-2d/wk, for 12wks	E vs C: Fugl-Meyer Motor Function Assessment (Upper and lower limb) (+exp) Berg Balance Scale (+exp) Timed “UP & GO” test (+exp) 6-minute walking test (+exp) Modified Barthel Index (+exp) Stroke-Specific Quality of Life Scale (+exp) Energy (+exp) Family Role (+exp) Language (+exp) Mobility (+exp) Mood (+exp) Personality (-) Selaf-care (+exp) Social role (+exp) Thinking (-) Upper Extremity (+exp) Vision (-) Work (+exp)
Lin et al. (2014b) RCT (7) Nstart=24 Nend=23 TPS=Chronic A vs 0	E: Telerehabilitation program C: Conventional therapy Duration: 50min/d, 3d/wk, for 4wks	E vs C: Berg Balance Scale (-) Barthel Index (-) Self-care (-) Mobility (-) Satisfaction with training (-)
Ada et al. (2003) RCT (7) Nstart=29 Nend=27 TPS=Chronic A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training); Table 9 (Treadmill Training)	E: Treadmill training and overground gait training C: Placebo program of low- intensity home exercise program + Telerehabilitation Duration: 30min/d, 3d/wk, for 4wks Treadmill and overground walking, 3d/wk, for 4wks Placebo program	E vs C: 6-Minute Walk Distance Test (+exp) 10-Metre Walk Speed Test (+exp) Stroke-adapted Sickness Impact Profile (SA-SIP30) (-) Step Length Affected Leg (+exp) Intact Leg (+exp) Step Width (-) Cadence (-)
Telerehabilitation Computerized Complex Repetitive Ankle Movement Training vs Simple Ankle Movement Training		
Deng et al. (2012) RCT (4) Nstart=19 Nend=16	E: Computerized complex repetitive ankle movement training C: Simple repetitive ankle movement training	E vs C: Paretic ankle Dorsiflexion during the swing phase of gait (+exp)

TPS=Chronic A1 vs A2	Duration: time-matched 60 training blocks/d, 20d over 4wks	Paretic ankle Plantarflexion during the swing phase of gait (-) 10-m walk test (-) Gait temporal symmetry ratio (-) Variance of toe clearance (-) Stride length (-) fMRI parameters (-)
Telerehabilitation Physiotherapy Combined with EMG-NMES vs Conventional Therapy Combined with EMG-NMES		
Chen et al. (2020b) RCT (7) Nstart=52 Nend=44 TPS=Acute A vs B	E: Telerehabilitation therapy (including PT, OT, ETNS guide by therapist over videocalls) C: In-person rehabilitation (including PT, OT, ETNS) Duration: 60min OT & PT + 20min ETNS/ session, 10d over 12wks.	E vs C: Fugl-Meyer Assessment (+exp) Modified Barthel Index (-)
Chen et al. (2017) RCT (8) Nstart=54 Nend=51 TPS=Acute A + B vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Tele-supervising rehabilitation (PT+ EMG-NMES) C: Conventional Care Duration: 1hr, 2x/d, 5d/wk, for 12 wks PT + 20min, 2x/d, 5d/wk, for 12wks	E vs C: modified Barthel Index(-) Berg Balance Scale(-) Caregiver Strain Index (-) Root mean square extensor carpi radialis longus (-) tibialis anterior (-)
Caregiver-Mediated Programs using Telerehabilitation or Technology vs Conventional Care		
Esteki-Ghashghaei et al. (2020) RCT (5) Nstart=57 Nend=40 TPS=Acute A + B vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: BASNEF model motivational training + home-based rehabilitation C: Conventional Care Duration: 3 sessions of training	E vs C: Fugl-Meyer Assessment (+exp) Questionnaire based on BASNEF model (+exp)
Vloothuis et al. (2019) RCT (8) Nstart=66 Nend=62 TPS=Subacute A + B vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Caregiver-mediated exercise program with e-health support + telerehabilitation C: Conventional therapy Duration: 30min/d, 5d/wk for 8wks - Caregiver-mediated exercise program	E vs C: Stroke Impact Scale (-) Length of stay (-) Fugl-Meyer Assessment (-) Motricity Index (-) 6-Minute Walking Test (-) 10-Metre Walk Test (-) Timed Up & Go Test (-) Berg Balance Scale (-) Rivermead Mobility Index (-) Barthel Index (-) Nottingham Extended ADL scale (-) Modified Rankin Scale (-) Caregiver Strain Index (-) Carer Quality of Life Scale (-) Hospital Anxiety and Depression Scale Patient Anxiety (+exp) Patient Depression (-) Caregiver Anxiety (-) Caregiver Depression (+exp)

		Fatigue Severity Scale (-) General Self-Efficacy Scale (-)
Zhou et al. (2019) RCT (7) Nstart=246 Nend=244 TPS=Acute A vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) C: Usual care Duration: 15-30min/session, 2- 3d caregiver training sessions, outcome measured at 6mo	E vs C: Barthel index (-) Modified Rankin scale (-) Functional ambulation category (+con) Patient health questionnaire 9 (-) EuroQol-5-dimension (-) Caregiver burden index (-)
Van Den Berg et al. (2016) RCT (8) Nstart=63 Nend=60 TPS=Acute A + B vs 0 Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Caregiver-mediated iPad exercise program + FitBit activity monitor (real-time feedback) C: Usual care Duration: 30min/d, 5x/wk for 8wks Caregiver-mediated program	E vs C: Stroke Impact scale (-) Rivermead mobility index (-) Barthel index (-) Nottingham extended ADL (+exp) Timed Up and Go (-) 10m timed walk (-) Fugl-Meyer assessment-lower extremity (-) Motricity index (-) Berg Balance scale (-) Hospital anxiety and depression scale patient (-) caregiver (-) General Self-efficacy scale patient (-) caregiver (-) Fatigue severity scale patient (-) caregiver (-) Carer QOL (-) Caregiver strain index (-) Modified Rankin Scale (No stats)
Video-Based vs Paper-Based Home Exercise Training		
Ozden et al. (2024) RCT (7) Nstart=32 Nend=32 TPS=Chronic A vs B	E: Video based exercise training C: Paper based exercise training Duration: 2 times a day, 6wks	E vs C: Falls efficacy scale-international (-) Activities-Specific Balance Confidence Scale (+exp) Stroke self-efficacy questionnaire (+exp) telemedicine satisfaction questionnaire (no stat)
Additional Comparisons from the Source Dataset		
Grau-Pellicer et al. (2020) RCT (4) Nstart=41 Nend=34 TPS=Chronic A vs 0	E: Home based Multimodal rehabilitation program by mHealth app C: Conventional care Duration: E: 1h/d, 2d/wk, 8wk C: daily, 3m0	E vs C: Adherence to physical activity: Community ambulation min./day (+exp) Sitting time hours/day (+exp) 10m Walk test comfort(+exp) fast(+exp) 6min Walk test (+exp) Timed Up and Go (-) Barthel index (+exp) EuroQoL (+exp)

Lawrie et al. (2018) RCT (6) Nstart=30 Nend=24 TPS=Subacute A vs 0	E: Smart-watch feedback on daily activity level C: local routine treatment Duration: 2x/hr for the first 8hr, 1x/hr for the last 1hr feedback, 9hr/d, 3wks	E vs C: Montreal Cognitive Assessment (No stats) Barthel index (No stats) WHO Disability assessment scale-12 item (No stats) Fatigue severity scale (No stats) EuroQOL 5D-5L (No stats) Rivermead mobility index (No stats) Visual Analog Fatigue Scale (No stats) 10m Walk test (No stats) Grip strength (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Llorens et al. (2015b) RCT (8) Nstart=31 Nend=30 TPS=Chronic A1 vs A2 Primary listing: Table 26 (Virtual Reality)	E: Virtual reality-based telerehabilitation in Home + conventional physical therapy C: Virtual reality-based rehabilitation in clinic + conventional physical therapy Duration: 45min/d, 3d/wk, for 7wks (20 total session)	E vs C: Brunel Balance Assessment (-) Berg Balance Scale (-) Tinetti Performance-Oriented Mobility Assessment (-) System Usability Scale (-) Intrinsic Motivation Inventory (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may produce greater improvements in motor recovery than Conventional Therapy or No Therapy.	4	Wang et al. 2024c; Guo et al. 2023; Chen et al. 2021a; Wu et al. 2020b
1b	Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may produce greater improvements in motor recovery than Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation.	1	Chen et al. 2020b
1a	There is conflicting evidence about the effect of Caregiver-Mediated Programs using Telerehabilitation or Technology when compared to Conventional Care for improving motor recovery.	3	Esteki-Ghashghaei et al. 2020; Vloothuis et al. 2019; Van Den Berg et al. 2016

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may produce greater improvements in biomechanical gait measures than Conventional Therapy or No Therapy.	2	Wang et al. 2024c; Ada et al. 2003
2	Telerehabilitation Computerized Complex Repetitive Ankle Movement Training may not have a difference in efficacy when	1	Deng et al. 2012

	compared to Simple Ankle Movement Training for improving biomechanical gait measures.		

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving muscle strength.	2	Mulder et al. 2024; Chen et al. 2021b
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving muscle strength.	2	Vloothuis et al. 2019; Van Den Berg et al. 2016

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home Based Therapy Using Technology and Telerehabilitation may produce greater improvements in spasticity than Conventional Therapy or No Therapy.	2	Wang et al. 2024c; Chen et al. 2021a

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving range of motion.	1	Garcia et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home Based Therapy Using Technology and Telerehabilitation may produce greater improvements in neurophysiological measures than Conventional Therapy or No Therapy.	1	Wang et al. 2024c
2	Telerehabilitation Computerized Complex Repetitive Ankle Movement Training may not have a difference in efficacy when compared to Simple Ankle Movement Training for improving neurophysiological measures.	1	Deng et al. 2012

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving pain.	1	Garcia et al. 2022

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving activities of daily living.	7	Mulder et al. 2024; Wang et al. 2024c; Garcia et al. 2022; Saywell et al. 2021; Chen et al. 2021a; Wu et al. 2020b; Lin et al. 2014b

1a	Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation for improving activities of daily living.	2	Chen et al. 2020b; Chen et al. 2017
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving activities of daily living.	3	Vloothuis et al. 2019; Zhou et al. 2019; Van Den Berg et al. 2016
1b	Video-Based Home Exercise Training may produce greater improvements in activities of daily living than Paper-Based Home Exercise Training.	1	Ozden et al. 2024
2	Home based Multimodal rehabilitation program by mHealth app may produce greater improvements in activities of daily living than Conventional care.	1	Grau-Pellicer et al. 2020
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving activities of daily living.	1	Lawrie et al. 2018

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving gait speed.	6	Mulder et al. 2024; Wang et al. 2024c; Lim et al. 2021; Vahlberg et al. 2021; Chen et al. 2021a; Ada et al. 2003
2	Telerehabilitation Computerized Complex Repetitive Ankle Movement Training may not have a difference in efficacy when compared to Simple Ankle Movement Training for improving gait speed.	1	Deng et al. 2012
1b	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	1	Vloothuis et al. 2019
2	Home based Multimodal rehabilitation program by mHealth app may produce greater improvements in gait speed than Conventional care.	1	Grau-Pellicer et al. 2020
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving gait speed.	1	Lawrie et al. 2018

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may produce greater improvements in gait endurance than Conventional Therapy or No Therapy.	4	Mulder et al. 2024; Vahlberg et al. 2021; Wu et al. 2020b; Ada et al. 2003
1b	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving gait endurance.	1	Vloothuis et al. 2019
2	Home based Multimodal rehabilitation program by mHealth app may produce greater improvements in gait endurance than Conventional care.	1	Grau-Pellicer et al. 2020

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving functional mobility.	8	Mulder et al. 2024; Lee et al. 2022c; Chen et al. 2021b; Lim et al. 2021; Saywell et al. 2021; Vahlberg et al. 2021; Chung et al. 2020a; Wu et al. 2020b
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	3	Vloothuis et al. 2019; Zhou et al. 2019; Van Den Berg et al. 2016
2	Home based Multimodal rehabilitation program by mHealth app may not have a difference in efficacy when compared to Conventional care for improving functional mobility.	1	Grau-Pellicer et al. 2020
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving functional mobility.	1	Lawrie et al. 2018
1b	Virtual reality-based telerehabilitation in Home with conventional physical therapy may not have a difference in efficacy when compared to Virtual reality-based rehabilitation in clinic with conventional physical therapy for improving functional mobility.	1	Llorens et al. 2015b

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving balance.	7	Mulder et al. 2024; Wang et al. 2024c; Garcia et al. 2022; Lee et al. 2022c; Chen et al. 2021b; Wu et al. 2020b; Lin et al. 2014b
1b	Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation for improving balance.	1	Chen et al. 2017
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving balance.	2	Vloothuis et al. 2019; Van Den Berg et al. 2016
1b	Virtual reality-based telerehabilitation in Home with conventional physical therapy may not have a difference in efficacy when compared to Virtual reality-based rehabilitation in clinic with conventional physical therapy for improving balance.	1	Llorens et al. 2015b

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving falls and fear of falling.	1	Chen et al. 2021b
1b	There is conflicting evidence about the effect of Video-Based Home Exercise Training when compared to Paper-Based Home Exercise Training for improving falls and fear of falling.	1	Ozden et al. 2024

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving quality of life.	7	Mulder et al. 2024; Garcia et al. 2022; Lee et al. 2022c; Lim et al. 2021; Saywell et al. 2021; Wu et al. 2020b; Ada et al. 2003
1b	Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation for improving quality of life.	1	Chen et al. 2017
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving quality of life.	3	Vloothuis et al. 2019; Zhou et al. 2019; Van Den Berg et al. 2016
2	Home based Multimodal rehabilitation program by mHealth app may produce greater improvements in quality of life than Conventional care.	1	Grau-Pellicer et al. 2020
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving quality of life.	1	Lawrie et al. 2018

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving mood.	2	Mulder et al. 2024; Wang et al. 2024c
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving mood.	2	Vloothuis et al. 2019; Van Den Berg et al. 2016

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving fatigue and sleep.	1	Mulder et al. 2024
1a	Caregiver-Mediated Programs using Telerehabilitation or Technology may not have a difference in efficacy when compared to Conventional Care for improving fatigue and sleep.	2	Vloothuis et al. 2019; Van Den Berg et al. 2016
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving fatigue and sleep.	1	Lawrie et al. 2018

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving cognition.	1	Lawrie et al. 2018

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Home Based Therapy Using Technology and Telerehabilitation may not have a difference in efficacy when compared to Conventional Therapy or No Therapy for improving upper extremity function.	1	Saywell et al. 2021
1b	Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation for improving upper extremity function.	1	Chen et al. 2017
1b	Smart-watch feedback on daily activity level may not have a difference in efficacy when compared to local routine treatment for improving upper extremity function.	1	Lawrie et al. 2018

Key Points

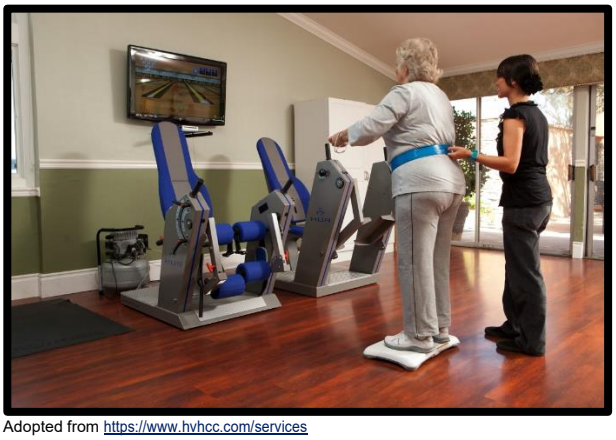
- Home Based Therapy Using Technology and Telerehabilitation may be beneficial for improving motor recovery, biomechanical gait measures, spasticity, neurophysiological measures, and gait endurance, but not muscle strength, range of motion, pain, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Therapy.
- Telerehabilitation Computerized Complex Repetitive Ankle Movement Training may not be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Simple Ankle Movement Training.
- Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may be beneficial for improving motor recovery, but not activities of daily living, balance, and quality of life, after stroke when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation.
- Caregiver-Mediated Programs using Telerehabilitation or Technology may not be beneficial for improving muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional Care; the literature is mixed regarding motor recovery.
- Video-Based Home Exercise Training may be beneficial for improving activities of daily living after stroke when compared to Paper-Based Home Exercise Training; the literature is mixed regarding falls and fear of falling.
- Home based Multimodal rehabilitation program by mHealth app may be beneficial for improving activities of daily living, gait speed, gait endurance, and quality of life, but not functional mobility, after stroke when compared to Conventional care.
- Smart-watch feedback on daily activity level may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to local routine treatment.
- Virtual reality-based telerehabilitation in Home with conventional physical therapy may not be beneficial for improving functional mobility and balance after stroke when compared to Virtual reality-based rehabilitation in clinic with conventional physical therapy.

Summary of Key Points: Telerehabilitation and Technology-Based Home Exercise Programs

Intervention	Control(s)	Function domain(s)	Effect
Home Based Therapy Using Technology and Telerehabilitation	Conventional Therapy or No Therapy	Motor recovery, biomechanical gait measures, spasticity, neurophysiological measures, gait endurance	+
Home Based Therapy Using Technology and Telerehabilitation	Conventional Therapy or No Therapy	Muscle strength, range of motion, pain, activities of daily living, gait speed,	–

		functional mobility, balance, falls and fear of falling, quality of life	
Telerehabilitation Computerized Complex Repetitive Ankle Movement Training	Simple Ankle Movement Training	Biomechanical gait measures, neurophysiological measures, gait speed	−
Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation	Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation	Motor recovery	+
Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation	Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation	Activities of daily living, balance, quality of life	−
Caregiver-Mediated Programs using Telerehabilitation or Technology	Conventional Care	Muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	−
Caregiver-Mediated Programs using Telerehabilitation or Technology	Conventional Care	Motor recovery	=
Video-Based Home Exercise Training	Paper-Based Home Exercise Training	Activities of daily living	+
Video-Based Home Exercise Training	Paper-Based Home Exercise Training	Falls and fear of falling	=
Home based Multimodal rehabilitation program by mHealth app	Conventional care	Activities of daily living, gait speed, gait endurance, quality of life	+
Home based Multimodal rehabilitation program by mHealth app	Conventional care	Functional mobility	−
Smart-watch feedback on daily activity level	local routine treatment	Activities of daily living, gait speed, functional mobility, quality of life	−
Virtual reality-based telerehabilitation in Home with conventional physical therapy	Virtual reality-based rehabilitation in clinic with conventional physical therapy	Functional mobility, balance	−

Virtual Reality



Adopted from https://www.hvhcc.com/services

Virtual reality (VR) is a technology that allows individuals to experience and interact with virtual environments, often through a game. VR simulates life-like learning and can be used to increase intensity of training while providing three-dimensional feedback of a visual, sensory, and auditory nature (Saposnik et al., 2010).

VR tools are classified as either immersive (i.e. three-dimensional environment via head-mounted display) or non-immersive (i.e. two-dimensional environment via conventional computer monitor or projector screen). Customized VR programs have been created and tested in rehabilitation research, although commercial gaming consoles (e.g. Nintendo Wii) have also been used to deliver VR training.

A total of 86 RCTs were found that evaluated virtual reality for lower extremity motor rehabilitation. 41 RCTs compared Virtual Reality with Conventional Therapy or No Treatment (Kwak et al. 2024; Fahmy et al. 2024; Kilinc et al. 2023; Pelaez-Velez et al. 2023; Bai et al. 2022; Bian et al. 2022; Yaman et al. 2022; Marques-Sule et al. 2021; Anwar et al. 2021; Junata et al. 2021; Cano-Manas et al. 2020; Lin et al. 2020; Sheehy et al. 2020; Henrique et al. 2019; Hsieh et al. 2019b; Miranda et al. 2019; Utkan Karasu et al. 2018; Lee et al. 2018a; Choi et al. 2017a; Hung et al. 2017; James et al. 2017; Lee et al. 2017d; Park et al. 2017c; Pedreira da Fonseca 2017b; Hung et al. 2016b; In et al. 2016; Şimşek & Cekok 2016; Bower et al. 2015; Da Silva Ribeiro et al. 2015; Llorens et al. 2015a; Hung et al. 2014; Morone et al. 2014; Lee et al. 2014b; Barcala et al. 2013; Fritz et al. 2013; Rajaratnam et al. 2013; Cho et al. 2012; Kim et al. 2012c; Lee et al. 2012; Kim et al. 2009; You et al. 2005). Six RCTs compared Virtual Reality with Balance Training (Bashir et al. 2024; Zhang et al. 2020; James et al. 2017; Braun et al. 2016; Yatar et al. 2015; Jung et al. 2011). Five RCTs compared Virtual Reality Exercise Program with Exercise Program (Lee et al. 2023d; Arshad et al. 2022; Yang et al. 2022; Cannell et al. 2018; Chung et al. 2014). One RCT compared Virtual Reality Training with Treadmill Training (Bang et al. 2016a). Ten RCTs compared Virtual Reality with Treadmill Training with Conventional Therapy or Treadmill Training (Yang et al. 2024a; De Rooij et al. 2021; Kim et al. 2016c; Kim et al. 2015a; Cho et al. 2014; Cho et al. 2013c; Jung et al. 2012; Kang et al. 2012; Yang et al. 2011; Yang et al. 2008). Two RCTs compared Virtual Reality with Treadmill Training with Overground Gait Training (Wang et al. 2024e; Jaffe et al. 2004). Four RCTs compared Virtual Reality Robotic Training with Robotic Training and Conventional Therapy (Kayabinar et al. 2021; Bergmann et al. 2018b; Calabro et al. 2017; Mirelman et al. 2009). One RCT compared Virtual Reality Robotic Training with Robotic Training, Auditory Stimulation, and Conventional Therapy (Park et al. 2018a). Ten RCTs evaluated Virtual Reality with Other Modalities (Aslam et al. 2021; Malik et al. 2021; Miclaus et al. 2021; Tollar et al. 2021; dos Santos Junior et al. 2019; Forrester et al. 2016; Llorens et al. 2015b; Yom et al. 2015; Bower et al. 2014; McEwen et al. 2014). Three RCTs compared Brain-Computer Interface Controlled Training with Sham (Zhao et al. 2022c; Li et al. 2021a; Yuan et al. 2021). One RCT compared Virtual Reality Training with Strength and Resistance Training (Sultan et al. 2023).

In addition, 20 RCTs in which virtual reality formed part of a combined or comparative intervention are cross-referenced at the end of Table 26; their primary listings appear in other tables.

The methodological details and results of all 86 RCTs are presented in Table 26.

Table 26. RCTs Evaluating Virtual Reality for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Virtual Reality vs Conventional Therapy or No Treatment		
Kwak et al. (2024) Feasibility/pilot RCT (4) Nstart=44 Nend=36 TPS=Chronic A vs 0	E: FIVR (fully immersive virtual reality device) + conventional physical therapy C: Conventional physical therapy Duration: E: VR device 30 min/d, 3d/wk, 5 wks + physical therapy 30 min/d, 5d/wk, 5 wks ; C: physical therapy 30 min/day, 5d/wk, 5 wks	E vs C: Berg Balance Scale (-) TUG (+exp) gait speed (+exp) step length (+exp) stride length (+exp) single support time (-)
Fahmy et al. (2024) RCT (6) Nstart=28 Nend=26 TPS=Chronic A + B vs 0	E: Wii Fit Plus Aerobic exercises C: Conventional therapy Duration: 60min/d, 3d/wk, 8wks	E vs C: Walking speed (+exp) step cycle (+exp) Step length paretic (+exp) nonparetic (+exp) Percentage of time

		paretic (+exp) nonparetic (+exp) 6MWT (+exp) FIM (+exp)
Kilinc et al. (2023) RCT (7) Nstart=30 Nend=29 TPS=Chronic A + B vs B Also in Table 11 (Balance Training)	E: Virtual balance training (VBT) + Conservative training C: Conservative training (traditional rehab techniques) Duration: 20min VBT + 60min CR/d, 4d/wk, 8wks	E vs C: BBS (-) BI (-) NIHSS (-) SF-36 physical function (-) physical role limitations (-) pain (-) general health (-) energy (-) social function (-) emotional role limitation (-) mental health (-) Brunnstrom stage UE (-) hand (-) LE (-) FAS (-) MAS LE-plantar flexion spasticity degree (-)
Pelaez-Velez et al. (2023) Feasibility/pilot RCT (6) Nstart=26 Nend=24 TPS=Subacute A vs 0	E: VR video games + physiotherapy C: Physiotherapy Duration: 30min/d, 3d/wk, 6wks	E vs C: MI(+exp) Trunk Control(+exp) Balance Tinetti(+exp) Gait Tinnetti(no stat) Berg Balance Scale(+exp) CFMHS(+exp) Daniel Worthingham scale(-) MAS(-)
Bai et al. (2022) RCT (4) Nstart=50 Nend=50 TPS=Subacute A vs 0	E: AI limb rehabilitation on account of virtual reality technology + traditional therapy C: Traditional therapy Duration: E: 40-60 mins/d, 5ds/wk, 10wks	E vs C: FMA-UE (+exp) FMA-LE (+exp) Hong Kong version of functional test for the hemiplegic upper extremity (+exp) BI (+exp) Berg balance scale (+exp) 10 meter max walking speed (+exp)
Bian et al. (2022) Feasibility/pilot RCT (4) Nstart=44 Nend=34 TPS=Not reported A vs B	E: VR based physical training (used Wii game and VR balance/gait training) C: Convetional therapy based rehabilitation training Duration: 5h/day, 5d/wk, 3 wks	E vs C: BBS(-) FMA-LE (-) Spatiotemporal gait parameters walking speed (-) cadence (-) stride time (-) step time (-) opposite foot off/contact (-) single support (-) double support (-) foot off (-)

		stride length (-) step length (-) kinematic parameters knee (-) ankle (-) hip (-)
Yaman et al. (2022) RCT (6) Nstart=60 Nend=60 TPS=Chronic A vs 0	E: VR rehab program and training (involved playing VR games) + conventional rehabilitation C: Conventional Therapy Duration: 60min/d, 5d/wk, 6wks	E vs C: FMA-LE(+exp) RMI (-) 10MWT (-) BBS (+exp)
Marques-Sule et al. (2021) RCT (9) Nstart=29 Nend=29 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Virtual reality balance training with Nintendo Wii + conventional physical therapy C: Conventional physical therapy Duration: 120min/d, 2d/wk, for 4wks Conventional PT & 30min/d, 2d/wk, for 4wks VR training	E vs C: Timed up and go (+exp) Tinetti Performance-Oriented Mobility Assessment (+exp) Berg Balance Scale (+exp) Fugl-Meyer Upper Limb Motor Assessment (-) Barthel Index (+exp) Frenchay Activity Index (+exp)
Anwar et al. (2021) RCT (6) Nstart=74 Nend=68 TPS=Not reported A vs 0	E: Virtual Reality with Wii C: Conventional Physical Therapy Duration: 60min/d, 3d/wk, for 6wks	E vs C: Berg Balance Scale (+exp) Fugl-Meyer Assessment-LE Motor Function (+exp) Joint Range (+exp) Joint Pain (+exp) Sensation (-)
Junata et al. (2021) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs B	E: Kinect-based Rapid Movement Training (real-time feedback) C: Conventional balance training Duration: 60min/d, 3d/wk, for 7wks (20 sessions)	E vs C: Berg Balance Scale (-) Timed-Up-and-Go Test (-) Fugl-Meyer Assessment - Motor Recovery (-) Activities specific balance confidence scale (-) Barthel index (-) Step displacement (-) Step length (-) Step width (-) Movement onset & completion time (-) Number of steps (-) center of mass (-) EMG results (-) muscle reaction time of the supporting leg medial gastrocnemius (+exp) other parameter (-)
Cano-Manas et al. (2020) RCT (6) Nstart=56 Nend=48 TPS=Subacute A vs 0	E: Video game based therapy + Conventional rehabilitation C: Conventional rehabilitation Duration: 90min, 5x/wk, for 8wks rehabilitation & 20min video game/d, 3x/wk, for 8wks	E vs C: Modified Rankin scale (+exp) Barthel index (+exp) Tinetti scale for Balance and Gait (+exp) Functional Reach test (+exp) Get Up and Go test (+exp) Baropodometry

		force plate (+exp) support surface (-) EuroQOL-5D mobility (-) activities (-) pain/discomfort (+exp) anxiety and depression (+exp) VAS (+exp)
Lin et al. (2020) RCT (8) Nstart=152 Nend=143 TPS=Acute A1 vs A2	E: Virtual Reality (Kinect) with Early Conventional Rehabilitation C: Early Conventional Rehabilitation Duration: 60min/d, 5d/wk during inpatient stay, rehabilitation & 30min/d, 5d Virtual Reality	E vs C: Manual Muscle Testing scale Affected side upper limb (-) Affected side Lower limb(-) Unaffected side upper limb (+exp) Unaffected side Lower limb(-) Hospital Anxiety and Depression Scale Anxiety (+exp) Depression(+exp) Postural Assessment Stroke Scale (-) Barthel index(-)
Sheehy et al. (2020) RCT (7) Nstart=76 Nend=69 TPS=Subacute A vs B	E: Virtual Reality Training with leaning and reaching + standard rehabilitation C: Virtual Reality Training with trunk restrained (placebo) + standard rehabilitation Duration: 30-45min/d, 5d/wk, 10-12 sessions total VRT & 2-3 sessions/d standard rehabilitation	E vs C: Function in Sitting Test (-) Ottawa Sitting Scale (-) Reaching Performance Scale (-) Wolf Motor Function Test (-)
Henrique et al. (2019) RCT (5) Nstart=31 Nend=31 TPS=Chronic A vs 0	E: Motion Rehab AVE 3D (Exergames) C: Conventional care Duration: 30min/d, 2d/wk for 12wk	E vs C: Fugl-Meyer assessment Shoulder elbow forearm (+exp) wrist (-) hand (-) total (+exp) Berg Balance scale (-)
Hsieh et al. (2019b) RCT (7) Nstart=54 Nend=54 TPS=Subacute A vs B Also in Table 11 (Balance Training)	E: Modified PC Balance Training Gaming Platform C: PC gaming with Mouse Duration: 40 mins/d, 3d/wk, for 12wks	E vs C: Centre of pressure kinematics sway path (+exp) sway area (+exp) sway velocity (+exp) Berg Balance Scale (+exp) Fullerton Advanced Balance Scale (-) Timed Up and Go tests (+exp)
Miranda et al. (2019) RCT (6) Nstart=29 Nend=29 TPS=Chronic A vs 0	E: Nintendo Wii Fit balance platform training C: No treatment Duration: One 60-min session and two 30-min sessions over a week	E vs C: Rhythmic Weight Shift Anteposterior (-) Laterolateral (-) Limit of stability (-) Endpoint excursion (-)
Utkan Karasu et al. (2018) RCT (7) Nstart=23 Nend=23 TPS=Subacute	E: Wii Fit-based balance exercise + conventional rehabilitation C: Conventional rehabilitation	E vs C: Berg Balance Scale (+exp) Functional Reach Test (+exp) Postural Assessment Scale for Stroke Patients (-)

A vs 0 Also in Table 11 (Balance Training)	Duration: 120-180min/d, 5d/wk, for 4 wks conventional therapy & 20min/d, 5d/wk, for 4 wks Wii Fit training	Timed Up and Go Test (-) Static Balance Index (-) Postural sway AP/ML (eye open) (+exp) AP (eye closed) (+exp) ML (eye closed) (-) COP displacement during weight shift (to affected/non affected) (+exp) Functional Independence Measure transfer (+exp) locomotion (-)
Lee et al. (2018a) RCT (6) Nstart=31 Nend=30 TPS=Subacute A vs 0	E: Conventional rehabilitation program + game-based virtual reality (VR) canoe paddling training C: Conventional rehabilitation program Duration: 60min, 2x/d, 5d/wk, for 5wks conventional rehabilitation program & 30min/d, 3d/wk, for 5wks VR training	E vs C: Modified Functional Reach Tests Forward (-) Unaffected side (+exp) Affected side (+exp) Postural sway test Center of pressure path length (+exp) Sway Velocity (+exp) Manual function test of UE Upper limb (+exp) Hand (-)
Choi et al. (2017a) RCT (7) Nstart=36 Nend=36 TPS=Chronic A vs B vs 0 Also in Table 6 (Constraint-Induced Movement Therapy (CIMT))	E1: Game-based CIMT + Traditional physical therapy; E2: General game-based training + Traditional PT C: Traditional physical therapy Duration: 30min/d, 3d/wk, for 4wks game training & 60min/d, 5d/wk, for 4wks traditional PT	E1/E2 vs C: Center of pressure - AP (exp1), - ML (+exp1) Sway mean velocity (-) Sway area (+exp1) symmetric weight bearing (+exp1, +exp2) Functional Reach Test(-) modified Functional Reach Test (+exp1, +exp2) Timed Up and Go Test (-) E1 vs E2: Center of pressure - AP (-), - ML (+exp1) Sway mean velocity (-) Sway area (+exp1) symmetric weight bearing (+exp1) Functional Reach Test(-) modified Functional Reach Test (-) Timed Up and Go Test (-)
Hung et al. (2017) RCT (7) Nstart=43 Nend=37 TPS=Chronic A vs B vs C Also in Table 11 (Balance Training); Table 15 (Biofeedback)	E1: Wii Fit balance training E2: Tetrax biofeedback balance training C: Conventional weight-shifting training Duration: 30min/d, 2d/wk for 12wks	E1 vs E2 vs C: Cognitive Abilities Screening Instrument-Chinese version total (-) long term memory (-) short term memory (-) attention (-) Mental manipulation (-) Orientation (-) Abstract/judgment (+exp1) Language (+exp1) Drawing (-) Word fluency (-) Berg Balance scale (-)

James et al. (2017) RCT (6) Nstart=10 Nend=10 TPS=Acute A1 vs A2 Also in Table 11 (Balance Training); Table 15 (Biofeedback)	E: Gaming Assisted Visual feedback for balance training + Conventional therapy C: Balance training exercises + Conventional therapy Duration: 60min, 2x/d, for 4d (8 sessions total)	E vs C: Berg Balance Scale (+exp) AP-Postural sway (-) Lat-Postural Sway (+exp) Stance symmetry (+exp) Active ankle ROM dorsiflexion (-) Active ankle ROM plantarflexion (+exp) Lateral reach test (-)
Lee et al. (2017d) RCT (6) Nstart=50 Nend=47 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Virtual reality balance training + Standard treatment C: Standard treatment Duration: 90min/d, 2d/wk, for 6wks	E vs C: Berg Balance Scale (-) Functional Reach Test (-) Timed Up and Go-cognitive (-) Modified Barthel Index (-) Activities-Specific Balance Confidence (-) Stroke Impact Scale (-)
Park et al. (2017c) RCT (6) Nstart=24 Nend=20 TPS=Chronic A vs 0	E: Virtual reality through Xbox Kinect + Conventional physical therapy C: Conventional physical therapy Duration: 30min/d, 7d/wk, for 6wks Virtual reality/ Conventional physical therapy	E vs C: Fugl-Meyer Assessment (-) Berg Balance Scale (+exp) Timed Up and Go (+exp) 10-m Walk Test (+exp)
Pedreira da Fonseca (2017b) RCT (7) Nstart=30 Nend=27 TPS=Chronic A vs 0	E: Virtual rehabilitation + conventional PT C: Conventional PT Duration: 60min/d, 2d/wk, for 10wks	E vs C: Dynamic Gait Index (-) Fall rate (-)
Hung et al. (2016b) RCT (5) Nstart=27 Nend=23 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Virtual reality-based balance training C: Conventional rehabilitation Duration: 100min/d, 3d/wk Conventional care ; 20min/d, 3d/wk for 6wks - Tetrax balance training	E vs C: Physiologic Profile Assessment Proprioception (+exp) Muscle strength (-) Reaction time (+exp) Postural sway area (-) Weight bearing (+exp) Timed Up and Go (+exp) Forward reach distance (-)
In et al. (2016) RCT (5) Nstart=30 Nend=25 TPS=Chronic A vs 0	E: Virtual reality reflection therapy (VRRT) + Conventional therapy C: Placebo VRRT + Conventional care Duration: 60min/d, 5d/wk for 4 wks	E vs C: Berg Balance Scale (+exp) Functional Reaching Test (+exp) Timed Up and Go Test (+exp) (+exp) 10 meter walking velocity (+exp) Static balance ability anterior-posterior sway distance (eye open) (+exp) anterior-posterior sway distance (eye close) (-) medial-lateral sway distance (eye open/eye close) (-) total sway distance (eye open) (+exp) (eye close) (-)
Şimşek & Cekok (2016)	E: Nintendo Wii game training	E vs C:

RCT (7) Nstart=44 Nend=42 TPS=Subacute A vs 0	C: Conventional rehabilitation Duration: 45-60min/d, 3d/wk, for 10wks	Functional Independence Measure (-) Motor (-) Cognitive (-) Nottingham Health Profile (-) Energy level (-) Pain (-) Emotional reaction (-) Social isolation (-) Sleep (-) Physical activity (-) Visual Analogue scale-satisfaction (+exp)
Bower et al. (2015) RCT (4) Nstart=16 Nend=16 TPS=Subacute A vs 0	E: Virtual reality training (PrimeSense) C: Conventional rehabilitation Duration: 40min/d, 2d/wk for 4wk	E vs C: 6-Minute Walk Test (-) Functional Independence Measure (-) Step Test (-) Functional Reach Test (-) Motor Assessment Scale (-)
Da Silva Ribeiro et al. (2015) RCT (7) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Virtual rehabilitation using Wii (videogame) C: Conventional physical therapy Duration: 60min/d, 2d/wk for 2mo	E vs C: Fugl-Meyer assessment (-) UE (-) LE (-) Passive motion and pain (-) Sensitivity (-) Balance (-) 36-item Short-form (-) Physical functioning (+exp) Physical aspects (-) Pain (-) General Health (-) Vitality (-) Social aspects (-) Emotional aspects (-) Mental health (-)
Llorens et al. (2015a) RCT (8) Nstart=22 Nend=20 TPS=Chronic A vs 0	E: Conventional physiotherapy + Virtual reality-based stepping exercise C: Conventional physiotherapy Duration: 60min/d, 5d/wk, for 4wks	E vs C: Berge balance scale (+exp) Tinetti performance-oriented mobility assessment balance (-) gait (-) 10-m walking test (+exp) Brunel Balance assessment (+exp)
Hung et al. (2014) RCT (6) Nstart=30 Nend=28 TPS=Chronic A vs 0	E: Wii Fit Balance board + Routine rehabilitation C: Conventional weight-shift training + routine rehabilitation Duration: 30min/d, 2d/wk, for 12 wks interventions + routine rehabilitation	E vs C: Static standing balance in 8 positions Head straight with eyes open while standing on solid surface (-) Head straight with eyes closed while standing on solid surface (-) Head straight with eyes open while standing on a foam surface (+exp) Head straight with eyes closed while standing on foam surface (-) Eyes closed while standing on a solid surface with head turned at 30 to the right (-)

		Eyes closed while standing on a solid surface with head turned at 30 to the left (+exp) Eyes closed while standing on a solid surface with head up (+exp) Eyes closed while standing on a solid surface with head down (-) Weight bearing on affected leg in 8 positions (-) Timed Up and Go (-) Forward reach test (-) Falls Efficacy Scale-international (-) Physical Activity Enjoyment Scale (+exp)
Morone et al. (2014) RCT (7) Nstart=50 Nend=47 TPS=Subacute A1 vs A2 Also in Table 11 (Balance Training)	E: Video Game-Based Balance Training + conventional PT C: Conventional PT + Balance Training Duration: 20min/d balance training + 80min/d conventional physical therapy, 3d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Barthel Index (+exp) 10-Metre Walk Test (-) Functional Ambulation Category (-)
Lee et al. (2014b) RCT (7) Nstart=21 Nend=19 TPS=Chronic A vs 0	E: Augmented reality based postural control training + conventional physical therapy C: Conventional physical therapy Duration: 30min/d, 3d/wk, for 4wks VR-Postural Training & 30min/d, 4d/wk, for 4wks PT	E vs C: Timed Up and Go test (-) Berg Balance Scale (-) Gait velocity(+exp) Cadence (-) Step length (+exp) Stride length (+exp)
Barcala et al. (2013) RCT (7) Nstart=20 Nend=20 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Wii-based balance training C: Conventional rehabilitation Duration: 60min/d, 2d/wk, 5wks Conventional therapy ; 30min/d, 2d/wk, 5wks Wii Fit balance training	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-) Functional Independence Measure (-) Stabilometry (-) Body symmetry (-)
Fritz et al. (2013) RCT (8) Nstart=30 Nend=28 TPS=Chronic A vs 0	E: Virtual reality training C: No Treatment Duration: 1hr/d, 4d/wk for 5wks	E vs C: Fugl-Meyer Assessment (-) 6-Minute Walk Test (-) 3-Metre Walk Test (-) Dynamic Gait Index (-) Berg Balance Scale (-) Timed Up & Go Test (-) Stroke Impact Scale (-)
Rajaratnam et al. (2013) RCT (5) Nstart=19 Nend=19 TPS=Acute A vs 0	E: Interactive virtual-reality balance-related video games + conventional therapy C: Conventional therapy Duration: E: 40min VR + 20min conventional/session, 15 sessions; C: 60min/session, 15 sessions	E vs C: Functional Reach Test (+exp) Timed Up and Go (-) Berg Balance Scale (-) Centre of Pressure (-) Modified Barthel Index (-)
Cho et al. (2012) RCT (5) Nstart=24 Nend=22	E: Wii-based balance training C: Conventional rehabilitation Duration: 30min/d, 3d/wk, for 6wks virtual reality balance training & 1hr/d, 5d/wk, for 6wks conventional care	E vs C: Antero-posterior postural sway velocity (-) Medio-lateral postural sway velocity (-) Berg Balance Scale(+exp)

TPS=Chronic A vs 0 Also in Table 11 (Balance Training)		Timed up and Go test(+exp)
Kim et al. (2012c) RCT (4) Nstart=20 Nend=17 TPS=Chronic A vs B Also in Table 11 (Balance Training)	E: Wii-based balance training C: Control group Duration: 30min/d, 3d/wk for 3wks	E vs C: Postural Assessment Scale (+exp) Modified Motor Assessment Scale (+exp) Functional Independence Measure (-)
Lee et al. (2012) RCT (8) Nstart=40 Nend=40 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Balance training with Balance Control Trainer C: Conventional rehabilitation Duration: 60min/d, 5d/wk, for 4wks conventional rehabilitation & 20min/d, 5d/wk, for 4wks balance training	E vs C: Berg Balance Scale (+exp) Timed Up & Go Test (+exp) Functional Ambulation Categories (+exp) Modified Barthel Index (-) 10-Metre Walking Test (+exp) Manual Muscle Test (-)
Kim et al. (2009) RCT (6) Nstart=24 Nend=24 TPS=Chronic A vs 0 Also in Table 11 (Balance Training)	E: Virtual reality-based balance training C: Conventional therapy Duration: 30min/d, 4d/wk, for 4wks VR-balance training & 40min/d, 4d/wk, for 4wks Conventional therapy	E vs C: Berg Balance Scale (+exp) Static balance (-) Sway area (-) Sway path (-) Maximal velocity (-) Dynamic balance AP angle (+exp) ML angle (+exp) Modified Motor Assessment Scale (+exp) 10-Metre Walk Test (+exp) Cadence (+exp) Step time (+exp) Swing time (-) Stance time (-) Single Limb Support time (-) Double Limb Support time (-) Step length (+exp) Stride length (-)
You et al. (2005) RCT (5) Nstart=10 Nend=10 TPS=Chronic A vs 0	E: Virtual reality training (computer) C: No Treatment Duration: 60min/d, 5d/wk for 4wks	E vs C: Functional Ambulation Category (+exp) Modified Motor Assessment Scale (+exp)
Virtual Reality vs Balance Training		
Bashir et al. (2024) RCT (7) Nstart=60 Nend=60 TPS=Chronic A vs B	E: CAREN Virtual reality system-based training C: Conventional balance rehabilitation Duration: 4 weeks	E vs C: Berg balance scale (-) TUG (-) Functional reach test (-)
Zhang et al. (2020) RCT (5)	E: Conventional balance training + visual balance training with Pro-kin system + Game training	E vs C: Berg Balance Scale (+exp)

Nstart=40 Nend=40 TPS=Subacute A + B vs C Also in Table 11 (Balance Training)	C: Conventional balance training Duration: 20min/d, 5d/wk, for 3wks	Timed Up & Go Test (+exp) Functional Ambulation Classification (+exp) Barthel Index (+exp) Pro-kin system parameters: perimeter EO (+exp) ellipse area EO (+exp) perimeter EC (+exp) ellipse area EC (+exp)
Braun et al. (2016) RCT (10) Nstart=28 Nend=24 TPS=Subacute A vs B Also in Table 11 (Balance Training)	E: Dynamic balance training with Balance Trainer C: Static balance training with a conventional standing frame Duration: 30min/session, 3- 5x/wk for 5wks	E vs C: Berg Balance Scale (+exp) Functional Ambulation Category (+exp) De Morton Mobility Index (+exp) Functional Independence Measure (+exp)
Yatar et al. (2015) RCT (5) Nstart=33 Nend=30 TPS=Chronic A vs B Also in Table 11 (Balance Training)	E: Wii-based balance training C: Progressive balance training Duration: 1hr/d, 3d/wk for 4wks	E vs C: Berg Balance Scale (-) Timed Up & Go Test (-) Functional Reach Test (-) Activity-Specific Balance Confidence Scale (-) Dynamic Gait Index (-) Frenchay Activities Index (-)
Jung et al. (2011) RCT (4) Nstart=22 Nend=22 TPS=Chronic A vs B Also in Table 11 (Balance Training); Table 15 (Biofeedback)	E: 3D balance exercises (3D Thera-Balance) with visual feedback C: Weight shifting exercises Duration: 50min/d, 5d/wk for 6wks	E vs C: Berg Balance Scale (+exp) 10-Metre Walk Test (-)
Virtual Reality Exercise Program vs Exercise Program		
Lee et al. (2023d) RCT (7) Nstart=68 Nend=56 TPS=Subacute A + B vs B Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Augmented reality + home based exercise program C: Home based exercise program Duration: 30min/d, 5d/wk, 4wks	E vs C: TUG(+exp) POMA(-) BBS(-) FES(+exp) GDS(-) EQ5D(-)
Arshad et al. (2022) RCT (9) Nstart=40 Nend=37 TPS=Chronic A vs 0	E: Exergames via X-box Kinect + Conventional therapy (balance excercises) C: Conventional therapy (balance excercises) Duration: 35-40 min/d, 3d/wk, 6 wks	E vs C: BBS (+exp) TUG (+exp) Dynamic Gait Index (+exp)
Yang et al. (2022) RCT (6) Nstart=129 Nend=39 TPS=Chronic	E: Customized physical excercise training done at Rehab center, 75% of the training delivered by human trainer and 25% of the training delivered by AR virtual trainer + Regular usual care	E vs C: FMA-UE (-) FMA-LE (-) BBS (-) FAC (-)

A1 vs A2	C: Customized physical exercise training done at home 75% of the time, 75% of the training delivered by AR virtual trainer and 25% of the training delivered by human trainer + Regular usual care Duration: 120 min/session, 2-5 session/wk, 4-10 wks (20 sessions)	BI(no stat) SF-12 Physical component summary (-) Mental component summary (-)
Cannell et al. (2018) RCT (8) Nstart=81 Nend=73 TPS=Subacute A1 vs A2	E: Customized Physiotherapy plan using interactive Motion Capture Rehabilitation (VR- based) C: Customized Physiotherapy plan Duration: Maximum of 1hr/d, 5d/wk, for 8wks or up to discharge (whichever comes first)	E vs C: Functional reach Test (-) Lateral reach Test (-) Sitting balance Test (-) Modified Motor assessment scale (-) Box and Block (-) Step test (-) Timed Up and Go (-) Gait Velocity (-)
Chung et al. (2014) RCT (4) Nstart=26 Nend=19 TPS=Chronic A + B vs A Also in Table 4 (Trunk Training)	E: Core stability exercises + real time feedback + conventional physical therapy C: Core stability exercises + conventional physical therapy Duration: 30min/session, 3d/wk for 6wks	E vs C: Timed Up and Go test (+exp) Gait velocity (+exp) Gait cadence (-) Affected side Stride length (+exp) Step length (-) Single support time (+exp) Double support time (-) Non-affected side Stride length (+exp) Step length (-) Single support time (-) Double support time (-)
Virtual Reality Training vs Treadmill Training		
Bang et al. (2016a) RCT (4) Nstart=40 Nend=40 TPS=Chronic A vs B	E: Virtual reality training (Wii fit board) C: Treadmill training Duration: 40min/d, 3d/wk for 8wks	E vs C: Weight bearing Left/right (+exp) Anterior/posterior (+exp) Stance phase (-) Swing phase (-) Cadence (-)
Virtual Reality with Treadmill Training vs Conventional Therapy or Treadmill Training		
Yang et al. (2024a) RCT (7) Nstart=40 Nend=40 TPS=Subacute A vs B + C Also in Table 9 (Treadmill Training)	E: Augmented reality treadmill-based gait adaptation training C: Treadmill training + overground walking Duration: 35min/d, 3d/wk, 5wks	E vs C: 10MWT (-) Obstacle avoidance ROA (+exp) BBS (+exp) C-TUGT sit-to-stand (-) linear walking (-) turning around (+exp) stand-to-sit (+exp) total time (+exp)
De Rooij et al. (2021) RCT (8) Nstart=55	E: Virtual reality Gait training (using Gait Real-time Analysis Interactive Lab (GRAIL)) C: Treadmill training + Gait exercises	E vs C: Utrecht scale for Evaluation of Rehabilitation-Participation (No stats)

Nend=52 TPS=Subacute A vs B	Duration: 30min/d, 2d/wk, for 6 wks	Stroke Impact scale-16 (No stats) Fatigue Severity scale (No stats) Hospital Anxiety and Depression scale (No stats) Falls Efficacy Scale-International (No stats) Stroke Specific Quality of Life Scale (No stats) Timed Up & Go (No stats) 6min walking test (No stats) Mini-Balance Evaluation Systems Test (Mini-BEST) (No stats)
Kim et al. (2016c) RCT (7) Nstart=30 Nend=27 TPS=Chronic A1 vs A2 vs 0 Also in Table 9 (Treadmill Training)	E1: VR treadmill training-based community ambulation E2: Community ambulation training C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 4wks Treadmill training and community ambulation & 30min/session, 10sessions/wk for 4wks general exercise program control.	E1 vs E2: Timed Up and Go Test (-) Activities-specific Balance Confidence Scales (-) 6-minute Walking Test (-) Gait Speed (-) Cadence (-) Step Length (-) Stride Length (-) E1 vs C: Timed Up and Go Test (+exp1) Activities-specific Balance Confidence Scales (+exp1) 6-minute Walking Test (-) Gait Speed (-) Cadence (-) Step Length (-) Stride Length (-) E2 vs C: Timed Up and Go Test (-) Activities-specific Balance Confidence Scales (+exp2) 6-minute Walking Test (+exp2) Gait Speed (-) Cadence (-) Step Length (-) Stride Length (-)
Kim et al. (2015a) RCT (4) Nstart=20 Nend=17 TPS=Chronic A + B vs 0 Also in Table 9 (Treadmill Training)	E: Treadmill training + Virtual reality C: Conventional rehabilitation Duration: 30min/d, 3d/wk, 4wks interventions + 60min/d, 5d/wk, 4wks Conventional PT	E vs C: Postural sway path length (+exp) Postural sway speed (+exp)
Cho et al. (2014) RCT (7) Nstart=32 Nend=30 TPS=Chronic A1 vs A2 Also in Table 9 (Treadmill Training)	E: Treadmill training based real- world video recording + standard rehabilitation C: Treadmill training + Standard rehabilitation Duration: 30min/d, 3/wk for 6wks treadmill trainings; 80min/d, 5/wk, 6wks standard rehabilitation program	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Postural sway velocity (-) Gait speed (+exp) Cadence (+exp) Stride length (+exp) Paretic side step length (+exp) Single time support (+exp)

		Double time support (+exp)
Cho et al. (2013c) RCT (7) Nstart=16 Nend=14 TPS=Chronic A vs B	E: Virtual walking training + standard rehabilitation program C: Treadmill gait training + standard rehabilitation Duration: 30min/d, 3d/wk for 6wks trainings & 80min/d, 5d/wk for 6wks standard rehabilitation program	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Gait performance Velocity (+exp) Cadence (+exp) Step length (-) Stride length (-) Single limb support (-)
Jung et al. (2012) RCT (5) Nstart=25 Nend=21 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + Virtual reality C: Treadmill training Duration: 30min/d, 5d/wk for 3wks	E vs C: Timed Up & Go Test (+exp) Activities-Specific Balance Confidence Scale (+exp)
Kang et al. (2012) RCT (7) Nstart=32 Nend=30 TPS=Chronic A1 vs A2 vs 0 Also in Table 9 (Treadmill Training)	E1: Treadmill with optic flow + conventional physical therapy E2: Treadmill + conventional physical therapy C: Conventional therapy Duration: 30min/session, 3d/wk, 4wks + conventional physical therapy 5d/wk, for 4wks	E1 vs E2: 10-Metre Walk Test (+exp1) 6-Minute Walk Test (+exp1) Timed Up & Go Test (+exp1) Functional Reach Test (-) E2 vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Timed Up & Go Test (-) Functional Reach Test (+exp2) E1 vs C: 10-Metre Walk Test (+exp1) 6-Minute Walk Test (+exp1) Timed Up & Go Test (+exp1) Functional Reach Test (+exp1)
Yang et al. (2011) RCT (4) Nstart=14 Nend=14 TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)	E: Treadmill training + Virtual reality + Conventional rehabilitation C: Treadmill training + Conventional rehabilitation Duration : 20min/d, 3x/wk for 3wks - Treadmill training & 40min/d, 7x/wk for 3wks - Conventional rehabilitation	E vs C: Quiet stance Center of pressure anterior-posterior (-) mediolateral (+exp) excursion (-) sway area (-) Sit to stand anterior-posterior (-) mediolateral (-) excursion (-) sway area (-) symmetric index (+exp) Level walking Stance time (-) contact area (-) number of steps (-)
Yang et al. (2008) RCT (6) Nstart=24 Nend=20	E: Treadmill training + Virtual reality C: Treadmill training Duration: 20min/d, 3d/wk for 3wks	E vs C: Gait speed (+exp) Community walk test (+exp) Walking Ability Questionnaire (-)

TPS=Chronic A + B vs A Also in Table 9 (Treadmill Training)		Activities Specific Balance Confidence Scale (-)
Virtual Reality with Treadmill Training vs Overground Gait Training		
Wang et al. (2024e) RCT (5) Nstart=54 Nend=48 TPS=Subacute A1 + B vs A2 + B Also in Table 53 (Acupuncture and Massage)	E: VR-assisted gait adaptation training + acupuncture + conventional physical therapy C: Overground gait adaptation training + acupuncture + conventional physical therapy Duration: 80min (30min gait + 30min PT + 20min acu)/d, 5d/wk, 5wks	E vs C: Walking speed (+exp) Obstacle avoidance ability (+exp) TUG (+exp) Postural stability eye-opening COP speed (+exp) eye-closing COP speed (-) tandem COP speed (-) single-leg COP speed (-) BI (-)
Jaffe et al. (2004) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs C Also in Table 9 (Treadmill Training)	E: Treadmill training + Virtual reality C: Stepping over real objects on 10m walkway Duration: 60min/d, 6d/2wks	E vs C: Performance-Oriented Assessment of Mobility (-) Physical Performance Test (-) Fast Walk Test (+exp) Self-Selected Walk Test (-) Cadence (-) Stride Length (-) Step Length (-) 6-Minute Walk Test (-) Obstacle Clearance (-)
Virtual Reality Robotic Training vs Robotic Training and Conventional Therapy		
Kayabinar et al. (2021) RCT (6) Nstart=37 Nend=30 TPS=Chronic A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: VR augmented robot- assisted gait training + conventional care C: Robot-assisted gait training + conventional care Duration: gait training 45min/d, 2d/wk, for 6wks + conventional care 30min/d, 3d/wk, for 6wks	E vs C: 10-metre walk test (-) Motor task added 10-metre walk test (-) Cognitive task added 10-metre walk test (-) Motor dual-task performance (-) Cognitive dual task performance (-) Functional Gait assessment (-) Rivermead Mobility Index (-) Berg Balance Scale (-) Falls Efficacy Scale-I (-) Functional Independence Measure total (-)
Bergmann et al. (2018b) RCT crossover (5) Nstart=27 Nend=20 TPS=Subacute A + B vs A Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted gait training + Virtual reality C: Robot-assisted gait training Duration: 3x/wk for 4wks interventions + one extra crossover session	E vs C: Intrinsic Motivation inventory Self management (-) External assessment (-) Functional Ambulation Category (No stats) 10m Walk test (No stats) 10m Dual task (No stats) 6min Walk test (No stats) Medical Research Council scale (No stats)
Calabrò et al. (2017) RCT (8) Nstart=24 Nend=24 TPS=Chronic A + B vs A	E: Robot-assisted gait training (Lokomat) + Virtual reality C: Robot-assisted gait training (Lokomat) Duration: 45min/d, 5d/wk, for 8wks	E vs C: Rivermead Mobility Index (+exp) Tinetti Performance Oriented Mobility Assessment (+exp) Modified Ashworth Scale (-) Hamilton Rating Scale for Depression (-)

Also in Table 27 (Electromechanical and Robotic Devices)		Knee Force (+exp) Hip Force (+exp) EEG-Brain Activation BA6 Brain Area (+exp) BA7 Area (+exp) BA17 Area (+exp) Parieto-occipital activation- μ and Hγ (+exp)
Mirelman et al. (2009) RCT (5) Nstart=18 Nend=18 TPS=Chronic A1 vs A2 Also in Table 27 (Electromechanical and Robotic Devices)	E: Virtual reality robotic training (computer) C: Robotic training Duration: 60min/d, 3d/wk for 4wks	E vs C: 7-Metre Walk Test- self-selected speed (-) 6-Minute Walk Test (-) Community activity measures Distance in 7 days (+exp) Steps per day (-) Speed (-) Step length (-) Top speed (-)
Virtual Reality Robotic Training vs Robotic Training, Auditory Stimulation, and Conventional Therapy		
Park et al. (2018a) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B vs D Also in Table 9 (Treadmill Training); Table 27 (Electromechanical and Robotic Devices)	E1: Virtual reality + robot- assisted gait training (Treadmill)+ conventional physical therapy E2: Auditory stimulation + robot- assisted gait training (Treadmill) + conventional physical therapy C: Conventional physical therapy + treadmill training Duration: 45min/d, 3d/wk, for 6wks trainings & 30min/d, 5d/wk, for 6wks Conventional therapy	E1 vs E2: Medical Research Council(+exp1) Berg Balance Scale(-) Timed Up & Go Test (-) 10 Meter Walk test(-) Fugl-Myer Assessment(+exp1) Modified Barthel Index(-) E1/ E2 vs C: Medical Research Council (+exp1+exp2) Berg Balance Scale(+exp1, +exp2) Timed Up & Go Test (+exp1, +exp2) 10 Meter Walk test(+exp1) Fugl-Myer Assessment(+exp1) Modified Barthel Index(-)
Virtual Reality with Other Modalities		
Aslam et al. (2021) RCT (8) Nstart=30 Nend=30 TPS=Chronic A vs B	E: Videogame exercises (x-box) C: Task-specific training Duration: 15-20 min, 5d/wk, for 6wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp)
Malik et al. (2021) RCT (6) Nstart=52 Nend=43 TPS=Subacute A + B vs A Also in Table 5 (Task-Specific Training)	E: Task-oriented training + Virtual reality training C: Task-oriented training Duration: 40-45min/d, 3d/wk, for 8wks task-oriented training & 15-20min/d 3d/wk for 8wks virtual reality training	E vs C: Fugl-Meyer Assessment-Lower Extremity (+exp) Berg Balance Test (+exp) Timed Up and Go test (+exp) Dynamic Gait Index (-)
Miclaus et al. (2021) RCT (7) Nstart=64 Nend=64 TPS=Chronic	E: Virtual reality (VR) therapy and mirror therapy (MT) exercises C: Standard lower extremity rehabilitation Duration: 70min/d, 5d/wk, for 2wks	E vs C: Functional Independence Measure (-) Modified Rankin Scale (-) Modified Ashworth Scale (-) Fugl Meyer Lower Extremity Assessment

A vs B Also in Table 19 (Mirror Therapy)		motor (+exp) passive (+exp) pain (-) Manual Muscle Testing (+exp) Active Range of Motion (+exp) Functional Reach Test (+exp) Time Up to Go (-)
Tollar et al. (2021) RCT (7) Nstart=680 Nend=641 TPS=Acute A1 + B vs A2 + B vs C vs B vs D + E Also in Table 53 (Acupuncture and Massage)	E1: one session daily high intensity Videogame exercises + medical massage E2: two sessions daily high intensity Videogame exercises + medical massage C: standard physical therapy + medical massage E2: 120min/d, 5d/wk, 5wks exergaming + 40min/d, 5d/wk, 5wks massage C: 60min/d standard care + 20min/d massage Duration: E1: 60min/d, 5d/wk, 5wks exergaming + 20min/d, 5d/wk, 5wks massage ; E2: 120min/d, 5d/wk, 5wks exergaming + 40min/d, 5d/wk, 5wks massage ; C: 60min/d standard care + 20min/d massage	E1/E2 vs C: modified Rankin Scale (exp1)(exp2) Barthel index (exp1)(exp2) EQ5-VAS (exp2) EQ5-Sum (-) Berg balance scale (exp2) 6-minute walk test (exp2) Beck Depression Inventory (-) Mini Mental State Examination (-) center of pressure path (wide/narrow stance & open/closed eye) (+exp2) resting HR (exp1)(exp2) resting SBP/DBP (exp1)(exp2) Peak HR (+con) rate of perceived exertion (+con) E1 vs E2: modified Rankin Scale (-) Barthel index (exp2) EQ5-VAS (exp2) EQ5-Sum (-) Berg balance scale (exp2) 6-minute walk test (exp2) Beck Depression Inventory (-) Mini Mental State Examination (-) center of pressure path (wide/narrow stance & open/closed eye) (+exp2) resting HR (No stats) resting SBP/DBP (No stats) Peak HR (-) rate of perceived exertion (-)
dos Santos Junior et al. (2019) RCT (6) Nstart=48 Nend=40 TPS=Chronic A vs A + B vs B Also in Table 12 (Stretching or Mobilization Exercises)	E1: Virtual Reality (Nintendo Wii) E2: Virtual Reality + Proprioceptive Neuromuscular Facilitation C: Proprioceptive Neuromuscular Facilitation Duration: 50min/d, 2d/wk, for 8wks	E1/E2 vs C: Fugl-Meyer Assessment (-) Sensory Assessment (-) Balance (-) Lower Limb Motor Function (-) E1 vs E2: Fugl-Meyer Assessment (-) ; - Sensory Assessment (-) ; - Balance (-) ; - Lower Limb Motor Function (-)
Forrester et al. (2016) RCT (4) Nstart=35 Nend=28 TPS=Chronic A + B + C vs D + B + C	E: Treadmill training + Virtual reality + Ankle robotics C: Seated training + Virtual reality + Ankle robotics Duration: 1h/d, 3x/wk, 6wk	E vs C: Overground gait velocity (-) paretic single limb support duration (-) Paretic Anterior posterior propulsive impulses (-) Paretic foot center of pressure length (-) Center of pressure symmetry (-)

Also in Table 9 (Treadmill Training); Table 27 (Electromechanical and Robotic Devices)		Ankle targeting speed (-) ankle targeting accuracy (+exp) dorsiflexion active Range of motion (-) Paretic peak swing angle (No stats) heel-first strikes (No stats)
Llorens et al. (2015b) RCT (8) Nstart=31 Nend=30 TPS=Chronic A1 vs A2 Also in Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Virtual reality-based telerehabilitation in Home + conventional physical therapy C: Virtual reality-based rehabilitation in clinic + conventional physical therapy Duration: 45min/d, 3d/wk, for 7wks (20 total session)	E vs C: Brunel Balance Assessment (-) Berg Balance Scale (-) Tinetti Performance-Oriented Mobility Assessment (-) System Usability Scale (-) Intrinsic Motivation Inventory (-)
Yom et al. (2015) RCT (6) Nstart=22 Nend=20 TPS=Chronic A vs B	E: Virtual reality ankle training C: Watch a documentary irrelevant to ankle exercise. Duration: 30min/d, 5d/wk for 6wks	E vs C: Timed Up & Go Test (+exp) Modified Ashworth Scale (+exp) Tardieu Scale (+exp) Gait Speed (+exp) Cadence (+exp) Step Length (+exp) Stride Length (+exp) Stance Time Percentage (+exp) Swing Time Percentage (+exp) Double Support (+exp)
Bower et al. (2014) RCT (8) Nstart=30 Nend=21 TPS=Acute A + B vs B Also in Table 11 (Balance Training)	E: Wii Fit Plus video game (Balance training) C: Wii Sports video game (Upper limb training) Duration: 45min/session, 3d/wk for 2-4wks	E vs C: Step Test Affected (+exp1) Unaffected (-) Functional Reach Test (-) Timed Up and Go Test (-) Centre of Pressure Measures (+exp1) Short Falls Efficacy Scale – International (-) Upper Limb - Motor Assessment Scale (-) Stroke Rehabilitation Assessment of Movement (-)
McEwen et al. (2014) RCT (5) Nstart=74 Nend=59 TPS=Subacute A1 vs A2	E: Regular rehabilitation therapy + Virtual Reality Exercise in standing position C: Regular rehabilitation therapy + Virtual Reality Exercise in sitting position Duration: 30min/d, 3wks (10-12 sessions in total)	E vs C: Timed Up & Go Test (-) Two-Minute Walk Test (-) Chedoke-McMaster Stroke Assessment Scale (+exp)
Brain-Computer Interface Controlled Training vs Sham		
Zhao et al. (2022c) RCT (5) Nstart=31 Nend=28 TPS=Subacute A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Brain-computer interface- controlled training robot + Conventional Physiotherapy C: Sham brain-computer interface-controlled training robot + Conventional Physiotherapy Duration: 60 min/d, 6d/wk, for 4wks	E vs C: Loewenstein Occupational Therapy Cognitive Assessment (+exp) Fugl-Meyer Assessment Lower Extremity (-) Balance (-) Functional ambulation category (-) Modified Barthel Index (-) Serum BDNF (-)

		MEP Latency (-) Amplitude (-)
Li et al. (2021a) RCT (6) Nstart=26 Nend=25 TPS=Subacute A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Brain-computer interface- operated lower limb rehabilitation robot C: Sham (Lower limb pedal training without image, video, sound hint) Duration: 30min/d, 1session/d for 4wks	E vs C: NIH stroke scale (+exp) Fugl-Meyer: Upper limb (-) Lower limb (+exp) Balance (-) Holden walking scale (-) EMG parameters MEP amplitude (+exp) MEP latency (+exp) Fractional anisotropy (-)
Yuan et al. (2021) RCT (8) Nstart=30 Nend=30 TPS=Subacute A vs 0 Also in Table 8 (Cycle Ergometer Training)	E: Brain-computer interface- controlled pedaling training C: Sham BCI-controlled pedaling training Duration: 2sessions/d, 6d/wk, for 2wks	E vs C: Fugl-Meyer Assessment (+exp) Digital Span Test (+exp) Symbol Digit Modalities Test (+exp) Attention Index (+exp) Mini-Mental State Examination (-) Montreal Cognitive Assessment (-)
Virtual Reality Training vs Strength and Resistance Training		
Sultan et al. (2023) RCT (6) Nstart=41 Nend=41 TPS=Chronic A vs B	E: Xbox training C: Strength exercises program Duration: 30min/d, 3d/wk, 8wks	E vs C: BBS(-) TUG(+exp) FIM(+exp) TIS(+exp)
Additional Comparisons from the Source Dataset		
Hsieh et al. (2019a) RCT (7) Nstart=56 Nend=56 TPS=Chronic A vs 0	E: Adaptive foot switch Videogame + Regular physiotherapy C: Regular physiotherapy Duration: 30min/d, 7d/wk, 10 wks Videogame	E vs C: 10-Metre Test of Walking (+exp) Centre of pressure anterior posterior sway (+exp) medal-later sway (-) sway area (+exp)
Golla et al. (2018) RCT (5) Nstart=14 Nend=11 TPS=Subacute A vs B	E: Wii Balance Intervention C: Conventional Balance Intervention Duration: 60min/d, 1d/wk, 6wks supervised + 30min/d, 3d/wk, 6wks at home	E vs C: Berg Balance scale (No stats) Dynamic Gait index (No stats) Activities-specific balance confidence scale (No stats) Timed Up and Go (No stats) Postural regulation (No stats)
Givon et al. (2016) RCT (7) Nstart=47 Nend=41 TPS=Chronic A vs 0	E: Group Video game therapy C: Conventional care Duration: 1h/d, 2x/wk, 3mo	E vs C: 10m walk test (No stats) Grip strength (No stats) Action research arm test (No stats) number of steps walked/day (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Vishnuram et al. (2024) Feasibility/pilot RCT (6)	E: Peripheral nerve mobilization + VR-based gait training	E vs C: Gait speed (+exp)

Nstart=8 Nend=8 TPS=Chronic A + B vs 0 Primary listing: Table 12 (Stretching or Mobilization Exercises)	C: Conventional exercises Duration: 2x30-90min/d, 5d/wk, 4wks	stride length (+exp) cadence (+exp)
Masood et al. (2024) RCT (8) Nstart=30 Nend=28 TPS=Not reported A + B vs B Primary listing: Table 17 (Mental Practice)	E: Motor imagery + VR training C: VR training + Conventional therapy Duration: 45-50min/d, 3d/wk, 6wks	E vs C: FMA-LE (+exp) BBS (+exp) WGS (+exp) TUG (+exp) 10MWT (+exp)
Fang et al. (2024) RCT (6) Nstart=40 Nend=36 TPS=Acute A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: Repetitive transcranial magnetic stimulation + Augmented reality gait adaptive training C: Augmented reality gait adaptive training Duration: Experimental group: 40 mins/wk (20 mins of rTMS + 20 mins of ARGAT), 5ds/wk, 4wks; Control group: 20 mins/wk of ARGAT, 5ds/wk, 4wks	E vs C: Berg balance scale (+exp) FMA-LE (+exp) Walking speed (+exp) Cadence (-) Symmetry index (-) Affected step length (+exp) Affected stride length (+exp) step width (-) Unaffected step length (-) Unaffected stride length (-) Knee co-contraction index (-) Ankle co-contraction index (-)
Van Bladel et al. (2023) RCT crossover (4) Nstart=25 Nend=25 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E: Selfpaced treadmill walking in VR environment C:Self Placed Overground Platform walking Duration: E: 9 minutes (6 min familrization time + 3 minutes of testing) C: NR	E vs C: Gait speed (+exp) cadence (-) Step Width (+exp) Step length paretic (+exp) non paretic (+exp) Stance phase paretic (+exp) non paretic (+exp) Swing phase paretic (+exp) non paretic (+exp) Double Limb Support (+exp) Single Limb Support paretic (+exp) non-paretic (+exp) Step length symmetry (-) Stance phase symmetry (-) Swing phase symmetry (-)
Akinci et al. (2023) RCT (7) Nstart=56 Nend=56 TPS=Chronic A1 vs A2 vs A3 vs 0	E1: Lokomat endurance video games E2: Lokomat motivation video games E3: Lokomat timing video games C: Conventional Physiotherapy Duration: E1/E2/E3: 40min/d, 3d/wk, for 6 wks, C: 40min, 5d/wk for 6wk	E1 vs C/E2/E3: 6MWT(+exp1) 10MWT(+exp1) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-)

Primary listing: Table 27 (Electromechanical and Robotic Devices)		Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-) Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(-) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(-) BBS(-) E3 vs E1/E2/C: 6MWT(-) 10MWT(-) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-) Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-) Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(+exp3) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(+exp3) BBS(-) E2 vs C: 6MWT(-) 10MWT(-) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-) Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-) Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(-) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(-) BBS(+exp)
Qurat-Ul-Ain et al. (2023) RCT (7) Nstart=83 Nend=66 TPS=Chronic A1 vs B vs A2	E1: Xbox training during anodal tDCS stimulation to cerebellum E2: Xbox training during nodal tDCS stimulation to motor cortex C: Sham tDCS + xbox training Duration: 1hr xbox training, 20min tDCS, single session	E1 vs E2: BBS(-) TUG(-) BESTest(+exp2) 6MWT(-) 25FWT(-) JHFRAT(-)

Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))		MMSE(-) MOCA(-) E1 vs C: BBS(+exp) TUG(+exp) BESTest(+exp) 6MWT(-) 25FWT(+exp) JHFRAT(-) MMSE(+exp) MOCA(-) E2 vs C: BBS(+exp) TUG(-) BESTest(-) 6MWT(-) 25FWT(-) JHFRAT-() MMSE(+exp) MOCA(-)
Van Bladel et al. (2022) RCT crossover (7) Nstart=25 Nend=25 TPS=Chronic A1 vs A2 Primary listing: Table 9 (Treadmill Training)	E: Self paced treadmill walking in VR environment C: Fixed speed treadmill walking in VR environment Duration: E: Total 9 min: 6 min for familirization + 3 min for self paced condition C: Total 9 min: 6 min for familirization + 3 min for fixed speed condition	E vs C: Velocity (+exp) Cadence (+exp) Step width (-) step length paretic (+exp) nonparetic (+exp) stance phase paretic (+exp) nonparetic (+exp) swing phase paretic (+exp), nonparetic (+exp) double limb support (+exp) single limb support (paretic (+exp) non paretic (+exp) step length symmetry (+exp) stance phase symmetry (-) swing phase symmetry (-)
Garcia et al. (2022) Feasibility/pilot RCT (3) Nstart=10 Nend=6 TPS=Chronic A vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Telerehabilitation video games C: Conventional rehab Duration: 30 min session/d, 3d/wk, 8 wks - 2wk washout	E vs C: VAS-pain(-) ROM(-) FIM(-) Berg(-) SF-36 PCS(-)
Qurat-ul-ain et al. (2022) RCT (8) Nstart=79 Nend=66 TPS=Not reported A + B vs B	E1: Anodal Cerebellar tDCS + Xbox Kinect games ; E2: Anodal M1 tDCS + Xbox Kinect games C: Sham Stimulation Group + Xbox Kinect games Duration: 70min/d, 3d	E1/E2 vs C: Berg Balance Scale (+exp1/2) TUG (+exp1/2) 6MWT (-) 25-ft walk test (-) Fall Risk Assessment Tool (+exp1) BESTest total(+exp1/2)

Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))		Biomechanical restraints (+exp2) Stability limits (+exp1/2) Anticipatory postural adjustment (+exp1/2) Reactive postural response (+exp1/2) Sensory orientation (+exp1/2) Stability in gait (+exp2) MMSE (+exp2) MoCA (-) E1 vs E2: Berg Balance Scale (-) TUG (-) 6MWT (-) 25-ft Walk Test (-) Fall Risk Assessment Tool (+exp1) BESTest total(-) Biomechanical restraints (-) Stability limits (-) Anticipatory postural adjustment (-) Reactive postural response (-) Sensory orientation (-) Stability in gait (-) MMSE (+exp1) MoCA (-)
Hyun et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Subacute A + B vs A Primary listing: Table 15 (Biofeedback)	E: Sit-to-stand training + visual feedback with Wii Balance Board + Standard physiotherapy C: Sit-to-stand Training + Standard physiotherapy Duration: 20min/d, 5d/wk, 6 wks sit-to-stand training & 30min/d, 5d/wk, 6wks physiotherapy	E vs C: Manual muscle Strength test of the Lower Extremities Hip flexor (+exp) hip abductor (+exp) knee extensor (+exp) Centre of Pressure (+exp) Berg Balance Scale (+exp) 10 meter walking test (+exp) Timed Up and Go test (+exp) Stroke-Specific Quality of Life (+exp)
Timmermans et al. (2021) RCT (5) Nstart=40 Nend=30 TPS=Chronic A vs B Primary listing: Table 7 (Non-Technological Overground Walking and Gait Training); Table 9 (Treadmill Training)	E1: Treadmill-based C-Mill (using gait-dependent augmented reality) E2: Overground walking therapy (walking-adaptability exercises with physical obstacles) Duration: 90min/d, 2d/wk for 5wks	E1 vs E2: 10m Walk test (-) Context (+exp) Context and Cognitive (-) Cognitive (-) Interactive walkway assessment Obstacles (-) Obstacles and cognitive (-) Cognitive dual-task performance (-)
Chen et al. (2021b) RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	E: Telerehabilitation using a Kinect camera-based interactive telerehabilitation system C: Conventional physiotherapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: Berg Balance Scale (-) Timed up and Go test (-) Modified Falls Efficacy Scale (-) Motricity Index (-) Functional Ambulation Category (-)

Kayabinar et al. (2021) RCT (6) Nstart=37 Nend=30 TPS=Chronic A1 vs A2 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: VR augmented robot-assisted gait training + conventional care C: Robot-assisted gait training + conventional care Duration: gait training 45min/d, 2d/wk, for 6wks + conventional care 30min/d, 3d/wk, for 6wks	E vs C: 10-metre walk test (-) Motor task added 10-metre walk test (-) Cognitive task added 10-metre walk test (-) Motor dual-task performance (-) Cognitive dual task performance (-) Functional Gait assessment (-) Rivermead Mobility Index (-) Berg Balance Scale (-) Falls Efficacy Scale-1(-) Functional Independence Measure total (-)
Lee (2019d) RCT (7) Nstart=42 Nend=42 TPS=Chronic A + B vs A Primary listing: Table 8 (Cycle Ergometer Training)	E: Speed-Interactive Pedaling Training + Virtual Reality C: Pedaling Training Duration: 40 min/d, 5d/wk, for 6wks	E vs C: Fugl-Meyer assessment (+exp) Static sitting balance (+exp) Modified Functional reach test (+exp) trunk impairment scale (+exp) Gait velocity (+exp) Cadence (+exp) Stride time (+exp) Step time (+exp) Stride length (+exp) Step length (+exp)
Dos Santos Junior et al. (2019) RCT (6) Nstart=48 Nend=40 TPS=Chronic A vs A + B vs B Primary listing: Table 12 (Stretching or Mobilization Exercises)	E1: Virtual Reality E2: Virtual Reality + Proprioceptive Neuromuscular Facilitation C: Proprioceptive Neuromuscular Facilitation Duration: 50min/d, 2d/wk, 8wks	E1/E2 vs C: Fugl-Meyer Assessment (-) Sensory Assessment (-) Balance (-) Lower Limb Motor Function (-) E1 vs E2: Fugl-Meyer Assessment (-) ; - Sensory Assessment (-) ; - Balance (-) ; - Lower Limb Motor Function (-)
Kannan et al. (2019) RCT (4) Nstart=25 Nend=23 TPS=Chronic A vs 0 Primary listing: Table 16 (Dual-Task Training)	E: Cognitive motor exergaming training C: Conventional training (stretching, strengthening, balance and endurance training) Duration: 90min/d, 10d, 6wk	E vs C: Limit of Stability (+exp) Movement velocity (+exp) Postural center of mass (-) Letter-number sequencing (No stats) 10min Walk test (No stats) Berg balance scale (No stats) 6min Walk test (No stats) Timed Up and Go (No stats) Wii Gaming scores (-)
Fishbein et al. (2019) RCT (6) Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Dual-task (VR-based UL training while walking on treadmill) C: Single task treadmill walking	E vs C: 10 m walk test Time (+exp) Steps (+exp) Timed Up and Go (-) Functional Reach Test (+exp) Lateral Reach Test (+exp) Activities Specific Balance confidence (+exp) Berg Balance Scale (+exp)
Calabro et al. (2017) RCT (8)	E: Robotic-assisted gait training (Lokomat-Pro) + VR	E vs C: Rivermead Mobility Index (+exp)

Nstart=24 Nend=24 TPS=Chronic A + B vs A Primary listing: Table 27 (Electromechanical and Robotic Devices)	C: Robotic-assisted gait training (Lokomat-Nanos) Duration: 45min/d, 5d/wk, for 8wks	Tinetti Performance Oriented Mobility Assessment (+exp) Modified Ashworth Scale (-) Hamilton Rating Scale for Depression (-) Knee force (+exp) Hip force (+exp) EEG-Brain activation BA6 brain area(+exp) BA7 area(+exp) BA17 area (+exp) parieto-occipital activation- Î¼ and HÎ³ (+exp)
Cho et al. (2015b) RCT (8) Nstart=24 Nend=22 TPS=Chronic A vs B Primary listing: Table 16 (Dual-Task Training)	E: Virtual reality with cognitive load + conventional rehabilitation C: Treadmill walking with virtual environment + conventional rehabilitation Duration: 30min/d, 5d/wk, 4wk Virtual reality training and 60min/d, 5d/wk, 4wk conventional therapy	E vs C: Under single task condition Gait velocity (-) Cadence (-) Paretic side step length (-) Stride length (-) Under dual task condition Gait velocity (+exp) Cadence (+exp) Paretic side step length (+exp) Stride length (+exp)
Cho et al. (2013c) RCT (7) Nstart=16 Nend=14 TPS=Chronic A vs B Primary listing: Table 9 (Treadmill Training)	E: Virtual walking training (VR) + standard rehabilitation program C: Treadmill gait training + standard rehabilitation Duration: 30min/d, 3d/wk for 6wks trainings; 80min/d, 5d/wk for 6wks standard rehabilitation program	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Gait velocity (+exp) Gait cadence (+exp) Step length (-) Stride length (-) Single limb support (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving motor recovery.	11	Kilinc et al. 2023; Bai et al. 2022; Bian et al. 2022; Yaman et al. 2022; Marques-Sule et al. 2021; Anwar et al. 2021; Junata et al. 2021; Henrique et al. 2019; Park et al. 2017c; Da Silva Ribeiro et al. 2015; Fritz et al. 2013
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving motor recovery.	1	Yang et al. 2022

2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving motor recovery.	1	Jaffe et al. 2004
1b	Task-oriented training with Virtual reality training may produce greater improvements in motor recovery than Task-oriented training.	1	Malik et al. 2021
1b	Virtual reality therapy and mirror therapy (MT) exercises may produce greater improvements in motor recovery than lower extremity rehabilitation.	1	Miclaus et al. 2021
1b	Virtual Reality may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	dos Santos Junior et al. 2019
1b	Virtual Reality (Nintendo Wii) may not have a difference in efficacy when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	dos Santos Junior et al. 2019
1a	Brain-Computer Interface Controlled Training may produce greater improvements in motor recovery than Sham.	3	Zhao et al. 2022c; Li et al. 2021a; Yuan et al. 2021
1b	Motor imagery with virtual reality training may produce greater improvements in motor recovery than virtual reality training with Conventional therapy.	1	Masood et al. 2024
1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may produce greater improvements in motor recovery than Augmented reality gait adaptive training.	1	Fang et al. 2024
1b	Speed-Interactive Pedaling Training with Virtual Reality may produce greater improvements in motor recovery than Pedaling Training.	1	Lee 2019d
1b	Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	Dos Santos Junior et al. 2019
1b	Virtual Reality may not have a difference in efficacy when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation for improving motor recovery.	1	Dos Santos Junior et al. 2019

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving biomechanical gait measures.	8	Kwak et al. 2024; Fahmy et al. 2024; Bian et al. 2022; Junata et al. 2021; James et al. 2017; Lee et al. 2014b; Barcala et al. 2013; Kim et al. 2009
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may produce greater improvements in biomechanical gait measures than General game-based training with Traditional physical therapy.	1	Choi et al. 2017a
2	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving biomechanical gait measures.	1	Chung et al. 2014
2	Virtual Reality Training may not have a difference in efficacy when compared to Treadmill Training for improving biomechanical gait measures.	1	Bang et al. 2016a
1a	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving biomechanical gait measures.	4	Kim et al. 2016c; Cho et al. 2014; Cho et al. 2013c; Yang et al. 2011

1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving biomechanical gait measures.	1	Kim et al. 2016c
2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving biomechanical gait measures.	1	Jaffe et al. 2004
2	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving biomechanical gait measures.	1	Mirelman et al. 2009
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving biomechanical gait measures.	1	Forrester et al. 2016
1b	Virtual Reality with Other Modalities may produce greater improvements in biomechanical gait measures than Task-specific training.	1	Yom et al. 2015
1b	Peripheral nerve mobilization with virtual reality-based gait training may produce greater improvements in biomechanical gait measures than Conventional exercises.	1	Vishnuram et al. 2024
1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may not have a difference in efficacy when compared to Augmented reality gait adaptive training for improving biomechanical gait measures.	1	Fang et al. 2024
2	Selfpaced treadmill walking in virtual reality environment may produce greater improvements in biomechanical gait measures than Self Placed Overground Platform walking.	1	Van Bladel et al. 2023
1b	Lokomat endurance video games may not have a difference in efficacy when compared to Conventional Physiotherapy for improving biomechanical gait measures.	1	Akinci et al. 2023
1b	Self paced treadmill walking in virtual reality environment may produce greater improvements in biomechanical gait measures than Fixed speed treadmill walking in virtual reality environment.	1	Van Bladel et al. 2022
1b	Speed-Interactive Pedaling Training with Virtual Reality may produce greater improvements in biomechanical gait measures than Pedaling Training.	1	Lee 2019d
1b	There is conflicting evidence about the effect of Virtual reality with cognitive load with conventional rehabilitation when compared to Treadmill walking with virtual environment with conventional rehabilitation for improving biomechanical gait measures.	1	Cho et al. 2015b
1b	Virtual walking training (virtual reality) with rehabilitation program may not have a difference in efficacy when compared to Treadmill gait training with rehabilitation for improving biomechanical gait measures.	1	Cho et al. 2013c

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving biomechanical balance measures.	13	Hsieh et al. 2019b; Miranda et al. 2019; Utkan Karasu et al. 2018; Lee et al. 2018a; Choi et al. 2017a; James et al. 2017; Hung et al. 2016b; In et al. 2016; Hung et al. 2014; Barcala et al. 2013; Rajaratnam et al. 2013; Cho et al. 2012; Kim et al. 2009

1b	Game-based constraint-induced movement therapy with Traditional physical therapy may produce greater improvements in biomechanical balance measures than General game-based training with Traditional physical therapy.	1	Choi et al. 2017a
2	There is conflicting evidence about the effect of Virtual Reality Training when compared to Treadmill Training for improving biomechanical balance measures.	1	Bang et al. 2016a
1b	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving biomechanical balance measures.	3	Kim et al. 2015a; Cho et al. 2014; Yang et al. 2011
2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving biomechanical balance measures.	1	Wang et al. 2024e
1b	There is conflicting evidence about the effect of One session daily high intensity Videogame exercises with medical massage when compared to two sessions daily high intensity Videogame exercises with medical massage for improving biomechanical balance measures.	1	Tollar et al. 2021
1a	There is conflicting evidence about the effect of Virtual Reality with Other Modalities when compared to Task-specific training for improving biomechanical balance measures.	2	Tollar et al. 2021; Bower et al. 2014
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving biomechanical balance measures.	1	Forrester et al. 2016
1b	Adaptive foot switch Videogame with Regular physiotherapy may produce greater improvements in biomechanical balance measures than Regular physiotherapy.	1	Hsieh et al. 2019a
1b	There is conflicting evidence about the effect of Lokomat endurance video games when compared to Conventional Physiotherapy for improving biomechanical balance measures.	1	Akinci et al. 2023
2	Cognitive motor exergaming training may produce greater improvements in biomechanical balance measures than Conventional training (stretching, strengthening, balance and endurance training).	1	Kannan et al. 2019

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving muscle strength.	3	Lin et al. 2020; Hung et al. 2016b; Lee et al. 2012
2	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving muscle strength.	1	Bergmann et al. 2018b
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in muscle strength than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy or Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy may produce greater improvements in muscle strength than Conventional physical therapy with treadmill training.	1	Park et al. 2018a

1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may not have a difference in efficacy when compared to Augmented reality gait adaptive training for improving muscle strength.	1	Fang et al. 2024
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in muscle strength than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
2	Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not have a difference in efficacy when compared to Conventional physiotherapy for improving muscle strength.	1	Chen et al. 2021b

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving spasticity.	2	Kilinc et al. 2023; Pelaez-Velez et al. 2023
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving spasticity.	1	Calabrò et al. 2017
1b	Virtual reality therapy and mirror therapy (MT) exercises may not have a difference in efficacy when compared to lower extremity rehabilitation for improving spasticity.	1	Miclaus et al. 2021
1b	Virtual Reality with Other Modalities may produce greater improvements in spasticity than Task-specific training.	1	Yom et al. 2015
1b	Robotic-assisted gait training (Lokomat-Pro) with VR may not have a difference in efficacy when compared to Robotic-assisted gait training (Lokomat-Nanos) for improving spasticity.	1	Calabro et al. 2017

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Virtual Reality when compared to Conventional Therapy or No Treatment for improving range of motion.	1	James et al. 2017
1b	Virtual reality therapy and mirror therapy (MT) exercises may produce greater improvements in range of motion than lower extremity rehabilitation.	1	Miclaus et al. 2021
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving range of motion.	1	Forrester et al. 2016
2	Telerehabilitation video games may not have a difference in efficacy when compared to Conventional rehab for improving range of motion.	1	Garcia et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving neurophysiological measures.	1	Junata et al. 2021
1b	Virtual Reality Robotic Training may produce greater improvements in neurophysiological measures than Robotic Training and Conventional Therapy.	1	Calabrò et al. 2017

1b	Brain-Computer Interface Controlled Training may not have a difference in efficacy when compared to Sham for improving neurophysiological measures.	2	Zhao et al. 2022c; Li et al. 2021a
1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may not have a difference in efficacy when compared to Augmented reality gait adaptive training for improving neurophysiological measures.	1	Fang et al. 2024
1b	Robotic-assisted gait training (Lokomat-Pro) with VR may produce greater improvements in neurophysiological measures than Robotic-assisted gait training (Lokomat-Nanos).	1	Calabro et al. 2017

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to two sessions daily high intensity Videogame exercises with medical massage.	1	Tollar et al. 2021
1b	Virtual Reality with Other Modalities may not have a difference in efficacy when compared to Task-specific training for improving aerobic measures.	1	Tollar et al. 2021

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Virtual Reality may produce greater improvements in sensory and proprioceptive function than Conventional Therapy or No Treatment.	1	Hung et al. 2016b
1b	Virtual Reality may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving sensory and proprioceptive function.	1	dos Santos Junior et al. 2019
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in sensory and proprioceptive function than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving sensory and proprioceptive function.	1	Qurat-ul-ain et al. 2022
1b	Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving sensory and proprioceptive function.	1	Dos Santos Junior et al. 2019

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving pain.	2	Cano-Manas et al. 2020; Da Silva Ribeiro et al. 2015
2	Telerehabilitation video games may not have a difference in efficacy when compared to Conventional rehab for improving pain.	1	Garcia et al. 2022

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving activities of daily living.	17	Fahmy et al. 2024; Kilinc et al. 2023; Bai et al. 2022; Marques-Sule et al. 2021; Junata et al. 2021; Cano-Manas et al. 2020; Lin et al. 2020; Utkan Karasu et al. 2018; Lee et al. 2017d; Şimşek & Cekok 2016; Bower et al. 2015; Hung et al. 2014; Morone et al. 2014; Barcala et al. 2013; Rajaratnam et al. 2013; Kim et al. 2012c; Lee et al. 2012
1b	Virtual Reality may produce greater improvements in activities of daily living than Balance Training.	3	Zhang et al. 2020; Braun et al. 2016; Yatar et al. 2015
2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving activities of daily living.	1	Wang et al. 2024e
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving activities of daily living.	1	Kayabinar et al. 2021
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving activities of daily living.	1	Park et al. 2018a
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training, Auditory Stimulation, and Conventional Therapy for improving activities of daily living.	1	Park et al. 2018a
1b	Virtual reality therapy and mirror therapy (MT) exercises may not have a difference in efficacy when compared to lower extremity rehabilitation for improving activities of daily living.	1	Miclaus et al. 2021
1b	Virtual Reality with Other Modalities may not have a difference in efficacy when compared to Task-specific training for improving activities of daily living.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may produce greater improvements in activities of daily living than Standard physical therapy with medical massage.	1	Tollar et al. 2021
1b	Two sessions daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to Standard physical therapy with medical massage for improving activities of daily living.	1	Tollar et al. 2021
2	Brain-Computer Interface Controlled Training may not have a difference in efficacy when compared to Sham for improving activities of daily living.	1	Zhao et al. 2022c
1b	Virtual Reality Training may produce greater improvements in activities of daily living than Strength and Resistance Training.	1	Sultan et al. 2023
2	Telerehabilitation video games may not have a difference in efficacy when compared to Conventional rehab for improving activities of daily living.	1	Garcia et al. 2022

2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving activities of daily living.	1	Timmermans et al. 2021
1b	Virtual reality augmented robot-assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving activities of daily living.	1	Kayabinar et al. 2021

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may produce greater improvements in gait speed than Conventional Therapy or No Treatment.	14	Kwak et al. 2024; Fahmy et al. 2024; Bai et al. 2022; Bian et al. 2022; Yaman et al. 2022; Hsieh et al. 2019b; Lee et al. 2018a; Choi et al. 2017a; Park et al. 2017c; In et al. 2016; Morone et al. 2014; Lee et al. 2014b; Fritz et al. 2013; Kim et al. 2009
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving gait speed.	1	Choi et al. 2017a
2	Virtual Reality may not have a difference in efficacy when compared to Balance Training for improving gait speed.	1	Jung et al. 2011
1b	There is conflicting evidence about the effect of Virtual Reality Exercise Program when compared to Exercise Program for improving gait speed.	2	Cannell et al. 2018; Chung et al. 2014
1a	Virtual Reality with Treadmill Training may produce greater improvements in gait speed than Conventional Therapy or Treadmill Training.	6	Yang et al. 2024a; Kim et al. 2016c; Cho et al. 2014; Cho et al. 2013c; Kang et al. 2012; Yang et al. 2008
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving gait speed.	1	Kim et al. 2016c
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in gait speed than Treadmill with conventional physical therapy.	1	Kang et al. 2012
2	Virtual Reality with Treadmill Training may produce greater improvements in gait speed than Overground Gait Training.	1	Wang et al. 2024e
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving gait speed.	3	Kayabinar et al. 2021; Bergmann et al. 2018b; Mirelman et al. 2009
1b	There is conflicting evidence about the effect of Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving gait speed.	1	Park et al. 2018a
1b	Virtual Reality Robotic Training may produce greater improvements in gait speed than Robotic Training, Auditory Stimulation, and Conventional Therapy.	1	Park et al. 2018a
2	Treadmill training with Virtual reality and Ankle robotics may not have a difference in efficacy when compared to Seated training with Virtual reality and Ankle robotics for improving gait speed.	1	Forrester et al. 2016

1b	Virtual Reality with Other Modalities may produce greater improvements in gait speed than Task-specific training.	1	Yom et al. 2015
1b	Group Video game therapy may not have a difference in efficacy when compared to Conventional care for improving gait speed.	1	Givon et al. 2016
1b	Peripheral nerve mobilization with virtual reality-based gait training may produce greater improvements in gait speed than Conventional exercises.	1	Vishnuram et al. 2024
1b	Motor imagery with virtual reality training may produce greater improvements in gait speed than virtual reality training with Conventional therapy.	1	Masood et al. 2024
1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may produce greater improvements in gait speed than Augmented reality gait adaptive training.	1	Fang et al. 2024
2	Selfpaced treadmill walking in virtual reality environment may produce greater improvements in gait speed than Self Placed Overground Platform walking.	1	Van Bladel et al. 2023
1b	There is conflicting evidence about the effect of Lokomat endurance video games when compared to Conventional Physiotherapy for improving gait speed.	1	Akinci et al. 2023
1b	Self paced treadmill walking in virtual reality environment may produce greater improvements in gait speed than Fixed speed treadmill walking in virtual reality environment.	1	Van Bladel et al. 2022
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in gait speed than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving gait speed.	1	Timmermans et al. 2021
1b	Virtual reality augmented robot-assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving gait speed.	1	Kayabinar et al. 2021
1b	Speed-Interactive Pedaling Training with Virtual Reality may produce greater improvements in gait speed than Pedaling Training.	1	Lee 2019d
2	Cognitive motor exergaming training may not have a difference in efficacy when compared to Conventional training (stretching, strengthening, balance and endurance training) for improving gait speed.	1	Kannan et al. 2019
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in gait speed than Single task treadmill walking.	1	Fishbein et al. 2019
1b	There is conflicting evidence about the effect of Virtual reality with cognitive load with conventional rehabilitation when compared to Treadmill walking with virtual environment with conventional rehabilitation for improving gait speed.	1	Cho et al. 2015b
1b	Virtual walking training (virtual reality) with rehabilitation program may produce greater improvements in gait speed than Treadmill gait training with rehabilitation.	1	Cho et al. 2013c
1b	Xbox training during anodal tDCS stimulation to cerebellum may produce greater improvements in gait speed than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving gait speed.	1	Qurat-Ul-Ain et al. 2023

1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving gait speed.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving gait speed.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving gait speed.	1	Qurat-ul-ain et al. 2022

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving gait endurance.	3	Fahmy et al. 2024; Bower et al. 2015; Fritz et al. 2013
1a	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving gait endurance.	3	De Rooij et al. 2021; Kim et al. 2016c; Kang et al. 2012
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving gait endurance.	1	Kim et al. 2016c
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in gait endurance than Treadmill with conventional physical therapy.	1	Kang et al. 2012
2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving gait endurance.	1	Jaffe et al. 2004
2	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving gait endurance.	2	Bergmann et al. 2018b; Mirelman et al. 2009
2	There is conflicting evidence about the effect of Virtual Reality with Other Modalities when compared to Task-specific training for improving gait endurance.	1	McEwen et al. 2014
1b	There is conflicting evidence about the effect of Lokomat endurance video games when compared to Conventional Physiotherapy for improving gait endurance.	1	Akinci et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving gait endurance.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving gait endurance.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving gait endurance.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving gait endurance.	1	Qurat-ul-ain et al. 2022
2	Cognitive motor exergaming training may not have a difference in efficacy when compared to Conventional training (stretching,	1	Kannan et al. 2019

	strengthening, balance and endurance training) for improving gait endurance.		

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may produce greater improvements in functional mobility than Conventional Therapy or No Treatment.	27	Kwak et al. 2024; Pelaez-Velez et al. 2023; Yaman et al. 2022; Marques-Sule et al. 2021; Junata et al. 2021; Cano-Manas et al. 2020; Hsieh et al. 2019b; Utkan Karasu et al. 2018; Choi et al. 2017a; Lee et al. 2017d; Park et al. 2017c; Pedreira da Fonseca 2017b; Hung et al. 2016b; In et al. 2016; Bower et al. 2015; Llorens et al. 2015a; Hung et al. 2014; Morone et al. 2014; Lee et al. 2014b; Barcala et al. 2013; Fritz et al. 2013; Rajaratnam et al. 2013; Cho et al. 2012; Kim et al. 2012c; Lee et al. 2012; Kim et al. 2009; You et al. 2005
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving functional mobility.	1	Choi et al. 2017a
1a	Virtual Reality may produce greater improvements in functional mobility than Balance Training.	4	Bashir et al. 2024; Zhang et al. 2020; Braun et al. 2016; Yatar et al. 2015
1a	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving functional mobility.	5	Lee et al. 2023d; Arshad et al. 2022; Yang et al. 2022; Cannell et al. 2018; Chung et al. 2014
1a	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving functional mobility.	9	Yang et al. 2024a; De Rooij et al. 2021; Kim et al. 2016c; Cho et al. 2014; Cho et al. 2013c; Jung et al. 2012; Kang et al. 2012; Yang et al. 2011; Yang et al. 2008
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving functional mobility.	1	Kim et al. 2016c
1b	Treadmill with optic flow with conventional physical therapy may produce greater improvements in functional mobility than Treadmill with conventional physical therapy.	1	Kang et al. 2012
2	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Overground Gait Training for improving functional mobility.	2	Wang et al. 2024e; Jaffe et al. 2004
1a	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving functional mobility.	3	Kayabinar et al. 2021; Bergmann et al. 2018b; Calabrò et al. 2017
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving functional mobility.	1	Park et al. 2018a

1a	There is conflicting evidence about the effect of Virtual Reality with Other Modalities when compared to Task-specific training for improving functional mobility.	5	Aslam et al. 2021; Yom et al. 2015; Llorens et al. 2015b; Bower et al. 2014; McEwen et al. 2014
1b	There is conflicting evidence about the effect of Task-oriented training with Virtual reality training when compared to Task-oriented training for improving functional mobility.	1	Malik et al. 2021
1b	Brain-Computer Interface Controlled Training may not have a difference in efficacy when compared to Sham for improving functional mobility.	2	Zhao et al. 2022c; Li et al. 2021a
1b	Virtual Reality Training may produce greater improvements in functional mobility than Strength and Resistance Training.	1	Sultan et al. 2023
2	Wii Balance Intervention may not have a difference in efficacy when compared to Conventional Balance Intervention for improving functional mobility.	1	Golla et al. 2018
1b	Motor imagery with virtual reality training may produce greater improvements in functional mobility than virtual reality training with Conventional therapy.	1	Masood et al. 2024
1b	Xbox training during anodal tDCS stimulation to cerebellum may produce greater improvements in functional mobility than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving functional mobility.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving functional mobility.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving functional mobility.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in functional mobility than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in functional mobility than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
2	Treadmill-based with augmented reality may not have a difference in efficacy when compared to Overground walking with physical obstacles for improving functional mobility.	1	Timmermans et al. 2021
2	Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not have a difference in efficacy when compared to Conventional physiotherapy for improving functional mobility.	1	Chen et al. 2021b
1b	Virtual reality augmented robot-assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving functional mobility.	1	Kayabinar et al. 2021
2	Cognitive motor exergaming training may not have a difference in efficacy when compared to Conventional training (stretching, strengthening, balance and endurance training) for improving functional mobility.	1	Kannan et al. 2019

1b	Dual-task (virtual reality-based UL training while walking on treadmill) may not have a difference in efficacy when compared to Single task treadmill walking for improving functional mobility.	1	Fishbein et al. 2019
1b	Robotic-assisted gait training (Lokomat-Pro) with VR may produce greater improvements in functional mobility than Robotic-assisted gait training (Lokomat-Nanos).	1	Calabro et al. 2017
1b	Virtual walking training (virtual reality) with rehabilitation program may produce greater improvements in functional mobility than Treadmill gait training with rehabilitation.	1	Cho et al. 2013c

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving balance.	35	Kwak et al. 2024; Kilinc et al. 2023; Pelaez-Velez et al. 2023; Bai et al. 2022; Bian et al. 2022; Yaman et al. 2022; Marques-Sule et al. 2021; Anwar et al. 2021; Junata et al. 2021; Cano-Manas et al. 2020; Lin et al. 2020; Sheehy et al. 2020; Henrique et al. 2019; Hsieh et al. 2019b; Utkan Karasu et al. 2018; Lee et al. 2018a; Choi et al. 2017a; Hung et al. 2017; James et al. 2017; Lee et al. 2017d; Park et al. 2017c; In et al. 2016; Bower et al. 2015; Da Silva Ribeiro et al. 2015; Llorens et al. 2015a; Hung et al. 2014; Morone et al. 2014; Lee et al. 2014b; Barcala et al. 2013; Fritz et al. 2013; Rajaratnam et al. 2013; Cho et al. 2012; Kim et al. 2012c; Lee et al. 2012; Kim et al. 2009
1b	Game-based constraint-induced movement therapy with Traditional physical therapy may not have a difference in efficacy when compared to General game-based training with Traditional physical therapy for improving balance.	1	Choi et al. 2017a
1a	Virtual Reality may not have a difference in efficacy when compared to Balance Training for improving balance.	5	Bashir et al. 2024; Zhang et al. 2020; Braun et al. 2016; Yatar et al. 2015; Jung et al. 2011
1a	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving balance.	4	Lee et al. 2023d; Arshad et al. 2022; Yang et al. 2022; Cannell et al. 2018
1a	Virtual Reality with Treadmill Training may produce greater improvements in balance than Conventional Therapy or Treadmill Training.	5	Yang et al. 2024a; De Rooij et al. 2021; Cho et al. 2014; Cho et al. 2013c; Kang et al. 2012
1b	Treadmill with optic flow with conventional physical therapy may not have a difference in efficacy when compared to Treadmill with conventional physical therapy for improving balance.	1	Kang et al. 2012
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving balance.	1	Kayabinar et al. 2021
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait	1	Park et al. 2018a

	training (Treadmill) and conventional physical therapy for improving balance.		
1a	There is conflicting evidence about the effect of Virtual Reality with Other Modalities when compared to Task-specific training for improving balance.	3	Aslam et al. 2021; Llorens et al. 2015b; Bower et al. 2014
1b	Task-oriented training with Virtual reality training may produce greater improvements in balance than Task-oriented training.	1	Malik et al. 2021
1b	There is conflicting evidence about the effect of Virtual reality therapy and mirror therapy (MT) exercises when compared to lower extremity rehabilitation for improving balance.	1	Miclaus et al. 2021
1b	Virtual Reality may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving balance.	1	dos Santos Junior et al. 2019
1b	Brain-Computer Interface Controlled Training may not have a difference in efficacy when compared to Sham for improving balance.	1	Li et al. 2021a
1b	There is conflicting evidence about the effect of Virtual Reality Training when compared to Strength and Resistance Training for improving balance.	1	Sultan et al. 2023
2	Wii Balance Intervention may not have a difference in efficacy when compared to Conventional Balance Intervention for improving balance.	1	Golla et al. 2018
1b	Motor imagery with virtual reality training may produce greater improvements in balance than virtual reality training with Conventional therapy.	1	Masood et al. 2024
1b	Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may produce greater improvements in balance than Augmented reality gait adaptive training.	1	Fang et al. 2024
1b	There is conflicting evidence about the effect of Lokomat endurance video games when compared to Conventional Physiotherapy for improving balance.	1	Akinci et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may produce greater improvements in balance than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
2	Telerehabilitation video games may not have a difference in efficacy when compared to Conventional rehab for improving balance.	1	Garcia et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving balance.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in balance than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in balance than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021
2	Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not have a difference in efficacy when compared to Conventional physiotherapy for improving balance.	1	Chen et al. 2021b
1b	Virtual reality augmented robot-assisted gait training with conventional care may not have a difference in efficacy when	1	Kayabinar et al. 2021

	compared to Robot-assisted gait training with conventional care for improving balance.		
1b	Speed-Interactive Pedaling Training with Virtual Reality may produce greater improvements in balance than Pedaling Training.	1	Lee 2019d
1b	Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving balance.	1	Dos Santos Junior et al. 2019
2	Cognitive motor exergaming training may not have a difference in efficacy when compared to Conventional training (stretching, strengthening, balance and endurance training) for improving balance.	1	Kannan et al. 2019
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in balance than Single task treadmill walking.	1	Fishbein et al. 2019
1b	Virtual walking training (virtual reality) with rehabilitation program may produce greater improvements in balance than Treadmill gait training with rehabilitation.	1	Cho et al. 2013c

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving falls and fear of falling.	4	Junata et al. 2021; Lee et al. 2017d; Pedreira da Fonseca 2017b; Hung et al. 2014
2	Virtual Reality may not have a difference in efficacy when compared to Balance Training for improving falls and fear of falling.	1	Yatar et al. 2015
1b	Virtual Reality Exercise Program may produce greater improvements in falls and fear of falling than Exercise Program.	1	Lee et al. 2023d
1a	Virtual Reality with Treadmill Training may produce greater improvements in falls and fear of falling than Conventional Therapy or Treadmill Training.	4	De Rooij et al. 2021; Kim et al. 2016c; Jung et al. 2012; Yang et al. 2008
1b	Virtual reality treadmill training-based community ambulation may not have a difference in efficacy when compared to Community ambulation training for improving falls and fear of falling.	1	Kim et al. 2016c
1b	Virtual Reality Robotic Training may not have a difference in efficacy when compared to Robotic Training and Conventional Therapy for improving falls and fear of falling.	1	Kayabinar et al. 2021
1b	Virtual Reality with Other Modalities may not have a difference in efficacy when compared to Task-specific training for improving falls and fear of falling.	1	Bower et al. 2014
2	Wii Balance Intervention may not have a difference in efficacy when compared to Conventional Balance Intervention for improving falls and fear of falling.	1	Golla et al. 2018
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in falls and fear of falling than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Anodal M1 tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving falls and fear of falling.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in falls and fear of falling than Anodal M1 tDCS with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022

2	Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not have a difference in efficacy when compared to Conventional physiotherapy for improving falls and fear of falling.	1	Chen et al. 2021b
1b	Virtual reality augmented robot-assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving falls and fear of falling.	1	Kayabinar et al. 2021
1b	Dual-task (virtual reality-based UL training while walking on treadmill) may produce greater improvements in falls and fear of falling than Single task treadmill walking.	1	Fishbein et al. 2019
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving falls and fear of falling.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving falls and fear of falling.	1	Qurat-Ul-Ain et al. 2023

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving quality of life.	5	Kilinc et al. 2023; Cano-Manas et al. 2020; Lee et al. 2017d; Şimşek & Cekok 2016; Fritz et al. 2013
1a	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving quality of life.	2	Lee et al. 2023d; Yang et al. 2022
1b	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving quality of life.	1	De Rooij et al. 2021
2	Telerehabilitation video games may not have a difference in efficacy when compared to Conventional rehab for improving quality of life.	1	Garcia et al. 2022
2	Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may produce greater improvements in quality of life than Sit-to-stand Training with physiotherapy.	1	Hyun et al. 2021

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual Reality may produce greater improvements in mood than Conventional Therapy or No Treatment.	1	Lin et al. 2020
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving mood.	1	Lee et al. 2023d
1b	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving mood.	1	De Rooij et al. 2021

1b	Virtual Reality Robotic Training may produce greater improvements in mood than Robotic Training and Conventional Therapy.	1	Calabrò et al. 2017
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving mood.	1	Tollar et al. 2021
1b	Virtual Reality with Other Modalities may not have a difference in efficacy when compared to Task-specific training for improving mood.	1	Tollar et al. 2021
1b	Robotic-assisted gait training (Lokomat-Pro) with VR may produce greater improvements in mood than Robotic-assisted gait training (Lokomat-Nanos).	1	Calabro et al. 2017

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving fatigue and sleep.	1	Şimşek & Cekok 2016
1b	Virtual Reality with Treadmill Training may not have a difference in efficacy when compared to Conventional Therapy or Treadmill Training for improving fatigue and sleep.	1	De Rooij et al. 2021

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving cognition.	1	Hung et al. 2017
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving cognition.	1	Tollar et al. 2021
1b	Virtual Reality with Other Modalities may not have a difference in efficacy when compared to Task-specific training for improving cognition.	1	Tollar et al. 2021
1b	Brain-Computer Interface Controlled Training may not have a difference in efficacy when compared to Sham for improving cognition.	1	Yuan et al. 2021
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may produce greater improvements in cognition than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving cognition.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in cognition than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving cognition.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in cognition than Anodal M1 tDCS with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Virtual Reality may not have a difference in efficacy when compared to Conventional Therapy or No Treatment for improving upper extremity function.	6	Kilinc et al. 2023; Bai et al. 2022; Lin et al. 2020; Sheehy et al. 2020; Henrique et al. 2019; Lee et al. 2018a
1b	Virtual Reality Exercise Program may not have a difference in efficacy when compared to Exercise Program for improving upper extremity function.	1	Yang et al. 2022
1b	Group Video game therapy may not have a difference in efficacy when compared to Conventional care for improving upper extremity function.	1	Givon et al. 2016

Key Points

- Virtual Reality may be beneficial for improving sensory and proprioceptive function, gait speed, and functional mobility, but not motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding range of motion.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to General game-based training with Traditional physical therapy.
- Virtual Reality may be beneficial for improving activities of daily living and functional mobility, but not gait speed, balance, and falls and fear of falling, after stroke when compared to Balance Training.
- Virtual Reality Exercise Program may be beneficial for improving falls and fear of falling, but not motor recovery, biomechanical gait measures, functional mobility, balance, and quality of life, after stroke when compared to Exercise Program; the literature is mixed regarding gait speed.
- Virtual Reality Training may not be beneficial for improving biomechanical gait measures after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical balance measures.
- Virtual Reality with Treadmill Training may be beneficial for improving gait speed, balance, and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, gait endurance, functional mobility, and quality of life, after stroke when compared to Conventional Therapy or Treadmill Training.
- Virtual reality treadmill training-based community ambulation may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Community ambulation training.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Treadmill with conventional physical therapy.
- Virtual Reality with Treadmill Training may be beneficial for improving gait speed, but not motor recovery, biomechanical gait measures, biomechanical balance measures, activities of daily living, gait endurance, and functional mobility, after stroke when compared to Overground Gait Training.
- Virtual Reality Robotic Training may be beneficial for improving neurophysiological measures, but not biomechanical gait measures, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Robotic Training and Conventional Therapy.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving muscle strength, but not activities of daily living, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy; the literature is mixed regarding gait speed.
- Virtual Reality Robotic Training may be beneficial for improving gait speed, but not activities of daily living, after stroke when compared to Robotic Training, Auditory Stimulation, and Conventional Therapy.

- Virtual Reality with Other Modalities may be beneficial for improving biomechanical gait measures, spasticity, and gait speed, but not aerobic measures, activities of daily living, and falls and fear of falling, after stroke when compared to Task-specific training; the literature is mixed regarding biomechanical balance measures, gait endurance, functional mobility, and balance.
- Task-oriented training with Virtual reality training may be beneficial for improving motor recovery and balance after stroke when compared to Task-oriented training; the literature is mixed regarding functional mobility.
- Virtual reality therapy and mirror therapy (MT) exercises may be beneficial for improving motor recovery and range of motion, but not spasticity and activities of daily living, after stroke when compared to lower extremity rehabilitation; the literature is mixed regarding balance.
- One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to two sessions daily high intensity Videogame exercises with medical massage; the literature is mixed regarding biomechanical balance measures.
- Virtual Reality may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Treadmill training with Virtual reality and Ankle robotics may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed after stroke when compared to Seated training with Virtual reality and Ankle robotics.
- Brain-Computer Interface Controlled Training may be beneficial for improving motor recovery, but not neurophysiological measures, activities of daily living, functional mobility, and balance, after stroke when compared to Sham.
- Virtual Reality Training may be beneficial for improving activities of daily living and functional mobility after stroke when compared to Strength and Resistance Training; the literature is mixed regarding balance.
- Adaptive foot switch Videogame with Regular physiotherapy may be beneficial for improving biomechanical balance measures after stroke when compared to Regular physiotherapy.
- Wii Balance Intervention may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional Balance Intervention.
- Group Video game therapy may not be beneficial for improving gait speed after stroke when compared to Conventional care.
- Peripheral nerve mobilization with virtual reality-based gait training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional exercises.
- Motor imagery with virtual reality training may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to virtual reality training with Conventional therapy.
- Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may be beneficial for improving motor recovery, gait speed, and balance, but not biomechanical gait measures, muscle strength, and neurophysiological measures, after stroke when compared to Augmented reality gait adaptive training.
- Selfpaced treadmill walking in virtual reality environment may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Self Placed Overground Platform walking.
- Lokomat endurance video games may not be beneficial for improving biomechanical gait measures after stroke when compared to Conventional Physiotherapy; the literature is mixed regarding gait speed, gait endurance, biomechanical balance measures, and balance.
- Xbox training during anodal tDCS stimulation to cerebellum may be beneficial for improving gait speed, functional mobility, and balance, but not gait endurance and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.
- Xbox training during anodal tDCS stimulation to cerebellum may not be beneficial for improving gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Xbox training during nodal tDCS stimulation to motor cortex; Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.

- Self paced treadmill walking in virtual reality environment may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Fixed speed treadmill walking in virtual reality environment.
- Telerehabilitation video games may not be beneficial for improving range of motion, pain, activities of daily living, balance, and quality of life after stroke when compared to Conventional rehab.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit-to-stand Training with physiotherapy.
- Treadmill-based with augmented reality may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking with physical obstacles.
- Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not be beneficial for improving muscle strength, functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional physiotherapy.
- Virtual reality augmented robot-assisted gait training with conventional care may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Robot-assisted gait training with conventional care.
- Speed-Interactive Pedaling Training with Virtual Reality may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Pedaling Training.
- Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Cognitive motor exergaming training may be beneficial for improving biomechanical balance measures, but not gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Conventional training (stretching, strengthening, balance and endurance training).
- Dual-task (virtual reality-based UL training while walking on treadmill) may be beneficial for improving gait speed, balance, and falls and fear of falling, but not functional mobility, after stroke when compared to Single task treadmill walking.
- Robotic-assisted gait training (Lokomat-Pro) with VR may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, after stroke when compared to Robotic-assisted gait training (Lokomat-Nanos).
- The literature is mixed regarding the effect of Virtual reality with cognitive load with conventional rehabilitation on biomechanical gait measures and gait speed after stroke when compared to Treadmill walking with virtual environment with conventional rehabilitation.
- Virtual walking training (virtual reality) with rehabilitation program may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Treadmill gait training with rehabilitation.
- One session daily high intensity Videogame exercises with medical massage may be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Two sessions daily high intensity Videogame exercises with medical massage may not be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.

- Virtual Reality with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving falls and fear of falling, but not sensory and proprioceptive function, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Anodal M1 tDCS with Xbox Kinect games.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, balance, and falls and fear of falling, but not gait speed and gait endurance, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Anodal M1 tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, and balance, but not gait speed, gait endurance, and falls and fear of falling, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Xbox training during nodal tDCS stimulation to motor cortex may be beneficial for improving balance, but not gait speed, gait endurance, functional mobility, and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.

Summary of Key Points: Virtual Reality

Intervention	Control(s)	Function domain(s)	Effect
Virtual Reality	Conventional Therapy or No Treatment	Sensory and proprioceptive function, gait speed, functional mobility	+
Virtual Reality	Conventional Therapy or No Treatment	Motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, balance, falls and fear of falling, quality of life	–
Virtual Reality	Conventional Therapy or No Treatment	Range of motion	=
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy	Biomechanical gait measures, biomechanical balance measures	+
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy	Gait speed, functional mobility, balance	–
Virtual Reality	Balance Training	Activities of daily living, functional mobility	+
Virtual Reality	Balance Training	Gait speed, balance, falls and fear of falling	–
Virtual Reality Exercise Program	Exercise Program	Falls and fear of falling	+
Virtual Reality Exercise Program	Exercise Program	Motor recovery, biomechanical gait measures, functional mobility, balance, quality of life	–
Virtual Reality Exercise Program	Exercise Program	Gait speed	=
Virtual Reality Training	Treadmill Training	Biomechanical gait measures	–
Virtual Reality Training	Treadmill Training	Biomechanical balance measures	=
Virtual Reality with Treadmill Training	Conventional Therapy or Treadmill Training	Gait speed, balance, falls and fear of falling	+

Virtual Reality with Treadmill Training	Conventional Therapy or Treadmill Training	Biomechanical gait measures, biomechanical balance measures, gait endurance, functional mobility, quality of life	–
Virtual reality treadmill training-based community ambulation	Community ambulation training	Biomechanical gait measures, gait speed, gait endurance, functional mobility, falls and fear of falling	–
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy	Gait speed, gait endurance, functional mobility	+
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy	Balance	–
Virtual Reality with Treadmill Training	Overground Gait Training	Gait speed	+
Virtual Reality with Treadmill Training	Overground Gait Training	Motor recovery, biomechanical gait measures, biomechanical balance measures, activities of daily living, gait endurance, functional mobility	–
Virtual Reality Robotic Training	Robotic Training and Conventional Therapy	Neurophysiological measures	+
Virtual Reality Robotic Training	Robotic Training and Conventional Therapy	Biomechanical gait measures, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling	–
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Muscle strength	+
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Activities of daily living, functional mobility, balance	–
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Gait speed	=
Virtual Reality Robotic Training	Robotic Training, Auditory Stimulation, and Conventional Therapy	Gait speed	+
Virtual Reality Robotic Training	Robotic Training, Auditory Stimulation, and Conventional Therapy	Activities of daily living	–
Virtual Reality with Other Modalities	Task-specific training	Biomechanical gait measures, spasticity, gait speed	+
Task-oriented training with Virtual reality training	Task-oriented training	Motor recovery, balance	+
Task-oriented training with Virtual reality training	Task-oriented training	Functional mobility	=
Virtual reality therapy and mirror therapy (MT) exercises	lower extremity rehabilitation	Motor recovery, range of motion	+
Virtual reality therapy and mirror therapy (MT) exercises	lower extremity rehabilitation	Spasticity, activities of daily living	–
Virtual reality therapy and mirror therapy (MT) exercises	lower extremity rehabilitation	Balance	=

One session daily high intensity Videogame exercises with medical massage	two sessions daily high intensity Videogame exercises with medical massage	Aerobic measures	−
One session daily high intensity Videogame exercises with medical massage	two sessions daily high intensity Videogame exercises with medical massage	Biomechanical balance measures	=
Virtual Reality with Other Modalities	Task-specific training	Aerobic measures, activities of daily living, falls and fear of falling	−
Virtual Reality	Proprioceptive Neuromuscular Facilitation	Motor recovery, sensory and proprioceptive function, balance	−
Virtual Reality (Nintendo Wii)	Virtual Reality with Proprioceptive Neuromuscular Facilitation	Motor recovery	−
Treadmill training with Virtual reality and Ankle robotics	Seated training with Virtual reality and Ankle robotics	Biomechanical gait measures, biomechanical balance measures, range of motion, gait speed	−
Virtual Reality with Other Modalities	Task-specific training	Falls and fear of falling	−
Virtual Reality with Other Modalities	Task-specific training	Gait endurance, functional mobility, balance, biomechanical balance measures	=
Virtual Reality with Other Modalities	Task-specific training	Biomechanical gait measures, gait speed	+
Brain-Computer Interface Controlled Training	Sham	Motor recovery	+
Brain-Computer Interface Controlled Training	Sham	Neurophysiological measures, activities of daily living, functional mobility, balance	−
Virtual Reality Training	Strength and Resistance Training	Activities of daily living, functional mobility	+
Virtual Reality Training	Strength and Resistance Training	Balance	=
Adaptive foot switch Videogame with Regular physiotherapy	Regular physiotherapy	Biomechanical balance measures	+
Wii Balance Intervention	Conventional Balance Intervention	Functional mobility, balance, falls and fear of falling	−
Group Video game therapy	Conventional care	Gait speed	−
Peripheral nerve mobilization with virtual reality-based gait training	Conventional exercises	Biomechanical gait measures, gait speed	+
Motor imagery with virtual reality training	virtual reality training with Conventional therapy	Motor recovery, gait speed, functional mobility, balance	+
Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training	Augmented reality gait adaptive training	Motor recovery, gait speed, balance	+
Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training	Augmented reality gait adaptive training	Biomechanical gait measures, muscle strength, neurophysiological measures	−
Selfpaced treadmill walking in virtual reality environment	Self Placed Overground Platform walking	Biomechanical gait measures, gait speed	+
Lokomat endurance video games	Conventional Physiotherapy	Biomechanical gait measures	−

Xbox training during anodal tDCS stimulation to cerebellum	Sham tDCS with xbox training	Gait speed, functional mobility, balance	+
Xbox training during anodal tDCS stimulation to cerebellum	Sham tDCS with xbox training	Gait endurance, falls and fear of falling	–
Xbox training during nodal tDCS stimulation to motor cortex	Sham tDCS with xbox training	Balance	+
Xbox training during nodal tDCS stimulation to motor cortex	Sham tDCS with xbox training	Gait speed, gait endurance, functional mobility, falls and fear of falling	–
Xbox training during anodal tDCS stimulation to cerebellum	Xbox training during nodal tDCS stimulation to motor cortex	Gait speed, gait endurance, functional mobility, balance, falls and fear of falling	–
Self paced treadmill walking in virtual reality environment	Fixed speed treadmill walking in virtual reality environment	Biomechanical gait measures, gait speed	+
Telerehabilitation video games	Conventional rehab	Range of motion, pain, activities of daily living, balance, quality of life	–
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit-to-stand Training with physiotherapy	Muscle strength, gait speed, functional mobility, balance, quality of life	+
Treadmill-based with augmented reality	Overground walking with physical obstacles	Activities of daily living, gait speed, functional mobility	–
Telerehabilitation using a Kinect camera-based interactive telerehabilitation system	Conventional physiotherapy	Muscle strength, functional mobility, balance, falls and fear of falling	–
Virtual reality augmented robot-assisted gait training with conventional care	Robot-assisted gait training with conventional care	Activities of daily living, gait speed, functional mobility, balance, falls and fear of falling	–
Speed-Interactive Pedaling Training with Virtual Reality	Pedaling Training	Motor recovery, biomechanical gait measures, gait speed, balance	+
Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation	Proprioceptive Neuromuscular Facilitation	Motor recovery, sensory and proprioceptive function, balance	–
Virtual Reality	Virtual Reality with Proprioceptive Neuromuscular Facilitation	Motor recovery	–
Cognitive motor exergaming training	Conventional training (stretching, strengthening, balance and endurance training)	Biomechanical balance measures	+
Cognitive motor exergaming training	Conventional training (stretching, strengthening, balance and endurance training)	Gait speed, gait endurance, functional mobility, balance	–
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking	Gait speed, balance, falls and fear of falling	+
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking	Functional mobility	–
Robotic-assisted gait training (Lokomat-Pro) with VR	Robotic-assisted gait training (Lokomat-Nanos)	Neurophysiological measures, functional mobility	+
Robotic-assisted gait training (Lokomat-Pro) with VR	Robotic-assisted gait training (Lokomat-Nanos)	Spasticity	–
Virtual reality with cognitive load with conventional rehabilitation	Treadmill walking with virtual environment with conventional rehabilitation	Biomechanical gait measures, gait speed	=

Virtual walking training (virtual reality) with rehabilitation program	Treadmill gait training with rehabilitation	Gait speed, functional mobility, balance	+
Virtual walking training (virtual reality) with rehabilitation program	Treadmill gait training with rehabilitation	Biomechanical gait measures	–
One session daily high intensity Videogame exercises with medical massage	Standard physical therapy with medical massage	Activities of daily living	+
Two sessions daily high intensity Videogame exercises with medical massage	Standard physical therapy with medical massage	Activities of daily living	–
Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Lokomat endurance video games	Conventional Physiotherapy	Gait speed, gait endurance, biomechanical balance measures, balance	=
Virtual Reality with Proprioceptive Neuromuscular Facilitation	Proprioceptive Neuromuscular Facilitation	Motor recovery, sensory and proprioceptive function, balance	–
Anodal Cerebellar tDCS with Xbox Kinect games	Anodal M1 tDCS with Xbox Kinect games	Falls and fear of falling	+
Anodal Cerebellar tDCS with Xbox Kinect games	Anodal M1 tDCS with Xbox Kinect games	Sensory and proprioceptive function, gait speed, gait endurance, functional mobility, balance	–
Anodal Cerebellar tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Sensory and proprioceptive function, functional mobility, balance, falls and fear of falling	+
Anodal Cerebellar tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Gait speed, gait endurance	–
Anodal M1 tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Sensory and proprioceptive function, functional mobility, balance	+
Anodal M1 tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Gait speed, gait endurance, falls and fear of falling	–

Electromechanical and Robotic Devices



Adopted from: http://internationalmedipol.com/lokomat-robotic-walking-system; https://www.odtmag.com/contents/view_breaking-news/2018-03-02/hybrid-assistive-limb-hal-treatment-for-spinal-cord-injury-available-in-us

Recently, considerable effort has been invested in developing electromechanical-assisted training devices for gait training. Most of these devices are generally classified as either an “end-effector device” (i.e. patients are placed on foot plates that stimulate the stance and swing phases of gait) or an “exoskeleton device” (i.e. patients are outfitted with a programmable device that moves the hips and knees during gait). The most commonly studied end-effector device is the Gait Trainer (Reha-Stim; Berlin Germany), while the Lokomat (Hokoma; Zurich, Switzerland) is the most studied exoskeleton device (Mehrholz & Pohl, 2012). Other exoskeleton devices that have been studied can be classified as either an exoskeleton system or an exoskeleton portable device. A third category of electromechanical devices can be described as a robotic arm control system group, as described by Ochi et al. 2015.

The main advantage electromechanical devices may offer over conventional gait training is that they may increase the number of repetitions performed and reduce the need for intensive therapist involvement, thereby increasing therapist productivity and accelerating patient recovery. A table of various robotic devices used in stroke rehabilitation is outlined below (Table 28). Table 28. Electromechanical devices used for lower limb rehabilitation post-stroke Electromechanical Devices Description End-Effectors The G-EO system is a gait-trainer robotic • G-EO System device that provides a supportive harness • Gait Trainer I and II (GT I, GT II) and uses foot plates to simulate floor walking and also walking up and down stairs.

The GT II is a gait-trainer robotic device that offers body weight support through a harness and also endpoint feet trajectories through foot plates (Iosa et al., 2011).

Exoskeleton Systems The Lokomat is a widely used exoskeleton • Lokomat device that features a treadmill, a dynamic • Walkbot body weight support system, and a motor- • Hybrid Assistive Limb (HAL) driven robotic orthosis (Bae et al. 2016). The • AutoAmbulator robotic orthosis is used to control gait pattern through adjusting gait speed, guidance force, • LokoHelp and support from body weight (Bae et al. 2016).

The Walkbot is a gait rehabilitation exoskeleton that features powered hip-knee- ankle joint drive motor design as well as a biofeedback platform (Kim et al. 2015h).

The HAL is a wearable robotic exoskeleton that supports participants in walking, standing, and performing other leg movements (Yoshikawa et al., 2018). The HAL detects bioelectrical signals generated by muscles and floor-reaction-force signals and responds to the user’s voluntary movements instead of following a predefined motion (Yoshikawa et al., 2018).

The AutoAmbulator is a gait rehabilitation exoskeleton that provides body weight support treadmill training with the assistance of a harness and robot arms. The robot arms have four degrees of freedom and control various aspects of the gait cycle (Fisher et al. 2011).

The LokoHelp device is placed on top of a treadmill and is an easily installed or removed. It works through transmitting the treadmill movement to levers on either side of the device which then create movements that imitate stance and swing phases of gait (Freivogel et al. 2009).

Exoskeleton Portable Devices The Stride Management Assist (SMA) device • Stride Management Assist (SMA) is a robotic exoskeleton that provides • Anklebot assistance with high flexion and extension in • Bionic Leg each leg. This device uses neural oscillators and the user’s Central Pattern Generator to generate assist torques during the gait cycle to regulate walking patterns (Buesing et al. 2015).

The Anklebot is a robotic device consisting of a knee brace that is attached to a custom shoe (Forrester et al., 2013). It is designed to strengthen the ankle and the lower extremity through adjusting the force applied depending on varying requirements (Forrester et al., 2013).

The Bionic Leg device is a powered knee orthosis that uses sensors, accelerometers, and joint angle detectors to detect the user’s movements and provide mechanical assistance (Stein et al. 2014).

Robotic Arm Control System The gait-assistance robot is a robotic arm • Gait-Assistance Robot (GAR) control system that includes 4 robotic arms, a full weight-bearing system, and a visual foot pressure biofeedback system (Nakanishi et al., 2014). The four separate robotic arms provide the ability to move the lower body automatically and independently (Ochi et al. 2015). This device does not suspend a patient with a harness and thus promotes full body weight bearing while on a treadmill (Ochi et al. 2015).

A total of 127 RCTs were found that evaluated electromechanical and robotic devices for lower extremity motor rehabilitation. 24 RCTs compared Robot Assisted Gait Training with Conventional Therapy and Overground Gait Training (Hirano et al. 2024; Huo et al. 2024; Lee et al. 2024a; Tang et al. 2024; Zhang et al. 2024d; Akinci et al. 2023; Lee et al. 2023a; Talaty et al. 2023; Yoo et al. 2023b; Zhang et al. 2023b; Thimabut et al. 2022; Lin et al.

2022a; Alingh et al. 2021; Kooncumchoo et al. 2021; Song et al. 2021b; Stolz et al. 2019; Kim et al. 2019a; Lee et al. 2019a; Morone et al. 2018; Bizovicar et al. 2017; Chua et al. 2016; Morone et al. 2016; Peurala et al. 2009; Ng et al. 2008). One RCT compared Early Robot Assisted Gait Training with Late Start Robot Assisted Gait Training (Kim et al. 2020c). One RCT compared Robot Assisted Gait Training with Balance Training (Gandolfi et al. 2019). Five RCTs compared Electromechanical Gait Training with Conventional Treatment or No Treatment (Liu et al. 2022; Tanaka et al. 2012; Pohl et al. 2007; Tong et al. 2006; Peurala et al. 2005). Two RCTs compared End-Effector Gait Training with Body Weight Supported Treadmill (Kim et al. 2020c; Werner et al. 2002b). 46 RCTs compared Exoskeleton Systems with Conventional Therapy or Overground Gait Training (Zhang et al. 2024b; Xie et al. 2023; Yokota et al. 2023; Miyagawa et al. 2023; Nam et al. 2022b; Kang et al. 2021b; Louie et al. 2021; Kotov et al. 2021; Li et al. 2021b; Li et al. 2021c; Molteni et al. 2021; Palmcrantz et al. 2021; Yu et al. 2021; Mustafaoglu et al. 2020; Nam et al. 2020; Park et al. 2020c; Rojek et al. 2020; Wall et al. 2020; Lee et al. 2019a; Nam et al. 2019; Sczesny-Kaiser et al. 2019; Wall et al. 2019; Kim et al. 2019a; Bergmann et al. 2018b; Mayr et al. 2018; Yun et al. 2018; Calabro et al. 2018; Han et al. 2016; Taveggia et al. 2016; Cho et al. 2015a; Kim et al. 2015h; Ochi et al. 2015; van Nunen 2015; Ucar et al. 2014; Watanabe et al. 2014; Wu et al. 2014; Kelley et al. 2013; Chang et al. 2012; Fisher et al. 2011; Morone et al. 2011; Freivogel et al. 2009; Hidler et al. 2009; Lewek et al. 2009; Schwartz et al. 2009; Hornby et al. 2008; Husemann et al. 2007). Five RCTs compared Exoskeleton Systems with Treadmill Training (Yoo et al. 2023a; Choi et al. 2022; Lee et al. 2022b; Bang & Shin 2016b; Westlake & Patten 2009). One RCT compared Exoskeleton Gait Training with Functional Task-Specific Training (Jayaraman et al. 2019). Two RCTs evaluated Exoskeleton Systems Administration Method (Jiae et al. 2022; Bae et al. 2016). Six RCTs compared Exoskeleton Portable Devices with Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis (Wright et al. 2021; Yeung et al. 2021; Buesing et al. 2015; Goodman et al. 2014; Stein et al. 2014; Waldman et al. 2013). Two RCTs compared Exoskeleton Portable Devices with Stretching (Zhai et al. 2021; Forrester et al. 2014). One RCT compared Exoskeleton Portable Devices with Ankle Foot Orthosis with Sham Ankle Foot Orthosis (Yeung et al. 2018). Two RCTs evaluated Robotic-Assisted Gait Training and Restraint (Kang et al. 2018; Bonnyaud et al. 2014a). Three RCTs compared Robotics Combined with Virtual Reality with Robotics, Robotics Combined with Auditory Stimulation or Conventional Training (Kayabinar et al. 2021; Park et al. 2018a; Calabrò et al. 2017). One RCT compared Lokomat Training with Galvanic Vestibular Stimulation or Physiotherapy with Visual Feedback (Krewer et al. 2013). One RCT compared Robot as Gait Training as Needed with Robot Assisted Gait Training Full Time (Seo et al. 2018). One RCT compared Robot-assisted Trunk Training with Conventional Therapy (Kim et al. 2022f). One RCT compared Gait Training with Gait Exercise Assist Robot (GEAR) with Gait Training with Treadmill (Ogino et al. 2020). One RCT compared Gait Training with Gait Exercise Assist Robot (GEAR) with Overground Gait Training (Tomida et al. 2019). One RCT compared Robotic Verticalization + FES with Conventional therapy (Calabro et al. 2015). One RCT compared Robotic-assisted Stretching with Conventional Therapy (Yoo et al. 2018a). One RCT compared Regent Suit + Neuromotor rehabilitation with Neuromotor rehabilitation (Monticone et al. 2013). One RCT compared Vibration on sole of foot with Contact on Sole of Foot with No Vibration (Onal et al. 2020). One RCT evaluated Robot-Assisted Gait Training with Visuomotor Feedback (Maggio et al. 2021). Three RCTs compared Robotics with Treadmill Training and Virtual Reality with Seated Training (Tamburella et al. 2019; Forrester et al. 2016; Bustamante Valles et al. 2016). One RCT compared Robot-assisted Task Specific Training with Task Specific Walking (Buesing et al. 2015). One RCT evaluated Comparison of Robot-Assisted Gait Training Systems (Elmas Bodur et al. 2024). One RCT evaluated Comparison of Ankle Robot Training Intensity and Frequency (Zhang et al. 2023a). One RCT compared Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation with Conventional Therapy (Mao et al. 2022b). One RCT compared Robot-Assisted Gait Training with Robotic Balance Platform with Robot-Assisted Gait Training Alone (Aprile et al. 2022). One RCT compared Robot-Assisted Gait Training with Upper Limb Therapy (Lin et al. 2022b). One RCT compared Robot-Assisted Gait Training with Balance Training with Balance Training Alone (Gunduz et al. 2024). One RCT compared Robot-Assisted Gait Training with Home-Based Exercise Program (Do et al. 2024).

In addition, 30 RCTs in which electromechanical and robotic devices formed part of a combined or comparative intervention are cross-referenced at the end of Table 27; their primary listings appear in other tables.

The methodological details and results of all 127 RCTs are presented in Table 27.

Table 27. RCTs Evaluating Electromechanical and Robotic Devices for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)

Study design		
Robot Assisted Gait Training vs Conventional Therapy and Overground Gait Training		
Hirano et al. (2024) RCT (8) Nstart=91 Nend=85 TPS=Subacute A vs 0 Also in Table 13 (Orthotic Devices)	E: Robot-assisted gait training (Welwalk orthosis-type robotic leg) + Conventional rehab C: Conventional rehab Duration: 80min (40min RAGT + 40min Conventional)/d, 6d/wk, 4wks; Conventional therapy: 7d/wk	E vs C: FIM motor (-) cognitive (-) walk (-) 10-metre walk test (-) 6 minute walk test (-) SIAS motor (-) verticality (-) position sense in LE (-) Wisconsin Gait Scale (-) gait pattern (-)
Huo et al. (2024) RCT (6) Nstart=40 Nend=30 TPS=Subacute A vs 0 Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Robot-assisted overground gait training C: Conventional rehab Duration: E: 30min/d, 5d/wk,4 wks (20 sessions); C: 60 min/d (30min/d twice daily), 5d/wk, 4wks	E vs C: BBS (+exp) Functional Ambulation Category (+exp) FMA-LE (+exp) mBI (+exp)
Lee et al. (2024a) RCT (8) Nstart=96 Nend=96 TPS=Chronic A vs 0	E: Robot-assisted walking training + Conventional rehab C: Conventional rehab Duration: E: 70min/d, 5d/wk, 4wks (40min of robot-assisted training + 30min rehab); C: 30min/d, 5d/wk, 4wks	E vs C: TIS 0-5(+exp) 6-10(-) 11-19 (+exp) BBS 0-5(+exp) 6-20 (-) 21-40(-) FMA 0-20 (+exp) 21-49 (+exp) 50-84 (+exp) MBI 0-23 (+exp) 24-49 (+exp) 50-74 (-)
Tang et al. (2024) Feasibility/pilot RCT (5) Nstart=26 Nend=21 TPS=Subacute A vs 0	E: Robot-assisted gait training + Conventional rehab C: Conventional gait training + Conventional rehab Duration: 90min (30min gait + 60min CT)/d, 5d/wk, 4wks	E vs C: FMA-LE (+exp) BBS (+exp) Functional Ambulation Category (+exp)
Zhang et al. (2024d) RCT (7) Nstart=60 Nend=55 TPS=Subacute	E: Robot assisted gait training (A3 training) + Conventional training C: Floor walking training + Conventional training	E vs C: Basic activities of daily living (+exp) Stroke-specific quality of life scale (+exp) FM Balance Meter (+exp) FMA (+exp)

A vs B	Duration: 60 mins/d (30 mins Robotic gait training/overgroup gait training + 30 mins conventional rehab), 5ds/wk, 2 wks	Rivermead Mobility Index (+exp) Holden walking ability scale (+exp) TUG (+exp) Stride frequency (+exp) stride speed (+exp) Stride length (+exp) Gravity center moving track length (+exp) Track length per unit area (+exp) Gravity center moving track area (-)
Akinci et al. (2023) RCT (7) Nstart=56 Nend=56 TPS=Chronic A1 vs A2 vs A3 vs 0 Also in Table 26 (Virtual Reality)	E1: Lokomat endurance video games E2: Lokomat motivation video games E3: Lokomat timing video games C: Conventional Physiotherapy Duration: E1/E2/E3: 40min/d, 3d/wk, for 6 wks, C: 40min, 5d/wk for 6wk	E1 vs C/E2/E3: 6MWT(+exp1) 10MWT(+exp1) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-) Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-) Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(-) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(-) BBS(-) E3 vs E1/E2/C: 6MWT(-) 10MWT(-) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-) Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-) Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(+exp3) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(+exp3) BBS(-) E2 vs C: 6MWT(-) 10MWT(-) Hemiplegic step length(-) Non-hemiplegic step length(-) Stride length(-) Step width(-) Hemiplegic stance phase time(-) Non-hemiplegic stance phase(-)

		Double support phase time(-) Spatial symmetry(-) Temporal symmetry(-) Limits of stability(-) Postural stability center of pressure velocity epen eyes(-) Postural stability center of pressure velocity closed eyes(-) BBS(+exp)
Lee et al. (2023a) RCT (5) Nstart=55 Nend=49 TPS=Acute A vs 0	E: Robotic Gait training C: conventional rehab Duration: 2hrs/d(30min Robot training, 1.5hrs conventional rehab), 5d/wk, 4wks	E vs C: FAC(+exp) MI(-) FMA(-) RMI(-) 10MWT(-) BBS(-) MBI(-)
Talaty et al. (2023) Feasibility/pilot RCT (5) Nstart=30 Nend=30 TPS=Chronic A vs 0	E:Lokomat gait training C: conventional rehab Duration: 45min/d, 4d/wk, 2wks	E vs C: FIM(+exp): FAC(+exp): MAS(-): 10MWT(+exp) 2MWT(+exp) 5TSTS(-) MBS-RPE(-) Ankle rom(-) Knee ro(-)
Yoo et al. (2023b) Feasibility/pilot RCT (6) Nstart=25 Nend=17 TPS=Subacute A vs 0	E: Robot assisted Gait training C: Conventional + Gait training Duration: 30min/d, 3d/wk, 4wks	E vs C: FAC(+exp) MBI(-) Euroqol5d(+exp) 10MWT(-) BBS(-) TUG(-) FMA-LE(-) forced expirator volume(-)
Zhang et al. (2023b) RCT (5) Nstart=38 Nend=34 TPS=Subacute A vs 0	E: Robot assisted gait training C: Conventional gait training Duration: 30min/d, 5d/wk, 4wks	E vs C: Walking Speed(+exp) Symmetry index(+exp) Affected stride length(-) Unaffected Stride length(-) Affected Hip ROM(+exp) Unaffected hip ROM(-) Affected knee flexion(+exp) unaffected knee flexion(-) Affected ankle ROM(+exp) Unaffected ankle ROM(-) FMA-LE(+exp) FAC(+exp) 6MWT(-) Knee EMG(+exp) Ankle EMG(-)
Thimabut et al. (2022) RCT (7) Nstart=26	E: Robot assisted gait training + Overground walk training + Conventional PT	E vs C: Functional independence measure walk (-)

Nend=26 TPS=Subacute A + B vs B vs C + D	C: Overground walk training + Conventional PT Duration: E: 40min RAGT + 20 min overground walking + 60min PT 5d/wk, for 6wks C: 60min overground walking + 60min PT 5d/wk, for 6wks	Efficacy (+exp) 6min Walk test (-) Barthel index (-) Gait speed (-) Cadence (-) Step length (-) Step width (-) Gait symmetry ratio (+exp)
Lin et al. (2022a) RCT (7) Nstart=40 Nend=40 TPS=Subacute A vs 0	E: Robot assisted gait training + conventional rehab C: Conventional rehab Duration: 130min/d, 5d/wk, 3-4wks	E vs C: MMT(-) AROM(-) FMA(+exp) POMA(-) PASS(-) BBS(-)
Alingh et al. (2021) RCT (7) Nstart=34 Nend=31 TPS=Subacute A vs B + C vs 0 vs C	E: Robotic gait training + conventional gait training C: Conventional gait training Duration: E: 30min/d, 3d/wk Robot training + 30min, 1-2d/wk conventional training for 6wks. C: 30min, 3-5d/wk for 6wks conventional training	E vs C: External Mechanical Work (-) 6-minute Walk Test (-) Gait Speed (-) Step Width (+exp) Step Length (-) Single-Support Time (-) 10-Metre Walk Test (-) Timed Up-and-Go Test (-) Functional Gait Assessment (-) Motricity Index Leg Score (-) Fugl-Meyer Assessment Leg Score (-)
Kooncumchoo et al. (2021) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs B	E: I-Walk machine + Conventional training C: Overground training + Conventional training Duration: 60min/d, 3d/wk, for 8wks	E vs C: 6-minute walk test (-) 10-meter walk test (+exp) Timed Up and Go test (-) Fugl-Meyer Assessment Total (-) Lower extremity (+exp) Coordination/speed (-) Total motor function (-) Sensation (-) Passive joint motion (-) Joint pain (-)
Song et al. (2021b) RCT (4) Nstart=60 Nend=36 TPS=Subacute A vs 0	E: Robot-assisted gait training + conventional PT C: Conventional PT Duration: E: 30min/d, 5d/wk, for 3wks robot-assisted gait training + 60min/d, 5d/wk, for 3wks conventional PT & C: 90min/d, 5d/wk, 3wks conventional PT	E vs C: Cortical activation (no stat) Functional Ambulation Category (-) 10 Meter Walk Test (+exp) Modified Barthel Index (-) Berg Balance Scale (+exp) Motricity Index (+exp) Rivermead Mobility Index (-) Gait speed (+exp)
Stolz et al. (2019) RCT (5)	E: Cable-driven gait trainer (RoboWalk) + conventional physiotherapy	E vs C: 10m Walk test

Nstart=40 Nend=36 TPS=Acute A vs 0	C: Conventional physiotherapy Duration: 60min/d, 5d/wk, until discharge	Speed (-) Cadence (-) 6min Walk test (-) Functional Independence measure (-) Timed Up and Go (-) Step test (-) EuroQoL-5D (-)
Kim et al. (2019b) RCT (4) Nstart=58 Nend=48 TPS=Subacute A vs 0	E: Robotic End-Effector training (Morning Walk) C: Conventional physiotherapy Duration: E: 30min/d, 5d/wk, 3 wks Robot-assisted gait training + 60min/d, 5d/wk, 3 wks conventional physiotherapy & C: 60min/d, 5d/wk, 3 wks conventional physiotherapy	E vs C: Functional Ambulation Category (-) Motricity Index Lower Paretic Limb (+exp) 10-Meter Walk Test (-) Modified Barthel Index (-) Rivermead Mobility index (-) Berg Balance Scale (+exp)
Morone et al. (2018) RCT (6) Nstart=110 Nend=100 TPS=Acute A vs B	E: Gait Trainer GT I + standard rehabilitation (PT) C: Overground walking + standard rehabilitation (PT) Duration: 2sessions (3hr)/d, 5d/wk PT for the first week, then, 1session PT+ 40min RAGT or walking training 5d/wk for 4wks	E vs C: Functional Ambulation category (+exp) Trunk Control test (+exp) Barthel index (-)
Bizovicar et al. (2017) RCT (5) Nstart=22 Nend=19 TPS=Subacute A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground gait training using E-Go device + Standard Physiotherapy C: Overground walking training + Standard Physiotherapy Duration: 45min/d, 3wks physiotherapy, followed by gait training at convenient duration, 15 sessions	E vs C: FMA (-) Gait distance (-) BBS (-) FAC (-) FIM (-)
Chua et al. (2016) RCT (6) Nstart=106 Nend=77 TPS=Acute A vs 0	E: Electromechanical Gait Trainer (GT I Rehastim) + Conventional physiotherapy C: Conventional physiotherapy Duration: 45min/d, 6d/wk, for 8 wks	E vs C: Functional Ambulation Category (-) Barthel Index (-) Gait speed (-) Stroke Impact Scale (-) Physical (-) Participation (-)
Morone et al. (2016) RCT (7) Nstart=44 Nend=42 TPS=Subacute A vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: Overground walking training with i-Walker robotic assistive device C: Conventional overground walking training Duration: 80min/d, 5d/wk, 4wks	E vs C: 10-Meter Walk Test (+exp) 6-Minute Walk Test (+exp) Tinetti Scale (+exp) Modified Ashworth Scale (-) Barthel Index (-) Canadian Neurological Scale (-) Upright gait stability (-)
Peurala et al. (2009) RCT (5) Nstart=56 Nend=47 TPS=Acute A vs B vs 0	E1: Gait Trainer GT I (Rehastim) E2: Overground gait training C: Conventional physiotherapy Duration: 1h/d for 3wks - Gait trainer or Overground walk training ; 55min/d for 3wks - Conventional gait-oriented physiotherapy ; 1-2x/d for 3wks - Usual physiotherapy	E1/E2 vs C: Functional Ambulation Category (+exp1, +exp2) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Motor Assessment Scale (+exp1, +exp2)

Also in Table 7 (Non-Technological Overground Walking and Gait Training)		Rivermead Motor Assessment Gross motor function (-) Leg and trunk (-) Rivermead Mobility Index (-) E1 vs E2: Functional Ambulation Category (-) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Modified Motor Assessment Scale (-) Rivermead Motor Assessment Gross motor function (-) Leg and trunk (-) Rivermead Mobility Index (-)
Ng et al. (2008) RCT (6) Nstart=54 Nend=50 TPS=Acute A + B vs A vs C Also in Table 28 (Functional Electrical Stimulation)	E1: Gait Trainer GT II (Rehastim) + Functional electrical stimulation + Regular rehabilitation E2: Gait Trainer GT II (Rehastim) + Regular rehabilitation C: Overground gait training Duration: 20min/d, 5d/wk, for 4wks intervention sessions & 130min/d, 5d/wk, for 4wks Regular rehabilitation	E1 vs E2: Elderly Mobility Scale (-) Berg Balance Scale (-) Functional Ambulatory Category (-) Motricity Index (-) Functional Independence Measure (-) Barthel Index (-) 5-m Gait Speed (-) E1/E2 vs C: Elderly Mobility Scale (+exp1, +exp2) Berg Balance Scale (-) Functional Ambulatory Category (+exp1) Motricity Index (-) Functional Independence Measure (-) Barthel Index (-) 5-m Gait Speed (+exp1, +exp2)
Early Robot Assisted Gait Training vs Late Start Robot Assisted Gait Training		
Kim et al. (2020a) RCT (6) Nstart=11 Nend=11 TPS=Subacute A1 vs A2	E: Early start robot-assisted gait training + Conventional physiotherapy C: 4wk late start robot-assisted gait training + Conventional physiotherapy Duration: 45min/d, 5d/wk, for 4wks robot-assisted gait training	E vs C: Mean diffusivity by fMRI (+exp)
Robot Assisted Gait Training vs Balance Training		
Gandolfi et al. (2019) RCT (8) Nstart=32 Nend=28 TPS=Chronic A vs B	E: Robot-assisted stair climbing training (G-EO System) C: Sensory integration balance training Duration: 50min/session, 2d/wk, for 5wks	E vs C: Berg Balance Scale (-) 10-metre Walk test (-) 6min Walk test (+exp) Dynamic gait index (-) Stair climbing test Up (-) Down (-) Timed Up and Go (-) Postural sway (-) Centre of Pressure perimeter Open eyes-stable surface (-) Closed eyes-stable surface (+exp) dome-stable surface (-) Open eyes-compliant surface (-)

		Closed eyes-compliant surface (+exp) dome-compliant surface (+exp) Center of Pressure sway area Open eyes-stable surface (-) Closed eyes-stable surface (-) dome-stable surface (-) Open eyes-compliant surface (+exp) Closed eyes-compliant surface (-) dome-compliant surface (+exp)
Electromechanical Gait Training vs Conventional Treatment or No Treatment		
Liu et al. (2022) RCT (7) Nstart=80 Nend=80 TPS=Subacute A vs B	E: Bed Type Rehabilitation Robot + Conventional Motor Training C: Conventional Motor Training Duration: E: 45 min/d, 5d/wk, 2wks	E vs C: FME-LE (+exp) RMI (+exp) MBI (+exp)
Tanaka et al. (2012) RCT crossover (5) Nstart=12 Nend=12 TPS=Chronic A vs 0	E: Electromechanical gait training C: No treatment Duration: 20min/d, 2-3d/wk, for 4-6wks (12sessions total)	E vs C: 10m Gait speed (+exp) Timed up-and-go test (-)
Pohl et al. (2007) RCT (8) Nstart=155 Nend=144 TPS=Subacute A vs 0	E: Repetitive locomotor therapy on electromechanical gait trainer + Physiotherapy C: Conventional physiotherapy Duration: 45min/d, 5d/wk, for 4wks	E vs C: Functional Ambulation Category (+exp) Barthel Index (+exp) 10-m Walk (+exp) 6-min Walk (+exp) Rivermead Mobility Index (+exp) Motricity Index (+exp)
Tong et al. (2006) RCT (7) Nstart=50 Nend=46 TPS=Acute A + B vs A vs 0 Also in Table 28 (Functional Electrical Stimulation)	E1: Electromechanical gait trainer + Functional electrical stimulation + Conventional PT E2: Electromechanical gait trainer + Conventional PT C: Gait training + Conventional PT Duration: 20min/d, 5d/wk, for 4wks Experimental intervention, 40min/d, 5d/wk, for 4wks Conventional PT	E1/E2 vs C: Motricity Index Leg Score (+exp1, +exp2) Five-Meter Walking Speed Test (+exp1, +exp2) Elderly Mobility Scale (+exp1, +exp2) Berg Balance Scale (-) Barthel Index (-) Functional Ambulatory Category (+exp1, +exp2) FIM Instrument Score (-) E1 vs E2: Motricity Index Leg Score (-) Five-Meter Walking Speed Test (-) Elderly Mobility Scale (-) Berg Balance Scale (-) Barthel Index (-) Functional Ambulation Category (-) FIM Instrument Score (-)
Peurala et al. (2005) RCT (6) Nstart=45 Nend=45 TPS=Chronic	E1: Electromechanical gait trainer + Functional electrical stimulation + Conventional therapy E2: Electromechanical gait trainer + Conventional therapy	E1/E2 vs C: walking distance(+exp1) 10-m walking time (-) 6-minute walk (-) Static balance test (-)

A + B vs A vs C Also in Table 28 (Functional Electrical Stimulation)	C: Overground gait training + Conventional therapy Duration: 20min/d, 5d/wk, for 3wks gait training, 55min/d, 5d/wk, for 3 wks Conventional therapy	Dynamic balance (time/trip) (-) postural sway (-) muscle force (-) functional independence measure (-) centre of pressure(AP & ML) (-) Modified Motor Assessment Scale(-) functional independence measure(-) E1 vs E2: walking distance(-) 10-m walking time (-) 6-minute walk (-) Static balance test (-) Dynamic balance (time/trip) (-) postural sway (-) muscle force (-) functional independence measure (-) centre of pressure(AP & ML) (-) Modified Motor Assessment Scale(-) functional independence measure(-)
End-Effector Gait Training vs Body Weight Supported Treadmill		
Kim et al. (2020c) RCT (7) Nstart=30 Nend=28 TPS=Chronic A vs B	E: End-effector Robot-Assisted Gait Training C: Body Weight Supported Treadmill Training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Fugl-Meyer assessment (+exp) Timed up and go test (-) 10-m walk test (-) Regional cortical activity (-)
Werner et al. (2002b) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A vs B Also in Table 9 (Treadmill Training)	E1: Electromechanical gait trainer therapy + Conventional rehabilitation E2: Body weight-supported treadmill training + Conventional rehabilitation Duration: 15-20min/d, 5d/wk for 6wks Interventions, 45min/d, 7d/wk, Conventional rehabilitation	E1 vs E2: Functional Ambulation Category (+exp) 10-m Gait velocity (-) Rivermead Motor Assessment (-) Modified Ashworth Score (-)
Exoskeleton Systems vs Conventional Therapy or Overground Gait Training		
Zhang et al. (2024b) Feasibility/pilot RCT (8) Nstart=24 Nend=24 TPS=Subacute A vs B	E: Robot-assisted gait training (REX robotic exoskeleton) + Conventional rehab C: Upright bed rehabilitation + Conventional rehab Duration: 140 min/d, 5d/wk, 4 wks (Intervention: 60 min/d, 5d/wk, 4wks, Conventional: 80 min/d, 5d/wk, 4wks)	E vs C: BBS (+exp) PASS (+exp) FMA (-) MBI (-) Static balance open eyes track length (-) close eyes track length (-) open eyes track area (+exp) close eyes track area (-) Stability limit (+exp) sEMG (-)
Xie et al. (2023) Feasibility/pilot RCT (5) Nstart=30 Nend=30 TPS=Subacute A vs 0	E: Soft robotic exoskeleton (Yrobot Relink) assisted walking + Conventional rehabilitation C: Conventional rehabilitation Duration: 90min (30min SRE + 60min conventional)/d, 5d/wk, 2wks	E vs C: 10MWT (+exp) 6MWT (+exp) FMA-LE (+exp) FAC (-) BBS (-)

		Temporal symmetry ratio (+exp) Spatial symmetry ratio (+exp)
Yokota et al. (2023) RCT (6) Nstart=24 Nend=22 TPS=Acute A vs 0	E: Hybrid assistive limb robot C: Gait training + conventional rehab Duration: 20-60min/d, 5-6d/wk, 4wks	E vs C: FIM(-) FAC(-) FMA(-) mRS(-) Apathy(-)
Miyagawa et al. (2023) RCT (6) Nstart=40 Nend=35 TPS=Subacute A vs 0	E: Curara assitive robot device C: Gait training Duration: 30min/d, 5d/wk, 2wks	E vs C: Stride Duration(+exp) Stride Length(-) Gait(+exp) Cadence(+exp) Ratio of unnaffected standing phase(-) Maximum flexion angles(-) Symmetry(-)
Nam et al. (2022b) RCT (6) Nstart=144 Nend=109 TPS=Chronic A vs 0	E: Electromechanical-assisted gait training C: Basic rehabilitation + conventional gait rehabilitation treatment by therapists Duration: 30min/d, 5d/wk, for 4wks	E vs C: Functional ambulatory category (-) Rivermead mobility index (-) 10-m walk test (-) 6-minute walk test (-) Motricity index (-) Berg balance scale (-) Swing-time symmetry (-) Step-length symmetry (-)
Kang et al. (2021b) RCT (6) Nstart=30 Nend=30 TPS=Chronic A vs 0	E: Robot-Assisted gait training (SUBAR) C: Conventional Physiotherapy Duration: 10 treatment sessions, 30 min each, over 3 wks	E vs C: 10-meter walk test (-) Berg Balance Scale (+con) Functional Ambulation Category (-) Modified Ashworth Scale (-) Motricity Index (-) Rivermead Mobility Index (-) Timed up and go test (-) Gait analysis Step length (-) Stride length (-) Single support (-) Double support (-) Cadence (-) Speed (-)
Louie et al. (2021) RCT (8) Nstart=36 Nend=34 TPS=Subacute A vs 0	E: Exoskeleton-based physical therapy program + Standard physical therapy C: Standard physical therapy Duration: 60min/d, 3d/wk, for 8wks exoskeleton-based physiotherapy & 45-60min/d, 4- 5d/wk standard physiotherapy	E vs C: Functional Ambulation Category (-) Gait speed (-) 6-minute walk test (-) Berg Balance Scale (-) Fugl-Meyer Assessment (lower extremity) (-) Montreal cognitive assessment (-) Patient Health Questionnaire-9 (-) Short-Form 36 Physical (-) Mental (-)

Kotov et al. (2021) RCT (5) Nstart=47 Nend=41 TPS=Subacute A vs B Also in Table 8 (Cycle Ergometer Training)	E1: ExoAtlet exoskeleton exercises + standard rehabilitation E2: Ortorent MOTO pedal trainer for active-passive training + standard rehabilitation Duration: 10-30min/d, 5d/wk, for 2wks	E1 v E2: Medical research council scale (+exp1) Modified Ashworth scale (-) Hauser Ambulation index (+exp1) 10m Walk test (+exp1) Berg Balance scale (+exp1) Modified Rankin scale (+exp1) Barthel index (+exp1) Romberg test (Statokinesiogram Measures) length with eye open (+exp) area with eye open/closed (-) energy index eye open/closed (-)
Li et al. (2021b) RCT (6) Nstart=130 Nend=114 TPS=Subacute A vs B	E: Exoskeletal robot locomotor training C: Routine overground walking training Duration: 30min/session, 2x/d, 5d/wk for 4 wks	E vs C: 6-minute walk test (+exp) Fugl-Meyer Assessment Lower Extremity (-) Functional Ambulation Category (-) Cadence (-) Gait Cycle (-) Swing phase symmetry (-) Step length symmetry (-)
Li et al. (2021c) RCT (6) Nstart=36 Nend=32 TPS=Subacute A vs 0	E: BEAR-H1 exoskeleton + routine rehabilitation C: Conventional gait training + routine rehabilitation Duration: 30min/d, 5d/wk, for 4wks	E vs C: 6-Minute Walk Test (+exp) Fugl-Meyer Assessment (+exp) Functional Ambulatory Classification (-) Modified Ashworth Scale (-) Gait speed (+exp) Cadence (+exp) Step length (+exp) Stride length (-) Cycle duration (+exp) Swing time (-)
Molteni et al. (2021) RCT (6) Nstart=80 Nend=75 TPS=Subacute A vs 0	E: Overground Robot-Assisted Gait training + conventional rehabilitation C: Conventional gait training + Conventional Rehabilitation Duration: 120min/d, 6d/wk, for 3wks Conventional care & 60min/d, 5d/wk, for 3wks gait training	E vs C: 6min Walk test (-) Modified Ashworth scale-affected limb (-) Motricity index-affected limb (-) Trunk Control test (-) Functional Ambulation category (-) 10m Walk test (-) Modified Barthel index (-) Walking Handicap scale (-)
Palmcrantz et al. (2021) RCT (5) Nstart=55 Nend=48 TPS=Chronic A vs 0 vs 0	E: Hybrid Assistive Limb (HAL) + Conventional care C1: Conventional care C2: No treatment Duration: 90min/d, 3d/wk, for 6wks	E v C1: 6min Walk test (-) Fugl-Meyer assessment-lower extremity (-) 10-m Walk test (-) Borg Rating of Perceived Exertion (-) Berg balance scale (-) Barthel index (-) Stroke Impact scale (-) E v C2: 6min Walk test (-) Fugl-Meyer assessment-lower extremity (-)

		10-m Walk test (-) Borg Rating of Perceived Exertion (-) Berg balance scale (-) Barthel index (-) Stroke Impact scale (-) C1 v C2: 6min Walk test (+con1) Fugl-Meyer assessment-lower extremity (-) 10-m Walk test (-) Borg Rating of Perceived Exertion (-) Berg balance scale (-) Barthel index (-) Stroke Impact scale (-)
Yu et al. (2021) RCT (5) Nstart=85 Nend=54 TPS=Subacute A vs B	E: Robot-assisted gait training + Conventional physiotherapy C: Overground gait training + Conventional physiotherapy Duration: 120min/d, 7d/wk for 2wks	E vs C: Fugl-Meyer Assessment (-) Timed-Up and Go test (-) Time parameters Stride time (-) Single stance (-) Double stance (-) Swing phase (-) Stance phase (-) Space parameters Stride length (-) Walk velocity (-) Cadence (-) Gait width (-) Toe out angle (+con)
Mustafaoglu et al. (2020) RCT (6) Nstart=51 Nend=51 TPS=Chronic A1 vs A2 vs 0	E1: Robot Assisted Gait Training (Lokomat)+ Conventional Therapy E2: Robot Assisted Gait Training (Lokomat) C: Conventional therapy Duration: 45min/d, 5d/wk, for 6wks conventional training & 45min/d, 2d/wk, for 6wks robot- assisted gait training	E1 vs C: Barthel Index (+exp1) Stroke Specific Quality of Life Scale (+exp1) 6-Minute Walk Test (+exp1) Stair Climbing Test (+exp1) Fugl Meyer Assessment-Lower Extremity (+exp1) 10-m Walk Test: Fast(+exp1) Comfortable (+exp1) Borg Rating of Perceived Exertion (+exp1) E1 vs E2: Barthel Index (+exp1) Stroke Specific Quality of Life Scale (+exp1) 6-Minute Walk Test (+exp1) Stair Climbing Test (+exp1) Fugl Meyer Assessment-Lower Extremity (-) 10-m Walk Test: Fast (-) Comfortable (+exp1) Borg Rating of Perceived Exertion (-) E2 vs C: Barthel Index (-)

		Stroke Specific Quality of Life Scale (-) 6-Minute Walk Test (-) Stair Climbing Test (-) Fugl Meyer Assessment-Lower Extremity (-) 10-m Walk Test: Fast (-) Comfortable (+exp) Borg Rating of Perceived Exertion (-)
Nam et al. (2020) RCT (6) Nstart=40 Nend=38 TPS=Chronic A vs 0	E: Electromechanical gait training (Exowalk) + conventional therapy C: Gait training + conventional therapy Duration: 60min/d, 5d/wk, for 2wks	E vs C: Functional ambulation category (-) 10-meter walk test (-) 6-minute walk test (-) Motricity index (-) Berg balance scale (-)
Park et al. (2020c) RCT (5) Nstart=14 Nend=14 TPS=Acute A vs 0	E: Robot-assisted gait training (Walkbot) + physical therapy C: Conventional locomotor gait training + physical therapy Duration: 60min/d, 7d/wk, for 2wks physical therapy & 30min/d, 7d/wk, for 2wks gait training/Walkbot training	E vs C: Berg Balance Scale (-) Functional Ambulation Category (+exp) Heart rate (+exp) Borg Rating of Perceived Exertion (+exp) Beck Depression Inventory-II (+exp) Activities-specific balance confidence scale (+exp)
Rojek et al. (2020) RCT (5) Nstart=60 Nend=44 TPS=Subacute A vs 0	E: Ekso Gait Training exoskeleton-assisted gait training + conventional physiotherapy C: Conventional physiotherapy Duration: 45min/d, 5d/wk, for 4wks therapeutic session & 60min/d 5d/wk, for 4wks physical therapy	E vs C: COP path length open eye (+con) closed eye (-) COP velocity open eye (+con) closed eye (-) Length of minor axis (closed/open) (-) Length and Angle of major axis (closed/open) (-) COP deviation X (closed/open) (-) COP deviation Y (closed/open) (+con) Forefoot load involved (closed/open) (-) Forefoot load uninvolved (closed/open) (+con) Backfoot load involved (closed/open) (-) Backfoot load uninvolved (closed/open) (+con) Total load involved/uninvolved (closed/open) (-) Barthel Index (+exp) Rivermead Mobility Index (-)
Wall et al. (2020) RCT (6) Nstart=36 Nend=32 TPS=Subacute A vs 0	E: Hybrid assistive limb (HAL) training + Conventional training C: Conventional training Duration: 30min/d, 4d/wk, for 4wks - HAL training & 30- 60min/d, 5d/wk, for 4wks - Conventional training	E vs C: Functional Ambulation Categories (-) Fugl-Meyer Assessment (-) 2-minute walk test (-) Berg Balance Scale (-) Barthel Index (-)
Lee et al. (2019a) RCT (5)	E: Gait training program (treadmill + overground walking) wearing a hip-assist robot	E vs C: Gait speed (+exp)

Nstart=28 Nend=26 TPS=Chronic A + B vs A + C Also in Table 7 (Non-Technological Overground Walking and Gait Training); Table 9 (Treadmill Training)	C: Gait training (treadmill training + over ground walking) Duration: 45min/session, 10x for 4wks.	cadence (+exp1) stride length (+exp) Fugl-Meyer Assessment scale(+exp) Temporal symmetry ratio (+exp) Spatial step symmetry ratio (+exp) Muscle maximum voluntary contraction rectus femoris (+exp) tibialis anterior (+exp) biceps femoris (+exp) medial of gastrocnemius (+exp) metabolic energy cost (+exp) Korean- Fall Efficacy Scale (+exp) Berg Balance Scale (No stats) Motricity Index (+exp)
Nam et al. (2019) RCT (5) Nstart=40 Nend=34 TPS=Chronic A vs B	E: Electromechanical gait training assisted by an exoskeleton device C: Physical therapist-assisted conventional gait training Duration: 30min/d, 5d/wk, for 4wks	E vs C: Functional Ambulatory Category (-) Rivermead Mobility Index (-) 10-Metre Walk Test (-) 6-Minute Walk Test (-) Motricity Index (-) Berg Balance Scale (-) Modified Barthel Index (-)
Sczesny-Kaiser et al. (2019) RCT crossover (4) Nstart=18 Nend=18 TPS=Chronic A vs 0 Also in Table 9 (Treadmill Training)	E: Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training C: Conventional Physical therapy Duration: 30min/d, 5d/wk, for 6wks HAL exoskeleton training & 30-45min/d, 5d/wk, for 6wks Conventional care, 1wk washout.	E vs C: 10m Walk test (-) Timed Up and Go (-) 6min Walk test (-) Functional Ambulation category (-) Berg balance scale (-)
Wall et al. (2019) RCT (5) Nstart=34 Nend=28 TPS=Subacute A vs 0	E: Electromechanically assisted gait training with the Hybrid Assistive Limb + Conventional care C: Conventional care Duration: 4d/wk, for 4wks	E vs C: Stroke Impact Scale Mobility (-) Strength (-) ADL (-) Participation (-) Perceived recovery (-)
Kim et al. (2019a) RCT crossover (7) Nstart=19 Nend=17 TPS=Chronic A vs 0	E: Robot Assisted Gait Training (Lokomat) + conventional physiotherapy C: Conventional physical therapy Duration: 60 mins/d, 5d/wk, for 4 wks (No Washout)	E vs C: Berg Balance Scale (+exp) Static Balance COP ML (feet separated, eyes closed/open) (+exp) COP ML (feet together, eyes closed/open) (-) COP AP (-) COP Area (-) Trunk impairment Scale (-) Fugl-Meyer Assessment Lower Extremity (+exp) Functional Ambulation Category (-) 10-meter walk test (-) Falls Efficacy Scale (-) Scale for the Assessment and Rating of Ataxia (+exp)

		Gait (+exp) Stance (+exp) Sitting (-)
Bergmann et al. (2018a) RCT (6) Nstart=38 Nend=30 TPS=Subacute A vs 0	E: Robot-assisted gait therapy (Lokomat) C: Conventional Physical Therapy Duration: 60min/d of physiotherapy & minimum of 20min/d on Lokomat, 5d/wk, for 2wks	E vs C: Burke Lateropulsion scale (+exp) Scale for Contraversive Pushing (+exp) Performance-oriented Mobility assessment (-) Functional Ambulation classification (-) Subjective visual vertical (-)
Mayr et al. (2018) RCT (7) Nstart=74 Nend=66 TPS=Subacute A vs B	E: Robot-Assisted gait training (Lokomat) C: Conventional overground gait training Duration: 120min/d, 5d/wk, for 8wks	E vs C: modified Emory Functional Ambulation Profile (-) Rivermead Motor Index (-) Mobility Milestones (-) Hochzirl Walking Aids Profile (-)
Yun et al. (2018) RCT (6) Nstart=38 Nend=36 TPS=Subacute A vs 0	E: Robot-assisted gait training (Lokomat) C: Conventional Physical Therapy Duration: 30min/d, 5d/wk, for 3wks	E vs C: Burke Lateropulsion Scale (+exp) Berg Balance Scale (+exp) Postural Assessment Scale for Stroke (+exp) Fugl-Meyer Assessment (-) Upper Extemity (-) Lower Extremity (-) Korean of the modified Barthel Index (-) Somatosensory Evoked Potentials (-)
Calabro et al. (2018) RCT (7) Nstart=40 Nend=40 TPS=Chronic A vs B	E: Exoskeleton GaitTrainer (Ekso) + conventional Physiotherapy C: Overground Walking Training + conventional Physiotherapy Duration: 60min Physiotherapy & 45min Gait training, 5d/wk for 8wks	E vs C: 10metre Walk Test (+exp) Rivermead Mobility index (+exp) Timed Up and Go (+exp) Step cadence (+exp) Gait quality index (+exp) Gait cycle (+exp) Stance/swing ratio (+exp) Frontoparietal effective Connectivity (+exp) Corticospinal excitability- affected side (+exp) Sensory-motor integration (+exp) Motor evoked potential (+exp)
Han et al. (2016) RCT (5) Nstart=60 Nend=56 TPS=Acute A vs 0 vs B + C	E: Robot-assisted gait therapy (Lokomat) + Conventional care (occupational therapy + physiotherapy) C: Conventional care (occupational therapy + physiotherapy) C: (60min physical therapy + 60min occupational therapy)/d, 5d/wk, for 4wks Duration: E: (30min RAGT + 30min physical therapy + 30min occupational therapy)/d, 5x/wk, 4wk; C: (60min physical therapy + 60min occupational therapy)/d, 5x/wk, 4wk	E vs C: Modified Barthel index Korean (-) Berg Balance scale (-) Functional Ambulation category (-) Fugl-Meyer assessment- Paretic Lower limb (-) Arterial stiffness Blood pressure (+exp) V02 peak (+exp) Diastolic blood pressure Resting (-) Peak (-) Systolic blood pressure Resting (-)

		Peak (-) Heart rate Resting (-) Peak (-) Exercise tolerance test duration (-)
Taveggia et al. (2016) RCT (7) Nstart=28 Nend=28 TPS=Subacute A vs B	E: Lokomat gait training + conventional treatment C: Conventional treatment + overground treatment to walking improvement Duration: 60min/d, 5d/wk for 5wks - conventional therapy & 30min/d, 5d/wk for 5wks lokomat	E vs C: 6-minute Walk Test (-) 10-mter Walk test (-) Functional Independence Measure (-) Short Form-36 (-) Tinetti Scale (-)
Cho et al. (2015a) RCT crossover (4) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Robot-assisted gait training (Lokomat) C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 4wks Lokomat & 30min/d, 5d/wk for 4wks conventional	E vs C: Berg Balance Scale (-) Modified Funciontal Reach Test (-) Functional Ambulation Category (-) Modified Ashworth Scale (-) Fugl-Meyer Assesment (-) Motricity Index (-) Modified Barthel Index (-) Transfer (+exp) Ambulation (-)
Kim et al. (2015h) RCT (5) Nstart=30 Nend=26 TPS=Subacute A vs B	E: Walkbot gait training + Conventional locomotor rehabilitation C: Conventional locomotor rehabilitation Duration: 80min/d, 5d/wk, for 4wks	E vs C: Function ambulation category (+exp) Berg balance scale (+exp) Korean modified Barthel index (+exp) grooming (-) bathing (-) feeding (-) toilet use (-) stairs (-) dressing (+exp) bowels (-) bladder (-) ambulation (+exp) transfers (-) modified Ashworth scale (-) EuroQol-5 dimensions (-)
Ochi et al. (2015) RCT (6) Nstart=26 Nend=26 TPS=Acute A vs B	E: Robot-assisted gait training + standard physical therapy C: Overground gait training + standard physical therapy Duration: 60min/d, 5d/wk, for 4wks standard PT & 20min/d, 5d/wk, for 4wks overground gait training/robot gait training	E vs C: Fugl-Meyer Assessment (lower extremity) (-) Muscle torque Affected (-) Unaffected (+exp) Functional Ambulation Classification (+exp) 10-m walking test (-) Functional Independence Measure (-)
van Nunen (2015) RCT (4) Nstart=37 Nend=30 TPS=Subacute A vs 0	E: Lokomat + Conventional physical therapy C: Conventional physical therapy Duration: 3.5hr/wk, for 8wks	E vs C: 10-Metre Walk Test (-) Berg Balance Scale (-) Timed Up & Go Test (-) Motricity Index (-) Rivermead Mobility Index (-)

		Fugl-Meyer Assessment (-) Functional Ambulation Category (-) Maximal voluntary isometric torque (-) Short form-36 (-) Stroke Impact Scale (-)
Ucar et al. (2014) RCT (4) Nstart=22 Nend=22 TPS=Chronic A vs B	E: Active robotic training (Lokomat) C: Conventional home exercise Duration: 30min/d, 5d/wk, 2wks	E vs C: 10m Walk Test (+exp) Timed Up & Go Test (+exp)
Watanabe et al. (2014) RCT (4) Nstart=32 Nend=22 TPS=Subacute A vs 0	E: Gait training using a Hybrid Assistive Limb (HAL) C: Conventional gait training Duration: 20min/d, 3d/wk, for 4wks	E vs C: Functional ambulation category (+exp) 10-m Maximal walking speed (-) Stride (-) Cadence (-) 6-minute walking distance (-) Fugl-Meyer Assessment (-) Short Physical Performance Battery (-) Timed Up & Go Test (-) Isometric muscle strength (hip flexion/extension, knee flexion/extension) (-)
Wu et al. (2014) RCT (5) Nstart=30 Nend=28 TPS=Chronic A1 vs A2	E1: Resistance load Robotic gait system training E2: Assistance Robotic gait system training Duration: 45min/d, 3d/wk for 6wks	E1 v E2: 10m walk test Self selected (-) Fast (-) 6min walk test (-) Modified Ashworth scale (no stat) Berg Balance Scale (-) Activities-specific Balance Confidence scale (no stat) Short form-36 (no stat)
Kelley et al. (2013) RCT (6) Nstart=21 Nend=20 TPS=Chronic A vs B	E: Lokomat gait training C: Overground gait training Duration: 1h/d, 5d/wk for 8wks	E vs C: 10-metre Walking Test (-) 6-metre walking distance (-) Fugl-Meyer Assessment - Lower extremity (-) Barthel Index (-) Stroke Impact Scale (-) Mobility (-) Activities of Daily Living (-) Social participation (-) total recovery (-)
Chang et al. (2012) RCT (7) Nstart=48 Nend=37 TPS=Acute A vs 0	E: Lokomat gait training + conventional rehabilitation C: Conventional rehabilitation Duration: 100min/d, 5d/wk for 2wks	E vs C: Peak VO2 (+exp) Ventilatory response (-) respiratory exchange ratio (-) Blood pressure (-) Rate of perceived exertion (-) Fugl-Meyer assessment (+exp) Motricity index (-) Functional Ambulation category (-)

Fisher et al. (2011) RCT (6) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: AutoAmbulator gait training + Conventional rehabilitation C: Conventional rehabilitation Duration: 60min/d, 3-5d/wk, for 6-8wks (24 sessions totally)	E vs C: 8-Metre Walk Test (-) 3-Minute Walk Test (-) Tinetti Balance Assessment (-)
Morone et al. (2011) RCT (6) Nstart=48 Nend=27 TPS=Acute A1 vs A2 vs A3 vs A4	E1: High Motricity patients receiving Robot-assisted gait training + Conventional care; E2: Low Motricity patients receiving Robot-assisted gait training + Conventional care C1: High motricity patients receiving conventional gait training + Conventional care; C2: Low motricity patients receiving conventional gait training + Conventional care Duration: 3h/d for 5d/wk - Conventional care, 40min/d, 5x/wk for 4wks - Robot-assisted gait training, 40min/d, 5x/wk for 4wks - Conventional gait training	E1 vs C1: Functional Ambulation category (-) Ashworth scale (-) Rivermead mobility index (-) Motricity index (-) Trunk Control Test (-) Canadian Neurological scale (-) Barthel index (-) Rankin scale (-) 6min walk test (-) 10m Walk test (-) E2 vs C2: Functional Ambulation category (+exp2) Ashworth scale (-) Rivermead mobility index (+exp2) Motricity index (-) Trunk Control Test (+exp2) Canadian Neurological scale (No stats) Barthel index (+exp2) Rankin scale (+exp2) 6min walk test (+exp2) 10m Walk test (-)
Freivogel et al. (2009) RCT crossover (8) Nstart=16 Nend=16 TPS=Chronic A vs 0	E: LokoHelp gait training C: Conventional gait training Duration: 30min/d, 3-5d/wk, 20 treatments, crossover after 6wks	E vs C: Functional Ambulation Category (-) Gait Velocity (-) Motricity Index (-) Rivermead Mobility Index (-) Berg Balance Scale (-) Modified Ashworth Scale (-)
Hidler et al. (2009) RCT (5) Nstart=72 Nend=63 TPS=Subacute A vs 0	E: Lokomat gait training C: Conventional gait training Duration: 60min/d, 3d/wk, for 8- 10wks	E vs C: Motor assessment scale (-) Functional Ambulation Category (-) Berg Balance test (-) Rivermead Mobility (-) Gait Cadence (-) 6-minute walk distance (+exp) 5-meter walk test- speed (+exp) National Institutes of Health Stroke Scale (-) Frenchay Activities Index (-) 36-Item Health Survey; - General health (-); - Social functioning (-)
Lewek et al. (2009) RCT (5) Nstart=26 Nend=20 TPS=Chronic	E1: Therapist-assisted locomotor training E2: Robotic-assisted locomotor training Duration: 30min/d, 3d/wk for 4wks	E1 vs E2: Hip and Knee Average Coefficient of Correspondence (-) Spatiotemporal patterns (-) Self-selected gait speed (-)

A vs B		Cadence (-) Stride length (-) Hip kinematics (-) Knee kinematics (-) Ankle kinematics (-) circumduction (-)
Schwartz et al. (2009) RCT (6) Nstart=67 Nend=56 TPS=Acute A vs 0	E: Lokomat gait training C: Conventional therapy Duration: E: 30min/d, 3d/wk, 6wks Robotic-Assisted Gait Training + 30min/d, 5d/wk, 6wks regular PT & C: 60min/d, 5d/wk, 6wks PT	E vs C: Functional Ambulation Category (+exp) National Institutes of Health stroke scale (+exp) Functional Independence Measure Motor (+exp) Cognitive (-) Stroke Activity Scale (-) Subgroup Analysis for (FAC >=3): 10-m walk (-) Time Up and Go test (-) 2-minute walk test (-) stairs climbed test (+exp)
Hornby et al. (2008) RCT (5) Nstart=48 Nend=48 TPS=Chronic A1 vs A2	E: Robotic assisted Locomotor training C: Therapist assisted locomotor training Duration: 30min/d for 12 sessions	E vs C: 10m walk test Self-selected velocity (+con) Fast velocity (+con) impaired leg stance time Self-selected velocity (-) Fast velocity (+con) Step asymmetry Self-selected velocity (-) Fast velocity (-) 6min Walk test (-) Modified Emory Functional Ambulation profile (-) Berg Balance scale (-) Frenchay Activities index (-) Short form-36 (+con)
Husemann et al. (2007) RCT (7) Nstart=30 Nend=30 TPS=Subacute A vs 0	E: Lokomat gait training + Conventional care C: Conventional care Duration: 30min/d, 20 sessions Lokomat + 20 sessions Conventional care; 30min/d, 40 sessions Conventional care	E vs C: Functional ambulation category (-) Modified Ashworth scale (-) Motricity index (-) Barthel Index (-) 10m Walk test (-) Cadence (-) Stride duration (-) Stance Duration Affected leg (-) Unaffected leg (-) Single support time Affected leg (+exp) Unaffected leg (-) Body Tissue Composition Fat mass (+con) Body weight (+con) Body cell mass (+exp)

Exoskeleton Systems vs Treadmill Training		
Yoo et al. (2023a) Feasibility/pilot RCT (5) Nstart=30 Nend=29 TPS=Chronic A1 vs A2 Also in Table 9 (Treadmill Training)	E: Treadmill training with HEALBOT exoskeleton C: Treadmill training Duration: 30min/d, 2-3d/wk, 4wks(10 sessions total)	E vs C: fNIRS Cortical activity(+exp) FAC(+exp) 10MWT(-) MI-LE(+exp) BBS(-) Spatial step symmetry(+exp) Temporal step symmetry(-)
Choi et al. (2022) RCT (5) Nstart=24 Nend=24 TPS=Chronic A1 vs A2 vs A3 vs B	E1: 30% weight robot gait training + general physical therapy E2: 50% weight robot gait training + general physical therapy E3: 70% weight robot gait training + general physical therapy C: treadmill training + general physical therapy Duration: 120 mins/d, 5ds/wk, 6 wks	E1 vs C: 10 meter walk test (+exp1) TUG (+exp1) Berg balance scale (+exp1) E1 vs E2: 10 meter walk test (+exp1) TUG (+exp1) Berg balance scale (+exp1) E1 vs E3: 10 meter walk test (+exp1) TUG (+exp1) Berg balance scale (+exp1) E2 vs C: 10 meter walk test (+exp2) TUG (-) Berg balance scale (-) E2 vs E3: 10 meter walk test (+exp2) TUG (-) Berg balance scale (-) E3 vs C: 10 meter walk test (+exp3) TUG (-) Berg balance scale (-)
Lee et al. (2022b) RCT (6) Nstart=47 Nend=43 TPS=Chronic A1 vs A2 vs B vs C Also in Table 6 (Constraint-Induced Movement Therapy (CIMT))	E1: Healbot no pelvic mode E2: Healbot pelvic mode E3: Healbot CIMT mode C: Conventional gait training with treadmill Duration: 30min/d 2-3d/wk, 4wks	E1/E2/E3 vs C: 10MWT(+exp3) BBS(+exp2) FAC(-) TUG(+exp2) MI(+exp3)
Bang & Shin (2016b) RCT (7) Nstart=18 Nend=18 TPS=Chronic A vs B	E: Lokomat gait training C: Treadmill gait training Duration: 60min/d, 5d/wk, for 4wks	E vs C: Gait speed (+exp) Cadence (+exp) Step Length (+exp) Berg Balance Scale (+exp) Activities-Specific Balance Confidence (+exp) Double-support phase (+exp)
Westlake & Patten (2009) RCT (6) Nstart=16 Nend=16	E: Lokomat gait training C: Manually assisted body- weight supported treadmill training Duration: 30min/d, 3d/wk for 4wks	E vs C: Self-selected walking speed (-) 6-Minute Walk Test (-) Berg Balance Scale (-)

TPS=Chronic A vs B		Fugl-Meyer Assessment (-) Short Physical Performance Battery (-) Step length ratio (-)
Exoskeleton Gait Training vs Functional Task-Specific Training		
Jayaraman et al. (2019) RCT (5) Nstart=54 Nend=50 TPS=Chronic A vs B	E: over-ground gait training with the Honda Stride Management Assist (SMA) exoskeleton C: Functional task-specific training Duration: 45min/d, 3d/wk, for 6- 8wks (18 sessions total)	E vs C: 10-metre walk test (+exp) 6-minute walk test (+exp) functional gait assessment (-) Berg Balance Scale (+exp) 5 Times Sit-to-Stand Test (-) Fugl-Meyer Assessment (-) Corticomotor excitability lateral hamstrings (-) tibialis anterior (-) rectus femoris (paretic) (+exp) rectus femoris (nonparetic) (-) Activities-Specific Balance Confidence Scale (-) Numeric Pain Rating Scale (-) Modified Falls Efficacy Scale (-) Stroke-Specific Quality of Life (-) Patient Health Questionnaire for depression (-) step count during therapy days (+exp) during non therapy days (-) energy expenditure (+exp)
Exoskeleton Systems Administration Method		
Jiae et al. (2022) RCT (4) Nstart=55 Nend=40 TPS=Subacute A1 vs A2	E: Heart rate controlled robot-assisted gait training C: Therapist controlled robot-assisted gait training Duration: 20min/d, 5d/wk, 3wks	E vs C: FAC(-) MBI(-) BBS(-) TUG(-) 10MWT(-)
Bae et al. (2016) RCT (8) Nstart=34 Nend=34 TPS=Chronic A vs B	E: Heart rate reserve (HRR)- guided high-intensity robot- assisted gait training (RAGT) using Lokomat C: Rate of perceived exertion (RPE)-guided high-intensity robot-assisted gait training (RAGT) using Lokomat Duration: 60min/d, 3d/wk for 6wks	E vs C: Fugl-Meyer Assessment (+exp) 10-metre Walk Test (+exp) Gait Speed (+exp) Cadence (+exp) Stride Length (+exp) Step Length (+exp) Swing Time (+exp) Single/Double Support Time (+exp) Symmetrical Index of Swing/Stance (+exp)
Exoskeleton Portable Devices vs Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis		
Wright et al. (2021) RCT (7) Nstart=34 Nend=31 TPS=Chronic A vs 0	E1: Home-based overground Robot-assisted gait training (AlterG Bionic Leg) + Usual care E2: Physical Activity + Usual physiotherapy Duration: 30 min/d PT & minimum 30 min/d robot gait training, 6d/wk, for 10wks	E1 vs E2: 6min Walk test (+exp) Rating Perceived exertion (-) Timed Up and Go (-) Dynamic gait index (+exp) Berg balance scale (+exp) Functional ambulation category (+exp)

Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)		Modified Rankin scale (no stats)
Yeung et al. (2021) RCT (7) Nstart=47 Nend=43 TPS=Acute A1 vs A2 vs 0	E1: Robot-assisted training with Power-assisted ankle robot + Conventional training E2: Robot-assisted training with Swing-controlled ankle robot + Conventional training C: Conventional training Duration: 30min/d, 2d/wk, (20sessions total) PAAR/SCAR & 2h/d, 5d/wk conventional therapy	E1 vs C: Functional Ambulation Category (-) Berg Balance Scale (-) 10-Metre Walk Test (+exp1) E2 vs C: Functional Ambulation Category (+exp2) Berg Balance Scale (-) 10-Metre Walk Test (-) E1 vs E2: Functional Ambulation Category (-) Berg Balance Scale (-) 10-Metre Walk Test (+exp1)
Buesing et al. (2015) RCT (6) Nstart=50 Nend=50 TPS=Chronic A vs B	E: Task-specific walking training while wearing a robotic device (Stride Management Assistant system) C: Functional task specific walking Duration: 45min/session, 3x/wk for 6-8wks	E vs C: Gait velocity (-) Gait Candence (-) Step time (-) Stance time (-) Swing time (-) Double support time (-) Step length Impaired side (+exp) Non-impaired side (-) Stride length (no stats) Spatial asymmetry At fast speed (+exp) At self speed (-) Temporal asymmetry (-)
Goodman et al. (2014) RCT (3) Nstart=17 Nend=10 TPS=Chronic A1 vs A2	E: High reward (monetary, social and performance) Anklebot training C: Low reward (reduced social, scoring feedback, prizes) Anklebot training Duration: 1h/d, 3x/wk, for 3wks	E vs C: 8m Walk test (-) Ankle motor control: Peak Speed (-) Mean Speed (-) Normalized Jerk (+exp) Number of successful gate passages (-) Velocity (-) Gait cadence (-) Step time: Non paretic (-) Paretic (-) Step length: Non paretic (+exp) Paretic (-) Paretic Single limb support (-) Double limb support (-) Stride length (+exp) EEG measures spectral (+exp) EEG Coherence to Motor Planning: Theta (+con) Alpha (+con) Low Beta (+con EEG Frontoparietal Coherence:- Theta (+exp) Low Beta (+exp)

Stein et al. (2014) RCT (7) Nstart=24 Nend=24 TPS=Chronic A1 vs A2 Also in Table 13 (Orthotic Devices)	E: Gait training with robotic leg brace C: Group exercise without robotic leg brace Duration: 60min/d, 3d/wk for 6wks	E vs C: Timed Up and Go (-) 10-m walk test (-) 6-min walk test (-) Five-Times-Sit-to-Stand test (-) Berg Balance scale (+exp) California Functional Evaluation 40 (-) Emory Functional Ambulation Profile (+con) Romberg (open eye/ closed eye) (-)
Waldman et al. (2013) RCT (5) Nstart=24 Nend=23 TPS=Chronic A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Robot assisted passive stretching and active movement training C: At-home passive ankle stretching Duration: 60min/d, 3d/wk for 6wks	E vs C: Modified Ashworth Scale (+exp) Stroke Rehabilitation Assessment of Movement (+exp) Berg Balance Scale (+exp) 6 minute Walk Test (-) Ankle Dorsiflexion Passive Range of Motion (+exp) Ankle Dorsiflexion Active Range of Motion (-) Isometric Muscle Strength (+exp) Maximal Voluntary Contraction (+exp) Vertical Ground Reaction during Stance Phase (+exp)
Exoskeleton Portable Devices vs Stretching		
Zhai et al. (2021) RCT (8) Nstart=20 Nend=20 TPS=Subacute A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China). C: Manual stretching by the appointed physiotherapist Duration: 20min/d, 5d/wk, for 2wks	E vs C: Modified Ashworth Scale (-) Fugl-Meyer Lower Extremity (-) Berg Balance Scale (-) Modified Barthel Index (-) Biomechanical DF PROM (-) DF strength (-) DF Stiffness (-) PF Stiffness (-)
Forrester et al. (2014) RCT (5) Nstart=39 Nend=34 TPS=Acute A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Performance-based training with Anklebot stretching C: Manual stretching of ankle Duration: Performance Based Training: 60min, daily Duration not specified	E vs C: 8 m Walk (-) Berg Balance Scale (-) AROM (-) Muscle strength (-) Functional Independence Measure (-) Interlimb temporal symmetry (+exp) Step time ratio (+exp) Interlimb spatial symmetry (+exp) Step length ratio (-) Peak angular velocity (+exp) Mean angular velocity (-) Movement smoothness Normalized jerk (+exp) Target success (+exp) Step time Paretic (-) Non paretic (-) Step time symmetry (+exp)

		Step length Paretic (-) Non paretic (-) Step length symmetry (+exp)
Exoskeleton Portable Devices with Ankle Foot Orthosis vs Sham Ankle Foot Orthosis		
Yeung et al. (2018) RCT (5) Nstart=19 Nend=15 TPS=Chronic A vs 0 Also in Table 13 (Orthotic Devices)	E: Robot-assisted ankle-foot- orthosis (AFO) with dorsiflexion assistance C: Sham Ankle foot orthosis (AFO) with torque impedance Duration: 30min/d, 2-4d/wk, for 5wks (20 session total)	E vs C: Functional Ambulation Categories (+exp) Fugl-Meyer Assessment (+exp) Modified Ashworth Scale (-) Berg Balance Scale (-) 10-Meter Walk Test (+exp) Six-Minute Walk Test (-) Walking Speed (+exp) Step Length (-) Stance Time (-) Swing Time (-) Peak Kinetic Gait Parameters Vertical Force loading response (+exp) Vertical Force loading response unaffected (-) Vertical Force terminal stance (-) Braking Force loading response (-) Propulsive Force terminal stance (-) Peak Kinematic Gait Parameters Foot Tilting at initial contact (-) Ankle Dorsiflexion at stance (-) Ankle Dorsiflexion at swing (-) Knee Flexion at stance (-) Knee Flexion at swing affected (-) Knee Flexion at swing unaffected (+exp) Knee Flexion at swing (-) Hip Flexion at stance (-) Hip Flexion at swing (-)
Robotic-Assisted Gait Training and Restraint		
Kang et al. (2018) RCT (7) Nstart=20 Nend=20 TPS=Subacute A1 vs A2	E: Robot-assisted (Lokomat) walking training with rhythmic arm swing facilitated + conventional care C: Robot-assisted (Lokomat) walking training with arm fixation + conventional care Duration: 30min/d, 5d/wk, for 6wks	E vs C: 10 metre walk test (-) Berg Balance Scale (+exp) Timed Up and Go test (-) Tetrax Fall index (-) Fugl-Meyer Assessment (+exp) modified Barthel Index (+exp)
Bonnyaud et al. (2014a) RCT (4) Nstart=26 Nend=26 TPS=Chronic A + B vs A	E: Lokomat Gait Training + Restraint of Non-paretic Limb C: Lokomat Gait Training Duration: Single 30min Session	E vs C: Gait velocity (-) Cadence (-) Step length (-) single-support phase (-) Peak knee flexion paretic side (+exp) other knee kinematics (-) hip kinematics (-) Ankle kinematics 9-) Vertical GRF single-support phase paretic side (+exp) - nonparetic side (-) Peak propulsion (-)

		Peak braking (-)
Robotics Combined with Virtual Reality vs Robotics, Robotics Combined with Auditory Stimulation or Conventional Training		
Kayabinar et al. (2021) RCT (6) Nstart=37 Nend=30 TPS=Chronic A1 vs A2 Also in Table 26 (Virtual Reality)	E: VR augmented robot-assisted gait training + conventional care C: Robot-assisted gait training + conventional care Duration: gait training 45min/d, 2d/wk, for 6wks + conventional care 30min/d, 3d/wk, for 6wks	E vs C: 10-metre walk test (-) Motor task added 10-metre walk test (-) Cognitive task added 10-metre walk test (-) Motor dual-task performance (-) Cognitive dual task performance (-) Functional Gait assessment (-) Rivermead Mobility Index (-) Berg Balance Scale (-) Falls Efficacy Scale-1(-) Functional Independence Measure total (-)
Park et al. (2018a) RCT (6) Nstart=40 Nend=40 TPS=Chronic A + B vs C + B vs D Also in Table 9 (Treadmill Training); Table 26 (Virtual Reality)	E1: Virtual reality + robot- assisted gait training (Treadmill)+ conventional physical therapy E2: Auditory stimulation + robot- assisted gait training (Treadmill) + conventional physical therapy C: Conventional physical therapy + treadmill training Duration: 45min/d, 3d/wk, for 6wks trainings & 30min/d, 5d/wk, for 6wks Conventional therapy	E1 vs E2: Medical Research Council (+exp1) Berg Balance Scale (-) Timed Up & Go Test (-) 10 Meter Walk test (-) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-) E1/ E2 vs C: Medical Research Council (+exp1+exp2) Berg Balance Scale (+exp1, +exp2) Timed Up & Go Test (+exp1, +exp2) 10 Meter Walk test (+exp1) Fugl-Meyer Assessment (+exp1) Modified Barthel Index (-)
Calabro et al. (2017) RCT (8) Nstart=24 Nend=24 TPS=Chronic A + B vs A Also in Table 26 (Virtual Reality)	E: Robotic-assisted gait training (Lokomat-Pro) + VR C: Robotic-assisted gait training (Lokomat-Nanos) Duration: 45min/d, 5d/wk, for 8wks	E vs C: Rivermead Mobility Index (+exp) Tinetti Performance Oriented Mobility Assessment (+exp) Modified Ashworth Scale (-) Hamilton Rating Scale for Depression (-) Knee force (+exp) Hip force (+exp) EEG-Brain activation BA6 brain area(+exp) BA7 area(+exp) BA17 area (+exp) parieto-occipital activation- Î¼ and HÎ³ (+exp)
Lokomat Training vs Galvanic Vestibular Stimulation or Physiotherapy with Visual Feedback		
Krewer et al. (2013) RCT crossover (5) Nstart=25 Nend=24 TPS=Chronic A vs 0 vs B Also in Table 15 (Biofeedback)	E1: Galvanic vestibular stimulation E2: Gait training (Lokomat) E3: Physiotherapy with visual feedback Duration: 20min session - 1d washout	E1 vs E2/E3: Burke Lateropulsion Scale (-) Scale for Contraversive Pushing (-) E2 vs E3: Burke Lateropulsion Scale (+exp2) Scale for Contraversive Pushing (-)

Robot as Gait Training as Needed vs Robot Assisted Gait Training Full Time		
Seo et al. (2018) RCT (5) Nstart=24 Nend=12 TPS=Chronic A + B vs A	E1: Assist-as-needed robot- assisted gait training for unaffected limb + fully-assisted robot-assisted training for affected limb E2: Assist-as-needed robot- assisted gait training for affected limb + fully-assisted robot- assisted training for unaffected limb Duration: 45min, 2x/wk, for 10wks	E1 vs E2: Fugl–Meyer Motor Assessment (-) Functional Ambulation Category (-) Motricity Index (-) Trunk Control Test (-) gait speed (-) cadence (-) step length asymmetric ratio (-) stride length (-) double support time (-) single support time (-) kinematic Hip extension (-) Knee extension (-) Hip flexion (-) Knee flexion (-) Ankle dorsiflexion affected (+exp) Ankle dorsiflexion Unaffected (-) hip/knee/ankle Kinetic variables (-)
Robot-assisted Trunk Training vs Conventional Therapy		
Kim et al. (2022f) RCT (6) Nstart=40 Nend=40 TPS=Not reported A vs B Also in Table 4 (Trunk Training)	E: Robot-assisted trunk control training + Conventional trunk stabilization exercise C: Conventional trunk stabilization exercise + stretching exercise Duration: 30 min/d, 5d/wk for 8 wks trunk stabilization exercise & 15min/d, 5d/wk for 8 wks robot-assisted trunk control therapy/stretching exercise	E vs C: Trunk Impairment Scale (+exp) Berg Balance Scale (+exp) Functional Reach Test (+exp) Limit of Stability (+exp) Centre of Pressure (+exp)
Gait Training with Gait Exercise Assist Robot (GEAR) vs Gait Training with Treadmill		
Ogino et al. (2020) RCT (6) Nstart=20 Nend=19 TPS=Chronic A vs B Also in Table 9 (Treadmill Training)	E1: Gait training with Gait Exercise Assist Robot (GEAR) E2: Gait training with treadmill Duration: 60min/d, 5d/wk, for 4wks	E1 vs E2: Timed Up and Go Test (+exp1) 6-min walk test (+exp1) SF-8 (-) Global rating of change scale (-) 10-m walk test Gait speed (-) Cadence (-) Stride length (-) Gait distance (+exp2)
Gait Training with Gait Exercise Assist Robot (GEAR) vs Overground Gait Training		
Tomida et al. (2019) RCT (4) Nstart=26 Nend=26 TPS=Acute A vs B	E: Robot-assisted gait training (GEAR) + Conventional rehabilitation C: Overground gait training + Conventional rehabilitation Duration: 40min/d, 7d/wk, for 4wks	E vs C: Functional Independence Measure Walk score (+exp) Stroke Impairment Assessment Set total lower limb motor function score (-)
Robotic Verticalization + FES vs Conventional therapy		
Calabro et al. (2015) RCT (5) Nstart=20 Nend=20	E: Robotic verticalization + FES + dynamic foot support C: Physiotherapy-assisted verticalization (simple tilt-table)	E vs C: Visual Analog Fatigue Scale (+exp) Ravens Coloured Progressive Matrices (+exp)

TPS=Subacute A + B + C vs D Also in Table 28 (Functional Electrical Stimulation)	Duration: 30min/d, 5d/wk for 6wks	Fugl-Meyer Lower Extremity scale (+exp) Medical Research Council scale (+exp) Postural assessment scale for Stroke Patients (+exp) Sensory-Motor plasticity (+exp) PO2 (-) Heart rate (-) Blood pressure (-) cVEP (+exp) cVEMPS (+exp) MEP (+exp)
Robotic-assisted Stretching vs Conventional Therapy		
Yoo et al. (2018a) RCT (4) Nstart=16 Nend=16 TPS=Chronic A vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Robotic ankle stretching exercises C: Conventional stretching board 2d/wk, for 3.5wks (7 sessions total)	E vs C: Ankle ROM (+exp) Sensory organization test (+exp) Speed (-) Cadence (-) Step Length affected (-) Step Length unaffected (+exp)
Regent Suit + Neuromotor rehabilitation vs Neuromotor rehabilitation		
Monticone et al. (2013) RCT (8) Nstart=60 Nend=55 TPS=Acute A1 vs A2	E: Neuromotor rehabilitation sessions + neuromotor exercises wearing the Regent Suit C: Neuromotor rehabilitation sessions Duration: 90min/d, 20d	E vs C: 6-minute walking test gait speed (+exp) oxygen saturation (-) heart rate (-) Berg balance scale (+exp) 10-m walking test gait speed (+exp) step length (+exp) cadence (-) length symmetry index (-) time symmetry index (-) Functional independence measure (+exp) Barthel index (+exp) Global perceived effect scores (+exp)
Vibration on sole of foot vs Contact on Sole of Foot with No Vibration		
Onal et al. (2020) RCT (6) Nstart=34 Nend=30 TPS=Chronic A1 vs A2 Also in Table 31 (Muscle Vibration)	E: Vibration on sole of foot C: Contact on sole of foot with No vibration Duration: 15min single treatment	E vs C: Postural Stability Test (+exp) Anteroposterior stability test (+exp) Mediolateral stability (-) Fall risk test (+exp)
Robot-Assisted Gait Training with Visuomotor Feedback		
Maggio et al. (2021) RCT (6) Nstart=45 Nend=45 TPS=Subacute A + B vs A	E: Robot-Assisted Gait Training + Visuomotor feedback C: Robot-Assisted Gait Training Duration: 60min/d, 5d/wk, for 8wks	E vs C: Body-esteem scale (+exp) Body Uneasiness Test-A Global Severity Index (-) Weight Phobia (+exp) Body Image Concern (-)

		Avoidance (+exp) Compulsive self-monitoring (-) Depersonalization (+exp) Body Uneasiness Test-B Positive Symptom Total (+exp) Positive Symptom Distress Index (+exp) I Mouth (+exp) II Face shape (+exp) III Thighs (+exp) IV Legs (+exp) V Arms (+exp) VI Moutsache (-) VII Skin (-) VIII Blushing (-) Fugl-Meyer assessment (+exp) Frontal assessment battery (-) Montreal Cognitive assessment (-) Beck Depression Inventory (-) Short form-12 Total (-) Physical Health (-) Mental Health (-) EEG (+exp)
Robotics with Treadmill Training and Virtual Reality vs Seated Training		
Tamburella et al. (2019) RCT crossover (5) Nstart=12 Nend=10 TPS=Subacute A + B vs A + C Also in Table 15 (Biofeedback)	E: Lokomat robotic training + EMG biofeedback + Conventional therapy C: Lokomat robotic training + Commercial joint torque biofeedback + Conventional therapy Duration: 40min/d, 5d/wk for 6 session - Conventional therapy, 40min/d, 3x/wk for 6 sessions - Lokomat with EMG, 40min/d, 3x/wk for 6 sessions - Lokomat with Joint torque feedback	E vs C: Modified Ashworth scale hip (-) Knee (-) Ankle (-) Manual Muscle test: Hip (-) Knee (-) Ankle (-) Functional Ambulation category (-) Visual Analogue scale-pain (-) Barthel index (-) Berg Balance scale (-) Trunk Control test (-)
Forrester et al. (2016) RCT (4) Nstart=35 Nend=28 TPS=Chronic A + B + C vs D + B + C Also in Table 9 (Treadmill Training); Table 26 (Virtual Reality)	E: Treadmill training + Virtual reality + Ankle robotics C: Seated training + Virtual reality + Ankle robotics Duration: 45min/d, 5d/wk for 6wks	E vs C: Overground gait velocity (-) paretic single limb support duration (-) Paretic Anterior posterior propulsive impulses (-) Paretic foot center of pressure length (-) Center of pressure symmetry (-) Ankle targeting speed (-) ankle targeting accuracy (+exp) dorsiflexion active Range of motion (-) Paretic peak swing angle (No stats) heel-first strikes (No stats)
Bustamante Valles et al. (2016) RCT (3) Nstart=27	E: Circuit Training (NESS L300 & Motomed Viva 2 FES+ Cycling & Brain trainer)	E vs C: Fugl-Meyer Assessment (+exp) 6-Minute Walk Test (-)

Nend=20 TPS=Chronic A + B vs 0 Also in Table 8 (Cycle Ergometer Training); Table 28 (Functional Electrical Stimulation)	C: Conventional Therapy Duration: 2hrs, 24 sessions over 6-8wks	10-Meter Walk Test (-) Timed Up and Go Test (-)
Comparison of Robot-Assisted Gait Training Systems		
Elmas Bodur et al. (2024) RCT (6) Nstart=32 Nend=32 TPS=Chronic A vs B	E1: Robotic gait training with Exoskeleton ExoAthlet + Conventional physiotherapy; E2: Robotic gait training with Lokomat Free-D + Conventional physiotherapy Duration: 60min (30min RGT + 30min CT)/d, 3d/wk, 8wks	E1 vs E2: FIM (-) 6MWT (-) 30-CST (-) SF-36 vitality (+exp) mental health (+exp) bodily pain (+exp) general health perception (+exp) physical functioning (-) role limitations (-) social functioning (-)
Comparison of Ankle Robot Training Intensity and Frequency		
Zhang et al. (2023a) RCT (8) Nstart=36 Nend=36 TPS=Subacute A1 vs A2 vs A3 vs A4	E1: ankle robot training low frequency, low intensity E2: ankle robot training high frequency, low intensity E3: ankle robot training low frequency, high intensity E4: ankle robot training high frequency, high intensity Duration: high frequency: 20min 2x/d, low frequency: 20min/d, 5d/wk, 3wks	E1 vs E2 vs E3 vs E4: PROM (-) AROM (-) FMA-LE (-)
Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation vs Conventional Therapy		
Mao et al. (2022b) RCT (6) Nstart=60 Nend=60 TPS=Subacute A + B vs 0 Also in Table 34 (Thermal Stimulation and Cryotherapy)	E: Robot guided ankle proprioceptive training + Thermal tactile stimulation + Conventional therapy C: Conventional Therapy Duration: E: 1 session/d, 5d/wk, 6 wks	E vs C: AROM (+exp) PROM (+exp) Ankle Joint Sensitivity (+exp) FMA-LE (+exp) BBS(+exp) 10MWT (+exp)
Robot-Assisted Gait Training with Robotic Balance Platform vs Robot-Assisted Gait Training Alone		
Aprile et al. (2022) RCT (5) Nstart=40 Nend=36 TPS=Subacute A + B vs A	E: Robotic Gait Device (G-EO system) + Robotic Platform (Hunova) C: Robotic Gait Device (G-EO system) Duration: 45 min/d, 3d/wk, 4 wks	E vs C: Motricity Index Ankle Dorsiflexion (-) Knee Extension (-) Hip Flexion (-) Lower Limb (-) Modified Ashworth Scale Hip(-) Knee (-) Ankle (-) Lower Limb (-) FAC (-) Tinnetti Scale Balance (-) Trunk Control Test (-) Walking Handicap Scale (-)

		10MWT (-) 6MWT(-) Ambulation Index (-) TUG (-) BI (-) Numerical Ratings Scale (-) ID Pain (-) Center of Pressure Sway Area (-) Sway Path (-) Ossicilation (-) Mean Velocity (-) Mean Velocity Medio-Lateral Open Eyes (+exp) Romberg Index (-) Ellipse axes ratio (-) Trunk Displacement (-) Trunk Osscilation (-) BBS (-)
Robot-Assisted Gait Training vs Upper Limb Therapy		
Lin et al. (2022b) RCT (8) Nstart=172 Nend=144 TPS=Subacute A vs B	E: Robot-assisted training C: Enhanced upper limb therapy Duration: 30 mins/d, 5ds/wk, 3wks	E vs C: FMA-UE total (-) proximal (-) FMA-LE (+exp) modified barthel index (-)
Robot-Assisted Gait Training with Balance Training vs Balance Training Alone		
Gunduz et al. (2024) RCT (8) Nstart=42 Nend=42 TPS=Subacute A + B vs C Also in Table 11 (Balance Training)	E: Robot assisted gait training + Traditional balance training C: Traditonal balance training Duration: Experimental group: Traditional balance training (40 mins/d, 3ds/wk, 5wks) + Robot assisted gait training (40 mins, 2ds/wk, 5wks); Control Group: 40 mins/d, 5ds/wk, 5 wks	E vs C: Encephalog app anterior (-) postrior (-) medial (-) lateral (-) stand up time (+exp) sit down time (+exp) TUG (-) Berg balance scale (-) Falls efficacy scale-international (-) FMA-LE (+exp) Foot posture index-6 (-)
Robot-Assisted Gait Training vs Home-Based Exercise Program		
Do et al. (2024) RCT (6) Nstart=24 Nend=22 TPS=Chronic A vs B	E: Robot-assisted gait training (Morning Walk device) C: Home-based rehabilitation (aerobic, balance, stretching and strength exercises) + Conventional rehab Duration: E: 30 min/d, 3d/wk, 8 wks, C: 3d/wk for 8wks	E vs C: VO2 max (+exp) Functional Ambulation Category (-) 2-Minute Walk Test (-) 10MWT (-) BBS (-) Motricity Index (+exp) MBI (-) FMA (+exp) knee extensor affected (+exp) knee extensor non-affected (+exp)

		knee flexor affected (+exp) knee flexor non-affected (+exp) muscle mass (-) fat % (-) glucose (-) cholesterol (-) lipids (-)
Additional Comparisons from the Source Dataset		
Park et al. (2021c) RCT (5) Nstart=30 Nend=20 TPS=Acute A vs B	E: Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy C: Gait training + Conventional PT Duration: 30min/d, 7d/wk for 2wks Gait or robotic gait training, 60min/d, 7d/wk for 2wks - Conventional physical therapy	E vs C: Kinematic hip angle change (No stats) knee angle change (No stats) ankle angle change (No stats) Kinetic forces hip (No stats) knee (No stats) ankle (No stats) Peak passive stiffness (No stats) hip (No stats) knee ankle (No stats) Modified Ashworth scale hip flexor (-) hip extensor (+exp) knee flexor (-) knee extensor (-) ankle dorsiflexor (+exp) ankle plantarflexor (-) Fugl-Meyer assessment-LE synergy (-) synergy (-) extensor synergy (-)
Son et al. (2021) RCT (6) Nstart=24 Nend=23 TPS=Chronic A1 vs A2	E: Healbot T (Exoskeleton) with pelvic motion on C: Healbot T (Exoskeleton) with pelvic motion off Duration: 30mins/d, 10d/4wks	E vs C: Stride length (No stats) Cadence (No stats) Walking speed (No stats) EMG signal (+exp)
Park et al. (2019d) RCT (7) Nstart=34 Nend=34 TPS=Subacute A1 vs A2	E: Progressive reducing assistance force during robot-assisted gait training + conventional PT C: Full assistance force during robot-assisted gait training + conventional PT Duration: 30min/d, 5d/wk, 4wks robot-assisted gait training & 30min/d, 5d/wk, 4wks conventional PT	E vs C: Functional ambulation category (+exp) Berg balance scale (+exp) Korean version of Modified Barthel Index (K-MBI) (+exp) Knee extensors torque (+exp)
Niedermeier et al. (2017) RCT crossover (6) Nstart=16 Nend=14 TPS=Subacute A vs 0	E: Robot-Assisted Gait Training C: Physiotherapy Duration: 1h/1session, 24h washout	E vs C: German Mood Survey Scale Anger (+exp) Activation (+exp) Elation (+exp) Calmness (+exp) Fatigue (-) Depression (-)

		Excitement (-)
Rodrigues et al. (2017) RCT (7) Nstart=20 Nend=18 TPS=Chronic A1 vs A2	E1: Fast rhythmic robot-assisted locomotor training on body-weight supported treadmill; E2: Slow discrete robot-assisted locomotor training on body-weight supported treadmill Duration: 30min/d, 5x/wk for 6wks	E1 vs E2: Functional Ambulation category (No stats) Berg Balance scale (No stats) Fugl-Meyer assessment-lower limb (No stats) Timed Up and Go (No stats) 6min Walk test (No stats) 10m Walk test (No stats)
Dias et al. (2007) RCT (4) Nstart=40 Nend=36 TPS=Chronic A vs 0	E: Gait trainer device (REHA-STIM) C: Conventional rehabilitation (Bobath) Duration: 40min/d, 5d/wk, 5 wks	E vs C: Motricity Index lower limb (No stats) Toulouse Motor Scale (No stats) Berg Balance Scale (No stats) Rivermead Mobility Index (No stats) Fugl-Meyer Stroke Scale lower limb (No stats) Barthel Index (No stats) 10 meter walking test cadence (No stats) velocity (No stats) step length (No stats) 6 minutes walking test (No stats) step test (-)
Mayr et al. (2007) RCT crossover (5) Nstart=16 Nend=16 TPS=Subacute A1 vs A2	E: 2x Lokomat gait training + 1x Conventional PT C: 2x Conventional PT + 1x Lokomat gait training Duration: 30min/d, 5d/wk for 9wks	E vs C: EU-Walking Scale (No stats) Rivermead Motor Assessment (No stats) 10-m timed walking speed (No stats) 6-minute timed walking distance (No stats) Medical Research Council scale (No stats) Motricity Index (No stats) Ashworth Scale (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Haolin et al. (2024) RCT (8) Nstart=100 Nend=100 TPS=Subacute A vs B vs A + B vs 0 Primary listing: Table 12 (Stretching or Mobilization Exercises)	E1: Daoyin + Conventional rehab, E2: Lower Limb Robot + Conventional rehab, E3: Daoyin + Lower Limb Robot + Conventional rehab C: Conventional rehab Duration: E1: 80min/d, 5d/wk, 2 wks; E2: 40min/d, 5d/wl, 2wks; E3: 120 min/d, 5d/wk, 2 wks (2x/day, Daoyin 40 min, Robot 20min)	E1/E2/E3 vs C: FMA (+exp3) BBS (+exp2/3) BI (+exp3) Fatigue Scale-14 (+exp1/3) Pittsburgh sleep quality index (+exp1/3) Hamilton rating scale for anxiety (+exp1/3) Hamilton rating scale for depression (+exp1/3) E1/E3 vs E2: FMA (-) BBS (-) BI (-) Fatigure Scale-14 (+exp1) Pittsburgh sleep quality index (-) Hamilton rating scale for anxiety (+exp1/3) Hamilton rating scale for depression (+exp1/3)
Kim et al. (2024b) RCT (7)	E: High definition transcranial direct current stimulation (dual) + Robot assisted gait training	E vs C: 10 meter walk test (-)

Nstart=27 Nend=24 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	C: Sham High definition transcranial direct current stimulation + Robot assisted gait training Duration: 45mins/d, 3x/wk, 4wks	Functional Reach Test (-) Dynamic gait index (-) FMA total (+exp) lower extremity (-) TUG (-) Berg balance scale (-) Korean-Modified Barthel Index (+exp)
Cotinat et al. (2024) RCT crossover (7) Nstart=33 Nend=29 TPS=Chronic A + B vs B Primary listing: Table 46 (Botulinum Toxin)	E: Robotic Gait Training (Lokomat robotic exoskeleton) + Botulinum toxin injection C: Botulinum toxin injection + Conventional physiotherapy Duration: 45min/d, 5d/wk, 2wks	E vs C: 6mWT (+exp) 10MWT (+exp) TUG (-) BBS (-) MAS (-)
Hu et al. (2024) RCT (5) Nstart=56 Nend=56 TPS=Subacute A + B vs A Primary listing: Table 53 (Acupuncture and Massage)	E: Acupuncture + Gait rehab robot training (AiWalker-I) + Conventional rehab C: Acupuncture + Conventional rehab Duration: 75min (25min acu + 20min robotic gait + 30min CT)/d, 5d/wk, 4wks	E vs C: FAC (+exp) FAC effectiveness rate (+exp) TUG (+exp) Wisconsin Gait Scale (+exp) step length (+exp) step speed (+exp) step frequency (+exp) step width (+exp)
Inoue et al. (2022b) RCT (7) Nstart=60 Nend=57 TPS=Subacute A vs B vs 0 Primary listing: Table 11 (Balance Training)	E1: Robotic balance training + conventional rehabilitation E2: Intensive balance training + conventional rehabilitation C: Conventional training Duration: E1/E2: 120-180min/d, 6d/wk, for 2wks conventional care + 18min/d, 6d/wk, for 2wks & C: 120-180min/d, 6d/wk, for 2wks conventional	E1/E2 v C: Mini-BEST (+exp1, +exp2) Muscle strength (-) Stroke Impairment Assessment set (-) Maximum COP movement (-) Functional Independence measure (-) Functional Ambulation category (-) Timed Up and Go (+exp1) Falls efficacy scale-international (-) E1 v E2: Mini-BEST (+exp1) Muscle strength (-) Stroke Impairment Assessment set (-) Maximum COP movement (-) Functional Independence measure (-) Functional Ambulation category (-) Timed Up and Go (-) Falls efficacy scale-international (-)
Zhao et al. (2022c) RCT (5) Nstart=31 Nend=28 TPS=Subacute A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Brain-computer interface- controlled training robot + Conventional Physiotherapy C: Sham brain-computer interface-controlled training robot + Conventional Physiotherapy Duration: 60 min/d, 6d/wk, for 4wks	E vs C: Loewenstein Occupational Therapy Cognitive Assessment (+exp) Fugl-Meyer Assessment Lower Extremity (-) Balance (-) Functional ambulation category (-) Modified Barthel Index (-) Serum BDNF (-) MEP

		Latency (-) Amplitude (-)
Ueda et al. (2022) RCT crossover (8) Nstart=20 Nend=20 TPS=Chronic A + B vs C Primary listing: Table 28 (Functional Electrical Stimulation)	E: Dynamic tilt table with robotic leg movement (DTTRLM) + FES C: DTTRLM Duration: 10min, 1x (per phase) - 1wk washout	E vs C: 10MWT walking speed (+exp) walking steps (+exp) walking time (-) cadence (-) FMA (-) ROM ankle inversion (+exp) knee extension (-) knee flexion (-) ankle dorsiflexion (-) ankle plantar flexion (-) ankle eversion (-) mAS (no stat)
Kayabinar et al. (2021) RCT (6) Nstart=37 Nend=30 TPS=Chronic A vs B Primary listing: Table 26 (Virtual Reality)	E: VR augmented robot- assisted gait training + conventional care C: Robot-assisted gait training + conventional care Duration: gait training 45min/d, 2d/wk, for 6wks + conventional care 30min/d, 3d/wk, for 6wks	E vs C: 10-metre walk test (-) Motor task added 10-metre walk test (-) Cognitive task added 10-metre walk test (-) Motor dual-task performance (-) Cognitive dual task performance (-) Functional Gait assessment (-) Rivermead Mobility Index (-) Berg Balance Scale (-) Falls Efficacy Scale-I (-) Functional Independence Measure total (-)
Li et al. (2021a) RCT (6) Nstart=26 Nend=25 TPS=Subacute A vs 0 Primary listing: Table 26 (Virtual Reality)	E: Brain-computer interface- operated lower limb rehabilitation robot C: Sham (Lower limb pedal training without image, video, sound hint) Duration: 30min/d, 1session/d for 4wks	E vs C: NIH stroke scale (+exp) Fugl-Meyer: Upper limb (-) Lower limb (+exp) Balance (-) Holden walking scale (-) EMG parameters MEP amplitude (+exp) MEP latency (+exp) Fractional anisotropy (-)
Zhang et al. (2021c) RCT (6) Nstart=231 Nend=212 TPS=Subacute A + B vs A + C + D vs A Primary listing: Table 53 (Acupuncture and Massage)	E1: Interactive Dynamic Scalp Acupuncture + lower-limb robot training (SA & LLRT simultaneously) + Basic Treatment E2: Scalp Acupuncture + lower- limb robot training (LLRT + SA separately) + Basic Treatment C: Scalp Acupuncture + Basic Treatment Duration: 30min/d, 6d/wk, for 8wks Interactive Dynamic Acupuncture & 30min/d, 6d/wk, for 8wks traditional acupuncture & 30min, 2sessions/d, 6d/wk, for 8wks combination therapy	E1/E2 v C: Fugl-Meyer Lower Extremity (+exp1) Berg balance scale (+exp1) 6-minute walk test (+exp1) Modified Barthel index (+exp1) Stride frequency (+exp1, +exp2) Step length (-) Step width (-) Affected side foot angle (-) Passive range of motion affected side Hip(+exp1) Knee (+exp1) Ankle (+exp1) E1 v E2: Fugl-Meyer Lower Extremity (+exp1)

		Berg balance scale (+exp1) 6-minute walk test (+exp1) Modified barthel index (+exp1) Stride frequency (+exp1) Step length (-) Step width (-) Affected side foot angle (+exp2) Passive range of motion affected side Hip(+exp1) Knee (+exp1) Ankle (+exp1)
Min et al. (2020) RCT (7) Nstart=38 Nend=38 TPS=Chronic A vs 0 Primary listing: Table 4 (Trunk Training)	E: Trunk stability robot training (3DBT-33) + conventional physical therapy C: Conventional Physical Therapy Duration: 30min/d, 5d/wk, 4wks conventional physical therapy; 30min/d robot training, 5d/wk, 4wks	E vs C: Functional Ambulation Categories(-) timed up and go test (-) Berg Balance Scale (+exp) Korean Modified Barthel Index (+expd) Fugl-Meyer Assessment of Lower Extremity (+exp)
De Luca et al. (2020) RCT (6) Nstart=30 Nend=28 TPS=Chronic A vs 0 Primary listing: Table 11 (Balance Training)	E: Robot-assisted balance exercises C: Conventional care Duration: 45min, 3d/wk, for 5wks	E vs C: Berg Balance Scale (-) Trunk Impairment Scale (-) Static & dynamic sitting balance (-) Trunk coordination (-) Mini-Balance Evaluation Test (-) Anticipatory (-) Sensory orientation (-) Dynamic gait (-) Static Balance Test eyes open (-) eyes closed (-) Dynamic Balance test on unstable platform sway area (+exp) sway path (-) Trunk total movement (+exp) Variability-trunk (+exp) Reactive Balance Test (changes of trunk oscillatory) forward (-) backward (-) Affected side (-) unaffected side - mediolateral (+exp) unaffected - anterioposterior (-) Proprioceptive control test (Reaching in standing position) number of targets (+exp), - variability-trunk (+exp) normalized range mediolateral trunk (-) normalized range anterio posteriorior trunk (-) Proprioceptive control test (Reaching in Sitting position) number of targets (+exp) variability-trunk (+exp)

		normalized range mediolateral trunk (+exp) normalized range anterio posteriorior trunk (+exp) Sit to stand (-)
Kumar et al. (2020) RCT (4) Nstart=133 Nend=110 TPS=Acute A vs 0 Primary listing: Table 11 (Balance Training)	E: Robotic tilt table (Erigo) therapy C: Conventional physiotherapy Duration: 50-60min/d, 6d/wk, 30d	E vs C: SF-36 (+exp) Manual Muscle Testing (+exp)
Yadav et al. (2020) RCT (4) Nstart=133 Nend=110 TPS=Acute A1 vs A2 vs B1 vs B2 Primary listing: Table 11 (Balance Training)	E1: Haemorrhagic Stroke Erigo Robotic Tilt Table E2: Ischemic Stroke Erigo Robotic Tilt Table C1: Haemorrhagic Stroke Conventional Care C2: Ischemic Stroke Conventional Care Duration: 50-60min, 6d/wk, 30d	E vs C: For haemorrhagic group National Institutes of Health Stroke Scale (+exp) Mini Mental Scale Examination (-) Modified Ashworth Scale (+exp) SF-36 Quality of Life (+exp) Medical Research Council (+exp) For Ischemic group National Institutes of Health Stroke Scale (-) Mini Mental Scale Examination (-) Modified Ashworth Scale (-) SF-36 Quality of Life (-) Medical Research Council (-)
Picelli et al. (2019) RCT (8) Nstart=40 Nend=40 TPS=Chronic A1 + B + C vs A2 + B + C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Contralesionally cathodal tcDCS (2mA) + cathodal tsDCS + Robot-assisted gait training E2: Ipsileisonally cathodal tcDCS (2mA) + cathodal tsDCS + Robot-assisted gait training Duration: 20min/d, 5d/wk for 2wks	E1 vs E2: 6-meter walk test (-) Functional Ambulation Category (-) Motricity Index (-) Modified Ashworth Scale (-) Cadence (-) Single/Double Support duration (-)
Yadav et al. (2018) RCT (4) Nstart=30 Nend=30 TPS=Acute A + B vs 0 Primary listing: Table 11 (Balance Training)	E: Robotic Tilt table + Upper extremity exercises C: Conventional therapy Duration: 50-60min/d, 6d/wk, for 4wks	E vs C: SF-36 Quality of life (+exp) Medical Research council Muscle scale (+exp)
Yoo et al. (2018a) RCT (4) Nstart=16 Nend=16 TPS=Chronic A vs B Primary listing: Table 12 (Stretching or Mobilization Exercises)	E: Robotic ankle stretching exercises C: Conventional stretching board Duration: 30min/d, 2d/wk, for 3.5wks (7 sessions total)	E vs C: Ankle ROM (+exp) Sensory organization test (+exp) Walking speed (-) Cadence (-) Step Length affected (-) Step Length unaffected (+exp)

Bergmann et al. (2018b) RCT crossover (5) Nstart=27 Nend=20 TPS=Subacute A + B vs A Primary listing: Table 26 (Virtual Reality)	E: Robot-assisted gait training + Virtual reality C: Robot-assisted gait training Duration: 3x/wk for 4wks interventions + one extra crossover session	E vs C: Intrinsic Motivation inventory Self management (-) External assessment (-) Functional Ambulation Category (No stats) 10m Walk test (No stats) 10m Dual task (No stats) 6min Walk test (No stats) Medical Research Council scale (No stats)
Erbil et al. (2018) RCT (5) Nstart=48 Nend=43 TPS=Chronic A + B vs C + D vs A vs D Primary listing: Table 46 (Botulinum Toxin)	E: Botulinum toxin A (BoNTA) + Robot assisted Gait Training (RoboGait) + Conventional Physiotherapy C: Botulinum toxin A (BoNTA) + Conventional Physiotherapy Duration: E: 30min Robot-assissted training + 60min physical therapy 1session/d, 5d/wk, for 3wks C: 90min physical therapy 1session/d, 5d/wk, for 3wks	E vs C: Timed up-and-go (+exp) Berg Balance Scale (+exp) Rivermead Visual Gait Assessment (+exp) Modified Ashworth Scale (-) Tardieu Scale (-) Passive range of motion (-)
Calabrò et al. (2017) RCT (8) Nstart=24 Nend=24 TPS=Chronic A + B vs A Primary listing: Table 26 (Virtual Reality)	E: Robot-assisted gait training (Lokomat) + Virtual reality C: Robot-assisted gait training (Lokomat) Duration: 45min/d, 5d/wk, for 8wks	E vs C: Rivermead Mobility Index (+exp) Tinetti Performance Oriented Mobility Assessment (+exp) Modified Ashworth Scale (-) Hamilton Rating Scale for Depression (-) Knee Force (+exp) Hip Force (+exp) EEG-Brain Activation BA6 Brain Area (+exp) BA7 Area (+exp) BA17 Area (+exp) Parieto-occipital activation- μ and Hγ (+exp)
Leon et al. (2017) RCT (6) Nstart=50 Nend=49 TPS=Subacute A1 vs A2 vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Robot-assisted gait training and anodal tDCS over the leg motor cortex area E2: Robot-assisted gait training and anodal tDCS over the hand motor cortex area C: Robot-assisted gait training only Duration: 5h/d, 5d/wk for 4wks	E1/E2 vs C: Functional Ambulation Category (-) 10-Metre Walk Test (-)
Seo et al. (2017) RCT (9) Nstart=21 Nend=21 TPS=Chronic A vs 0 Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Robot-assisted gait training and anodal tDCS C: Robot-assisted gait training and sham stimulation Duration: 20min/d, 5d/wk, for 4wks tDCS/Sham, 45min/d, 5d/wk, for 4wks RAGT	E vs C: Functional Ambulation Category (-) 10-Meter Walk Test (-) 6-Minute Walk Test (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-) Medical Research Council Scale (-) Motor-Evoked Potential Parameters (-)
Picelli et al. (2016) RCT (8)	E: Botox (250U) With Robot- Assisted Gait Therapy	E vs C: Modified Ashworth scale (-)

Nstart=22 Nend=22 TPS=Chronic A vs B Primary listing: Table 46 (Botulinum Toxin)	C: Botox Alone Duration: 1 injection - AbobotulinumtoxinA injection, 30min/d, for 5d - Robot-assisted Gait training	Tardieu scale Spasticity Grade (-) Spasticity Angle (-) 6-Minute Walk Test (+exp)
Picelli et al. (2015) RCT (9) Nstart=30 Nend=30 TPS=Chronic A + B vs A + C vs A + B + C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Robot-assisted gait training (G-EO) + Anodal tDCS (2mA) + sham tsDCS (transcutaneous spinal direct current stimulation) E2: Robot-assisted gait training (G-EO) + sham tDCS + Cathodal tsDCS (2.5mA) E3: Robot-assisted gait training (G-EO) + Anodal tDCS (2mA) + Cathodal tsDCS (2.5mA) Duration: 20min/d, 5d/wk for 2wks RAGT	E1 vs E2: 6min Walk test (-) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (-) Single-double limb support time ratio (-) E1 vs E3: 6min Walk test (+exp3) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (+exp3) Single-double limb support time ratio (-) E2 vs E3: 6min Walk test (+exp3) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (+exp3) Single-double limb support time ratio (-)
Bae et al. (2014) RCT (7) Nstart=20 Nend=20 TPS=Chronic A + B vs A Primary listing: Table 28 (Functional Electrical Stimulation)	E: Robot-assisted (Lokomat) gait training + FES on the ankle dorsiflexor of affected side C: Robot-assisted (Lokomat) gait training Duration: 30min/d, 3d/wk for 5wks	E vs C: Modified Motor Assessment Scale (-) Timed Up and Go Test (-) Berg Balance Scale (-) Maximal knee flexion (+exp) Maximal knee extension (-) Ankle dorsi/plantarflexion (-) Pelvic range of motion (-) Gait speed (-) Cadence (-) Stride Length (-)
Krewer et al. (2013) RCT crossover (5) Nstart=25 Nend=24 TPS=Chronic A vs B vs C Primary listing: Table 15 (Biofeedback)	E1: Galvanic vestibular stimulation E2: Lokomat gait training E3: Physiotherapy with visual feedback Duration: 20min session – 1d washout	E1 vs E2/E3: Burke Lateropulsion Scale (-) Scale for Contraversive Pushing (-) E2 vs E3: Burke Lateropulsion Scale (+exp2) Scale for Contraversive Pushing (-)
Danzl et al. (2013) RCT (6) Nstart=10 Nend=8 TPS=Chronic A + B vs B	E: Anodal tDCS + Robot- assisted gait training C: Sham tDCS + Robot- assisted gait training Duration: 20min tDCS + 20- 40min/d lokomat, 3d/wk for 4wks	E vs C: Functional Ambulation Category (+exp) Berg Balance Scale (-) Timed Up and Go Test (-) 10-Metre Walk Test (-) Stroke Impact Scale (-)

Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))		
Geroin et al. (2011) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs B vs 0 Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Anodal tDCS + Robot- assisted gait training E2: Sham tDCS + Robot- assisted gait training C: Gait training Duration: 50min/d, 5d/wk for 2wks	E1 vs E2: 10-Meter Walk Test (-) 6-Minute Walk Test (-) cadence (-) temporal symmetry ratio (-) single-double support duration ratio (-) Functional Ambulation categories (-) Rivermead Mobility Index (-) Motoricity Index leg subscore (-) E1/E2 vs C: 10-Meter Walk Test (+exp1, +exp2) 6-Minute Walk Test (+exp1, +exp2) cadence (+exp1, +exp2) temporal symmetry ratio (+exp) single-double support duration ratio (+exp) Functional Ambulation categories (+exp) Rivermead Mobility Index (+exp) Motoricity Index leg subscore (+exp)
Mirelman et al. (2009) RCT (5) Nstart=18 Nend=18 TPS=Chronic A1 vs A2 Primary listing: Table 26 (Virtual Reality)	E: Virtual reality robotic training (computer) C: Robotic training Duration: 60min/d, 3d/wk for 4wks	E vs C: 7-Metre Walk Test- self-selected speed (-) 6-Minute Walk Test (-) Community activity measures Distance in 7 days (+exp) Steps per day (-) Speed (-) Step length (-) Top speed (-)
Werner et al. (2002b) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A vs B Primary listing: Table 9 (Treadmill Training)	E1: Electromechanical gait trainer therapy + Conventional rehabilitation E2: Body weight-supported treadmill training + Conventional rehabilitation Duration: 15-20min/d, 5d/wk for 6wks Interventions, 45min/d, 7d/wk, Conventional rehabilitation	E1 vs E2: Functional Ambulation Category (+exp) 10-m Gait velocity (-) Rivermead Motor Assessment (-) Modified Ashworth Score (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving motor recovery.	14	Hirano et al. 2024; Huo et al. 2024; Lee et al. 2024a; Tang et al. 2024; Zhang et al. 2024d; Lee et al. 2023a; Yoo et al. 2023b; Zhang et al. 2023b; Lin et al. 2022a; Alingh et al. 2021; Kooncumchoo et al. 2021; Lee et al. 2019a; Morone et al. 2016; Peurala et al. 2009
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving motor recovery.	1	Peurala et al. 2009
1b	End-Effector Gait Training may produce greater improvements in motor recovery than Body Weight Supported Treadmill.	1	Kim et al. 2020c
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving motor recovery.	1	Werner et al. 2002b
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving motor recovery.	24	Zhang et al. 2024b; Xie et al. 2023; Yokota et al. 2023; Louie et al. 2021; Li et al. 2021b; Li et al. 2021c; Palmcrantz et al. 2021; Yu et al. 2021; Mustafaoglu et al. 2020; Wall et al. 2020; Lee et al. 2019a; Kim et al. 2019a; Mayr et al. 2018; Yun et al. 2018; Han et al. 2016; Cho et al. 2015a; Ochi et al. 2015; van Nunen 2015; Watanabe et al. 2014; Kelley et al. 2013; Chang et al. 2012; Morone et al. 2011; Hidler et al. 2009; Schwartz et al. 2009
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving motor recovery in patients with high motricity.	1	Morone et al. 2011
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may not have a difference in efficacy when compared to Robot Assisted Gait Training (Lokomat) for improving motor recovery.	1	Mustafaoglu et al. 2020
1b	Exoskeleton Systems may not have a difference in efficacy when compared to Treadmill Training for improving motor recovery.	1	Westlake & Patten 2009
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving motor recovery.	1	Jayaraman et al. 2019
1b	Exoskeleton Systems Administration Method may produce greater improvements in motor recovery than Therapist controlled robot-assisted gait training.	1	Bae et al. 2016
2	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving motor recovery.	1	Goodman et al. 2014
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving motor recovery.	1	Zhai et al. 2021

2	Exoskeleton Portable Devices with Ankle Foot Orthosis may produce greater improvements in motor recovery than Sham Ankle Foot Orthosis.	1	Yeung et al. 2018
1b	Robotic-Assisted Gait Training and Restraint may produce greater improvements in motor recovery than Robot-assisted (Lokomat) walking training with arm fixation with conventional care.	1	Kang et al. 2018
1b	Robotics Combined with Virtual Reality may produce greater improvements in motor recovery than Robotics, Robotics Combined with Auditory Stimulation or Conventional Training.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in motor recovery than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving motor recovery.	1	Seo et al. 2018
2	Gait Training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Overground Gait Training for improving motor recovery.	1	Tomida et al. 2019
2	Robotic Verticalization with functional electrical stimulation may produce greater improvements in motor recovery than Conventional therapy.	1	Calabro et al. 2015
1b	There is conflicting evidence about the effect of Robot-Assisted Gait Training with Visuomotor feedback when compared to Robot-Assisted Gait Training for improving motor recovery.	1	Maggio et al. 2021
2	Robotics with Treadmill Training and Virtual Reality may produce greater improvements in motor recovery than Seated Training.	1	Bustamante Valles et al. 2016
1b	Ankle robot training low frequency, low intensity may not have a difference in efficacy when compared to ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity for improving motor recovery.	1	Zhang et al. 2023a
1b	Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may produce greater improvements in motor recovery than Conventional Therapy.	1	Mao et al. 2022b
1b	Robot-Assisted Gait Training may produce greater improvements in motor recovery than Upper Limb Therapy.	1	Lin et al. 2022b
1b	There is conflicting evidence about the effect of Robot-Assisted Gait Training with Balance Training when compared to Balance Training Alone for improving motor recovery.	1	Gunduz et al. 2024
1b	Robot-Assisted Gait Training may produce greater improvements in motor recovery than Home-Based Exercise Program.	1	Do et al. 2024
2	Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy may not have a difference in efficacy when compared to Gait training + Conventional PT for improving motor recovery.	1	Park et al. 2021c
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving motor recovery.	1	Dias et al. 2007
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving motor recovery.	1	Mayr et al. 2007

1b	Daoyin with Conventional rehab may produce greater improvements in motor recovery than Conventional rehab.	1	Haolin et al. 2024
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving motor recovery.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving motor recovery.	1	Haolin et al. 2024
1b	There is conflicting evidence about the effect of High definition transcranial direct current stimulation (dual) with Robot assisted gait training when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training for improving motor recovery.	1	Kim et al. 2024b
1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving motor recovery.	1	Inoue et al. 2022b
2	Brain-computer interface- controlled training robot with Conventional Physiotherapy may not have a difference in efficacy when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy for improving motor recovery.	1	Zhao et al. 2022c
1b	Dynamic tilt table with robotic leg movement with functional electrical stimulation may not have a difference in efficacy when compared to dynamic tilt table with robotic leg movement for improving motor recovery.	1	Ueda et al. 2022
1b	Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may produce greater improvements in motor recovery than Scalp Acupuncture with Basic Treatment.	1	Zhang et al. 2021c
1b	Trunk stability robot training (3DBT-33) with conventional physical therapy may produce greater improvements in motor recovery than Conventional Physical Therapy.	1	Min et al. 2020
2	There is conflicting evidence about the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care for improving motor recovery.	1	Yadav et al. 2020
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving motor recovery.	1	Seo et al. 2017
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving motor recovery.	1	Bizovicar et al. 2017
1b	Brain-computer interface- operated lower limb rehabilitation robot may produce greater improvements in motor recovery than Sham (Lower limb pedal training without image, video, sound hint).	1	Li et al. 2021a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving biomechanical gait measures.	7	Zhang et al. 2024d; Akinci et al. 2023; Zhang et al. 2023b; Thimabut et al. 2022; Alingh et al. 2021; Stolz et al. 2019; Lee et al. 2019a

1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving biomechanical gait measures.	1	Picelli et al. 2015
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving biomechanical gait measures.	13	Xie et al. 2023; Miyagawa et al. 2023; Nam et al. 2022b; Kang et al. 2021b; Li et al. 2021b; Li et al. 2021c; Yu et al. 2021; Lee et al. 2019a; Kim et al. 2019a; Calabro et al. 2018; Watanabe et al. 2014; Hidler et al. 2009; Husemann et al. 2007
2	Therapist-assisted locomotor training may not have a difference in efficacy when compared to Robotic-assisted locomotor training for improving biomechanical gait measures.	1	Lewek et al. 2009
1a	Exoskeleton Systems may produce greater improvements in biomechanical gait measures than Treadmill Training.	3	Yoo et al. 2023a; Bang & Shin 2016b; Westlake & Patten 2009
1b	Exoskeleton Systems Administration Method may produce greater improvements in biomechanical gait measures than Therapist controlled robot-assisted gait training.	1	Bae et al. 2016
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving biomechanical gait measures.	3	Buesing et al. 2015; Goodman et al. 2014; Waldman et al. 2013
2	There is conflicting evidence about the effect of Exoskeleton Portable Devices when compared to Stretching for improving biomechanical gait measures.	1	Forrester et al. 2014
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may not have a difference in efficacy when compared to Sham Ankle Foot Orthosis for improving biomechanical gait measures.	1	Yeung et al. 2018
2	Robotic-Assisted Gait Training and Restraint may not have a difference in efficacy when compared to Robot-assisted (Lokomat) walking training with arm fixation with conventional care for improving biomechanical gait measures.	1	Bonnyaud et al. 2014a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving biomechanical gait measures.	1	Seo et al. 2018
1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving biomechanical gait measures.	1	Ogino et al. 2020
2	Robotic-assisted Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	1	Yoo et al. 2018a
1b	Regent Suit with Neuromotor rehabilitation may not have a difference in efficacy when compared to Neuromotor rehabilitation for improving biomechanical gait measures.	1	Monticone et al. 2013
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving biomechanical gait measures.	2	Tamburella et al. 2019; Forrester et al. 2016

2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving biomechanical gait measures.	1	Aprile et al. 2022
2	Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy may not have a difference in efficacy when compared to Gait training + Conventional PT for improving biomechanical gait measures.	1	Park et al. 2021c
1b	Healbot T (Exoskeleton) with pelvic motion on may not have a difference in efficacy when compared to Healbot T (Exoskeleton) with pelvic motion off for improving biomechanical gait measures.	1	Son et al. 2021
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving biomechanical gait measures.	1	Dias et al. 2007
2	Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab may produce greater improvements in biomechanical gait measures than Acupuncture with Conventional rehab.	1	Hu et al. 2024
1b	Dynamic tilt table with robotic leg movement with functional electrical stimulation may not have a difference in efficacy when compared to dynamic tilt table with robotic leg movement for improving biomechanical gait measures.	1	Ueda et al. 2022
1b	Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may produce greater improvements in biomechanical gait measures than Scalp Acupuncture with Basic Treatment.	1	Zhang et al. 2021c
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving biomechanical gait measures.	1	Picelli et al. 2019
2	Robotic ankle stretching exercises may not have a difference in efficacy when compared to Conventional stretching board for improving biomechanical gait measures.	1	Yoo et al. 2018a
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).	1	Picelli et al. 2015
1b	Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not have a difference in efficacy when compared to Robot-assisted (Lokomat) gait training for improving biomechanical gait measures.	1	Bae et al. 2014
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving biomechanical gait measures.	1	Geroin et al. 2011
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may produce greater improvements in biomechanical gait measures than Gait training.	1	Geroin et al. 2011

2	Virtual reality robotic training (computer) may not have a difference in efficacy when compared to Robotic training for improving biomechanical gait measures.	1	Mirelman et al. 2009

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving biomechanical balance measures.	1	Akinci et al. 2023
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Balance Training for improving biomechanical balance measures.	1	Gandolfi et al. 2019
1b	Electromechanical Gait Training may not have a difference in efficacy when compared to Conventional Treatment or No Treatment for improving biomechanical balance measures.	1	Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving biomechanical balance measures.	1	Peurala et al. 2005
1b	There is conflicting evidence about the effect of Exoskeleton Systems when compared to Conventional Therapy or Overground Gait Training for improving biomechanical balance measures.	2	Rojek et al. 2020; Kim et al. 2019a
1b	Robot-assisted Trunk Training may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Kim et al. 2022f
2	Robotic-assisted Stretching may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Yoo et al. 2018a
1b	Vibration on sole of foot may produce greater improvements in biomechanical balance measures than Contact on Sole of Foot with No Vibration.	1	Onal et al. 2020
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving biomechanical balance measures.	1	Forrester et al. 2016
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving biomechanical balance measures.	1	Aprile et al. 2022
1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving biomechanical balance measures.	1	Inoue et al. 2022b
2	Robotic ankle stretching exercises may produce greater improvements in biomechanical balance measures than Conventional stretching board.	1	Yoo et al. 2018a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may produce greater improvements in muscle strength than Conventional Therapy and Overground Gait Training.	5	Alingh et al. 2021; Song et al. 2021b; Kim et al. 2019b; Lee et al. 2019a; Ng et al. 2008
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous	1	Picelli et al. 2015

	spinal direct current stimulation (2.5mA) for improving muscle strength.		
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving muscle strength.	1	Ng et al. 2008
1a	There is conflicting evidence about the effect of Electromechanical Gait Training when compared to Conventional Treatment or No Treatment for improving muscle strength.	2	Pohl et al. 2007; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving muscle strength.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving muscle strength.	1	Peurala et al. 2005
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving muscle strength.	14	Nam et al. 2022b; Kang et al. 2021b; Molteni et al. 2021; Nam et al. 2020; Lee et al. 2019a; Nam et al. 2019; Cho et al. 2015a; Ochi et al. 2015; van Nunen 2015; Watanabe et al. 2014; Chang et al. 2012; Morone et al. 2011; Freivogel et al. 2009; Husemann et al. 2007
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving muscle strength in patients with high or low motricity.	1	Morone et al. 2011
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in muscle strength than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
2	Exoskeleton Portable Devices may produce greater improvements in muscle strength than Overground Gait Training or Stretching or Sham Ankle Foot Orthosis.	1	Waldman et al. 2013
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving muscle strength.	2	Zhai et al. 2021; Forrester et al. 2014
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may produce greater improvements in muscle strength than Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.	1	Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy or Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy may produce greater improvements in muscle strength than Conventional physical therapy with treadmill training.	1	Park et al. 2018a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving muscle strength.	1	Seo et al. 2018
2	Robotic Verticalization with functional electrical stimulation may produce greater improvements in muscle strength than Conventional therapy.	1	Calabro et al. 2015

2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving muscle strength.	1	Aprile et al. 2022
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving muscle strength.	1	Do et al. 2024
1b	Progressive reducing assistance force during robot-assisted gait training + conventional PT may produce greater improvements in muscle strength than Full assistance force during robot-assisted gait training + conventional PT.	1	Park et al. 2019d
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving muscle strength.	1	Dias et al. 2007
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving muscle strength.	1	Mayr et al. 2007
1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving muscle strength.	1	Inoue et al. 2022b
2	Robotic tilt table (Erigo) therapy may produce greater improvements in muscle strength than Conventional physiotherapy.	1	Kumar et al. 2020
2	There is conflicting evidence about the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care for improving muscle strength.	1	Yadav et al. 2020
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving muscle strength.	1	Picelli et al. 2019
2	Robotic Tilt table with Upper extremity exercises may produce greater improvements in muscle strength than Conventional therapy.	1	Yadav et al. 2018
2	Robot-assisted gait training with Virtual reality may not have a difference in efficacy when compared to Robot-assisted gait training for improving muscle strength.	1	Bergmann et al. 2018b
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving muscle strength.	1	Seo et al. 2017
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving muscle strength.	1	Picelli et al. 2015

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving spasticity.	1	Morone et al. 2016
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving spasticity.	1	Picelli et al. 2015
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving spasticity.	1	Werner et al. 2002b
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving spasticity.	8	Kang et al. 2021b; Li et al. 2021c; Molteni et al. 2021; Cho et al. 2015a; Kim et al. 2015h; Morone et al. 2011; Freivogel et al. 2009; Husemann et al. 2007
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving spasticity in patients with high or low motricity.	1	Morone et al. 2011
2	ExoAtlet exoskeleton exercises with rehabilitation may not have a difference in efficacy when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation for improving spasticity.	1	Kotov et al. 2021
2	Exoskeleton Portable Devices may produce greater improvements in spasticity than Overground Gait Training or Stretching or Sham Ankle Foot Orthosis.	1	Waldman et al. 2013
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving spasticity.	1	Zhai et al. 2021
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may not have a difference in efficacy when compared to Sham Ankle Foot Orthosis for improving spasticity.	1	Yeung et al. 2018
1b	Robotics Combined with Virtual Reality may not have a difference in efficacy when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving spasticity.	1	Calabro et al. 2017
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving spasticity.	1	Tamburella et al. 2019
2	Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy may not have a difference in efficacy when compared to Gait training + Conventional PT for improving spasticity.	1	Park et al. 2021c
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving spasticity.	1	Mayr et al. 2007
1b	Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may not have a difference in efficacy when compared to Botulinum toxin injection with Conventional physiotherapy for improving spasticity.	1	Cotinat et al. 2024

2	There is conflicting evidence about the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care for improving spasticity.	1	Yadav et al. 2020
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving spasticity.	1	Picelli et al. 2019
2	Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may not have a difference in efficacy when compared to Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks for improving spasticity.	1	Erbil et al. 2018
1b	Robot-assisted gait training (Lokomat) with Virtual reality may not have a difference in efficacy when compared to Robot-assisted gait training (Lokomat) for improving spasticity.	1	Calabrò et al. 2017
1b	Botox (250U) With Robot- Assisted Gait Therapy may not have a difference in efficacy when compared to Botox Alone for improving spasticity.	1	Picelli et al. 2016
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving spasticity.	1	Picelli et al. 2015

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving range of motion.	3	Talaty et al. 2023; Zhang et al. 2023b; Lin et al. 2022a
1b	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving range of motion.	1	Miyagawa et al. 2023
2	There is conflicting evidence about the effect of Exoskeleton Portable Devices when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving range of motion.	1	Waldman et al. 2013
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving range of motion.	2	Zhai et al. 2021; Forrester et al. 2014
2	Robotic-Assisted Gait Training and Restraint may produce greater improvements in range of motion than Robot-assisted (Lokomat) walking training with arm fixation with conventional care.	1	Bonnyaud et al. 2014a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving range of motion.	1	Seo et al. 2018

2	Robotic-assisted Stretching may produce greater improvements in range of motion than Conventional Therapy.	1	Yoo et al. 2018a
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving range of motion.	1	Forrester et al. 2016
1b	Ankle robot training low frequency, low intensity may not have a difference in efficacy when compared to ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity for improving range of motion.	1	Zhang et al. 2023a
1b	Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may produce greater improvements in range of motion than Conventional Therapy.	1	Mao et al. 2022b
1b	Dynamic tilt table with robotic leg movement with functional electrical stimulation may not have a difference in efficacy when compared to dynamic tilt table with robotic leg movement for improving range of motion.	1	Ueda et al. 2022
2	Robotic ankle stretching exercises may produce greater improvements in range of motion than Conventional stretching board.	1	Yoo et al. 2018a
2	Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may not have a difference in efficacy when compared to Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks for improving range of motion.	1	Erbil et al. 2018
1b	Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not have a difference in efficacy when compared to Robot-assisted (Lokomat) gait training for improving range of motion.	1	Bae et al. 2014

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Robot Assisted Gait Training when compared to Conventional Therapy and Overground Gait Training for improving neurophysiological measures.	1	Zhang et al. 2023b
1b	Early Robot Assisted Gait Training may produce greater improvements in neurophysiological measures than Late Start Robot Assisted Gait Training.	1	Kim et al. 2020a
1b	End-Effector Gait Training may not have a difference in efficacy when compared to Body Weight Supported Treadmill for improving neurophysiological measures.	1	Kim et al. 2020c
1a	Exoskeleton Systems may produce greater improvements in neurophysiological measures than Conventional Therapy or Overground Gait Training.	2	Calabro et al. 2018; Husemann et al. 2007
2	Exoskeleton Systems may produce greater improvements in neurophysiological measures than Treadmill Training.	1	Yoo et al. 2023a
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving neurophysiological measures.	1	Jayaraman et al. 2019
2	Exoskeleton Portable Devices may produce greater improvements in neurophysiological measures than Overground Gait Training or Stretching or Sham Ankle Foot Orthosis.	1	Goodman et al. 2014
1b	Robotics Combined with Virtual Reality may produce greater improvements in neurophysiological measures than Robotics,	1	Calabro et al. 2017

	Robotics Combined with Auditory Stimulation or Conventional Training.		
2	Robotic Verticalization with functional electrical stimulation may produce greater improvements in neurophysiological measures than Conventional therapy.	1	Calabro et al. 2015
1b	Robot-Assisted Gait Training with Visuomotor feedback may produce greater improvements in neurophysiological measures than Robot-Assisted Gait Training.	1	Maggio et al. 2021
1b	Healbot T (Exoskeleton) with pelvic motion on may produce greater improvements in neurophysiological measures than Healbot T (Exoskeleton) with pelvic motion off.	1	Son et al. 2021
2	Brain-computer interface- controlled training robot with Conventional Physiotherapy may not have a difference in efficacy when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy for improving neurophysiological measures.	1	Zhao et al. 2022c
1b	Robot-assisted gait training (Lokomat) with Virtual reality may produce greater improvements in neurophysiological measures than Robot-assisted gait training (Lokomat).	1	Calabrò et al. 2017
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving neurophysiological measures.	1	Seo et al. 2017
1b	There is conflicting evidence about the effect of Brain-computer interface- operated lower limb rehabilitation robot when compared to Sham (Lower limb pedal training without image, video, sound hint) for improving neurophysiological measures.	1	Li et al. 2021a

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving aerobic measures.	1	Talaty et al. 2023
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving aerobic measures.	5	Palmcrantz et al. 2021; Mustafaoglu et al. 2020; Park et al. 2020c; Han et al. 2016; Chang et al. 2012
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may not have a difference in efficacy when compared to Robot Assisted Gait Training (Lokomat) for improving aerobic measures.	1	Mustafaoglu et al. 2020
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may not have a difference in efficacy when compared to Physical Activity with Usual physiotherapy for improving aerobic measures.	1	Wright et al. 2021
2	There is conflicting evidence about the effect of Robotic Verticalization with functional electrical stimulation when compared to Conventional therapy for improving aerobic measures.	1	Calabro et al. 2015
1b	Regent Suit with Neuromotor rehabilitation may not have a difference in efficacy when compared to Neuromotor rehabilitation for improving aerobic measures.	1	Monticone et al. 2013
1b	Robot-Assisted Gait Training may produce greater improvements in aerobic measures than Home-Based Exercise Program.	1	Do et al. 2024

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving sensory and proprioceptive function.	1	Bergmann et al. 2018a
2	There is conflicting evidence about the effect of Robotic Verticalization with functional electrical stimulation when compared to Conventional therapy for improving sensory and proprioceptive function.	1	Calabro et al. 2015
1b	Robot-assisted balance exercises may produce greater improvements in sensory and proprioceptive function than Conventional care.	1	De Luca et al. 2020

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving pain.	1	Jayaraman et al. 2019
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving pain.	1	Tamburella et al. 2019
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving pain.	1	Aprile et al. 2022

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving activities of daily living.	14	Hirano et al. 2024; Huo et al. 2024; Lee et al. 2024a; Zhang et al. 2024d; Lee et al. 2023a; Yoo et al. 2023b; Thimabut et al. 2022; Song et al. 2021b; Stolz et al. 2019; Kim et al. 2019b; Morone et al. 2018; Chua et al. 2016; Morone et al. 2016; Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving activities of daily living.	1	Ng et al. 2008
1a	Electromechanical Gait Training may not have a difference in efficacy when compared to Conventional Treatment or No Treatment for improving activities of daily living.	4	Liu et al. 2022; Pohl et al. 2007; Tong et al. 2006; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving activities of daily living.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving activities of daily living.	1	Peurala et al. 2005

1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving activities of daily living.	20	Zhang et al. 2024b; Yokota et al. 2023; Molteni et al. 2021; Palmcrantz et al. 2021; Mustafaoglu et al. 2020; Rojek et al. 2020; Wall et al. 2020; Nam et al. 2019; Yun et al. 2018; Han et al. 2016; Taveggia et al. 2016; Cho et al. 2015a; Kim et al. 2015h; Ochi et al. 2015; Kelley et al. 2013; Morone et al. 2011; Hidler et al. 2009; Schwartz et al. 2009; Hornby et al. 2008; Husemann et al. 2007
1b	Robot-assisted gait training with Conventional care may produce greater improvements in activities of daily living than Conventional gait training with Conventional care in patients with low motricity.	1	Morone et al. 2011
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving activities of daily living in patients with high motricity.	1	Morone et al. 2011
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in activities of daily living than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may produce greater improvements in activities of daily living than Robot Assisted Gait Training (Lokomat).	1	Mustafaoglu et al. 2020
2	Exoskeleton Systems Administration Method may not have a difference in efficacy when compared to Therapist controlled robot-assisted gait training for improving activities of daily living.	1	Jiae et al. 2022
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may not have a difference in efficacy when compared to Physical Activity with Usual physiotherapy for improving activities of daily living.	1	Wright et al. 2021
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving activities of daily living.	2	Zhai et al. 2021; Forrester et al. 2014
1b	Robotic-Assisted Gait Training and Restraint may produce greater improvements in activities of daily living than Robot-assisted (Lokomat) walking training with arm fixation with conventional care.	1	Kang et al. 2018
1a	Robotics Combined with Virtual Reality may not have a difference in efficacy when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving activities of daily living.	2	Kayabinar et al. 2021; Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving activities of daily living.	1	Park et al. 2018a
2	Gait Training with Gait Exercise Assist Robot (GEAR) may produce greater improvements in activities of daily living than Overground Gait Training.	1	Tomida et al. 2019
1b	Regent Suit with Neuromotor rehabilitation may produce greater improvements in activities of daily living than Neuromotor rehabilitation.	1	Monticone et al. 2013
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving activities of daily living.	1	Tamburella et al. 2019

1b	Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy may not have a difference in efficacy when compared to Robotic gait training with Lokomat Free-D with Conventional physiotherapy for improving activities of daily living.	1	Elmas Bodur et al. 2024
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving activities of daily living.	1	Aprile et al. 2022
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Upper Limb Therapy for improving activities of daily living.	1	Lin et al. 2022b
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving activities of daily living.	1	Do et al. 2024
1b	Progressive reducing assistance force during robot-assisted gait training + conventional PT may produce greater improvements in activities of daily living than Full assistance force during robot-assisted gait training + conventional PT.	1	Park et al. 2019d
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving activities of daily living.	1	Dias et al. 2007
1b	Daoyin with Conventional rehab may produce greater improvements in activities of daily living than Conventional rehab.	1	Haolin et al. 2024
1b	There is conflicting evidence about the effect of Daoyin with Conventional rehab when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving activities of daily living.	1	Haolin et al. 2024
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving activities of daily living.	1	Haolin et al. 2024
1b	High definition transcranial direct current stimulation (dual) with Robot assisted gait training may produce greater improvements in activities of daily living than Sham High definition transcranial direct current stimulation with Robot assisted gait training.	1	Kim et al. 2024b
1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving activities of daily living.	1	Inoue et al. 2022b
2	Brain-computer interface- controlled training robot with Conventional Physiotherapy may not have a difference in efficacy when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy for improving activities of daily living.	1	Zhao et al. 2022c
1b	Virtual reality augmented robot- assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving activities of daily living.	1	Kayabinar et al. 2021
1b	Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may produce greater improvements in activities of daily living than Scalp Acupuncture with Basic Treatment.	1	Zhang et al. 2021c
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving activities of daily living.	1	Bizovicar et al. 2017

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving gait speed.	16	Hirano et al. 2024; Akinci et al. 2023; Lee et al. 2023a; Talaty et al. 2023; Yoo et al. 2023b; Zhang et al. 2023b; Thimabut et al. 2022; Alingh et al. 2021; Kooncumchoo et al. 2021; Song et al. 2021b; Stolz et al. 2019; Kim et al. 2019b; Lee et al. 2019a; Chua et al. 2016; Morone et al. 2016; Peurala et al. 2009
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving gait speed.	1	Peurala et al. 2009
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving gait speed.	1	Ng et al. 2008
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Balance Training for improving gait speed.	1	Gandolfi et al. 2019
2	Electromechanical Gait Training may produce greater improvements in gait speed than Conventional Treatment or No Treatment.	1	Tanaka et al. 2012
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving gait speed.	1	Tong et al. 2006
1b	End-Effector Gait Training may not have a difference in efficacy when compared to Body Weight Supported Treadmill for improving gait speed.	1	Kim et al. 2020c
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may not have a difference in efficacy when compared to Body weight-supported treadmill training with Conventional rehabilitation for improving gait speed.	1	Werner et al. 2002b
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving gait speed.	25	Xie et al. 2023; Nam et al. 2022b; Kang et al. 2021b; Louie et al. 2021; Li et al. 2021c; Molteni et al. 2021; Palmcrantz et al. 2021; Yu et al. 2021; Mustafaoglu et al. 2020; Nam et al. 2020; Rojek et al. 2020; Lee et al. 2019a; Nam et al. 2019; Sczesny-Kaiser et al. 2019; Kim et al. 2019a; Calabro et al. 2018; van Nunen 2015; Ucar et al. 2014; Watanabe et al. 2014; Fisher et al. 2011; Morone et al. 2011; Freivogel et al. 2009; Hidler et al. 2009; Hornby et al. 2008; Husemann et al. 2007
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving gait speed in patients with high or low motricity.	1	Morone et al. 2011
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in gait speed than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021

1b	There is conflicting evidence about the effect of Robot Assisted Gait Training (Lokomat) with Conventional Therapy when compared to Robot Assisted Gait Training (Lokomat) for improving gait speed.	1	Mustafaoglu et al. 2020
2	Resistance load Robotic gait system training may not have a difference in efficacy when compared to Assistance Robotic gait system training for improving gait speed.	1	Wu et al. 2014
2	Therapist-assisted locomotor training may not have a difference in efficacy when compared to Robotic-assisted locomotor training for improving gait speed.	1	Lewek et al. 2009
1a	Exoskeleton Systems may produce greater improvements in gait speed than Treadmill Training.	5	Yoo et al. 2023a; Choi et al. 2022; Lee et al. 2022b; Bang & Shin 2016b; Westlake & Patten 2009
2	30% weight robot gait training with general physical therapy may produce greater improvements in gait speed than 50% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy may produce greater improvements in gait speed than 70% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy or 50% weight robot gait training with general physical therapy or 70% weight robot gait training with general physical therapy may produce greater improvements in gait speed than Treadmill training with general physical therapy.	1	Choi et al. 2022
2	Exoskeleton Gait Training may produce greater improvements in gait speed than Functional Task-Specific Training.	1	Jayaraman et al. 2019
1b	There is conflicting evidence about the effect of Exoskeleton Systems Administration Method when compared to Therapist controlled robot-assisted gait training for improving gait speed.	2	Jiae et al. 2022; Bae et al. 2016
1a	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving gait speed.	4	Yeung et al. 2021; Buesing et al. 2015; Goodman et al. 2014; Stein et al. 2014
1b	Robot-assisted training with Power-assisted ankle robot with Conventional training may produce greater improvements in gait speed than Robot-assisted training with Swing-controlled ankle robot with Conventional training.	1	Yeung et al. 2021
2	Exoskeleton Portable Devices may produce greater improvements in gait speed than Stretching.	1	Forrester et al. 2014
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may produce greater improvements in gait speed than Sham Ankle Foot Orthosis.	1	Yeung et al. 2018
1b	Robotic-Assisted Gait Training and Restraint may not have a difference in efficacy when compared to Robot-assisted (Lokomat) walking training with arm fixation with conventional care for improving gait speed.	2	Kang et al. 2018; Bonnyaud et al. 2014a
1a	Robotics Combined with Virtual Reality may not have a difference in efficacy when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving gait speed.	2	Kayabinar et al. 2021; Park et al. 2018a
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving gait speed.	1	Park et al. 2018a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not	1	Seo et al. 2018

	have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving gait speed.		
1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving gait speed.	1	Ogino et al. 2020
2	Robotic-assisted Stretching may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	1	Yoo et al. 2018a
1b	Regent Suit with Neuromotor rehabilitation may produce greater improvements in gait speed than Neuromotor rehabilitation.	1	Monticone et al. 2013
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving gait speed.	2	Forrester et al. 2016; Bustamante Valles et al. 2016
1b	Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may produce greater improvements in gait speed than Conventional Therapy.	1	Mao et al. 2022b
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving gait speed.	1	Aprile et al. 2022
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving gait speed.	1	Do et al. 2024
1b	Healbot T (Exoskeleton) with pelvic motion on may not have a difference in efficacy when compared to Healbot T (Exoskeleton) with pelvic motion off for improving gait speed.	1	Son et al. 2021
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving gait speed.	1	Dias et al. 2007
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving gait speed.	1	Mayr et al. 2007
1b	High definition transcranial direct current stimulation (dual) with Robot assisted gait training may not have a difference in efficacy when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training for improving gait speed.	1	Kim et al. 2024b
1b	Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may produce greater improvements in gait speed than Botulinum toxin injection with Conventional physiotherapy.	1	Cotinat et al. 2024
2	Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab may produce greater improvements in gait speed than Acupuncture with Conventional rehab.	1	Hu et al. 2024
1b	Dynamic tilt table with robotic leg movement with functional electrical stimulation may produce greater improvements in gait speed than dynamic tilt table with robotic leg movement.	1	Ueda et al. 2022
1b	Virtual reality augmented robot- assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving gait speed.	1	Kayabinar et al. 2021
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal	1	Picelli et al. 2019

	transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving gait speed.		
2	Robotic ankle stretching exercises may not have a difference in efficacy when compared to Conventional stretching board for improving gait speed.	1	Yoo et al. 2018a
2	Robot-assisted gait training with Virtual reality may not have a difference in efficacy when compared to Robot-assisted gait training for improving gait speed.	1	Bergmann et al. 2018b
1b	Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area may not have a difference in efficacy when compared to Robot-assisted gait training only for improving gait speed.	1	Leon et al. 2017
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving gait speed.	1	Seo et al. 2017
1b	Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not have a difference in efficacy when compared to Robot-assisted (Lokomat) gait training for improving gait speed.	1	Bae et al. 2014
1a	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving gait speed.	2	Danzl et al. 2013; Geroin et al. 2011
2	Virtual reality robotic training (computer) may not have a difference in efficacy when compared to Robotic training for improving gait speed.	1	Mirelman et al. 2009

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving gait endurance.	10	Hirano et al. 2024; Akinci et al. 2023; Talaty et al. 2023; Zhang et al. 2023b; Thimabut et al. 2022; Alingh et al. 2021; Kooncumchoo et al. 2021; Stolz et al. 2019; Morone et al. 2016; Peurala et al. 2009
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving gait endurance.	1	Picelli et al. 2015
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving gait endurance.	1	Peurala et al. 2009
1b	Robot Assisted Gait Training may produce greater improvements in gait endurance than Balance Training.	1	Gandolfi et al. 2019
1a	There is conflicting evidence about the effect of Electromechanical Gait Training when compared to Conventional Treatment or No Treatment for improving gait endurance.	2	Pohl et al. 2007; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy	1	Peurala et al. 2005

	when compared to Electromechanical gait trainer with Conventional therapy for improving gait endurance.		
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving gait endurance.	20	Xie et al. 2023; Nam et al. 2022b; Louie et al. 2021; Li et al. 2021b; Li et al. 2021c; Molteni et al. 2021; Palmcrantz et al. 2021; Mustafaoglu et al. 2020; Nam et al. 2020; Wall et al. 2020; Nam et al. 2019; Sczesny-Kaiser et al. 2019; Taveggia et al. 2016; Watanabe et al. 2014; Kelley et al. 2013; Fisher et al. 2011; Morone et al. 2011; Hidler et al. 2009; Schwartz et al. 2009; Hornby et al. 2008
1b	Robot-assisted gait training with Conventional care may produce greater improvements in gait endurance than Conventional gait training with Conventional care in patients with low motricity.	1	Morone et al. 2011
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving gait endurance in patients with high motricity.	1	Morone et al. 2011
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may produce greater improvements in gait endurance than Robot Assisted Gait Training (Lokomat).	1	Mustafaoglu et al. 2020
2	Resistance load Robotic gait system training may not have a difference in efficacy when compared to Assistance Robotic gait system training for improving gait endurance.	1	Wu et al. 2014
1b	Exoskeleton Systems may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Westlake & Patten 2009
2	Exoskeleton Gait Training may produce greater improvements in gait endurance than Functional Task-Specific Training.	1	Jayaraman et al. 2019
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in gait endurance than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving gait endurance.	2	Stein et al. 2014; Waldman et al. 2013
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may not have a difference in efficacy when compared to Sham Ankle Foot Orthosis for improving gait endurance.	1	Yeung et al. 2018
1b	There is conflicting evidence about the effect of Gait training with Gait Exercise Assist Robot (GEAR) when compared to Gait training with treadmill for improving gait endurance.	1	Ogino et al. 2020
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving gait endurance.	1	Bustamante Valles et al. 2016
1b	Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy may not have a difference in efficacy when compared to Robotic gait training with Lokomat Free-D with Conventional physiotherapy for improving gait endurance.	1	Elmas Bodur et al. 2024
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving gait endurance.	1	Aprile et al. 2022

1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving gait endurance.	1	Do et al. 2024
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving gait endurance.	1	Dias et al. 2007
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving gait endurance.	1	Mayr et al. 2007
1b	Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may produce greater improvements in gait endurance than Botulinum toxin injection with Conventional physiotherapy.	1	Cotinat et al. 2024
1b	Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may produce greater improvements in gait endurance than Scalp Acupuncture with Basic Treatment.	1	Zhang et al. 2021c
2	Robot-assisted gait training with Virtual reality may not have a difference in efficacy when compared to Robot-assisted gait training for improving gait endurance.	1	Bergmann et al. 2018b
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving gait endurance.	1	Seo et al. 2017
1b	Botox (250U) With Robot- Assisted Gait Therapy may produce greater improvements in gait endurance than Botox Alone.	1	Picelli et al. 2016
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).	1	Picelli et al. 2015
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving gait endurance.	1	Geroin et al. 2011
2	Virtual reality robotic training (computer) may not have a difference in efficacy when compared to Robotic training for improving gait endurance.	1	Mirelman et al. 2009
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving gait endurance.	1	Bizovicar et al. 2017

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving functional mobility.	19	Hirano et al. 2024; Huo et al. 2024; Tang et al. 2024; Zhang et al. 2024d; Lee et al. 2023a; Talaty et al. 2023; Yoo et al. 2023b; Zhang et al. 2023b; Lin et al. 2022a; Alingh et al. 2021; Kooncumchoo et al. 2021; Song et al. 2021b; Stolz et al. 2019;

			Kim et al. 2019b; Morone et al. 2018; Chua et al. 2016; Morone et al. 2016; Peurala et al. 2009; Ng et al. 2008
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving functional mobility.	1	Picelli et al. 2015
2	Gait Trainer GT I (Rehastim) may not have a difference in efficacy when compared to Overground gait training for improving functional mobility.	1	Peurala et al. 2009
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving functional mobility.	1	Ng et al. 2008
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Balance Training for improving functional mobility.	1	Gandolfi et al. 2019
1a	Electromechanical Gait Training may produce greater improvements in functional mobility than Conventional Treatment or No Treatment.	4	Liu et al. 2022; Tanaka et al. 2012; Pohl et al. 2007; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving functional mobility.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving functional mobility.	1	Peurala et al. 2005
1b	End-Effector Gait Training may not have a difference in efficacy when compared to Body Weight Supported Treadmill for improving functional mobility.	1	Kim et al. 2020c
1b	Electromechanical gait trainer therapy with Conventional rehabilitation may produce greater improvements in functional mobility than Body weight-supported treadmill training with Conventional rehabilitation.	1	Werner et al. 2002b
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving functional mobility.	34	Xie et al. 2023; Yokota et al. 2023; Nam et al. 2022b; Kang et al. 2021b; Louie et al. 2021; Li et al. 2021b; Molteni et al. 2021; Mustafaoglu et al. 2020; Nam et al. 2020; Park et al. 2020c; Rojek et al. 2020; Wall et al. 2020; Nam et al. 2019; Sczesny-Kaiser et al. 2019; Kim et al. 2019a; Bergmann et al. 2018a; Mayr et al. 2018; Calabro et al. 2018; Han et al. 2016; Taveggia et al. 2016; Cho et al. 2015a; Kim et al. 2015h; Ochi et al. 2015; van Nunen 2015; Ucar et al. 2014; Watanabe et al. 2014; Kelley et al. 2013; Chang et al. 2012; Fisher et al. 2011; Morone et al. 2011; Freivogel et al. 2009; Hidler

			et al. 2009; Schwartz et al. 2009; Husemann et al. 2007
1b	Robot-assisted gait training with Conventional care may produce greater improvements in functional mobility than Conventional gait training with Conventional care in patients with low motricity.	1	Morone et al. 2011
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving functional mobility in patients with high motricity.	1	Morone et al. 2011
2	ExoAtlet exoskeleton exercises with rehabilitation may produce greater improvements in functional mobility than Ortorent MOTO pedal trainer for active-passive training with rehabilitation.	1	Kotov et al. 2021
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may produce greater improvements in functional mobility than Robot Assisted Gait Training (Lokomat).	1	Mustafaoglu et al. 2020
1a	There is conflicting evidence about the effect of Exoskeleton Systems when compared to Treadmill Training for improving functional mobility.	4	Yoo et al. 2023a; Choi et al. 2022; Lee et al. 2022b; Westlake & Patten 2009
2	30% weight robot gait training with general physical therapy may produce greater improvements in functional mobility than 50% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy may produce greater improvements in functional mobility than 70% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy may produce greater improvements in functional mobility than Treadmill training with general physical therapy.	1	Choi et al. 2022
2	50% weight robot gait training with general physical therapy or 70% weight robot gait training with general physical therapy may not have a difference in efficacy when compared to Treadmill training with general physical therapy for improving functional mobility.	1	Choi et al. 2022
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving functional mobility.	1	Jayaraman et al. 2019
2	Exoskeleton Systems Administration Method may not have a difference in efficacy when compared to Therapist controlled robot-assisted gait training for improving functional mobility.	1	Jiae et al. 2022
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in functional mobility than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1a	There is conflicting evidence about the effect of Exoskeleton Portable Devices when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving functional mobility.	3	Yeung et al. 2021; Stein et al. 2014; Waldman et al. 2013
1b	Robot-assisted training with Power-assisted ankle robot with Conventional training may not have a difference in efficacy when compared to Robot-assisted training with Swing-controlled ankle robot with Conventional training for improving functional mobility.	1	Yeung et al. 2021
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may produce greater improvements in functional mobility than Sham Ankle Foot Orthosis.	1	Yeung et al. 2018
1b	Robotic-Assisted Gait Training and Restraint may not have a difference in efficacy when compared to Robot-assisted (Lokomat)	1	Kang et al. 2018

	walking training with arm fixation with conventional care for improving functional mobility.		
1a	There is conflicting evidence about the effect of Robotics Combined with Virtual Reality when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving functional mobility.	2	Kayabinar et al. 2021; Calabro et al. 2017
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving functional mobility.	1	Park et al. 2018a
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving functional mobility.	1	Seo et al. 2018
1b	Gait training with Gait Exercise Assist Robot (GEAR) may produce greater improvements in functional mobility than Gait training with treadmill.	1	Ogino et al. 2020
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving functional mobility.	2	Tamburella et al. 2019; Bustamante Valles et al. 2016
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving functional mobility.	1	Aprile et al. 2022
1b	Robot-Assisted Gait Training with Balance Training may not have a difference in efficacy when compared to Balance Training Alone for improving functional mobility.	1	Gunduz et al. 2024
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving functional mobility.	1	Do et al. 2024
1b	Progressive reducing assistance force during robot-assisted gait training + conventional PT may produce greater improvements in functional mobility than Full assistance force during robot-assisted gait training + conventional PT.	1	Park et al. 2019d
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving functional mobility.	1	Dias et al. 2007
2	2x Lokomat gait training + 1x Conventional PT may not have a difference in efficacy when compared to 2x Conventional PT + 1x Lokomat gait training for improving functional mobility.	1	Mayr et al. 2007
1b	High definition transcranial direct current stimulation (dual) with Robot assisted gait training may not have a difference in efficacy when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training for improving functional mobility.	1	Kim et al. 2024b
1b	Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may not have a difference in efficacy when compared to Botulinum toxin injection with Conventional physiotherapy for improving functional mobility.	1	Cotinat et al. 2024
2	Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab may produce greater improvements in functional mobility than Acupuncture with Conventional rehab.	1	Hu et al. 2024

1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving functional mobility.	1	Inoue et al. 2022b
2	Brain-computer interface- controlled training robot with Conventional Physiotherapy may not have a difference in efficacy when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy for improving functional mobility.	1	Zhao et al. 2022c
1b	Virtual reality augmented robot- assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving functional mobility.	1	Kayabinar et al. 2021
1b	Trunk stability robot training (3DBT-33) with conventional physical therapy may not have a difference in efficacy when compared to Conventional Physical Therapy for improving functional mobility.	1	Min et al. 2020
1b	Robot-assisted balance exercises may not have a difference in efficacy when compared to Conventional care for improving functional mobility.	1	De Luca et al. 2020
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving functional mobility.	1	Picelli et al. 2019
2	Robot-assisted gait training with Virtual reality may not have a difference in efficacy when compared to Robot-assisted gait training for improving functional mobility.	1	Bergmann et al. 2018b
2	Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may produce greater improvements in functional mobility than Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks.	1	Erbil et al. 2018
1b	Robot-assisted gait training (Lokomat) with Virtual reality may produce greater improvements in functional mobility than Robot-assisted gait training (Lokomat).	1	Calabrò et al. 2017
1b	Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area may not have a difference in efficacy when compared to Robot-assisted gait training only for improving functional mobility.	1	Leon et al. 2017
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving functional mobility.	1	Seo et al. 2017
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving functional mobility.	1	Picelli et al. 2015
1b	Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not have a difference in efficacy when compared to Robot-assisted (Lokomat) gait training for improving functional mobility.	1	Bae et al. 2014

1a	There is conflicting evidence about the effect of Anodal transcranial direct current stimulation with Robot- assisted gait training when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving functional mobility.	2	Danzl et al. 2013; Geroin et al. 2011
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may produce greater improvements in functional mobility than Gait training.	1	Geroin et al. 2011
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving functional mobility.	1	Bizovicar et al. 2017
1b	Brain-computer interface- operated lower limb rehabilitation robot may not have a difference in efficacy when compared to Sham (Lower limb pedal training without image, video, sound hint) for improving functional mobility.	1	Li et al. 2021a

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving balance.	13	Huo et al. 2024; Lee et al. 2024a; Tang et al. 2024; Zhang et al. 2024d; Akinci et al. 2023; Lee et al. 2023a; Yoo et al. 2023b; Lin et al. 2022a; Song et al. 2021b; Kim et al. 2019b; Lee et al. 2019a; Morone et al. 2018; Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving balance.	1	Ng et al. 2008
1b	Robot Assisted Gait Training may not have a difference in efficacy when compared to Balance Training for improving balance.	1	Gandolfi et al. 2019
1a	Electromechanical Gait Training may not have a difference in efficacy when compared to Conventional Treatment or No Treatment for improving balance.	2	Tong et al. 2006; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving balance.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving balance.	1	Peurala et al. 2005
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving balance.	24	Zhang et al. 2024b; Xie et al. 2023; Nam et al. 2022b; Kang et al. 2021b; Louie et al. 2021; Molteni et al. 2021; Palmcrantz et al. 2021; Nam et al. 2020; Park et al. 2020c; Wall et al. 2020; Lee et al. 2019a; Nam et al. 2019; Sczesny-Kaiser et al. 2019; Kim et al. 2019a; Bergmann et al. 2018a; Yun et al. 2018; Han et al. 2016; Cho et al. 2015a; Kim et al. 2015h; van Nunen 2015; Morone et al. 2011; Freivogel et al. 2009;

			Hidler et al. 2009; Hornby et al. 2008
1b	Robot-assisted gait training with Conventional care may produce greater improvements in balance than Conventional gait training with Conventional care in patients with low motricity.	1	Morone et al. 2011
1b	Robot-assisted gait training with Conventional care may not have a difference in efficacy when compared to Conventional gait training with Conventional care for improving balance in patients with high motricity.	1	Morone et al. 2011
2	There is conflicting evidence about the effect of ExoAtlet exoskeleton exercises with rehabilitation when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation for improving balance.	1	Kotov et al. 2021
2	Resistance load Robotic gait system training may not have a difference in efficacy when compared to Assistance Robotic gait system training for improving balance.	1	Wu et al. 2014
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Treadmill Training for improving balance.	5	Yoo et al. 2023a; Choi et al. 2022; Lee et al. 2022b; Bang & Shin 2016b; Westlake & Patten 2009
2	30% weight robot gait training with general physical therapy may produce greater improvements in balance than 50% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy may produce greater improvements in balance than 70% weight robot gait training with general physical therapy.	1	Choi et al. 2022
2	30% weight robot gait training with general physical therapy may produce greater improvements in balance than Treadmill training with general physical therapy.	1	Choi et al. 2022
2	50% weight robot gait training with general physical therapy or 70% weight robot gait training with general physical therapy may not have a difference in efficacy when compared to Treadmill training with general physical therapy for improving balance.	1	Choi et al. 2022
2	Exoskeleton Gait Training may produce greater improvements in balance than Functional Task-Specific Training.	1	Jayaraman et al. 2019
2	Exoskeleton Systems Administration Method may not have a difference in efficacy when compared to Therapist controlled robot-assisted gait training for improving balance.	1	Jiae et al. 2022
1b	Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may produce greater improvements in balance than Physical Activity with Usual physiotherapy.	1	Wright et al. 2021
1a	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis for improving balance.	3	Yeung et al. 2021; Stein et al. 2014; Waldman et al. 2013
1b	Robot-assisted training with Power-assisted ankle robot with Conventional training may not have a difference in efficacy when compared to Robot-assisted training with Swing-controlled ankle robot with Conventional training for improving balance.	1	Yeung et al. 2021
1b	Exoskeleton Portable Devices may not have a difference in efficacy when compared to Stretching for improving balance.	2	Zhai et al. 2021; Forrester et al. 2014
2	Exoskeleton Portable Devices with Ankle Foot Orthosis may not have a difference in efficacy when compared to Sham Ankle Foot Orthosis for improving balance.	1	Yeung et al. 2018

1b	Robotic-Assisted Gait Training and Restraint may produce greater improvements in balance than Robot-assisted (Lokomat) walking training with arm fixation with conventional care.	1	Kang et al. 2018
1b	Robotics Combined with Virtual Reality may not have a difference in efficacy when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving balance.	1	Kayabinar et al. 2021
1b	Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may not have a difference in efficacy when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy for improving balance.	1	Park et al. 2018a
2	Galvanic vestibular stimulation may not have a difference in efficacy when compared to Gait training (Lokomat) or Physiotherapy with visual feedback for improving balance.	1	Krewer et al. 2013
2	There is conflicting evidence about the effect of Gait training (Lokomat) when compared to Physiotherapy with visual feedback for improving balance.	1	Krewer et al. 2013
2	Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not have a difference in efficacy when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb for improving balance.	1	Seo et al. 2018
1b	Robot-assisted Trunk Training may produce greater improvements in balance than Conventional Therapy.	1	Kim et al. 2022f
2	Robotic Verticalization with functional electrical stimulation may produce greater improvements in balance than Conventional therapy.	1	Calabro et al. 2015
1b	Regent Suit with Neuromotor rehabilitation may produce greater improvements in balance than Neuromotor rehabilitation.	1	Monticone et al. 2013
2	Robotics with Treadmill Training and Virtual Reality may not have a difference in efficacy when compared to Seated Training for improving balance.	1	Tamburella et al. 2019
1b	Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may produce greater improvements in balance than Conventional Therapy.	1	Mao et al. 2022b
2	Robot-Assisted Gait Training with Robotic Balance Platform may not have a difference in efficacy when compared to Robot-Assisted Gait Training Alone for improving balance.	1	Aprile et al. 2022
1b	Robot-Assisted Gait Training with Balance Training may not have a difference in efficacy when compared to Balance Training Alone for improving balance.	1	Gunduz et al. 2024
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Home-Based Exercise Program for improving balance.	1	Do et al. 2024
1b	Progressive reducing assistance force during robot-assisted gait training + conventional PT may produce greater improvements in balance than Full assistance force during robot-assisted gait training + conventional PT.	1	Park et al. 2019d
2	Gait trainer device (REHA-STIM) may not have a difference in efficacy when compared to Conventional rehabilitation (Bobath) for improving balance.	1	Dias et al. 2007
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot,	1	Haolin et al. 2024

	Conventional rehab or Lower Limb Robot and Conventional rehab for improving balance.		
1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving balance.	1	Haolin et al. 2024
1b	High definition transcranial direct current stimulation (dual) with Robot assisted gait training may not have a difference in efficacy when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training for improving balance.	1	Kim et al. 2024b
1b	Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may not have a difference in efficacy when compared to Botulinum toxin injection with Conventional physiotherapy for improving balance.	1	Cotinat et al. 2024
1b	Robotic balance training with conventional rehabilitation may produce greater improvements in balance than Conventional training.	1	Inoue et al. 2022b
1b	Virtual reality augmented robot- assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving balance.	1	Kayabinar et al. 2021
1b	Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may produce greater improvements in balance than Scalp Acupuncture with Basic Treatment.	1	Zhang et al. 2021c
1b	Trunk stability robot training (3DBT-33) with conventional physical therapy may produce greater improvements in balance than Conventional Physical Therapy.	1	Min et al. 2020
1b	Robot-assisted balance exercises may not have a difference in efficacy when compared to Conventional care for improving balance.	1	De Luca et al. 2020
2	Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may produce greater improvements in balance than Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks.	1	Erbil et al. 2018
1b	Robot-assisted gait training and anodal transcranial direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training and sham stimulation for improving balance.	1	Seo et al. 2017
1b	Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not have a difference in efficacy when compared to Robot-assisted (Lokomat) gait training for improving balance.	1	Bae et al. 2014
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving balance.	1	Danzl et al. 2013
2	Overground gait training using E-Go device with Standard Physiotherapy may not have a difference in efficacy when compared to Overground walking training with Standard Physiotherapy for improving balance.	1	Bizovicar et al. 2017
1b	Brain-computer interface- operated lower limb rehabilitation robot may not have a difference in efficacy when compared to Sham (Lower limb pedal training without image, video, sound hint) for improving balance.	1	Li et al. 2021a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Robot Assisted Gait Training may produce greater improvements in falls and fear of falling than Conventional Therapy and Overground Gait Training.	1	Lee et al. 2019a
1b	Exoskeleton Systems may produce greater improvements in falls and fear of falling than Conventional Therapy or Overground Gait Training.	3	Park et al. 2020c; Lee et al. 2019a; Kim et al. 2019a
1b	Exoskeleton Systems may produce greater improvements in falls and fear of falling than Treadmill Training.	1	Bang & Shin 2016b
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving falls and fear of falling.	1	Jayaraman et al. 2019
1b	Robotic-Assisted Gait Training and Restraint may not have a difference in efficacy when compared to Robot-assisted (Lokomat) walking training with arm fixation with conventional care for improving falls and fear of falling.	1	Kang et al. 2018
1b	Robotics Combined with Virtual Reality may not have a difference in efficacy when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training for improving falls and fear of falling.	1	Kayabinar et al. 2021
1b	Vibration on sole of foot may produce greater improvements in falls and fear of falling than Contact on Sole of Foot with No Vibration.	1	Onal et al. 2020
1b	Robot-Assisted Gait Training with Balance Training may not have a difference in efficacy when compared to Balance Training Alone for improving falls and fear of falling.	1	Gunduz et al. 2024
1b	Robotic balance training with conventional rehabilitation may not have a difference in efficacy when compared to Conventional training for improving falls and fear of falling.	1	Inoue et al. 2022b
1b	Virtual reality augmented robot- assisted gait training with conventional care may not have a difference in efficacy when compared to Robot-assisted gait training with conventional care for improving falls and fear of falling.	1	Kayabinar et al. 2021

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Robot Assisted Gait Training may not have a difference in efficacy when compared to Conventional Therapy and Overground Gait Training for improving quality of life.	3	Zhang et al. 2024d; Stolz et al. 2019; Chua et al. 2016
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving quality of life.	8	Palmcrantz et al. 2021; Mustafaoglu et al. 2020; Wall et al. 2019; Taveggia et al. 2016; Kim et al. 2015h; van Nunen 2015; Kelley et al. 2013; Hornby et al. 2008
1b	Robot Assisted Gait Training (Lokomat) with Conventional Therapy may produce greater improvements in quality of life than Robot Assisted Gait Training (Lokomat).	1	Mustafaoglu et al. 2020
2	Exoskeleton Gait Training may not have a difference in efficacy when compared to Functional Task-Specific Training for improving quality of life.	1	Jayaraman et al. 2019

1b	Gait training with Gait Exercise Assist Robot (GEAR) may not have a difference in efficacy when compared to Gait training with treadmill for improving quality of life.	1	Ogino et al. 2020
1b	Robot-Assisted Gait Training with Visuomotor feedback may not have a difference in efficacy when compared to Robot-Assisted Gait Training for improving quality of life.	1	Maggio et al. 2021
1b	Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy may produce greater improvements in quality of life than Robotic gait training with Lokomat Free-D with Conventional physiotherapy.	1	Elmas Bodur et al. 2024
2	Robotic tilt table (Erigo) therapy may produce greater improvements in quality of life than Conventional physiotherapy.	1	Kumar et al. 2020
2	There is conflicting evidence about the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care for improving quality of life.	1	Yadav et al. 2020
2	Robotic Tilt table with Upper extremity exercises may produce greater improvements in quality of life than Conventional therapy.	1	Yadav et al. 2018
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving quality of life.	1	Danzl et al. 2013

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving mood.	3	Yokota et al. 2023; Louie et al. 2021; Park et al. 2020c
1b	Robotics Combined with Virtual Reality may produce greater improvements in mood than Robotics, Robotics Combined with Auditory Stimulation or Conventional Training.	1	Calabro et al. 2017
1b	Robot-Assisted Gait Training with Visuomotor feedback may produce greater improvements in mood than Robot-Assisted Gait Training.	1	Maggio et al. 2021
1b	Robot-Assisted Gait Training may produce greater improvements in mood than Physiotherapy.	1	Niedermeier et al. 2017
1b	Robot-assisted gait training (Lokomat) with Virtual reality may produce greater improvements in mood than Robot-assisted gait training (Lokomat).	1	Calabrò et al. 2017

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Robotic Verticalization with functional electrical stimulation may produce greater improvements in fatigue and sleep than Conventional therapy.	1	Calabro et al. 2015
1b	Daoyin with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab for improving fatigue and sleep.	1	Haolin et al. 2024

1b	Lower Limb Robot with Conventional rehab may not have a difference in efficacy when compared to Daoyin with Lower Limb Robot with Conventional rehab for improving fatigue and sleep.	1	Haolin et al. 2024

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Exoskeleton Systems may not have a difference in efficacy when compared to Conventional Therapy or Overground Gait Training for improving cognition.	1	Louie et al. 2021
1b	Robot-Assisted Gait Training with Visuomotor feedback may not have a difference in efficacy when compared to Robot-Assisted Gait Training for improving cognition.	1	Maggio et al. 2021
2	Haemorrhagic Stroke Erigo Robotic Tilt Table may not have a difference in efficacy when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care for improving cognition.	1	Yadav et al. 2020

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Robot Assisted Gait Training may produce greater improvements in upper extremity function than Conventional Therapy and Overground Gait Training.	1	Lee et al. 2019a
2	Exoskeleton Systems may produce greater improvements in upper extremity function than Conventional Therapy or Overground Gait Training.	1	Lee et al. 2019a
1b	Robot-Assisted Gait Training may not have a difference in efficacy when compared to Upper Limb Therapy for improving upper extremity function.	1	Lin et al. 2022b
1b	Brain-computer interface- operated lower limb rehabilitation robot may not have a difference in efficacy when compared to Sham (Lower limb pedal training without image, video, sound hint) for improving upper extremity function.	1	Li et al. 2021a

Key Points

- Robot Assisted Gait Training may be beneficial for improving muscle strength and falls and fear of falling, but not motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy and Overground Gait Training; the literature is mixed regarding neurophysiological measures.
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Overground gait training.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation.
- Early Robot Assisted Gait Training may be beneficial for improving neurophysiological measures after stroke when compared to Late Start Robot Assisted Gait Training.

- Robot Assisted Gait Training may be beneficial for improving gait endurance, but not biomechanical balance measures, gait speed, functional mobility, and balance, after stroke when compared to Balance Training.
- Electromechanical Gait Training may be beneficial for improving gait speed and functional mobility, but not biomechanical balance measures, activities of daily living, and balance, after stroke when compared to Conventional Treatment or No Treatment; the literature is mixed regarding muscle strength and gait endurance.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional physical therapy.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not be beneficial for improving biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional therapy.
- End-Effector Gait Training may be beneficial for improving motor recovery, but not neurophysiological measures, gait speed, and functional mobility, after stroke when compared to Body Weight Supported Treadmill.
- Electromechanical gait trainer therapy with Conventional rehabilitation may be beneficial for improving functional mobility, but not motor recovery, spasticity, and gait speed, after stroke when compared to Body weight-supported treadmill training with Conventional rehabilitation.
- Exoskeleton Systems may be beneficial for improving neurophysiological measures and falls and fear of falling, but not motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Overground Gait Training; the literature is mixed regarding biomechanical balance measures.
- ExoAtlet exoskeleton exercises with rehabilitation may be beneficial for improving muscle strength, activities of daily living, gait speed, and functional mobility, but not spasticity, after stroke when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation; the literature is mixed regarding balance.
- Robot Assisted Gait Training (Lokomat) with Conventional Therapy may be beneficial for improving activities of daily living, gait endurance, functional mobility, and quality of life, but not motor recovery and aerobic measures, after stroke when compared to Robot Assisted Gait Training (Lokomat); the literature is mixed regarding gait speed.
- Resistance load Robotic gait system training may not be beneficial for improving gait speed, gait endurance, and balance after stroke when compared to Assistance Robotic gait system training.
- Therapist-assisted locomotor training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Robotic-assisted locomotor training.
- Exoskeleton Systems may be beneficial for improving biomechanical gait measures, neurophysiological measures, gait speed, and falls and fear of falling, but not motor recovery, gait endurance, and balance, after stroke when compared to Treadmill Training; the literature is mixed regarding functional mobility.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to 50% weight robot gait training with general physical therapy.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to 70% weight robot gait training with general physical therapy.
- Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may be beneficial for improving gait speed, gait endurance, functional mobility, and balance, but not aerobic measures and activities of daily living, after stroke when compared to Physical Activity with Usual physiotherapy.
- Exoskeleton Gait Training may be beneficial for improving gait speed, gait endurance, and balance, but not motor recovery, neurophysiological measures, pain, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Functional Task-Specific Training.

- Exoskeleton Systems Administration Method may be beneficial for improving motor recovery and biomechanical gait measures, but not activities of daily living, functional mobility, and balance, after stroke when compared to Therapist controlled robot-assisted gait training; the literature is mixed regarding gait speed.
- Exoskeleton Portable Devices may be beneficial for improving muscle strength, spasticity, and neurophysiological measures, but not motor recovery, biomechanical gait measures, gait speed, gait endurance, and balance, after stroke when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis; the literature is mixed regarding range of motion and functional mobility.
- Robot-assisted training with Power-assisted ankle robot with Conventional training may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Robot-assisted training with Swing-controlled ankle robot with Conventional training.
- Exoskeleton Portable Devices may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, range of motion, activities of daily living, and balance, after stroke when compared to Stretching; the literature is mixed regarding biomechanical gait measures.
- Exoskeleton Portable Devices with Ankle Foot Orthosis may be beneficial for improving motor recovery, gait speed, and functional mobility, but not biomechanical gait measures, spasticity, gait endurance, and balance, after stroke when compared to Sham Ankle Foot Orthosis.
- Robotic-Assisted Gait Training and Restraint may be beneficial for improving motor recovery, activities of daily living, balance, and range of motion, but not gait speed, functional mobility, falls and fear of falling, and biomechanical gait measures, after stroke when compared to Robot-assisted (Lokomat) walking training with arm fixation with conventional care.
- Robotics Combined with Virtual Reality may be beneficial for improving motor recovery and neurophysiological measures, but not spasticity, activities of daily living, gait speed, balance, and falls and fear of falling, after stroke when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training; the literature is mixed regarding functional mobility.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.
- Galvanic vestibular stimulation may not be beneficial for improving balance after stroke when compared to Gait training (Lokomat) or Physiotherapy with visual feedback.
- The literature is mixed regarding the effect of Gait training (Lokomat) on balance after stroke when compared to Physiotherapy with visual feedback.
- Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, range of motion, gait speed, functional mobility, and balance after stroke when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb.
- Robot-assisted Trunk Training may be beneficial for improving biomechanical balance measures and balance after stroke when compared to Conventional Therapy.
- Gait training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and quality of life, after stroke when compared to Gait training with treadmill; the literature is mixed regarding gait endurance.
- Gait Training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving activities of daily living, but not motor recovery, after stroke when compared to Overground Gait Training.
- Robotic Verticalization with functional electrical stimulation may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and balance after stroke when compared to Conventional therapy; the literature is mixed regarding aerobic measures and sensory and proprioceptive function.
- Robotic-assisted Stretching may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional Therapy.

- Regent Suit with Neuromotor rehabilitation may be beneficial for improving activities of daily living, gait speed, and balance, but not biomechanical gait measures and aerobic measures, after stroke when compared to Neuromotor rehabilitation.
- Vibration on sole of foot may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Contact on Sole of Foot with No Vibration.
- Robot-Assisted Gait Training with Visuomotor feedback may be beneficial for improving neurophysiological measures, but not quality of life, after stroke when compared to Robot-Assisted Gait Training; the literature is mixed regarding motor recovery.
- Robotics with Treadmill Training and Virtual Reality may be beneficial for improving motor recovery, but not biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, pain, activities of daily living, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Seated Training.
- Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy may be beneficial for improving quality of life, but not activities of daily living and gait endurance, after stroke when compared to Robotic gait training with Lokomat Free-D with Conventional physiotherapy.
- Ankle robot training low frequency, low intensity may not be beneficial for improving motor recovery and range of motion after stroke when compared to ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity.
- Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may be beneficial for improving motor recovery, range of motion, gait speed, and balance after stroke when compared to Conventional Therapy.
- Robot-Assisted Gait Training with Robotic Balance Platform may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, pain, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Robot-Assisted Gait Training Alone.
- Robot-Assisted Gait Training may be beneficial for improving motor recovery, but not activities of daily living, after stroke when compared to Upper Limb Therapy.
- Robot-Assisted Gait Training with Balance Training may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Balance Training Alone; the literature is mixed regarding motor recovery.
- Robot-Assisted Gait Training may be beneficial for improving motor recovery and aerobic measures, but not muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Home-Based Exercise Program.
- Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy may not be beneficial for improving motor recovery, biomechanical gait measures, and spasticity after stroke when compared to Gait training + Conventional PT.
- Healbot T (Exoskeleton) with pelvic motion on may be beneficial for improving neurophysiological measures, but not biomechanical gait measures and gait speed, after stroke when compared to Healbot T (Exoskeleton) with pelvic motion off.
- Progressive reducing assistance force during robot-assisted gait training + conventional PT may be beneficial for improving muscle strength, activities of daily living, functional mobility, and balance after stroke when compared to Full assistance force during robot-assisted gait training + conventional PT.
- Gait trainer device (REHA-STIM) may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional rehabilitation (Bobath).
- 2x Lokomat gait training + 1x Conventional PT may not be beneficial for improving motor recovery, muscle strength, spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to 2x Conventional PT + 1x Lokomat gait training.
- Daoyin with Conventional rehab may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.
- Daoyin with Conventional rehab may not be beneficial for improving motor recovery and balance after stroke when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab; the literature is mixed regarding activities of daily living.

- High definition transcranial direct current stimulation (dual) with Robot assisted gait training may be beneficial for improving activities of daily living, but not gait speed, functional mobility, and balance, after stroke when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training; the literature is mixed regarding motor recovery.
- Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may be beneficial for improving gait speed and gait endurance, but not spasticity, functional mobility, and balance, after stroke when compared to Botulinum toxin injection with Conventional physiotherapy.
- Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Acupuncture with Conventional rehab.
- Robotic balance training with conventional rehabilitation may be beneficial for improving balance, but not motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, and falls and fear of falling, after stroke when compared to Conventional training.
- Brain-computer interface- controlled training robot with Conventional Physiotherapy may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, and functional mobility after stroke when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy.
- Dynamic tilt table with robotic leg movement with functional electrical stimulation may be beneficial for improving gait speed, but not motor recovery, biomechanical gait measures, and range of motion, after stroke when compared to dynamic tilt table with robotic leg movement.
- Virtual reality augmented robot- assisted gait training with conventional care may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Robot-assisted gait training with conventional care.
- Brain-computer interface- operated lower limb rehabilitation robot may be beneficial for improving motor recovery, but not functional mobility and balance, after stroke when compared to Sham (Lower limb pedal training without image, video, sound hint); the literature is mixed regarding neurophysiological measures.
- Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait endurance, and balance after stroke when compared to Scalp Acupuncture with Basic Treatment.
- Trunk stability robot training (3DBT-33) with conventional physical therapy may be beneficial for improving motor recovery and balance, but not functional mobility, after stroke when compared to Conventional Physical Therapy.
- Robot-assisted balance exercises may be beneficial for improving sensory and proprioceptive function, but not functional mobility and balance, after stroke when compared to Conventional care.
- Robotic tilt table (Erigo) therapy may be beneficial for improving muscle strength and quality of life after stroke when compared to Conventional physiotherapy.
- The literature is mixed regarding the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table on motor recovery, muscle strength, spasticity, and quality of life after stroke when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care.
- Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and functional mobility after stroke when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training.
- Robotic Tilt table with Upper extremity exercises may be beneficial for improving muscle strength and quality of life after stroke when compared to Conventional therapy.
- Robotic ankle stretching exercises may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional stretching board.
- Robot-assisted gait training with Virtual reality may not be beneficial for improving muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training.

- Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may be beneficial for improving functional mobility and balance, but not spasticity and range of motion, after stroke when compared to Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks.
- Robot-assisted gait training (Lokomat) with Virtual reality may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, after stroke when compared to Robot-assisted gait training (Lokomat).
- Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area may not be beneficial for improving gait speed and functional mobility after stroke when compared to Robot-assisted gait training only.
- Robot-assisted gait training and anodal transcranial direct current stimulation may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Robot-assisted gait training and sham stimulation.
- Botox (250U) With Robot- Assisted Gait Therapy may be beneficial for improving gait endurance, but not spasticity, after stroke when compared to Botox Alone.
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA); Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures and gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not be beneficial for improving biomechanical gait measures, range of motion, gait speed, functional mobility, and balance after stroke when compared to Robot-assisted (Lokomat) gait training.
- Anodal transcranial direct current stimulation with Robot- assisted gait training may not be beneficial for improving gait speed, balance, quality of life, biomechanical gait measures, and gait endurance after stroke when compared to Sham transcranial direct current stimulation with Robot- assisted gait training; the literature is mixed regarding functional mobility.
- Anodal transcranial direct current stimulation with Robot- assisted gait training may be beneficial for improving biomechanical gait measures and functional mobility after stroke when compared to Gait training.
- Virtual reality robotic training (computer) may not be beneficial for improving biomechanical gait measures, gait speed, and gait endurance after stroke when compared to Robotic training.
- Lower Limb Robot with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Daoyin with Lower Limb Robot with Conventional rehab.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Treadmill training with general physical therapy.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.

- Robot-assisted gait training with Conventional care may not be beneficial for improving motor recovery, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional gait training with Conventional care in patients with high motricity.
- Robot-assisted gait training with Conventional care may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not muscle strength, spasticity, and gait speed, after stroke when compared to Conventional gait training with Conventional care in patients with low motricity.
- Overground gait training using E-Go device with Standard Physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Overground walking training with Standard Physiotherapy.
- 50% weight robot gait training with general physical therapy may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Treadmill training with general physical therapy.
- 70% weight robot gait training with general physical therapy may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Treadmill training with general physical therapy.

Summary of Key Points: Electromechanical and Robotic Devices

Intervention	Control(s)	Function domain(s)	Effect
Robot Assisted Gait Training	Conventional Therapy and Overground Gait Training	Muscle strength, falls and fear of falling	+
Robot Assisted Gait Training	Conventional Therapy and Overground Gait Training	Motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	–
Robot Assisted Gait Training	Conventional Therapy and Overground Gait Training	Neurophysiological measures	=
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Biomechanical gait measures, muscle strength, spasticity, gait endurance, functional mobility	–
Gait Trainer GT I (Rehastim)	Overground gait training	Motor recovery, gait speed, gait endurance, functional mobility	–
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Gait Trainer GT II (Rehastim) with Regular rehabilitation	Muscle strength, activities of daily living, gait speed, functional mobility, balance	–
Early Robot Assisted Gait Training	Late Start Robot Assisted Gait Training	Neurophysiological measures	+
Robot Assisted Gait Training	Balance Training	Gait endurance	+
Robot Assisted Gait Training	Balance Training	Biomechanical balance measures, gait speed, functional mobility, balance	–
Electromechanical Gait Training	Conventional Treatment or No Treatment	Gait speed, functional mobility	+
Electromechanical Gait Training	Conventional Treatment or No Treatment	Biomechanical balance measures, activities of daily living, balance	–
Electromechanical Gait Training	Conventional Treatment or No Treatment	Muscle strength, gait endurance	=

Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Electromechanical gait trainer with Conventional physical therapy	Muscle strength, activities of daily living, gait speed, functional mobility, balance	–
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Electromechanical gait trainer with Conventional therapy	Biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, balance	–
End-Effector Gait Training	Body Weight Supported Treadmill	Motor recovery	+
End-Effector Gait Training	Body Weight Supported Treadmill	Neurophysiological measures, gait speed, functional mobility	–
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation	Functional mobility	+
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation	Motor recovery, spasticity, gait speed	–
Exoskeleton Systems	Conventional Therapy or Overground Gait Training	Neurophysiological measures, falls and fear of falling	+
Exoskeleton Systems	Conventional Therapy or Overground Gait Training	Motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, quality of life	–
Exoskeleton Systems	Conventional Therapy or Overground Gait Training	Biomechanical balance measures	=
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Muscle strength, activities of daily living, gait speed, functional mobility	+
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Spasticity	–
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation	Balance	=
Robot Assisted Gait Training (Lokomat) with Conventional Therapy	Robot Assisted Gait Training (Lokomat)	Activities of daily living, gait endurance, functional mobility, quality of life	+
Robot Assisted Gait Training (Lokomat) with Conventional Therapy	Robot Assisted Gait Training (Lokomat)	Motor recovery, aerobic measures	–
Robot Assisted Gait Training (Lokomat) with Conventional Therapy	Robot Assisted Gait Training (Lokomat)	Gait speed	=
Resistance load Robotic gait system training	Assistance Robotic gait system training	Gait speed, gait endurance, balance	–
Therapist-assisted locomotor training	Robotic-assisted locomotor training	Biomechanical gait measures, gait speed	–
Exoskeleton Systems	Treadmill Training	Biomechanical gait measures, neurophysiological measures, gait speed, falls and fear of falling	+
Exoskeleton Systems	Treadmill Training	Motor recovery, gait endurance, balance	–

Exoskeleton Systems	Treadmill Training	Functional mobility	=
30% weight robot gait training with general physical therapy	50% weight robot gait training with general physical therapy	Gait speed, functional mobility, balance	+
30% weight robot gait training with general physical therapy	70% weight robot gait training with general physical therapy	Gait speed, functional mobility, balance	+
Exoskeleton Gait Training	Functional Task-Specific Training	Gait speed, gait endurance, balance	+
Exoskeleton Gait Training	Functional Task-Specific Training	Motor recovery, neurophysiological measures, pain, functional mobility, falls and fear of falling, quality of life	–
Exoskeleton Systems Administration Method	Therapist controlled robot-assisted gait training	Activities of daily living, functional mobility, balance	–
Exoskeleton Systems Administration Method	Therapist controlled robot-assisted gait training	Motor recovery, biomechanical gait measures	+
Exoskeleton Portable Devices	Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis	Muscle strength, spasticity, neurophysiological measures	+
Exoskeleton Portable Devices	Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis	Motor recovery, biomechanical gait measures, gait speed, gait endurance, balance	–
Exoskeleton Portable Devices	Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis	Range of motion, functional mobility	=
Robot-assisted training with Power-assisted ankle robot with Conventional training	Robot-assisted training with Swing-controlled ankle robot with Conventional training	Gait speed	+
Robot-assisted training with Power-assisted ankle robot with Conventional training	Robot-assisted training with Swing-controlled ankle robot with Conventional training	Functional mobility, balance	–
Exoskeleton Portable Devices	Stretching	Gait speed	+
Exoskeleton Portable Devices	Stretching	Motor recovery, muscle strength, spasticity, range of motion, activities of daily living, balance	–
Exoskeleton Portable Devices	Stretching	Biomechanical gait measures	=
Exoskeleton Portable Devices with Ankle Foot Orthosis	Sham Ankle Foot Orthosis	Motor recovery, gait speed, functional mobility	+
Exoskeleton Portable Devices with Ankle Foot Orthosis	Sham Ankle Foot Orthosis	Biomechanical gait measures, spasticity, gait endurance, balance	–
Robotic-Assisted Gait Training and Restraint	Robot-assisted (Lokomat) walking training with arm fixation with conventional care	Motor recovery, activities of daily living, balance, range of motion	+
Robotic-Assisted Gait Training and Restraint	Robot-assisted (Lokomat) walking training with arm fixation with conventional care	Gait speed, functional mobility, falls and fear of falling, biomechanical gait measures	–
Robotic-Assisted Gait Training and Restraint	Robot-assisted (Lokomat) walking training with arm fixation with conventional care	Range of motion	+
Robotic-Assisted Gait Training and Restraint	Robot-assisted (Lokomat) walking training with arm fixation with conventional care	Biomechanical gait measures, gait speed	–

Robotics Combined with Virtual Reality	Robotics, Robotics Combined with Auditory Stimulation or Conventional Training	Motor recovery, neurophysiological measures	+
Robotics Combined with Virtual Reality	Robotics, Robotics Combined with Auditory Stimulation or Conventional Training	Spasticity, activities of daily living, gait speed, balance, falls and fear of falling	–
Robotics Combined with Virtual Reality	Robotics, Robotics Combined with Auditory Stimulation or Conventional Training	Functional mobility	=
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Motor recovery, muscle strength	+
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy	Activities of daily living, gait speed, functional mobility, balance	–
Galvanic vestibular stimulation	Gait training (Lokomat) or Physiotherapy with visual feedback	Balance	–
Gait training (Lokomat)	Physiotherapy with visual feedback	Balance	=
Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb	Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot- assisted training for unaffected limb	Motor recovery, biomechanical gait measures, muscle strength, range of motion, gait speed, functional mobility, balance	–
Robot-assisted Trunk Training	Conventional Therapy	Biomechanical balance measures, balance	+
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Functional mobility	+
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Biomechanical gait measures, gait speed, quality of life	–
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill	Gait endurance	=
Gait Training with Gait Exercise Assist Robot (GEAR)	Overground Gait Training	Activities of daily living	+
Gait Training with Gait Exercise Assist Robot (GEAR)	Overground Gait Training	Motor recovery	–
Robotic Verticalization with functional electrical stimulation	Conventional therapy	Motor recovery, muscle strength, neurophysiological measures, balance	+
Robotic Verticalization with functional electrical stimulation	Conventional therapy	Aerobic measures, sensory and proprioceptive function	=
Robotic-assisted Stretching	Conventional Therapy	Biomechanical balance measures, range of motion	+
Robotic-assisted Stretching	Conventional Therapy	Biomechanical gait measures, gait speed	–
Regent Suit with Neuromotor rehabilitation	Neuromotor rehabilitation	Activities of daily living, gait speed, balance	+
Regent Suit with Neuromotor rehabilitation	Neuromotor rehabilitation	Biomechanical gait measures, aerobic measures	–
Vibration on sole of foot	Contact on Sole of Foot with No Vibration	Biomechanical balance measures, falls and fear of falling	+

Robot-Assisted Gait Training with Visuomotor feedback	Robot-Assisted Gait Training	Neurophysiological measures	+
Robot-Assisted Gait Training with Visuomotor feedback	Robot-Assisted Gait Training	Quality of life	–
Robot-Assisted Gait Training with Visuomotor feedback	Robot-Assisted Gait Training	Motor recovery	=
Robotics with Treadmill Training and Virtual Reality	Seated Training	Motor recovery	+
Robotics with Treadmill Training and Virtual Reality	Seated Training	Biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, pain, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy	Robotic gait training with Lokomat Free-D with Conventional physiotherapy	Quality of life	+
Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy	Robotic gait training with Lokomat Free-D with Conventional physiotherapy	Activities of daily living, gait endurance	–
Ankle robot training low frequency, low intensity	ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity	Motor recovery, range of motion	–
Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation	Conventional Therapy	Motor recovery, range of motion, gait speed, balance	+
Robot-Assisted Gait Training with Robotic Balance Platform	Robot-Assisted Gait Training Alone	Biomechanical gait measures, biomechanical balance measures, muscle strength, pain, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
Robot-Assisted Gait Training	Upper Limb Therapy	Motor recovery	+
Robot-Assisted Gait Training	Upper Limb Therapy	Activities of daily living	–
Robot-Assisted Gait Training with Balance Training	Balance Training Alone	Functional mobility, balance, falls and fear of falling	–
Robot-Assisted Gait Training with Balance Training	Balance Training Alone	Motor recovery	=
Robot-Assisted Gait Training	Home-Based Exercise Program	Motor recovery, aerobic measures	+
Robot-Assisted Gait Training	Home-Based Exercise Program	Muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy	Gait training + Conventional PT	Motor recovery, biomechanical gait measures, spasticity	–
Healbot T (Exoskeleton) with pelvic motion on	Healbot T (Exoskeleton) with pelvic motion off	Neurophysiological measures	+
Healbot T (Exoskeleton) with pelvic motion on	Healbot T (Exoskeleton) with pelvic motion off	Biomechanical gait measures, gait speed	–

Progressive reducing assistance force during robot-assisted gait training + conventional PT	Full assistance force during robot-assisted gait training + conventional PT	Muscle strength, activities of daily living, functional mobility, balance	+
Gait trainer device (REHA-STIM)	Conventional rehabilitation (Bobath)	Motor recovery, biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
2x Lokomat gait training + 1x Conventional PT	2x Conventional PT + 1x Lokomat gait training	Motor recovery, muscle strength, spasticity, gait speed, gait endurance, functional mobility	–
Daoyin with Conventional rehab	Conventional rehab	Motor recovery, activities of daily living	+
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab	Motor recovery, balance	–
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab	Activities of daily living	=
High definition transcranial direct current stimulation (dual) with Robot assisted gait training	Sham High definition transcranial direct current stimulation with Robot assisted gait training	Activities of daily living	+
High definition transcranial direct current stimulation (dual) with Robot assisted gait training	Sham High definition transcranial direct current stimulation with Robot assisted gait training	Gait speed, functional mobility, balance	–
High definition transcranial direct current stimulation (dual) with Robot assisted gait training	Sham High definition transcranial direct current stimulation with Robot assisted gait training	Motor recovery	=
Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection	Botulinum toxin injection with Conventional physiotherapy	Gait speed, gait endurance	+
Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection	Botulinum toxin injection with Conventional physiotherapy	Spasticity, functional mobility, balance	–
Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab	Acupuncture with Conventional rehab	Biomechanical gait measures, gait speed, functional mobility	+
Robotic balance training with conventional rehabilitation	Conventional training	Balance	+
Robotic balance training with conventional rehabilitation	Conventional training	Motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, falls and fear of falling	–
Brain-computer interface- controlled training robot with Conventional Physiotherapy	Sham brain-computer interface-controlled training robot with Conventional Physiotherapy	Motor recovery, neurophysiological measures, activities of daily living, functional mobility	–
Dynamic tilt table with robotic leg movement with functional electrical stimulation	dynamic tilt table with robotic leg movement	Gait speed	+
Dynamic tilt table with robotic leg movement with functional electrical stimulation	dynamic tilt table with robotic leg movement	Motor recovery, biomechanical gait measures, range of motion	–

Virtual reality augmented robot-assisted gait training with conventional care	Robot-assisted gait training with conventional care	Activities of daily living, gait speed, functional mobility, balance, falls and fear of falling	−
Brain-computer interface- operated lower limb rehabilitation robot	Sham (Lower limb pedal training without image, video, sound hint)	Motor recovery	+
Brain-computer interface- operated lower limb rehabilitation robot	Sham (Lower limb pedal training without image, video, sound hint)	Functional mobility, balance	−
Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment	Scalp Acupuncture with Basic Treatment	Motor recovery, biomechanical gait measures, activities of daily living, gait endurance, balance	+
Trunk stability robot training (3DBT-33) with conventional physical therapy	Conventional Physical Therapy	Motor recovery, balance	+
Trunk stability robot training (3DBT-33) with conventional physical therapy	Conventional Physical Therapy	Functional mobility	−
Robot-assisted balance exercises	Conventional care	Sensory and proprioceptive function	+
Robot-assisted balance exercises	Conventional care	Functional mobility, balance	−
Robotic tilt table (Erigo) therapy	Conventional physiotherapy	Muscle strength, quality of life	+
Haemorrhagic Stroke Erigo Robotic Tilt Table	Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care	Motor recovery, muscle strength, spasticity, quality of life	=
Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Biomechanical gait measures, muscle strength, spasticity, gait speed, functional mobility	−
Robotic Tilt table with Upper extremity exercises	Conventional therapy	Muscle strength, quality of life	+
Robotic ankle stretching exercises	Conventional stretching board	Biomechanical balance measures, range of motion	+
Robotic ankle stretching exercises	Conventional stretching board	Biomechanical gait measures, gait speed	−
Robot-assisted gait training with Virtual reality	Robot-assisted gait training	Muscle strength, gait speed, gait endurance, functional mobility	−
Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy	Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks	Functional mobility, balance	+
Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy	Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks	Spasticity, range of motion	−
Robot-assisted gait training (Lokomat) with Virtual reality	Robot-assisted gait training (Lokomat)	Neurophysiological measures, functional mobility	+
Robot-assisted gait training (Lokomat) with Virtual reality	Robot-assisted gait training (Lokomat)	Spasticity	−
Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area	Robot-assisted gait training only	Gait speed, functional mobility	−

Robot-assisted gait training and anodal transcranial direct current stimulation	Robot-assisted gait training and sham stimulation	Motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, balance	–
Botox (250U) With Robot- Assisted Gait Therapy	Botox Alone	Gait endurance	+
Botox (250U) With Robot- Assisted Gait Therapy	Botox Alone	Spasticity	–
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Muscle strength, spasticity, functional mobility	–
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Biomechanical gait measures, gait endurance	–
Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side	Robot-assisted (Lokomat) gait training	Biomechanical gait measures, range of motion, gait speed, functional mobility, balance	–
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training	Gait speed, balance, quality of life, biomechanical gait measures, gait endurance	–
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training	Functional mobility	=
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training	Biomechanical gait measures, gait speed, gait endurance	–
Anodal transcranial direct current stimulation with Robot- assisted gait training	Gait training	Biomechanical gait measures, functional mobility	+
Virtual reality robotic training (computer)	Robotic training	Biomechanical gait measures, gait speed, gait endurance	–
Lower Limb Robot with Conventional rehab	Daoyin with Lower Limb Robot with Conventional rehab	Motor recovery, activities of daily living, balance	–
30% weight robot gait training with general physical therapy	Treadmill training with general physical therapy	Gait speed, functional mobility, balance	+
50% weight robot gait training with general physical therapy	Treadmill training with general physical therapy	Functional mobility, balance	–
Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+

Auditory stimulation with robot-assisted gait training (Treadmill) with conventional physical therapy	Conventional physical therapy with treadmill training	Muscle strength	+
Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care	Physical Activity with Usual physiotherapy	Aerobic measures, activities of daily living	–
Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care	Physical Activity with Usual physiotherapy	Gait endurance, functional mobility, balance, gait speed	+
Exoskeleton Systems Administration Method	Therapist controlled robot-assisted gait training	Gait speed	=
Robot-assisted gait training with Conventional care	Conventional gait training with Conventional care in patients with high motricity	Motor recovery, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
Robot-assisted gait training with Conventional care	Conventional gait training with Conventional care in patients with low motricity	Muscle strength, spasticity, gait speed	–
Robot-assisted gait training with Conventional care	Conventional gait training with Conventional care in patients with low motricity	Activities of daily living, gait endurance, functional mobility, balance	+
Brain-computer interface- operated lower limb rehabilitation robot	Sham (Lower limb pedal training without image, video, sound hint)	Neurophysiological measures	=
Overground gait training using E-Go device with Standard Physiotherapy	Overground walking training with Standard Physiotherapy	Motor recovery, activities of daily living, gait endurance, functional mobility, balance	–
50% weight robot gait training with general physical therapy	Treadmill training with general physical therapy	Gait speed	+
70% weight robot gait training with general physical therapy	Treadmill training with general physical therapy	Gait speed	+
70% weight robot gait training with general physical therapy	Treadmill training with general physical therapy	Functional mobility, balance	–

Functional Electrical Stimulation



Adopted from: http://inirehab.com/functional-electrical-stimulation-fes-explained/

Functional electrical stimulation (FES), the integration of neuromuscular electrical stimulation with functional activity or training, was first implemented with the goal of assisting stroke patients with foot drop (Liberson et al., 1961; Peckham & Knutson, 2005). FES is currently used to improve the function of the paretic extremity during various motor tasks (Liberson et al., 1961). FES works through applying short, programmed bursts of current to the nerve and muscles in the affected region to produce muscle contractions in a coordinated way.

A total of 73 RCTs were found that evaluated functional electrical stimulation for lower extremity motor rehabilitation. Ten RCTs compared FES Therapy or Sham Stimulation with Conventional Therapy or Sham Stimulation (Dujovic et al. 2017; Wilkinson et al. 2015; Lairamore et al. 2014; You et al. 2014; Kottink et al. 2007; Yan et al. 2005; Newsam & Baker 2004; Burridge et al. 1997; Bogataj et al. 1995; MacDonell et al. 1994). Ten RCTs compared FES Combined with Gait Training with Gait Training or Conventional Therapy (Mijic et al. 2023; VanBloemendaal et al. 2021; Araki et al. 2020; Sheffler et al. 2015; Spaich et al. 2014; Daly et al. 2011; Embrey et al. 2010; Kojovic et al. 2009; Daly et al. 2006; Cozean et al. 1988). Nine RCTs compared Cycling with FES with Cycling with or without Sham FES or Conventional Therapy (Bustamante Valles et al. 2016; De Sousa et al. 2016; Peri et al. 2016; Bauer et al. 2015; Lo et al. 2012; Ambrosini et al. 2012; Ambrosini et al. 2011; Ferrante et al. 2008; Janssen et al. 2008). One RCT compared Interval Cycling + FES with Linear Cycling + FES (Shariat et al. 2021). Six RCTs compared Treadmill Training with FES with Treadmill Training with or without Sham FES (Dantas et al. 2023; Lee et al. 2022d; Awad et al. 2016; Cho et al. 2015c; Hwang et al. 2015; Lee et al. 2013g). Three RCTs compared Robot-assisted Gait Training with FES with Gait Training or Robot-assisted Gait Training (Bae et al. 2014; Tong et al. 2006; Peurala et al. 2005). Two RCTs compared Balance Training + FES with Balance Training or Conventional Care (Lee et al. 2020b; Kunkel et al. 2013). One RCT compared FES + Proprioceptive Neuromuscular Facilitation with Proprioceptive Neuromuscular Facilitation (Shim et al. 2020). Two RCTs compared Ankle Training + BCI-based FES with Ankle Training + FES (Chung et al. 2020b; Chung et al. 2015). Three RCTs compared FES + Tilt Table with Conventional Therapy or Simple Tilt Table (Ueda et al. 2022; Calabro et al. 2015; Solopova et al. 2011 RCT 4). One RCT compared FES + Motor Training on Rocker Board with Conventional Exercises (Cheng et al. 2010). Two RCTs compared FES Muscle Stimulation with Electrical Muscle Stimulation (Mitsutake et al. 2019; Sharif et al. 2017). Two RCTs compared Four-Channel FES with Dual-Channel FES vs Sham (Zheng et al. 2018; Tan et al. 2014). One RCT compared Faradic Electrical Stimulation with Russian Electrical Stimulation (Ganesh et al. 2018). One RCT compared Mirror Therapy with Functional Electrical Stimulation with Conventional Therapy (Salhab et al. 2016). One RCT compared Functional Electrical Stimulation with Transcranial Direct Current Stimulation (Zhang et al. 2021b). One RCT compared Gait Training with FES with Gait Training with tDCS vs Gait Training with tDCS + FES (Mitsutake et al. 2021). Six RCTs compared Peroneal Nerve FES (Foot-drop Stimulator) with Ankle-Foot Orthosis (Sannyasi et al. 2022; Bethoux et al. 2014; Everaert et al. 2013; Kluding et al. 2013; Salisbury et al. 2013; Sheffler et al. 2006). Five RCTs compared Peroneal Nerve FES (Foot-drop Stimulator) with Conventional Therapy or Gait Training (Sehle et al. 2024; Matsumoto et al. 2023; Mao et al. 2022a; Hachisuka et al. 2021; Sheffler et al. 2013). Three RCTs compared Peroneal Nerve Stimulation with

Sham Stimulation or Conventional Therapy (Mrachacz-Kersting et al. 2019; Sheffler et al. 2015; Yavuzer et al. 2007). One RCT compared Core Muscle Training with FES with Core Muscle Training Alone (Li et al. 2024c). One RCT compared FES with Perturbation Training with Perturbation Training Alone (Purohit et al. 2024).

In addition, 16 RCTs in which functional electrical stimulation formed part of a combined or comparative intervention are cross-referenced at the end of Table 28; their primary listings appear in other tables.

The methodological details and results of all 73 RCTs are presented in Table 28.

Table 28. RCTs Evaluating Functional Electrical Stimulation for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
FES vs Conventional Therapy or Sham Stimulation		
Dujovic et al. (2017) RCT (7) Nstart=16 Nend=16 TPS=Subacute A vs 0	E: Multi-pad FES (40Hz) + Conventional stroke rehabilitation C: Conventional Therapy Duration: 30-40min/d, 7d/wk for 4wks – FES; 60min/d 5d/wk for 4wks - Conventional stroke rehabilitation	E vs C: Fugl-Meyer Assessment (-) Berg Balance Scale (-) Barthel Index (-) 10-Metre Walk Test (+exp)
Wilkinson et al. (2015) RCT (7) Nstart=20 Nend=20 TPS=Subacute A vs 0	E: FES + conventional physiotherapy C: Conventional physiotherapy Duration: 60min/session, 12session/6wks	E vs C: 10-Metre Walk Test (-) 6-Minute Walk Test (-) Rivermead Mobility Index (-) Rivermead Visual Gait Analysis (-) Psychosocial Impact of Assistive Devices Scale (-) Hospital Anxiety and Depression Scale (-) Canadian Occupational Performance Measure (-)
Lairamore et al. (2014) RCT (6) Nstart=32 Nend=26 TPS=Acute A vs B	E: Functional Electrical Stimulation + conventional PT C: Sensory (Sham) stimulation + conventional PT Duration: 90min/d, 5d/wk conventional PT & 45min/d, 4d/11d (average) FES/Sham	E vs C: Gait speed (-) EMG TA Activity (-) Functional independence measure Locomotion (-)
You et al. (2014) RCT (6) Nstart=42 Nend=37 TPS=Acute A vs 0	E: Functional Electrical Stimulation (FES) + standard rehabilitation C: standard rehabilitation Duration: 30min/d FES & 60min/d standard rehabilitation, 5d/wk, for 3wks	E vs C: Fugl-Meyer Assessment (+exp) Modified Barthel Index (+exp) Berg Balance Scale (+exp) Postural Assessment Scale for Stroke (-) Composite Spasticity Scale (+exp)
Kottink et al. (2007) RCT (7) Nstart=29 Nend=27 TPS=Chronic A vs 0	E: Implantable 2-channel peroneal nerve stimulator (FES) + conventional care C: Conventional care Duration: 26wk	E vs C: 10-Metre Walk Test (+exp) 6-Minute Walk Test (-) Activity level (-)
Yan et al. (2005) RCT (6)	E1: Standard rehabilitation + FES	E1/E2 vs C: Composite Spasticity Scale (+exp1)

Nstart=46 Nend=41 TPS=Acute A vs 0 vs 0	E2: Standard rehabilitation + Placebo stimulation C: Standard rehabilitation Duration: 60min/d, 5d/wk, for 3wks Standard rehabilitation, 30min/d, 5d/wk, for 3wks FES, 60min/d, 5d/wk, for 3wks Placebo stimulation	EMG co-contraction ratio (+exp1) integrated EMG (+exp1) Max Isometric Voluntary Contraction torque (+exp1) Timed Up & Go (+exp1) %subject Able to Walk (+exp1) E1 vs E2: Composite Spasticity Scale (+exp1) EMG co-contraction ratio (exp1) integrated EMG (+exp1) Max Isometric Voluntary Contraction torque (+exp1) Timed Up & Go (+exp1) %subject Able to Walk (+exp1)
Newsam & Baker (2004) RCT (4) Nstart=19 Nend=19 TPS=Subacute A vs 0	E: FES + Standard physical therapy C: Standard physical therapy Duration: 60min/d, 6d/wk Physical therapy, 5d/wk FES during PT sessions, for 3wks	E vs C: Maximum Voluntary Isometric Torque-Knee Extension (-) Supramaximal Contraction Torque (+exp) Interpolated Twitch Test- Knee Extensor (+exp)
Burridge et al. (1997) RCT (5) Nstart=33 Nend=32 TPS=Chronic A vs 0	E: FES + conventional physiotherapy C: Conventional physiotherapy Duration: 60min/session, 10 sessions/month PT	E vs C: 10-m walk test (+exp) Physiological Cost Index (+exp)
Bogataj et al. (1995) RCT crossover (6) Nstart=20 Nend=20 TPS=Subacute A vs B	E: Multichannel FES C: Customized Conventional Therapy Duration: 60-120min/d, 5d/wk, for 3wks physical therapy & 30- 60min/d, 5d/wk, for 3wks FES	E vs C: Fugl-Meyer score (+exp) Stride length (+exp) Gait speed (+exp) Gait cadence (+exp)
MacDonell et al. (1994) RCT (5) Nstart=38 Nend=38 TPS=Acute A + B vs 0	E: FES physical therapy + Cyclical electrical stimulation C: Conventional physical therapy Duration: 20min/d, 3-5d/wk for 4wks	E vs C: Functional Ambulation Category (-) Barthel Index (-) Fugl-Meyer Assessment (-) Electrophysiological Findings (-)
FES Combined with Gait Training vs Gait Training or Conventional Therapy		
Mijic et al. (2023) RCT crossover (6) Nstart=32 Nend=31 TPS=Acute A vs 0	E: FES during Gait training C: Conventional Physio Duration: 30min/d, 5d/wk, 2wks; No washout	E vs C: MRC (+exp) 10MWT steps (+exp) m/s(-) SEP Latency Paretic P40(-) Paretic N50(-) Non-paretic N50(-)
VanBloemendaal et al. (2021) RCT (8) Nstart=40 Nend=34	E: Gait training + multi-channel functional electrical stimulation C: Conventional gait training Duration: 30min/d, 5d/wk, for 10wks	E vs C: Adherence (-) Satisfaction with treatment (-) Step length symmetry (-)

TPS=Acute A vs 0		Step time asymmetry (-) Single-leg stance time asymmetry (-) Stride length (-) Stride time (-) 10m Walk test (-) Functional gait assessment (-) Berg Balance Scale (-)
Araki et al. (2020) RCT crossover (5) Nstart=14 Nend=14 TPS=Chronic A vs B	E: 14-m walking with FES on gluteus medius and tibialis anterior muscles C: 14-m walking without FES Duration: Single session	E vs C: Gait velocity (+exp) Cadence (-) Stride length (+exp) Range of motion Affected hip (-) Affected knee (-) Affected thigh (-) Affected shank (+exp)
Spaich et al. (2014) RCT (6) Nstart=30 Nend=28 TPS=Subacute A vs 0	E: Physiotherapy-based gait training + FES on foot arch + Conventional Physiotherapy C: Physiotherapy-based gait training + Conventional Physiotherapy Duration: 30min/d, 20d/4wks Physiotherapy-based gait training; 40min/d, 5d/wk, for 4wks Conventional Physiotherapy	E vs C: Functional Ambulation category (-) Walking speed Preferred (-) Maximum (-) Stance time symmetry ratio (-) For those with FAC0 Stance phase (-) Gait cycle (-) For those with FAC1 Stance phase (-) Gait cycle (-) For those with FAC2 Stance phase (+exp) Gait cycle (-)
Daly et al. (2011) RCT (6) Nstart=53 Nend=44 TPS=Chronic A vs 0	E: Gait training + Intramuscular FES C: Gait training Duration: 90min/d, 4d/wk for 12wks	E vs C: Gait assessment and intervention tool score (+exp) Manual Muscle Test (no stats reported/-?) Fugl-Meyer assessment (no stats reported/-?) 6min Walking distance test (no stats reported/-?) Gait speed (no stats reported/-?) Functional Independence Measure Locomotion (no stats reported/-?), -Mobility (no stats reported/-?)
Embrey et al. (2010) RCT crossover (4) Nstart=33 Nend=28 TPS=Chronic A + B vs B Also in Table 7 (Non-Technological Overground Walking and Gait Training)	E: FES of Dorsiflexors and Plantar Flexors + Overground Walking program C: Overground Walking program Duration: 6-8h/d, 7d/wk, for 3mo FES & 1h/d, 6d/wk, for 3mo Walking program	E vs C: 6min Walk Test (+exp) Emory Functional Ambulatory profile (-) Isometric muscle strength of ankle (-) Modified Ashworth scale (-) Stroke Impact scale-16 (+exp)
Kojovic et al. (2009)	E: Gait training + FES	E vs C:

RCT (5) Nstart=13 Nend=13 TPS=Acute A vs 0	C: Gait training Duration: 45min/d, 5d/wk for 4wks	6-Metre Walk Test (+exp) Fugl-Meyer Assessment (+exp) Barthel Index (+exp) Physiological Cost Index (+exp)
Daly et al. (2006) RCT (7) Nstart=32 Nend=29 TPS=Chronic A vs 0	E: Gait training + Functional neuromuscular stimulation with intramuscular electrodes C: Gait training Duration: 90min/d, 4d/wk, for 12wks	E vs C: Tinetti Gait Scale (+exp) Tinetti Balance Scale (-) 6-Minute Walk Test (-) Fugl-Meyer Assessment - Lower Extremity (-) Knee Flexion Coordination (+exp) Self-Reported Functional Milestones (-)
Cozean et al. (1988) RCT (6) Nstart=36 Nend=32 TPS=Chronic A vs B vs A + B vs 0 Also in Table 15 (Biofeedback)	E1: Gait training + FES E2: Gait training + Biofeedback E3: Gait training + FES + Biofeedback C: Standard care Duration: 30min/d, 3d/wk for 6wks	E3 vs E1/E2/C: Gait cycle time (+exp3) Stride length (-) Knee flexion (+exp3) Ankle flexion (+exp3)
Cycling with FES vs Cycling with or without Sham FES or Conventional Therapy		
Bustamante Valles et al. (2016) RCT (3) Nstart=27 Nend=20 TPS=Chronic A + B vs 0 Also in Table 8 (Cycle Ergometer Training); Table 27 (Electromechanical and Robotic Devices)	E: Circuit Training (NESS L300 & Motomed Viva 2 FES+ Cycling & Brain trainer) C: Conventional Therapy Duration: 2hrs, 24 sessions over 6-8wks	E vs C: Fugl-Meyer Assessment (+exp) 6-Minute Walk Test (-) 10-Meter Walk Test (-) Timed Up and Go Test (-)
De Sousa et al. (2016) RCT (8) Nstart=40 Nend=40 TPS=Subacute A + B vs 0 Also in Table 8 (Cycle Ergometer Training)	E: Cycling + FES + conventional care C: Conventional care Duration: 32min/d of FES cycling + 1h conventional therapy 5d/wk, for 4wks experimental group, 60min conventional therapy in control	E vs C: Functional Independence Measure (-) Muscle Strength Affected Leg Knee Extensors (-) Unaffected Leg Knee Extensors (-) Manual Muscle Testing of Key of Affected LE Muscles (+exp) Maximal Force (-) Modified Tardieu Scale for Plantar Flexors o Affected Leg (-)
Peri et al. (2016) RCT (7) Nstart=16 Nend=16 TPS=Acute A + B vs 0 Also in Table 8 (Cycle Ergometer Training)	E: Active cycling + FES C: Physiotherapy Duration: 75min/d, 5d/wk for 3wks	E vs C: Mechanical Efficiency Index (+exp) 6-Minute Walk Test (-) Functional Independence Measure Motor (-) Cognitive (-) Gait speed (-) Double Support Time (-) Unbalance U Score (-) Area Symmetry Index (-) Work Produced by Paretic Leg (-)

Bauer et al. (2015) RCT (7) Nstart=40 Nend=40 TPS=Subacute A + B vs A Also in Table 8 (Cycle Ergometer Training)	E: Active Leg Cycling + FES (unilaterally on the paretic lower limb) C: Active Leg Cycling Duration: 20min/d, 3d/wk for 4wks Cycling	E vs C: Functional Ambulation Category (+exp) Performance-Oriented Mobility Assessment (+exp) Motricity Index (-) Modified Ashworth Scale (-) Gait speed (+con)
Lo et al. (2012) RCT (4) Nstart=20 Nend=20 TPS=Chronic A + B vs B Also in Table 8 (Cycle Ergometer Training)	E: Functional electrical stimulation + cycling C: Cycling Duration: 20 min single session	E vs C: Limits of stability Reaction time Forward (-) Backward (-) Affected (-) Unaffected (-) Movement velocity Forward (+con) Backward (-) Affected (-) Unaffected (-) Directional control Forward (+exp) Backward (-) Affected (-) Unaffected (-) Endpoint excursion Forward (+con) Backward (-) Affected (-) Unaffected (-) Maximum excursion Forward (+exp) Backward (-) Affected (-) Unaffected (-) Muscle tone H/M ratio (-) Relaxation index (-)
Ambrosini et al. (2012) RCT (6) Nstart=35 Nend=30 TPS=Subacute A vs 0 Also in Table 8 (Cycle Ergometer Training)	E: Cycling induced by FES + Conventional Rehabilitation C: Cycling placebo FES + Conventional Rehabilitation Duration: 25min/d, 5d/wk, 4wks	E vs C: Motricity Index (+exp) Gait Speed (-)
Ambrosini et al. (2011) RCT (8) Nstart=35 Nend=30 TPS=Subacute A + B vs A	E: Cycling + FES C: Cycling + Sham FES Duration: 25min/d, 5d/wk for 4wks	E vs C: 50-Metre Walk Test (+exp) Motricity Index (+exp) Trunk Control Test (+exp) Upright Motor Control Test (+exp) Pedaling Unbalance (+exp)

Also in Table 8 (Cycle Ergometer Training)		
Ferrante et al. (2008) RCT (6) Nstart=20 Nend=20 TPS=Subacute A + B vs 0 Also in Table 8 (Cycle Ergometer Training)	E: FES + Cycling Ergometer + Conventional Care C: Conventional Care Duration: 35min/d, 5d/wk, for 4wks FES+ cycling & 3hr/d Conventional Care	E vs C: Trunk Control test (-) Motricity index (-) Upright Motor control test (-) 50m Walk test (-) Sit to Stand test Raising speed from slow to self-selected (+exp) Raising speed from self-selected to fast (-) Maximal Voluntary contraction (+exp)
Janssen et al. (2008) RCT (4) Nstart=16 Nend=12 TPS=Chronic A + B vs A Also in Table 8 (Cycle Ergometer Training)	E: Cycling + FES C: Cycling + Sham FES Duration: 25-30min/d, 2d/wk, 6wks	E vs C: Vo2peak (-) POmax (-) MVC torque (-) 6-Minute Walk Test (-) Berg Balance Scale (-) Rivermead Mobility Index (-)
Interval Cycling + FES vs Linear Cycling + FES		
Shariat et al. (2021) RCT (7) Nstart=36 Nend=30 TPS=Chronic A1 + B vs A2 + B Also in Table 8 (Cycle Ergometer Training)	E: Leg cycling + FES with interval patterns timing C: Leg cycling + FES with linear patterns timing Duration: 28min/d, 3d/wk, for 4wks	E vs C: Functional ambulation classification (-) 10-M Walk Test (-) Timed up and go test (+exp) Single leg stance (-) Active Ankle ROM affected side (+exp) Active Knee ROM affected side (+exp) Spasticity in quadriceps (+exp) Modified Ashworth scale (+exp) Spasticity in plantar flexor (+exp)
Treadmill Training with FES vs Treadmill Training with or without Sham FES		
Dantas et al. (2023) RCT crossover (5) Nstart=28 Nend=28 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: FES + treadmill training C: Treadmill training Duration: 30min/d, 2d/wk, 3wks, washout	E vs C: (E->C) v (C->E) FMA(no stat) BBS(no stat) LEMOCOT non paretic(no stat) LEMOCOT paretic(+exp) 10MWT(-) TUG(+exp) 6MWT(+exp)
Lee et al. (2022d) RCT (7) Nstart=38 Nend=34 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: Functional electrical stimulation + treadmill gait training C: Sham Functional electrical stimulation + treadmill gait training Duration: 30 mins/d, 5ds/wk, 4wks	E vs C: FMA (+exp) Performance-oriented mobility assessment balance (+exp) gait (+exp) total (+exp) stride length (+exp) Gait cycle (+exp) cadence (+exp) Total double support (+exp) affected step length (+exp)

		Affected single support (+exp) Affected speed (+exp) Affected step time (+exp) Average speed (+exp)
Awad et al. (2016) RCT (6) Nstart=50 Nend=45 TPS=Chronic A + B vs A1 vs A2 Also in Table 9 (Treadmill Training)	E: Fast speed treadmill training + FES C1: Self-Selected Speed Treadmill Training C2: Fast Speed Treadmill Training Duration: 36 min (30min on treadmill + 6min overground walking)/session, 3d/wk, for 12wks	E vs C1/C2: 6-Minute Walk Test (-) Energy Cost at Comfortable Walking Speed (+exp) Energy Cost at Fast Walking Speed (+exp)
Cho et al. (2015c) RCT (6) Nstart=34 Nend=31 TPS=Chronic A1 + B vs A2 + B vs A Also in Table 9 (Treadmill Training)	E1: Treadmill training + FES on gluteus medius and tibialis anterior E2: Treadmill training + FES on tibialis anterior C: Treadmill training Duration: 30min, 5d/wk for 4wks treadmill training; 1hr, 5d/wk, for 4wks regular physical therapy	E1 vs E2/C: Medical research council scale (+exp1) 6-min walk test (+exp1) Berg Balance Scale (+exp1) Cadence (+exp1) Gait velocity (+exp1) manual Muscle strength testing TA (+exp1) GM (+exp1) Temporal asymmetry (+exp1) Spatial asymmetry (+exp1) Single support time (+exp1) Double support time (-) Stride length (-) E2 vs C: Medical research council scale(+exp2) 6-min walk test(-) Berg Balance Scale(-) Cadence(+exp2) Gait velocity(+exp2) Muscle strength TA (-) GM (-) Temporal asymmetry (-) Spatial asymmetry (-) Single support time (-) Double support time (-) Stride length (-)
Hwang et al. (2015) RCT (7) Nstart=32 Nend=30 TPS=Chronic A vs 0 Also in Table 9 (Treadmill Training)	E: Treadmill training with Tilt sensor FES + conventional physical therapy C: Treadmill training with Placebo Tilt sensor FES + conventional physical therapy Duration: 30min/d treadmill training with FES or placebo FES + 1hr/d conventional care, for 4wks	E vs C: 10m Walk Test (+exp) Timed Up-and-Go Test (+exp) Berg Balance Scale (+exp) Muscle architecture Resting phase Pennation angle paretic side (-) Pennation angle non paretic side (-) Muscle thickness paretic side (+exp) Muscle thickness non paretic side (-) Muscle architecture Contraction phase Pennation angle paretic side (+exp) Pennation angle non paretic side (-) Muscle thickness paretic side (+exp) Muscle thickness non paretic side (-)

Lee et al. (2013g) RCT (6) Nstart=30 Nend=30 TPS=Subacute A + B vs C Also in Table 9 (Treadmill Training)	E: Body Weight-Supported Treadmill Training + functional electrical stimulation C: Body Weight Supported Treadmill Training Duration: 30mins/d, 5d/wk, for 4wks	E vs C: Berg Balance Scale (+exp) Timed Up and Go test (+exp) Stroke Rehabilitation Assessment of Movement (+exp) Gait velocity (+exp) cadence (+exp) paretic step length (+exp) stride length (+exp)
Robot-assisted Gait Training with FES vs Gait Training or Robot-assisted Gait Training		
Bae et al. (2014) RCT (7) Nstart=20 Nend=20 TPS=Chronic A + B vs A Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted (Lokomat) gait training + FES on the ankle dorsiflexor of affected side C: Robot-assisted (Lokomat) gait training Duration: 30min/d, 3d/wk for 5wks	E vs C: Modified Motor Assessment Scale (-) Timed Up and Go Test (-) Berg Balance Scale (-) Maximal knee flexion (+exp) Maximal knee extension (-) Ankle dorsi/plantarflexion (-) Pelvic range of motion (-) Gait speed (-) Cadence (-) Stride Length (-)
Tong et al. (2006) RCT (7) Nstart=50 Nend=46 TPS=Acute A + B vs A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E1: Electromechanical gait trainer + Functional electrical stimulation + Conventional PT E2: Electromechanical gait trainer + Conventional PT C: Gait training + Conventional PT Duration: 20min/d, 5d/wk, for 4wks Experimental intervention, 40min/d, 5d/wk, for 4wks Conventional PT	E1/E2 vs C: Motricity Index Leg Score (+exp1, +exp2) Five-Meter Walking Speed Test (+exp1, +exp2) Elderly Mobility Scale (+exp1, +exp2) Berg Balance Scale (-) Barthel Index (-) Functional Ambulatory Category (+exp1, +exp2) FIM Instrument Score (-) E1 vs E2: Motricity Index Leg Score (-) Five-Meter Walking Speed Test (-) Elderly Mobility Scale (-) Berg Balance Scale (-) Barthel Index (-) Functional Ambulation Category (-) FIM Instrument Score (-)
Peurala et al. (2005) RCT (6) Nstart=45 Nend=45 TPS=Chronic A + B vs A vs C Also in Table 27 (Electromechanical and Robotic Devices)	E1: Electromechanical gait trainer + Functional electrical stimulation + Conventional therapy E2: Electromechanical gait trainer + Conventional therapy C: Overground gait training + Conventional therapy Duration: 20min/d, 5d/wk, for 3wks gait training, 55min/d, 5d/wk, for 3 wks Conventional therapy	E1/E2 vs C: walking distance(+exp1) 10-m walking time (-) 6-minute walk (-) Static balance test (-) Dynamic balance (time/trip) (-) postural sway (-) muscle force (-) functional independence measure (-) centre of pressure(AP & ML) (-) Modified Motor Assessment Scale(-) functional independence measure(-) E1 vs E2: walking distance(-)

		10-m walking time (-) 6-minute walk (-) Static balance test (-) Dynamic balance (time/trip) (-) postural sway (-) muscle force (-) functional independence measure (-) centre of pressure(AP & ML) (-) Modified Motor Assessment Scale(-) functional independence measure(-)
Balance Training + FES vs Balance Training or Conventional Care		
Lee et al. (2020b) RCT (7) Nstart=49 Nend=49 TPS=Chronic A + B vs A Also in Table 11 (Balance Training)	E: Balance Training + EMG- triggered FES + General Rehabilitation C: Balance Training without FES + General Rehabilitation Duration: 40mins/d, 5d/wk, for 6 wks General Rehabilitation & 40 mins/d, 5d/wk, for 6wks Balance trainings +/- FES	E vs C: Static balance (+exp) Timed Up and Go (+exp) Functional reach test (+exp) Berg Balance scale (+exp) Surface EMG (Leg muscle activation) (+exp)
Kunkel et al. (2013) RCT (6) Nstart=21 Nend=21 TPS=Subacute A + B vs A vs 0 Also in Table 11 (Balance Training)	E1: Standing balance exercises + FES E2: Standing balance exercises C: Usual care Duration: 1hr/d, 4d/wk for 2wks interventions	E1 v E2 v C: Symmetry of weight transfer Weight through affected limb in parallel stance (-) Weight transferred onto affected limb in parallel stance (-) Weight transferred onto affected limb in stride stance (-) Berg Balance Scale Rivermead Mobility Index (-) 10-Metre Walk Test Normal walking (-) Fast walking (-)
FES + Proprioceptive Neuromuscular Facilitation vs Proprioceptive Neuromuscular Facilitation		
Shim et al. (2020) RCT (4) Nstart=40 Nend=33 TPS=Chronic A + B vs A Also in Table 12 (Stretching or Mobilization Exercises)	E: Proprioceptive neuromuscular facilitation (PNF) trunk pattern + EMG-triggered FES C: Proprioceptive neuromuscular facilitation (PNF) trunk pattern Duration: 30min/d, 5d/wk, for 4wks	E vs C: Trunk impairment scale (-) Berg balance scale (-) Dynamic gait index (-)
Ankle Training + BCI-based FES vs Ankle Training + FES		
Chung et al. (2020b) RCT (6) Nstart=26 Nend=25 TPS=Chronic A1 + B vs A2 + B Also in Table 21 (Strength and Resistance Training)	E: Ankle strengthening training + BCI-based FES on TA C: Ankle strengthening training + FES on TA Duration: 30min/session, 3d/wk for 5wks	E vs C: Timed-up and-go (-) Berg Balance scale (-) Gait velocity (+exp) Gait cadence (+exp) Stride length (-) Step length (-) Single support time (-)
Chung et al. (2015) RCT (5) Nstart=10	E: Ankle training + Brain- computer interference-based FES C: Ankle training + FES	E vs C: Timed Up and Go Test (-) Berg Balance Scale (-)

Nend=10 TPS=Chronic A1 + B vs A2 + B	Duration: 30min/d, 5d	Cadence (-) Step length (-) Stride length (-)
FES + Tilt Table vs Conventional Therapy or Simple Tilt Table		
Ueda et al. (2022) RCT crossover (8) Nstart=20 Nend=20 TPS=Chronic A + B vs C Also in Table 27 (Electromechanical and Robotic Devices)	E: Dynamic tilt table with robotic leg movement (DTTRLM) + FES C: DTTRLM Duration: 10min, 1x (per phase) - 1wk washout	E vs C: 10MWT walking speed (+exp) walking steps (+exp) walking time (-) cadence (-) FMA (-) ROM ankle inversion (+exp) knee extension (-) knee flexion (-) ankle dorsiflexion (-) ankle plantar flexion (-) ankle eversion (-) mAS (no stat)
Calabro et al. (2015) RCT (5) Nstart=20 Nend=20 TPS=Subacute A + B + C vs D Also in Table 27 (Electromechanical and Robotic Devices)	E: Robotic verticalization (ERIGO tilt table) + FES + dynamic foot support C: Physiotherapy-assisted verticalization (simple tilt-table) Duration: 30min/d, 5d/wk for 6wks	E vs C: Visual Analog Fatigue Scale (+exp) Ravens Coloured Progressive Matrices (+exp) Fugl-Meyer Lower Extremity scale (+exp) Medical Research Council scale (+exp) Postural assessment scale for Stroke Patients (+exp) Sensory-Motor plasticity (+exp) PO2 (-) Heart rate (-) Blood pressure (-) cVEP (+exp) cVEMPS (+exp) MEP (+exp)
Solopova et al. (2011) RCT (4) Nstart=61 Nend=61 TPS=Acute A vs 0	E: Functional Electrical Stimulation with Tilt Table C: Conventional Care Duration: 30min, 5d/wk, for 2wks	E vs C: Maximum Voluntary Contraction of Knee (+exp) Ankle Range of Movement (+exp) Fugl Meyer Assessment (+exp) Barthel index (+exp) National Institue of Health Stroke Scale (+exp) European Stroke Scale (+exp)
FES + Motor Training on Rocker Board vs Conventional Exercises		
Cheng et al. (2010) RCT (6) Nstart=18 Nend=15 TPS=Chronic A + B + C vs C	E: FES + motor training on rocker board + ankle focused ambulation training C: General exercises + ankle focused ambulation training Duration: 45min/d, 3d/wk for 4wks	E vs C: Dorsiflexion muscle strength Affected side (-) Nonaffected side (-) Spasticity index (+exp) Active ROM of ankle dorsiflexion (-) Limit of stability Forward (-)

		Nonaffected side (-) Backward (-) Affected side (-) Gait velocity (-) Gait spatial asymmetry ratio (+exp) Gait temporal asymmetry ratio (-) Emory Functional Ambulation Profile (+exp) Floor (+exp) Up & go (-) Obstacles (+exp) Stairs (+exp)
FES vs Electrical Muscle Stimulation		
Mitsutake et al. (2019) RCT (6) Nstart=41 Nend=36 TPS=Subacute A + B vs A vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E1: Electromyography-triggered neuromuscular electrical stimulation + tilt sensor functional electrical stimulation training (combined electrical stimulation) + conventional physiotherapy E2: Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) + conventional physiotherapy C: Conventional rehabilitation Duration: 60min/day, for 2wks	E1 vs E2: 10-meter walking tests (-) Body sway Vertical plane (-) Mediolateral plane (-) Anterioposterior plane (-) E1/E2 vs C: 10-meter walking tests (+exp1) Body sway Vertical plane (-) Mediolateral plane (+exp1) Anterioposterior plane (-)
Sharif et al. (2017) RCT (4) Nstart=38 Nend=38 TPS=Subacute A vs B	E: Functional Electrical Stimulation + Standard rehabilitation C: Electrical Muscle Stimulation tibialis anterior + Standard rehabilitation Duration: 30min/d, 5d/wk for 6wks FES + EMG-triggered NMES vs	E vs C: Fugl-Meyer Assessment (+exp) Timed-Up-and-Go (+exp) Berg Balance Scale (+exp) Modified Ashworth Scale (+exp) Dynamic Gait Index (+exp) EMG-triggered NMES
Four-Channel FES vs Dual-Channel FES vs Sham		
Zheng et al. (2018) RCT (6) Nstart=60 Nend=48 TPS=Acute A vs B vs 0	E1: Four-channel functional electrical stimulation (FES) + Standard physiotherapy E2: Dual-channel FES + Standard physiotherapy C: Sham FES + Standard physiotherapy Duration: FES 30min/d + physiotherapy 120min/d, 5d/wk, for 3wks	E1 vs E2: Fugl-Meyer Assessment (-) Postural Assessment Scale for Stroke Patients (+exp1) Brunel's Balance Assessment (+exp1) Berg Balance Scale (+exp1) Modified Barthel Index (+exp1) E1/E2 vs C: Fugl-Meyer Assessment (+exp1) Postural Assessment Scale for Stroke Patients (+exp1) Brunel's Balance Assessment (+exp1) Berg Balance Scale (+exp1, +exp2) Modified Barthel Index (+exp1, +exp2)
Tan et al. (2014) RCT (6) Nstart=55 Nend=45 TPS=Subacute	E1: Four-channel FES + Conventional therapy E2: Dual-channel FES + Conventional therapy C: Sham stimulation + Conventional therapy	E1 vs E2: Postural assessment scale for stroke patients (-) Fugl-Meyer assessment-lower extremity (+exp1) Berg Balance scale (-)

A vs B vs 0	Duration: 60min/d, 5d/wk for 3wks Conventional therapy & 30min/d, 5d/wk for 3wks FES/Sham	Functional Ambulation category (-) Modified Barthel index (+exp1) E1 vs C: Fugl-Meyer assessment-lower extremity (-) Berg Balance scale (+exp1) Postural assessment scale for stroke patients (+exp1) Functional Ambulation category (-) Modified Barthel Index (+exp1)
Faradic Electrical Stimulation vs Russian Electrical Stimulation		
Ganesh et al. (2018) RCT (6) Nstart=94 Nend=83 TPS=Chronic A1 + B vs A2 + B vs C vs D Also in Table 5 (Task-Specific Training)	E1: Faradic electrical stimulation + Task-oriented exercise E2: Russian electrical stimulation +Task-oriented exercises C: Conventional care with task- oriented approach Duration: E1, E2: 10min electrical stimulation + 40 min conventional care 5d/wk, for 6wks C: 40 min conventional care 5d/wk, for 6wks	E1 vs E2: Active ankle range of motion (-) Passive ankle range of motion (+exp2) Modified modified Ashworth scale (+exp1) Modified Emory Functional ambulation profile Walking speed (-) E2 vs C: Active ankle range of motion (-) Passive ankle range of motion (+exp2) Modified modified Ashworth scale (-) Modified Emory Functional ambulation profile Walking speed (-) E1 vs C: Active ankle range of motion (-) Passive ankle range of motion (-) Modified modified Ashworth scale (+exp1) Modified Emory Functional ambulation profile Walking speed (-)
Mirror Therapy with Functional Electrical Stimulation vs Conventional Therapy		
Salhab et al. (2016) RCT crossover (5) Nstart=18 Nend=18 TPS=Subacute A + B vs 0 Also in Table 19 (Mirror Therapy)	E: Mirror therapy + Functional electrical stimulation C: Conventional therapy Duration: E: 50 min, 4d/wk, 2 wks MT + 16min/session ES treatment C: 50 min, 4d/wk, 2 wks CT 1 wk washout	E vs C: Ankle dorsiflexion range of motion (+exp) Fugl-Meyer assessment-lower extremity (+exp) 10m Walk test (+exp)
Functional Electrical Stimulation vs Transcranial Direct Current Stimulation		
Zhang et al. (2021b) RCT (5) Nstart=122 Nend=122 TPS=Subacute A vs B Also in Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Transcranial direct current stimulation + conventional therapy E2: Functional electrical stimulation + conventional therapy Duration: 20min/d, 5d/wk, for 8wks	E1 V E2: Fugl-Meyer Assessment (+exp1) Barthel index (+exp1) Functional Ambulation Category (+exp1) Somatosensory evoked potential (-) P40 latency and amplitude (-) N45 latency and amplitude (-)
Gait Training with FES vs Gait Training with tDCS vs Gait Training with tDCS + FES		
Mitsutake et al. (2021) RCT (7) Nstart=37 Nend=34 TPS=Subacute A1 vs A2 vs A3	E1: Gait training with FES + sham tDCS+ conventional rehabilitation E2: Gait training with tDCS + conventional rehabilitation E3: Gait training with tDCS and FES + conventional rehabilitation	E1 vs E2: 10m Walk test (-) Trunk Acceleration harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-)

Also in Table 39 (Transcranial Direct Current Stimulation (tDCS))	Duration: 40min/d , 7d/wk Conventional rehabilitation & 20min/d, 7d/wk Gait with Stimulation, for 1wk	Autocorrelation coefficient vertical axis (-) mediolateral (-) anteroposterior axis (-) Root mean squared vertical axis (-) mediolateral axis (-) anteroposterior axis (-) E1 vs E3: 10m Walk test (-) Trunk Acceleration harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-) Autocorrelation coefficient vertical axis (-) mediolateral (+exp3) anteroposterior axis (+exp3) Root mean squared vertical axis (-) mediolateral axis (-) anteroposterior axis (-) E2 vs E3: 10m Walk test (-) Trunk Acceleration: harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-) Autocorrelation coefficient: vertical axis (-) mediolateral (-) anteroposterior axis (+exp3) Root mean squared: vertical axis (-) mediolateral axis (-) anteroposterior axis (-)
Peroneal Nerve FES (Foot-drop Stimulator) vs Ankle-Foot Orthosis		
Sannyasi et al. (2022) RCT crossover (6) Nstart=20 Nend=20 TPS=Chronic A vs B Also in Table 13 (Orthotic Devices)	E1: Ankle foot orthosis + gait training E2: FES +gait training Duration: 120 mins of gait training/d, 2wks (1 week of FES and 1 week of AFO)	E1 vs E2: 10-meter walk test (+exp) 6-minute walk test (+exp) gait speed (+exp) TUG (+exp) Stance-swing ratio paretic stance (+exp) non-paretic stance (+exp) paretic swing (+exp) non-paretic swing (+exp) single-limb support paretic (+exp) non-paretic (+exp) Physiological cost index (-) Stride length paretic (-) non-paretic (-) step width

		paretic (-) non-paretic (-)
Bethoux et al. (2014) RCT (5) Nstart=495 Nend=399 TPS=Chronic A vs B	E: Peroneal nerve FES (WalkAide foot-drop stimulator) C: Ankle-foot orthosis Duration: 2wk progressive wearing schedule, followed by wearing devices for all walking throughout the day for 6mo	E vs C: 10m Walking Test (-) 6-Minute Walk Test (-) Timed Up and Go Test (-) Berg Balance scale (-) Functional Ambulation Profile (-) Modified Emory Functional Ambulation Profile (-) Stroke Impact Scale (-) Stroke-specific Quality of Life (-) Serious adverse event (-)
Everaert et al. (2013) RCT (6) Nstart=120 Nend=99 TPS=Chronic A1 vs A2 vs B1 vs B2 vs C vs B3 Also in Table 13 (Orthotic Devices)	E1: 6wk of Peroneal nerve FES (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (AFO) E2: 6wk of Ankle Foot Orthosis followed by 6wk of Peroneal nerve FES (WalkAide Foot- Drop Stimulator) C: Ankle Foot Orthosis only Duration: E1: 6wk FES followed by 6wk AFO E2: 6wk AFO followed by 6wk FES C: 12wk AFO	E1 vs E2/C: Modified Rivermead Mobility Index (-) perceived safety level (-) 10-meter speed Device On (-) Device Off (-) Figure-8 speed Device On (-) Device Off (-) Physiological Cost Index Device On (-) Device Off (-) E2 vs C: Mobility Index (-) perceived safety level (-) 10-meter speed Device On (-) Device Off (-) Figure-8 speed Device On (-) Device Off (-) Physiological Cost Index Device On (+exp3) Device Off (-)
Kluding et al. (2013) RCT (5) Nstart=197 Nend=162 TPS=Chronic A + B vs C + B	E: Peroneal nerve FES Foot- drop stimulator + conventional therapy + home exercise C: Ankle foot orthosis + conventional therapy + sham stimulation + home exercise Duration: 8 physical therapy sessions over 6wks, then 24wks - physical therapy at home	E vs C: 10-meter walk test (-) Comfortable gait speed (-) Fast gait speed (-) 6-min walk distance (-) Timed up and go (-) Berg Balance Scale (-) Functional reach distance (-) Fugl-Meyer Lower Extremity (-) Stroke Impact Scale participation scores (-) mobility (-) Step activity (-)
Salisbury et al. (2013) RCT (7) Nstart=16	E: Odstock Drop Foot Stimulator (Peroneal nerve FES) C: Ankle-foot orthosis	E vs C: 10 m walk test (-) Functional Ambulation Classification (-)

Nend=14 TPS=Subacute A vs B	Duration: Not Specified	Stroke Impact Scale(-) Visual Analogue Scale (perception of change in walking) (-)
Sheffler et al. (2006) RCT crossover (5) Nstart=14 Nend=14 TPS=Chronic A vs B vs C Also in Table 13 (Orthotic Devices)	E1: Odstock Dropped-foot Stimulator (peroneal nerve FES) E2: Customized unilateral ankle-foot orthosis C: No Intervention Duration: single session - 30min washout	E1/E2 vs C: Modified Emory Functional Ambulation Profile Carpet (+exp1, +exp2) Floor (+exp2) Up and go (+exp2) E1 vs E2: Modified Emory Functional Ambulation Profile (-)
Peroneal Nerve FES (Foot-drop Stimulator) vs Conventional Therapy or Gait Training		
Sehle et al. (2024) RCT crossover (6) Nstart=25 Nend=25 TPS=Chronic A vs B	E: Incedo device electrical stimulation C: walking without Incedo Duration: 1session x 30min per condition (60min total)	E vs C: 10MWT (+exp) 2 minute walk test (+exp) step length (+exp) cadence (-) stance phase duration (-) swing phase duration (-) single support duration (-) double support duration (-) stride length (-) heel strike angle (-) toe off angle (-) maximum foot height (-) maximum circumduction (-)
Matsumoto et al. (2023) RCT (7) Nstart=203 Nend=169 TPS=Subacute A vs B	E: FES-based gait training (Walkaide) + Conventional physiotherapy C: Non-FES training program (ROM for FAC 3 or AFO-based gait training for FAC 4) + Conventional physiotherapy Duration: 40min FES + 60min conventional/d, 5d/wk, 8wks	E vs C: 6mWT (-) 10MWT (-) FMA-LE (-) TUG (-) Dorsiflexion ROM active (+exp) passive (-) MAS (-) SIS (-) Patient-reported burden in foot raising (-) spasticity in barefoot walking (+exp) stability barefoot (+exp) Clinician-rated gait disturbance barefoot stance phase (+exp) barefoot swing phase (+exp) barefoot all phases (+exp) AFO stance phase (-) AFO swing phase (-) AFO all phases (-)
Mao et al. (2022a) RCT (5) Nstart=32 Nend=31 TPS=Chronic	E: Transcutaneous peroneal nerve stimulator while walking C: Home-based gait training Duration: 120 mins/d, 7ds/wk, 3wks	E vs C: FMA-LE (-) Berg balance scale (-) Cadence (-) Stride time (-)

A vs B		less-affected foot off (+exp) less-affected foot contact (+exp) step time (-) single support (-) double support (-) foot off (-) stride length (-) step length (-) walking speed (-) Ankle initial contact (-) foot initial contact (-) Ankle maximum value in stance phase (-) Ankle maximum value in swing phase (-) Foot progress maximum value in stance phase sagittal (+exp) frontal (-) transverse (-) Foot progress minimun value in the swing phase (-) ankle minimum value in the swing phase (-) ankle power (-) ankle maximum value in the stance phase sagittal (+exp) frontal (-) transverse (-)
Hachisuka et al. (2021) RCT (6) Nstart=119 Nend=114 TPS=Chronic A + B vs A + C	E: Self-directed physical training + therapist-assisted gait training with Peroneal nerve FES device C: Self-directed training + therapist-assisted gait training without stimulation device Duration: 480min self directed training /4wks 260 conventional therapy +/- nerve stimulation	E vs C: 6-minute walking test (-) 10 metre walking test (-) Fugl-Meyer Assessment Lower extremity (-) Japanese version of Stroke Impact Scale Physical score (-) Stroke recovery (+exp) Function and ADI (-) Modified Ashworth Scale (-) Ankle dorsiflexion ROM (-)
Sheffler et al. (2013) RCT (7) Nstart=110 Nend=96 TPS=Chronic A + B vs C	E: Peroneal nerve FES + Gait- based physiotherapy C: Gait-based physiotherapy without FES Duration: 60min/d, 2d/wk, for 5wks training session & up to 8hr/d using devices for home and community mobility	E vs C: Fugl-Meyer Assessment LE (-) Modified Emory Functional Ambulation Profile (-) Stroke Specific Quality of Life (-)
Peroneal Nerve Stimulation vs Sham Stimulation or Conventional Therapy		
Mrachacz-Kersting et al. (2019) RCT (9) Nstart=24 Nend=24 TPS=Subacute A vs 0	E: Cortex activation-based peripheral peroneal nerve stimulation C: Sham stimulation Duration: 3d/wk, for 4wks	E vs C: Modified Rankin scale (-) Fugl-Meyer-lower extremity motor performance (+exp) Ashworth scale (-) Functional Ambulation category (-) 10-Meter Walk test (-) EMG activity Resting motor threshold (-)

		Tibialis Anterior MEPs amplitude (-)
Sheffler et al. (2015) RCT (6) Nstart=110 Nend=62 TPS=Subacute A + B vs A	E: Functional gait training + Peroneal nerve stimulator C: Functional gait training Duration: 60min/d, 2-3d/wk, 12wks	E vs C: Cadence (-) Double Support Time (-) Stride Length (-) Walking Speed (-) Peak Ankle Dorsiflexion (-) Peak Hip Power (-) Peak Ankle Power (-)
Yavuzer et al. (2007) RCT (7) Nstart=30 Nend=30 TPS=Subacute A vs 0	E: Conventional therapy + Sensory-Amplitude Electric Stimulation to peroneal nerve of the paretic leg C: Conventional therapy + Sham stimulation Duration: 120-300min/d, 5d/wk, for 4wks conventional therapy & 30min/d, 5d/wk, for 4wks SES/placebo	E vs C: Brunnstrom stages of lower extremity (-) Walking velocity (-) Step length (-) stance phase (-) Pelvis/Hip/Knee/Ankle Sagittal plane total excursion (-) Maximum ankle DF at swing (-) Maximum ankle PF at initial contact (-)
Core Muscle Training with FES vs Core Muscle Training Alone		
Li et al. (2024c) RCT (5) Nstart=120 Nend=120 TPS=Not reported A + B vs A Also in Table 4 (Trunk Training)	E: Core muscle training + Functional electrical stimulation C: Core muscle training Duration: 5d/wk, 8wks	E vs C: Lower Extremity Muscle Strength paralytic dorsiflexor (+exp) plantar flexor (+exp) knee extensor (+exp) knee flexor (+exp) 10MWT (+exp) TUG (+exp) BBS (+exp) FAC (-) Lower Extremity Motricity Index (+exp)
FES with Perturbation Training vs Perturbation Training Alone		
Purohit et al. (2024) RCT crossover (4) Nstart=12 Nend=12 TPS=Chronic A + B vs C Also in Table 11 (Balance Training)	E: Gait-slip perturbation + FES to paretic quadriceps muscle C: Gait-slip perturbations Duration: 30min slip experiment, 1x; FES 50-500ms after perturbation onset	E vs C: Laboratory falls (+exp) Reactive stability (+exp) Vertical limb support (+exp) Pre-slip stability (-) Compensatory step length (+exp) Step initiation time (+exp) step execution time (-) number of compensatory steps (+exp)
Additional Comparisons from the Source Dataset		
Jayaram et al. (2009) RCT crossover (4) Nstart=9 Nend=9 TPS=Chronic A vs B	E1: Common peroneal nerve stimulation E2: Low Frequency rTMS E3: Anodal tDCS Duration: 30min/1session - 48hr washout	E1 vs E2: Motor Evoked Potentials (-)
Daly et al. (2004) RCT (4) Nstart=16 Nend=15	E: Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes	E vs C: Gait Kinetics: gait cycle, Swing Phase(No stats) Hip Kinematics (No stats)

TPS=Chronic A + B vs X	C: Over-Ground Gait Training + BWS Treadmill Training Duration: 90min/d, 4d/wk, 3mth	Knee Kinematics (No stats) Ankle Kinematics (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Li et al. (2024a) RCT (6) Nstart=106 Nend=102 TPS=Subacute A + B vs B Primary listing: Table 19 (Mirror Therapy)	E: Mirror feedback + FES C: Conventional rehab + FES Duration: 50min(20min FES, 30min Mirror), 1d/wk, 4wks	E vs C: Grounding angle of the affected foot (+exp) Single-support phase(+exp) step length(+exp) Step rate (+exp) Lindmark score(+exp) FMA(+exp) Falls index(+exp) Berg score(+exp) TUGT(+exp)
da Cunha et al. (2024) RCT (8) Nstart=44 Nend=32 TPS=Chronic A + B vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Bicephalic tDCS + gait training + foot drop stimulator (Walkaide orthosis) C: Sham tDCS + gait training + foot drop stimulator Duration: 30min/d, 5d/wk, 2wks	E vs C: FMA(-) TUG(-) BDNF(-) Cortisol(-) Insulin growth factor 1/3(-) Interleukin 6/10(-) tumor necrosis factor(-)
Huang et al. (2022c) RCT (7) Nstart=70 Nend=60 TPS=Subacute A vs B Primary listing: Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Contralaterally controlled functional electrical stimulation (CCFES) + Routine rehab C: Neuromuscular electrical stimulaion (NMES) + Routine rehab Duration: 80min (20min stimulation + 60min CT)/d 5d/wk, 3 wks	E vs C: Ankle Dorsiflexion AROM (-) FMA-LE (+exp) FMA-LE Subcategories Reflex Activity (-) Flexor Synergy (-) Extensor Synergy (+exp) Movement Combining Synergy (+exp) Movement Out of Synergy (+exp) Normal Reflexes (-) Coordination/speed (-) BI (-) FAC (-) 10 Meter walking test (-) Surface EMG Root Mean Square of Paretic Tibialis Anterior(-)
Ehsani et al. (2022) RCT (7) Nstart=32 Nend=32 TPS=Subacute A + B vs B1 vs B1 + C vs B2 vs B2 + C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: M1 anodal tDCS + FES + Conventional care E2: Sham tDCS + FES + Conventional care C: 20min/d FES + Conventional care Duration: E1: 20min/d concurrent FES and a-tDCS + 20min/d conventional care, 5d/wk, for 2wks E2: 30s of a-tDCS during 20min/d FES + 20min/d conventional care 5d/wk, for 2wks; C: 20min/d FES + 20min/d conventional care, 5d/wk, for 2wks	E vs C: Modified Ashworth Scale (+exp) Berg balance scale (+exp) EMG data lateral gastrocnemius muscle (+exp) tibialis anterior muscle (-)

da Cunha et al. (2022) RCT (9) Nstart=32 Nend=30 TPS=Chronic A + B + C vs B + C Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Bicephalic Transcranial direct-current stimulation + Footdrop stimulator +Treadmill gait training C: Sham transcranial direct-current stimulation + Footdrop stimulator +treadmill gait training Duration: 30 mins/d (10 mins of tDCS/sham + 20 mins of treadmill gait training), 5ds/wk, 2wks	E vs C: TUG (-) MAS (-) Stroke-Specific Quality of Life Scale (-) Total Distance Walked (-)
Peishun et al. (2021) RCT (4) Nstart=60 Nend=60 TPS=Subacute A + B vs A Primary listing: Table 9 (Treadmill Training)	E: Foot drop stimulator + treadmill training + Basic rehabilitation training C: Foot drop stimulator training + Basic rehabilitation training Duration: 30min/d, 5d/wk, for 3wks	E vs C: Hip flexion (+exp) Knee flexion (+exp) Ankle flexion (+exp) EMG (+exp) Pace (+exp) Step length asymmetry (+exp) Modified Ashworth Scale (+exp) Functional Ambulation Classification (+exp)
Zhang et al. (2021b) RCT (5) Nstart=122 Nend=122 TPS=Subacute A vs B Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Transcranial direct current stimulation + conventional therapy E2: Functional electrical stimulation + conventional therapy Duration: 20min/d, 5d/wk, for 8wks	E1 vs E2: Fugl-Meyer Assessment (+exp1) Barthel index (+exp1) Functional Ambulation Category (+exp1) Somatosensory evoked potential (-) P40 latency and amplitude (-) N45 latency and amplitude (-)
Mitsutake et al. (2021) RCT (7) Nstart=37 Nend=34 TPS=Subacute A1 vs A2 vs A3 Primary listing: Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: Gait training with FES + sham tDCS+ conventional rehabilitation E2: Gait training with tDCS + conventional rehabilitation E3: Gait training with tDCS and FES + conventional rehabilitation Duration: 40min/d, 7d/wk Conventional rehabilitation & 20min/d, 7d/wk Gait with Stimulation, 1wk	E1 vs E2: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Root mean squared Vertical axis (-) Mediolateral axis (-) Anteroposterior axis (-) E1 vs E3: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (+exp3) Anteroposterior axis (+exp3) Root mean squared Vertical axis (-) Mediolateral axis (-)

		Anteroposterior axis (-) E2 vs E3: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (-) Anteroposterior axis (+exp3) Root mean squared Vertical axis (-) Mediolateral axis (-) Anteroposterior axis (-)
Karpe et al. (2019) RCT (3) Nstart=20 Nend=20 TPS=Not reported A vs 0 Primary listing: Table 13 (Orthotic Devices)	E: Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) + Conventional physiotherapy C: Conventional physiotherapy Duration: 3d/wk, 4wks	E vs C: 10-metre Walk (+exp)
Bae et al. (2017) RCT (6) Nstart=18 Nend=18 TPS=Chronic A + B vs C Primary listing: Table 18 (Action Observation)	E: Dual-afferent sensory input (EMG-triggered FES + Action Observation) C: Functional electric stimulation (FES) Duration: 20min/d, 5d/wk, for 4wks	E vs C: Movement-related Cortical Potential Bereitschafts Potential (-) Negative Slope (-) Motor Potential (+exp) Muscle Activity Tibialis Anterior (-) Medial Gastrocnemius (-) H-reflex (-) Balance Surface Area Ellipse (-) Surface Area Length (-) Limit Of Stability (+exp)
Salhab et al. (2016) RCT crossover (5) Nstart=18 Nend=18 TPS=Subacute A + B vs 0 vs C Primary listing: Table 19 (Mirror Therapy)	E: Mirror therapy + Functional electrical stimulation C: Conventional therapy Duration: E: 50 min, 4d/wk, for 2wks MT + 16min/session ES treatment C: 50 min, 4d/wk, for 2wks CT 1wk washout	E vs C: Ankle dorsiflexion range of motion (+exp) Fugl-Meyer assessment-lower extremity (+exp) 10m Walk test (+exp)
Park & Kang (2013a) RCT (5) Nstart=20 Nend=20 TPS=Chronic A + B vs A Primary listing: Table 18 (Action Observation)	E: Gait training + FES + Action observation C: Gait training + FES Duration: 15min/d, 5d/wk for 6wks	E vs C: Weight distribution Right Left (+exp) Anterior Posterior (-) Stability index (+exp) Gait speed (+exp)

Ng et al. (2008) RCT (6) Nstart=54 Nend=50 TPS=Acute A + B vs A vs C Primary listing: Table 27 (Electromechanical and Robotic Devices)	E1: Gait Trainer GT II (Rehastim) + Functional electrical stimulation + Regular rehabilitation E2: Gait Trainer GT II (Rehastim) + Regular rehabilitation C: Overground gait training Duration: 20min/d, 5d/wk, for 4wks intervention sessions & 130min/d, 5d/wk, for 4wks Regular rehabilitation	E1 vs E2: Elderly Mobility Scale (-) Berg Balance Scale (-) Functional Ambulatory Category (-) Motricity Index (-) Functional Independence Measure (-) Barthel Index (-) 5-m Gait Speed (-) E1/E2 vs C: Elderly Mobility Scale (+exp1, +exp2) Berg Balance Scale (-) Functional Ambulatory Category (+exp1) Motricity Index (-) Functional Independence Measure (-) Barthel Index (-) 5-m Gait Speed (+exp1, +exp2)
Baricich et al. (2008) RCT (6) Nstart=23 Nend=23 TPS=Chronic A + B vs A + C vs A + D Primary listing: Table 46 (Botulinum Toxin)	E1: Botulinum toxin A (500U) + FES E2: Botulinum toxin A (500U) + Taping E3: Botulinum toxin A (500U) + Stretching Duration: 30min/session, 2sessions/d, 5d FES & 5d taping & 30min/session, 2sessions/d for 7d stretching	E1 vs E2 vs E3: Modified Ashworth Scale (-) Passive Range of Motion (-) Motor Action Potential (-) Max Dorsiflexion Angle in Stance Phase (-)
Johnson et al. (2004) RCT (6) Nstart=21 Nend=18 TPS=Chronic A + B vs 0 Primary listing: Table 46 (Botulinum Toxin)	E: Botulinum toxin type A injection + FES + Conventional physiotherapy C: Conventional physiotherapy Duration: 1 injection (400U) each into gastrocnemius and tibialis posterior, 1/d, 7d/wk, for 12wks FES, 30-45min/d, 2-3d/wk, for 12wks PT	E vs C: Walking Speed (+exp) Physiological Cost Index (+exp) Modified Ashworth Scale (-) Rivermead Motor Assessment (-) SF-36 (-)
Cozean et al. (1988) RCT (6) Nstart=36 Nend=32 TPS=Chronic A vs B vs A + B vs 0 Primary listing: Table 15 (Biofeedback)	E1: Rehabilitation + EMG biofeedback E2: Rehabilitation + Functional electrical stimulation E3: Rehabilitation + EMG biofeedback + Functional electrical stimulation C: Conventional rehabilitation Duration: 30min/d, 3d/wk for 6wk	E1/E2/E3 vs C: Knee flexion (+exp3) Ankle dorsiflexion (+exp3) Stride length (-) Cycle time (+exp3)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving motor recovery.	4	Dujovic et al. 2017; You et al. 2014; Bogataj et al. 1995; MacDonell et al. 1994
1b	There is conflicting evidence about the effect of Functional electrical stimulation Combined with Gait Training when compared to Gait Training or Conventional Therapy for improving motor recovery.	2	Kojovic et al. 2009; Daly et al. 2006
1a	Cycling with functional electrical stimulation may produce greater improvements in motor recovery than Cycling with or without Sham functional electrical stimulation or Conventional Therapy.	3	Bustamante Valles et al. 2016; Ambrosini et al. 2011; Ferrante et al. 2008
1b	Treadmill Training with functional electrical stimulation may produce greater improvements in motor recovery than Treadmill Training with or without Sham functional electrical stimulation.	1	Lee et al. 2022d
1b	Functional electrical stimulation with Tilt Table may produce greater improvements in motor recovery than Conventional Therapy or Simple Tilt Table.	3	Ueda et al. 2022; Calabro et al. 2015; Solopova et al. 2011
2	Functional electrical stimulation Muscle Stimulation may produce greater improvements in motor recovery than Electrical Muscle Stimulation.	1	Sharif et al. 2017
1b	Four-channel functional electrical stimulation with physiotherapy may not have a difference in efficacy when compared to Dual-channel functional electrical stimulation with physiotherapy for improving motor recovery.	1	Zheng et al. 2018
1a	There is conflicting evidence about the effect of Four-Channel functional electrical stimulation when compared to Dual-Channel functional electrical stimulation or Sham for improving motor recovery.	2	Zheng et al. 2018; Tan et al. 2014
1b	Four-channel functional electrical stimulation with Conventional therapy may produce greater improvements in motor recovery than Dual-channel functional electrical stimulation with Conventional therapy.	1	Tan et al. 2014
2	Mirror Therapy with Functional Electrical Stimulation may produce greater improvements in motor recovery than Conventional Therapy.	1	Salhab et al. 2016
2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in motor recovery than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b
2	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving motor recovery.	1	Kluding et al. 2013
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving motor recovery.	4	Matsumoto et al. 2023; Mao et al. 2022a; Hachisuka et al. 2021; Sheffler et al. 2013
1a	There is conflicting evidence about the effect of Peroneal Nerve Stimulation when compared to Sham Stimulation or Conventional Therapy for improving motor recovery.	2	Mrachacz-Kersting et al. 2019; Yavuzer et al. 2007
1b	Mirror feedback with functional electrical stimulation may produce greater improvements in motor recovery than Conventional rehab with functional electrical stimulation.	1	Li et al. 2024a
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a	1	da Cunha et al. 2024

	difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving motor recovery.		
1b	There is conflicting evidence about the effect of Contralaterally controlled functional electrical stimulation with rehab when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving motor recovery.	1	Huang et al. 2022c
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in motor recovery than Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout.	1	Salhab et al. 2016
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may produce greater improvements in motor recovery than Conventional Care.	1	Bustamante Valles et al. 2016
1b	Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving motor recovery.	1	Johnson et al. 2004

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in biomechanical gait measures than Conventional Therapy or Sham Stimulation.	1	Bogataj et al. 1995
1a	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving biomechanical gait measures.	4	VanBloemendaal et al. 2021; Araki et al. 2020; Spaich et al. 2014; Cozean et al. 1988
1b	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving biomechanical gait measures.	1	Peri et al. 2016
1a	Treadmill Training with functional electrical stimulation may produce greater improvements in biomechanical gait measures than Treadmill Training with or without Sham functional electrical stimulation.	3	Lee et al. 2022d; Cho et al. 2015c; Lee et al. 2013g
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving biomechanical gait measures.	1	Bae et al. 2014
1b	Balance Training with functional electrical stimulation may not have a difference in efficacy when compared to Balance Training or Conventional Care for improving biomechanical gait measures.	1	Kunkel et al. 2013
1b	Ankle Training with brain-computer interface-based functional electrical stimulation may not have a difference in efficacy when compared to Ankle Training with functional electrical stimulation for improving biomechanical gait measures.	2	Chung et al. 2020b; Chung et al. 2015
1b	Functional electrical stimulation with Tilt Table may not have a difference in efficacy when compared to Conventional Therapy or Simple Tilt Table for improving biomechanical gait measures.	1	Ueda et al. 2022
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021

1b	Gait training with transcranial direct current stimulation with conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021
1b	Ankle foot orthosis with gait training may produce greater improvements in biomechanical gait measures than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving biomechanical gait measures.	3	Sehle et al. 2024; Matsumoto et al. 2023; Mao et al. 2022a
1a	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving biomechanical gait measures.	2	Sheffler et al. 2015; Yavuzer et al. 2007
2	FES with Perturbation Training may produce greater improvements in biomechanical gait measures than Perturbation Training Alone.	1	Purohit et al. 2024
2	Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes may not have a difference in efficacy when compared to Over-Ground Gait Training + BWS Treadmill Training for improving biomechanical gait measures.	1	Daly et al. 2004
1b	Mirror feedback with functional electrical stimulation may produce greater improvements in biomechanical gait measures than Conventional rehab with functional electrical stimulation.	1	Li et al. 2024a
2	Foot drop stimulator with treadmill training and Basic rehabilitation training may produce greater improvements in biomechanical gait measures than Foot drop stimulator training with Basic rehabilitation training.	1	Peishun et al. 2021
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving biomechanical gait measures.	1	Baricich et al. 2008
1b	There is conflicting evidence about the effect of Rehabilitation with electromyography biofeedback when compared to Conventional rehabilitation for improving biomechanical gait measures.	1	Cozean et al. 1988

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving biomechanical balance measures.	1	Lo et al. 2012
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving biomechanical balance measures.	1	Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy	1	Peurala et al. 2005

	when compared to Electromechanical gait trainer with Conventional therapy for improving biomechanical balance measures.		
1b	Functional electrical stimulation with Motor Training on Rocker Board may not have a difference in efficacy when compared to Conventional Exercises for improving biomechanical balance measures.	1	Cheng et al. 2010
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not have a difference in efficacy when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy for improving biomechanical balance measures.	1	Mitsutake et al. 2019
1b	Functional electrical stimulation Muscle Stimulation may not have a difference in efficacy when compared to Electrical Muscle Stimulation for improving biomechanical balance measures.	1	Mitsutake et al. 2019
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may produce greater improvements in biomechanical balance measures than Functional electric stimulation (functional electrical stimulation).	1	Bae et al. 2017
2	Gait training with functional electrical stimulation and Action observation may produce greater improvements in biomechanical balance measures than Gait training with functional electrical stimulation.	1	Park & Kang 2013a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in muscle strength than Conventional Therapy or Sham Stimulation.	2	Yan et al. 2005; Newsam & Baker 2004
1b	Rehabilitation with functional electrical stimulation may produce greater improvements in muscle strength than rehabilitation with Placebo stimulation.	1	Yan et al. 2005
1b	There is conflicting evidence about the effect of Functional electrical stimulation Combined with Gait Training when compared to Gait Training or Conventional Therapy for improving muscle strength.	2	Mijic et al. 2023; Embrey et al. 2010
1a	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving muscle strength.	6	De Sousa et al. 2016; Bauer et al. 2015; Ambrosini et al. 2012; Ambrosini et al. 2011; Ferrante et al. 2008; Janssen et al. 2008
1a	There is conflicting evidence about the effect of Treadmill Training with functional electrical stimulation when compared to Treadmill Training with or without Sham functional electrical stimulation for improving muscle strength.	2	Cho et al. 2015c; Hwang et al. 2015
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving muscle strength.	1	Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving muscle strength.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy	1	Peurala et al. 2005

	when compared to Electromechanical gait trainer with Conventional therapy for improving muscle strength.		
2	Functional electrical stimulation with Tilt Table may produce greater improvements in muscle strength than Conventional Therapy or Simple Tilt Table.	2	Calabro et al. 2015; Solopova et al. 2011
1b	Functional electrical stimulation with Motor Training on Rocker Board may not have a difference in efficacy when compared to Conventional Exercises for improving muscle strength.	1	Cheng et al. 2010
2	Core Muscle Training with functional electrical stimulation may produce greater improvements in muscle strength than Core Muscle Training Alone.	1	Li et al. 2024c
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving muscle strength.	1	Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Overground gait training for improving muscle strength.	1	Ng et al. 2008

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in spasticity than Conventional Therapy or Sham Stimulation.	2	You et al. 2014; Yan et al. 2005
1b	Rehabilitation with functional electrical stimulation may produce greater improvements in spasticity than rehabilitation with Placebo stimulation.	1	Yan et al. 2005
2	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving spasticity.	1	Embrey et al. 2010
1a	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving spasticity.	3	De Sousa et al. 2016; Bauer et al. 2015; Lo et al. 2012
1b	Interval Cycling with functional electrical stimulation may produce greater improvements in spasticity than Linear Cycling with functional electrical stimulation.	1	Shariat et al. 2021
1b	Functional electrical stimulation with Motor Training on Rocker Board may produce greater improvements in spasticity than Conventional Exercises.	1	Cheng et al. 2010
2	Functional electrical stimulation Muscle Stimulation may produce greater improvements in spasticity than Electrical Muscle Stimulation.	1	Sharif et al. 2017
1b	Faradic electrical stimulation with Task-oriented exercise may produce greater improvements in spasticity than Russian electrical stimulation with Task-oriented exercises.	1	Ganesh et al. 2018
1b	There is conflicting evidence about the effect of Faradic Electrical Stimulation when compared to Russian Electrical Stimulation for improving spasticity.	1	Ganesh et al. 2018
1a	There is conflicting evidence about the effect of Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) when compared to Conventional Therapy or Gait Training for improving spasticity.	2	Matsumoto et al. 2023; Hachisuka et al. 2021

1b	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving spasticity.	1	Mrachacz-Kersting et al. 2019
1b	M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care may produce greater improvements in spasticity than 20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks.	1	Ehsani et al. 2022
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving spasticity.	1	da Cunha et al. 2022
2	Foot drop stimulator with treadmill training and Basic rehabilitation training may produce greater improvements in spasticity than Foot drop stimulator training with Basic rehabilitation training.	1	Peishun et al. 2021
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving spasticity.	1	Baricich et al. 2008
1b	Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving spasticity.	1	Johnson et al. 2004

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Combined with Gait Training may produce greater improvements in range of motion than Gait Training or Conventional Therapy.	3	Araki et al. 2020; Daly et al. 2006; Cozean et al. 1988
1b	Interval Cycling with functional electrical stimulation may produce greater improvements in range of motion than Linear Cycling with functional electrical stimulation.	1	Shariat et al. 2021
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving range of motion.	1	Bae et al. 2014
1b	Functional electrical stimulation with Tilt Table may not have a difference in efficacy when compared to Conventional Therapy or Simple Tilt Table for improving range of motion.	1	Ueda et al. 2022
1b	Functional electrical stimulation with Motor Training on Rocker Board may not have a difference in efficacy when compared to Conventional Exercises for improving range of motion.	1	Cheng et al. 2010
1b	There is conflicting evidence about the effect of Faradic electrical stimulation with Task-oriented exercise when compared to Russian electrical stimulation with Task-oriented exercises for improving range of motion.	1	Ganesh et al. 2018
1b	Faradic Electrical Stimulation may not have a difference in efficacy when compared to Russian Electrical Stimulation for improving range of motion.	1	Ganesh et al. 2018
2	Mirror Therapy with Functional Electrical Stimulation may produce greater improvements in range of motion than Conventional Therapy.	1	Salhab et al. 2016

1a	There is conflicting evidence about the effect of Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) when compared to Conventional Therapy or Gait Training for improving range of motion.	2	Matsumoto et al. 2023; Hachisuka et al. 2021
1b	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving range of motion.	1	Sheffler et al. 2015
1b	Contralaterally controlled functional electrical stimulation with rehab may not have a difference in efficacy when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving range of motion.	1	Huang et al. 2022c
2	Foot drop stimulator with treadmill training and Basic rehabilitation training may produce greater improvements in range of motion than Foot drop stimulator training with Basic rehabilitation training.	1	Peishun et al. 2021
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in range of motion than Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout.	1	Salhab et al. 2016
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving range of motion.	1	Baricich et al. 2008
1b	Rehabilitation with electromyography biofeedback may produce greater improvements in range of motion than Conventional rehabilitation.	1	Cozean et al. 1988

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in neurophysiological measures than Conventional Therapy or Sham Stimulation.	2	Lairamore et al. 2014; Yan et al. 2005
1b	Rehabilitation with functional electrical stimulation may produce greater improvements in neurophysiological measures than rehabilitation with Placebo stimulation.	1	Yan et al. 2005
1b	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving neurophysiological measures.	1	Mijic et al. 2023
1b	Balance Training with functional electrical stimulation may produce greater improvements in neurophysiological measures than Balance Training or Conventional Care.	1	Lee et al. 2020b
2	Functional electrical stimulation with Tilt Table may produce greater improvements in neurophysiological measures than Conventional Therapy or Simple Tilt Table.	1	Calabro et al. 2015
2	Transcranial direct current stimulation with conventional therapy may not have a difference in efficacy when compared to Functional electrical stimulation with conventional therapy for improving neurophysiological measures.	1	Zhang et al. 2021b
1b	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving neurophysiological measures.	1	Mrachacz-Kersting et al. 2019
2	Common peroneal nerve stimulation may not have a difference in efficacy when compared to Low Frequency rTMS for improving neurophysiological measures.	1	Jayaram et al. 2009
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a	1	da Cunha et al. 2024

	difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving neurophysiological measures.		
1b	Contralaterally controlled functional electrical stimulation with rehab may not have a difference in efficacy when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving neurophysiological measures.	1	Huang et al. 2022c
1b	There is conflicting evidence about the effect of M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care when compared to 20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks for improving neurophysiological measures.	1	Ehsani et al. 2022
2	Foot drop stimulator with treadmill training and Basic rehabilitation training may produce greater improvements in neurophysiological measures than Foot drop stimulator training with Basic rehabilitation training.	1	Peishun et al. 2021
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may not have a difference in efficacy when compared to Functional electric stimulation (functional electrical stimulation) for improving neurophysiological measures.	1	Bae et al. 2017

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in aerobic measures than Conventional Therapy or Sham Stimulation.	1	Burridge et al. 1997
2	Functional electrical stimulation Combined with Gait Training may produce greater improvements in aerobic measures than Gait Training or Conventional Therapy.	1	Kojovic et al. 2009
1b	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving aerobic measures.	2	Peri et al. 2016; Janssen et al. 2008
2	There is conflicting evidence about the effect of Functional electrical stimulation with Tilt Table when compared to Conventional Therapy or Simple Tilt Table for improving aerobic measures.	1	Calabro et al. 2015
1b	Ankle foot orthosis with gait training may not have a difference in efficacy when compared to functional electrical stimulation with gait training for improving aerobic measures.	1	Sannyasi et al. 2022
1b	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving aerobic measures.	1	Everaert et al. 2013
1b	Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may produce greater improvements in aerobic measures than Conventional physiotherapy.	1	Johnson et al. 2004

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Functional electrical stimulation with Tilt Table when compared to Conventional Therapy or Simple Tilt Table for improving sensory and proprioceptive function.	1	Calabro et al. 2015

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving activities of daily living.	6	Dujovic et al. 2017; Wilkinson et al. 2015; Lairamore et al. 2014; You et al. 2014; Kottink et al. 2007; MacDonell et al. 1994
2	Functional electrical stimulation Combined with Gait Training may produce greater improvements in activities of daily living than Gait Training or Conventional Therapy.	1	Kojovic et al. 2009
1a	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving activities of daily living.	2	De Sousa et al. 2016; Peri et al. 2016
1a	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving activities of daily living.	2	Tong et al. 2006; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving activities of daily living.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving activities of daily living.	1	Peurala et al. 2005
2	Functional electrical stimulation with Tilt Table may produce greater improvements in activities of daily living than Conventional Therapy or Simple Tilt Table.	1	Solopova et al. 2011
1b	Four-channel functional electrical stimulation with physiotherapy may produce greater improvements in activities of daily living than Dual-channel functional electrical stimulation with physiotherapy.	1	Zheng et al. 2018
1b	Four-channel functional electrical stimulation (FES) with Standard physiotherapy or Dual-channel FES with Standard physiotherapy may produce greater improvements in activities of daily living than Sham FES with Standard physiotherapy.	1	Zheng et al. 2018
1b	Four-channel functional electrical stimulation with Conventional therapy may produce greater improvements in activities of daily living than Dual-channel functional electrical stimulation with Conventional therapy.	1	Tan et al. 2014
1b	Four-Channel functional electrical stimulation may produce greater improvements in activities of daily living than Dual-Channel functional electrical stimulation or Sham.	1	Tan et al. 2014
2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in activities of daily living than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b
1b	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving activities of daily living.	1	Mrachacz-Kersting et al. 2019
1b	Contralaterally controlled functional electrical stimulation with rehab may not have a difference in efficacy when compared to	1	Huang et al. 2022c

	Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving activities of daily living.		
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving activities of daily living.	1	Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Overground gait training for improving activities of daily living.	1	Ng et al. 2008

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may produce greater improvements in gait speed than Conventional Therapy or Sham Stimulation.	6	Dujovic et al. 2017; Wilkinson et al. 2015; Lairamore et al. 2014; Kottink et al. 2007; Burridge et al. 1997; Bogataj et al. 1995
1a	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving gait speed.	5	Mijic et al. 2023; VanBloemendaal et al. 2021; Araki et al. 2020; Spaich et al. 2014; Kojovic et al. 2009
1a	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving gait speed.	7	Bustamante Valles et al. 2016; Peri et al. 2016; Bauer et al. 2015; Lo et al. 2012; Ambrosini et al. 2012; Ambrosini et al. 2011; Ferrante et al. 2008
1b	Interval Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Linear Cycling with functional electrical stimulation for improving gait speed.	1	Shariat et al. 2021
1a	Treadmill Training with functional electrical stimulation may produce greater improvements in gait speed than Treadmill Training with or without Sham functional electrical stimulation.	6	Dantas et al. 2023; Lee et al. 2022d; Awad et al. 2016; Cho et al. 2015c; Hwang et al. 2015; Lee et al. 2013g
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving gait speed.	1	Bae et al. 2014
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving gait speed.	1	Tong et al. 2006
1b	Balance Training with functional electrical stimulation may not have a difference in efficacy when compared to Balance Training or Conventional Care for improving gait speed.	1	Kunkel et al. 2013
1b	Ankle Training with brain-computer interface-based functional electrical stimulation may produce greater improvements in gait speed than Ankle Training with functional electrical stimulation.	1	Chung et al. 2020b
1b	Functional electrical stimulation with Tilt Table may produce greater improvements in gait speed than Conventional Therapy or Simple Tilt Table.	1	Ueda et al. 2022
1b	Functional electrical stimulation with Motor Training on Rocker Board may not have a difference in efficacy when compared to Conventional Exercises for improving gait speed.	1	Cheng et al. 2010
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined	1	Mitsutake et al. 2019

	electrical stimulation) and conventional physiotherapy may not have a difference in efficacy when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy for improving gait speed.		
1b	Functional electrical stimulation Muscle Stimulation may produce greater improvements in gait speed than Electrical Muscle Stimulation.	1	Mitsutake et al. 2019
2	Mirror Therapy with Functional Electrical Stimulation may produce greater improvements in gait speed than Conventional Therapy.	1	Salhab et al. 2016
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Gait training with transcranial direct current stimulation with conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Ankle foot orthosis with gait training may produce greater improvements in gait speed than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving gait speed.	4	Bethoux et al. 2014; Everaert et al. 2013; Kluding et al. 2013; Salisbury et al. 2013
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving gait speed.	3	Sehle et al. 2024; Matsumoto et al. 2023; Mao et al. 2022a
1a	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving gait speed.	3	Mrachacz-Kersting et al. 2019; Sheffler et al. 2015; Yavuzer et al. 2007
2	Core Muscle Training with functional electrical stimulation may produce greater improvements in gait speed than Core Muscle Training Alone.	1	Li et al. 2024c
1b	Contralaterally controlled functional electrical stimulation with rehab may not have a difference in efficacy when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving gait speed.	1	Huang et al. 2022c
2	Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) with Conventional physiotherapy may produce greater improvements in gait speed than Conventional physiotherapy.	1	Karpe et al. 2019
2	Mirror therapy with Functional electrical stimulation may produce greater improvements in gait speed than Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout.	1	Salhab et al. 2016
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving gait speed.	1	Bustamante Valles et al. 2016

2	Gait training with functional electrical stimulation and Action observation may produce greater improvements in gait speed than Gait training with functional electrical stimulation.	1	Park & Kang 2013a
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving gait speed.	1	Ng et al. 2008
1b	Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may produce greater improvements in gait speed than Conventional physiotherapy.	1	Johnson et al. 2004

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving gait endurance.	2	Wilkinson et al. 2015; Kottink et al. 2007
1b	There is conflicting evidence about the effect of Functional electrical stimulation Combined with Gait Training when compared to Gait Training or Conventional Therapy for improving gait endurance.	2	Embrey et al. 2010; Daly et al. 2006
1b	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving gait endurance.	3	Bustamante Valles et al. 2016; Peri et al. 2016; Janssen et al. 2008
1a	There is conflicting evidence about the effect of Treadmill Training with functional electrical stimulation when compared to Treadmill Training with or without Sham functional electrical stimulation for improving gait endurance.	3	Dantas et al. 2023; Awad et al. 2016; Cho et al. 2015c
1b	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving gait endurance.	1	Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving gait endurance.	1	Peurala et al. 2005
1b	Ankle foot orthosis with gait training may produce greater improvements in gait endurance than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
2	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving gait endurance.	2	Bethoux et al. 2014; Kluding et al. 2013
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving gait endurance.	3	Sehle et al. 2024; Matsumoto et al. 2023; Hachisuka et al. 2021
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving gait endurance.	1	da Cunha et al. 2022
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving gait endurance.	1	Bustamante Valles et al. 2016

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving functional mobility.	3	Wilkinson et al. 2015; Yan et al. 2005; MacDonell et al. 1994
1b	Rehabilitation with functional electrical stimulation may produce greater improvements in functional mobility than rehabilitation with Placebo stimulation.	1	Yan et al. 2005
1a	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving functional mobility.	5	VanBloemendaal et al. 2021; Spaich et al. 2014; Daly et al. 2011; Embrey et al. 2010; Daly et al. 2006
1b	There is conflicting evidence about the effect of Cycling with functional electrical stimulation when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving functional mobility.	3	Bustamante Valles et al. 2016; Bauer et al. 2015; Janssen et al. 2008
1b	There is conflicting evidence about the effect of Interval Cycling with functional electrical stimulation when compared to Linear Cycling with functional electrical stimulation for improving functional mobility.	1	Shariat et al. 2021
1a	Treadmill Training with functional electrical stimulation may produce greater improvements in functional mobility than Treadmill Training with or without Sham functional electrical stimulation.	4	Dantas et al. 2023; Lee et al. 2022d; Hwang et al. 2015; Lee et al. 2013g
1a	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving functional mobility.	2	Bae et al. 2014; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving functional mobility.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving functional mobility.	1	Peurala et al. 2005
1a	There is conflicting evidence about the effect of Balance Training with functional electrical stimulation when compared to Balance Training or Conventional Care for improving functional mobility.	2	Lee et al. 2020b; Kunkel et al. 2013
2	Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving functional mobility.	1	Shim et al. 2020
2	Ankle Training with brain-computer interface-based functional electrical stimulation may not have a difference in efficacy when compared to Ankle Training with functional electrical stimulation for improving functional mobility.	1	Chung et al. 2015
1b	Functional electrical stimulation with Motor Training on Rocker Board may produce greater improvements in functional mobility than Conventional Exercises.	1	Cheng et al. 2010
2	Functional electrical stimulation Muscle Stimulation may produce greater improvements in functional mobility than Electrical Muscle Stimulation.	1	Sharif et al. 2017
1b	Four-channel functional electrical stimulation with Conventional therapy may not have a difference in efficacy when compared to	1	Tan et al. 2014

	Dual-channel functional electrical stimulation with Conventional therapy for improving functional mobility.		
1b	Four-Channel functional electrical stimulation may not have a difference in efficacy when compared to Dual-Channel functional electrical stimulation or Sham for improving functional mobility.	1	Tan et al. 2014
1b	Faradic electrical stimulation with Task-oriented exercise may not have a difference in efficacy when compared to Russian electrical stimulation with Task-oriented exercises for improving functional mobility.	1	Ganesh et al. 2018
1b	Faradic Electrical Stimulation may not have a difference in efficacy when compared to Russian Electrical Stimulation for improving functional mobility.	1	Ganesh et al. 2018
2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in functional mobility than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b
1b	Ankle foot orthosis with gait training may produce greater improvements in functional mobility than functional electrical stimulation with gait training.	1	Sannyasi et al. 2022
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving functional mobility.	5	Bethoux et al. 2014; Everaert et al. 2013; Kluding et al. 2013; Salisbury et al. 2013; Sheffler et al. 2006
2	Customized unilateral ankle-foot orthosis may produce greater improvements in functional mobility than No Intervention.	1	Sheffler et al. 2006
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving functional mobility.	3	Matsumoto et al. 2023; Hachisuka et al. 2021; Sheffler et al. 2013
1b	Peroneal Nerve Stimulation may not have a difference in efficacy when compared to Sham Stimulation or Conventional Therapy for improving functional mobility.	1	Mrachacz-Kersting et al. 2019
2	There is conflicting evidence about the effect of Core Muscle Training with functional electrical stimulation when compared to Core Muscle Training Alone for improving functional mobility.	1	Li et al. 2024c
1b	Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator for improving functional mobility.	1	da Cunha et al. 2024
1b	Contralaterally controlled functional electrical stimulation with rehab may not have a difference in efficacy when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab for improving functional mobility.	1	Huang et al. 2022c
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving functional mobility.	1	da Cunha et al. 2022
2	Foot drop stimulator with treadmill training and Basic rehabilitation training may produce greater improvements in functional mobility than Foot drop stimulator training with Basic rehabilitation training.	1	Peishun et al. 2021
2	Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	1	Bustamante Valles et al. 2016

1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving functional mobility.	1	Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may produce greater improvements in functional mobility than Overground gait training.	1	Ng et al. 2008

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving balance.	2	Dujovic et al. 2017; You et al. 2014
1b	Functional electrical stimulation Combined with Gait Training may not have a difference in efficacy when compared to Gait Training or Conventional Therapy for improving balance.	1	VanBloemendaal et al. 2021
1a	Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy for improving balance.	3	Ambrosini et al. 2011; Ferrante et al. 2008; Janssen et al. 2008
1b	Interval Cycling with functional electrical stimulation may not have a difference in efficacy when compared to Linear Cycling with functional electrical stimulation for improving balance.	1	Shariat et al. 2021
1a	Treadmill Training with functional electrical stimulation may produce greater improvements in balance than Treadmill Training with or without Sham functional electrical stimulation.	3	Cho et al. 2015c; Hwang et al. 2015; Lee et al. 2013g
1a	Robot-assisted Gait Training with functional electrical stimulation may not have a difference in efficacy when compared to Gait Training or Robot-assisted Gait Training for improving balance.	3	Bae et al. 2014; Tong et al. 2006; Peurala et al. 2005
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional physical therapy for improving balance.	1	Tong et al. 2006
1b	Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not have a difference in efficacy when compared to Electromechanical gait trainer with Conventional therapy for improving balance.	1	Peurala et al. 2005
1b	Balance Training with functional electrical stimulation may produce greater improvements in balance than Balance Training or Conventional Care.	1	Lee et al. 2020b
2	Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation may not have a difference in efficacy when compared to Proprioceptive Neuromuscular Facilitation for improving balance.	1	Shim et al. 2020
1b	Ankle Training with brain-computer interface-based functional electrical stimulation may not have a difference in efficacy when compared to Ankle Training with functional electrical stimulation for improving balance.	2	Chung et al. 2020b; Chung et al. 2015
2	Functional electrical stimulation with Tilt Table may produce greater improvements in balance than Conventional Therapy or Simple Tilt Table.	1	Calabro et al. 2015
2	Functional electrical stimulation Muscle Stimulation may produce greater improvements in balance than Electrical Muscle Stimulation.	1	Sharif et al. 2017

1b	Four-channel functional electrical stimulation with physiotherapy may produce greater improvements in balance than Dual-channel functional electrical stimulation with physiotherapy.	1	Zheng et al. 2018
1a	Four-Channel functional electrical stimulation may produce greater improvements in balance than Dual-Channel functional electrical stimulation or Sham.	2	Zheng et al. 2018; Tan et al. 2014
1b	Four-channel functional electrical stimulation with Conventional therapy may not have a difference in efficacy when compared to Dual-channel functional electrical stimulation with Conventional therapy for improving balance.	1	Tan et al. 2014
2	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving balance.	2	Bethoux et al. 2014; Kluding et al. 2013
2	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving balance.	1	Mao et al. 2022a
2	Core Muscle Training with functional electrical stimulation may produce greater improvements in balance than Core Muscle Training Alone.	1	Li et al. 2024c
1b	Mirror feedback with functional electrical stimulation may produce greater improvements in balance than Conventional rehab with functional electrical stimulation.	1	Li et al. 2024a
1b	M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care may produce greater improvements in balance than 20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks.	1	Ehsani et al. 2022
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may not have a difference in efficacy when compared to Functional electric stimulation (functional electrical stimulation) for improving balance.	1	Bae et al. 2017
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation for improving balance.	1	Ng et al. 2008
1b	Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not have a difference in efficacy when compared to Overground gait training for improving balance.	1	Ng et al. 2008

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	FES with Perturbation Training may produce greater improvements in falls and fear of falling than Perturbation Training Alone.	1	Purohit et al. 2024
1b	Mirror feedback with functional electrical stimulation may produce greater improvements in falls and fear of falling than Conventional rehab with functional electrical stimulation.	1	Li et al. 2024a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving quality of life.	1	Wilkinson et al. 2015
2	Functional electrical stimulation Combined with Gait Training may produce greater improvements in quality of life than Gait Training or Conventional Therapy.	1	Embrey et al. 2010
1b	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Ankle-Foot Orthosis for improving quality of life.	3	Bethoux et al. 2014; Kluding et al. 2013; Salisbury et al. 2013
1a	Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not have a difference in efficacy when compared to Conventional Therapy or Gait Training for improving quality of life.	3	Matsumoto et al. 2023; Hachisuka et al. 2021; Sheffler et al. 2013
1b	Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not have a difference in efficacy when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training for improving quality of life.	1	da Cunha et al. 2022
1b	Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving quality of life.	1	Johnson et al. 2004

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Functional electrical stimulation Therapy or Sham Stimulation may not have a difference in efficacy when compared to Conventional Therapy or Sham Stimulation for improving mood.	1	Wilkinson et al. 2015

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Functional electrical stimulation with Tilt Table may produce greater improvements in fatigue and sleep than Conventional Therapy or Simple Tilt Table.	1	Calabro et al. 2015

Key Points

- Functional electrical stimulation Therapy or Sham Stimulation may be beneficial for improving biomechanical gait measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, and gait speed, but not motor recovery, activities of daily living, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Sham Stimulation.
- Rehabilitation with functional electrical stimulation may be beneficial for improving muscle strength, spasticity, neurophysiological measures, and functional mobility after stroke when compared to rehabilitation with Placebo stimulation.
- Functional electrical stimulation Combined with Gait Training may be beneficial for improving range of motion, aerobic measures, activities of daily living, and quality of life, but not biomechanical gait

measures, spasticity, neurophysiological measures, gait speed, functional mobility, and balance, after stroke when compared to Gait Training or Conventional Therapy; the literature is mixed regarding motor recovery, muscle strength, and gait endurance.

- Cycling with functional electrical stimulation may be beneficial for improving motor recovery, but not biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, and balance, after stroke when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy; the literature is mixed regarding functional mobility.
- Interval Cycling with functional electrical stimulation may be beneficial for improving spasticity and range of motion, but not gait speed and balance, after stroke when compared to Linear Cycling with functional electrical stimulation; the literature is mixed regarding functional mobility.
- Treadmill Training with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Treadmill Training with or without Sham functional electrical stimulation; the literature is mixed regarding muscle strength and gait endurance.
- Robot-assisted Gait Training with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Gait Training or Robot-assisted Gait Training.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional physical therapy.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not be beneficial for improving biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional therapy.
- Balance Training with functional electrical stimulation may be beneficial for improving neurophysiological measures and balance, but not biomechanical gait measures and gait speed, after stroke when compared to Balance Training or Conventional Care; the literature is mixed regarding functional mobility.
- Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving functional mobility and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Ankle Training with brain-computer interface-based functional electrical stimulation may be beneficial for improving gait speed, but not biomechanical gait measures, balance, and functional mobility, after stroke when compared to Ankle Training with functional electrical stimulation.
- Functional electrical stimulation with Tilt Table may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, gait speed, and balance, but not biomechanical gait measures and range of motion, after stroke when compared to Conventional Therapy or Simple Tilt Table; the literature is mixed regarding aerobic measures and sensory and proprioceptive function.
- Functional electrical stimulation with Motor Training on Rocker Board may be beneficial for improving spasticity and functional mobility, but not biomechanical balance measures, muscle strength, range of motion, and gait speed, after stroke when compared to Conventional Exercises.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy.
- Functional electrical stimulation Muscle Stimulation may be beneficial for improving motor recovery, spasticity, gait speed, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Electrical Muscle Stimulation.

- Four-channel functional electrical stimulation with physiotherapy may be beneficial for improving activities of daily living and balance, but not motor recovery, after stroke when compared to Dual-channel functional electrical stimulation with physiotherapy.
- Four-Channel functional electrical stimulation may be beneficial for improving activities of daily living and balance, but not functional mobility, after stroke when compared to Dual-Channel functional electrical stimulation or Sham; the literature is mixed regarding motor recovery.
- Four-channel functional electrical stimulation with Conventional therapy may be beneficial for improving motor recovery and activities of daily living, but not functional mobility and balance, after stroke when compared to Dual-channel functional electrical stimulation with Conventional therapy.
- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Russian electrical stimulation with Task-oriented exercises; the literature is mixed regarding range of motion.
- Faradic Electrical Stimulation may not be beneficial for improving range of motion and functional mobility after stroke when compared to Russian Electrical Stimulation; the literature is mixed regarding spasticity.
- Mirror Therapy with Functional Electrical Stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional Therapy.
- Transcranial direct current stimulation with conventional therapy may be beneficial for improving motor recovery, activities of daily living, and functional mobility, but not neurophysiological measures, after stroke when compared to Functional electrical stimulation with conventional therapy.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation.
- Gait training with transcranial direct current stimulation with conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Ankle foot orthosis with gait training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility, but not aerobic measures, after stroke when compared to functional electrical stimulation with gait training.
- Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not be beneficial for improving motor recovery, aerobic measures, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Ankle-Foot Orthosis.
- Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional Therapy or Gait Training; the literature is mixed regarding spasticity and range of motion.
- Peroneal Nerve Stimulation may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, activities of daily living, gait speed, and functional mobility after stroke when compared to Sham Stimulation or Conventional Therapy; the literature is mixed regarding motor recovery.
- Core Muscle Training with functional electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance after stroke when compared to Core Muscle Training Alone; the literature is mixed regarding functional mobility.
- FES with Perturbation Training may be beneficial for improving biomechanical gait measures and falls and fear of falling after stroke when compared to Perturbation Training Alone.
- Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes may not be beneficial for improving biomechanical gait measures after stroke when compared to Over-Ground Gait Training + BWS Treadmill Training.

- Mirror feedback with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, balance, and falls and fear of falling after stroke when compared to Conventional rehab with functional electrical stimulation.
- Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator.
- Contralaterally controlled functional electrical stimulation with rehab may not be beneficial for improving range of motion, neurophysiological measures, activities of daily living, gait speed, and functional mobility after stroke when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab; the literature is mixed regarding motor recovery.
- M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care may be beneficial for improving spasticity and balance after stroke when compared to 20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks; the literature is mixed regarding neurophysiological measures.
- Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training.
- Foot drop stimulator with treadmill training and Basic rehabilitation training may be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Foot drop stimulator training with Basic rehabilitation training.
- Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) with Conventional physiotherapy may be beneficial for improving gait speed after stroke when compared to Conventional physiotherapy.
- Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may be beneficial for improving biomechanical balance measures, but not neurophysiological measures and balance, after stroke when compared to Functional electric stimulation (functional electrical stimulation).
- Mirror therapy with Functional electrical stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout.
- Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may be beneficial for improving motor recovery, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Conventional Care.
- Gait training with functional electrical stimulation and Action observation may be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Gait training with functional electrical stimulation.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may be beneficial for improving functional mobility, but not muscle strength, activities of daily living, and balance, after stroke when compared to Overground gait training.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may be beneficial for improving aerobic measures and gait speed, but not motor recovery, spasticity, and quality of life, after stroke when compared to Conventional physiotherapy.

- Rehabilitation with electromyography biofeedback may be beneficial for improving range of motion after stroke when compared to Conventional rehabilitation; the literature is mixed regarding biomechanical gait measures.
- Customized unilateral ankle-foot orthosis may be beneficial for improving functional mobility after stroke when compared to No Intervention.
- Four-channel functional electrical stimulation (FES) with Standard physiotherapy may be beneficial for improving activities of daily living after stroke when compared to Sham FES with Standard physiotherapy.
- Dual-channel FES with Standard physiotherapy may be beneficial for improving activities of daily living after stroke when compared to Sham FES with Standard physiotherapy.
- Common peroneal nerve stimulation may not be beneficial for improving neurophysiological measures after stroke when compared to Low Frequency rTMS.

Summary of Key Points: Functional Electrical Stimulation

Intervention	Control(s)	Function domain(s)	Effect
Functional electrical stimulation Therapy or Sham Stimulation	Conventional Therapy or Sham Stimulation	Biomechanical gait measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, gait speed	+
Functional electrical stimulation Therapy or Sham Stimulation	Conventional Therapy or Sham Stimulation	Motor recovery, activities of daily living, gait endurance, functional mobility, balance, quality of life	–
Rehabilitation with functional electrical stimulation	rehabilitation with Placebo stimulation	Muscle strength, spasticity, neurophysiological measures, functional mobility	+
Functional electrical stimulation Combined with Gait Training	Gait Training or Conventional Therapy	Range of motion, aerobic measures, activities of daily living, quality of life	+
Functional electrical stimulation Combined with Gait Training	Gait Training or Conventional Therapy	Biomechanical gait measures, spasticity, neurophysiological measures, gait speed, functional mobility, balance	–
Functional electrical stimulation Combined with Gait Training	Gait Training or Conventional Therapy	Motor recovery, muscle strength, gait endurance	=
Cycling with functional electrical stimulation	Cycling with or without Sham functional electrical stimulation or Conventional Therapy	Motor recovery	+
Cycling with functional electrical stimulation	Cycling with or without Sham functional electrical stimulation or Conventional Therapy	Biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, balance	–
Cycling with functional electrical stimulation	Cycling with or without Sham functional electrical stimulation or Conventional Therapy	Functional mobility	=
Interval Cycling with functional electrical stimulation	Linear Cycling with functional electrical stimulation	Spasticity, range of motion	+
Interval Cycling with functional electrical stimulation	Linear Cycling with functional electrical stimulation	Gait speed, balance	–
Interval Cycling with functional electrical stimulation	Linear Cycling with functional electrical stimulation	Functional mobility	=
Treadmill Training with functional electrical stimulation	Treadmill Training with or without Sham functional electrical stimulation	Motor recovery, biomechanical gait measures, gait speed, functional mobility, balance	+

Treadmill Training with functional electrical stimulation	Treadmill Training with or without Sham functional electrical stimulation	Muscle strength, gait endurance	=
Robot-assisted Gait Training with functional electrical stimulation	Gait Training or Robot-assisted Gait Training	Biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living, gait speed, gait endurance, functional mobility, balance	–
Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Electromechanical gait trainer with Conventional physical therapy	Muscle strength, activities of daily living, gait speed, functional mobility, balance	–
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Electromechanical gait trainer with Conventional therapy	Biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, balance	–
Balance Training with functional electrical stimulation	Balance Training or Conventional Care	Neurophysiological measures, balance	+
Balance Training with functional electrical stimulation	Balance Training or Conventional Care	Biomechanical gait measures, gait speed	–
Balance Training with functional electrical stimulation	Balance Training or Conventional Care	Functional mobility	=
Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation	Proprioceptive Neuromuscular Facilitation	Functional mobility, balance	–
Ankle Training with brain-computer interface-based functional electrical stimulation	Ankle Training with functional electrical stimulation	Gait speed	+
Ankle Training with brain-computer interface-based functional electrical stimulation	Ankle Training with functional electrical stimulation	Biomechanical gait measures, balance, functional mobility	–
Functional electrical stimulation with Tilt Table	Conventional Therapy or Simple Tilt Table	Motor recovery, muscle strength, neurophysiological measures, activities of daily living, gait speed, balance	+
Functional electrical stimulation with Tilt Table	Conventional Therapy or Simple Tilt Table	Biomechanical gait measures, range of motion	–
Functional electrical stimulation with Tilt Table	Conventional Therapy or Simple Tilt Table	Aerobic measures, sensory and proprioceptive function	=
Functional electrical stimulation with Motor Training on Rocker Board	Conventional Exercises	Spasticity, functional mobility	+
Functional electrical stimulation with Motor Training on Rocker Board	Conventional Exercises	Biomechanical balance measures, muscle strength, range of motion, gait speed	–
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy	Biomechanical balance measures, gait speed	–
Functional electrical stimulation Muscle Stimulation	Electrical Muscle Stimulation	Motor recovery, spasticity, gait speed, functional mobility, balance	+
Functional electrical stimulation Muscle Stimulation	Electrical Muscle Stimulation	Biomechanical balance measures	–

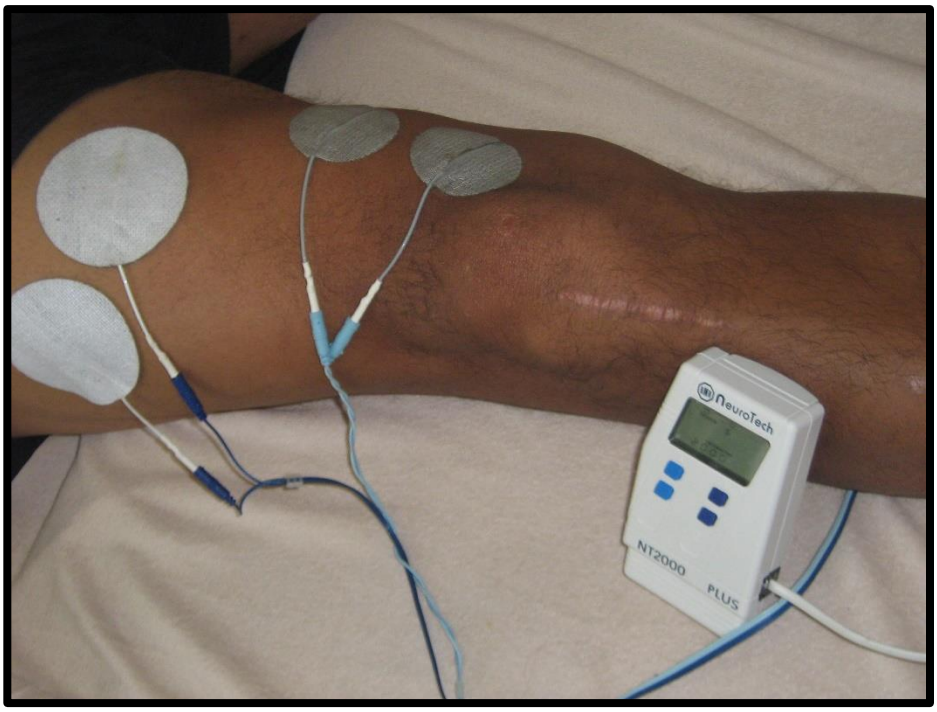
Four-channel functional electrical stimulation with physiotherapy	Dual-channel functional electrical stimulation with physiotherapy	Activities of daily living, balance	+
Four-channel functional electrical stimulation with physiotherapy	Dual-channel functional electrical stimulation with physiotherapy	Motor recovery	−
Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation vs Sham	Balance, activities of daily living	+
Four-channel functional electrical stimulation with Conventional therapy	Dual-channel functional electrical stimulation with Conventional therapy	Motor recovery, activities of daily living	+
Four-channel functional electrical stimulation with Conventional therapy	Dual-channel functional electrical stimulation with Conventional therapy	Functional mobility, balance	−
Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation vs Sham	Functional mobility, motor recovery	−
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Spasticity	+
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Functional mobility	−
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises	Range of motion	=
Faradic Electrical Stimulation	Russian Electrical Stimulation	Range of motion, functional mobility	−
Faradic Electrical Stimulation	Russian Electrical Stimulation	Spasticity	=
Mirror Therapy with Functional Electrical Stimulation	Conventional Therapy	Motor recovery, range of motion, gait speed	+
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy	Motor recovery, activities of daily living, functional mobility	+
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy	Neurophysiological measures	−
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	−
Gait training with transcranial direct current stimulation with conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	−
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	−
Ankle foot orthosis with gait training	functional electrical stimulation with gait training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	+
Ankle foot orthosis with gait training	functional electrical stimulation with gait training	Aerobic measures	−
Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Ankle-Foot Orthosis	Motor recovery, aerobic measures, gait speed, gait endurance, functional mobility, balance, quality of life	−
Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Ankle-Foot Orthosis	Functional mobility	−

Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Conventional Therapy or Gait Training	Motor recovery, biomechanical gait measures, gait speed, gait endurance, functional mobility, balance, quality of life	–
Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Conventional Therapy or Gait Training	Spasticity, range of motion	=
Peroneal Nerve Stimulation	Sham Stimulation or Conventional Therapy	Biomechanical gait measures, spasticity, range of motion, neurophysiological measures, activities of daily living, gait speed, functional mobility	–
Peroneal Nerve Stimulation	Sham Stimulation or Conventional Therapy	Motor recovery	=
Core Muscle Training with functional electrical stimulation	Core Muscle Training Alone	Muscle strength, gait speed, balance	+
Core Muscle Training with functional electrical stimulation	Core Muscle Training Alone	Functional mobility	=
FES with Perturbation Training	Perturbation Training Alone	Biomechanical gait measures, falls and fear of falling	+
Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes	Over-Ground Gait Training + BWS Treadmill Training	Biomechanical gait measures	–
Mirror feedback with functional electrical stimulation	Conventional rehab with functional electrical stimulation	Motor recovery, biomechanical gait measures, balance, falls and fear of falling	+
Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis)	Sham transcranial direct current stimulation with gait training and foot drop stimulator	Motor recovery, neurophysiological measures, functional mobility	–
Contralaterally controlled functional electrical stimulation with rehab	Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab	Range of motion, neurophysiological measures, activities of daily living, gait speed, functional mobility	–
Contralaterally controlled functional electrical stimulation with rehab	Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab	Motor recovery	=
M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care	20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks	Spasticity, balance	+
M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care	20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks	Neurophysiological measures	=
Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training	Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training	Spasticity, gait endurance, functional mobility, quality of life	–
Foot drop stimulator with treadmill training and Basic rehabilitation training	Foot drop stimulator training with Basic rehabilitation training	Biomechanical gait measures, spasticity, range of motion, neurophysiological measures, functional mobility	+

Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) with Conventional physiotherapy	Conventional physiotherapy	Gait speed	+
Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)	Biomechanical balance measures	+
Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)	Neurophysiological measures, balance	–
Mirror therapy with Functional electrical stimulation	Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout	Motor recovery, range of motion, gait speed	+
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care	Motor recovery	+
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care	Gait speed, gait endurance, functional mobility	–
Gait training with functional electrical stimulation and Action observation	Gait training with functional electrical stimulation	Biomechanical balance measures, gait speed	+
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Gait Trainer GT II (Rehastim) with Regular rehabilitation	Muscle strength, activities of daily living, gait speed, functional mobility, balance	–
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Overground gait training	Functional mobility	+
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Overground gait training	Muscle strength, activities of daily living, balance	–
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching	Biomechanical gait measures, spasticity, range of motion	–
Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy	Conventional physiotherapy	Aerobic measures, gait speed	+
Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy	Conventional physiotherapy	Motor recovery, spasticity, quality of life	–
Rehabilitation with electromyography biofeedback	Conventional rehabilitation	Range of motion	+
Rehabilitation with electromyography biofeedback	Conventional rehabilitation	Biomechanical gait measures	=
Customized unilateral ankle-foot orthosis	No Intervention	Functional mobility	+
Four-channel functional electrical stimulation (FES) with Standard physiotherapy	Sham FES with Standard physiotherapy	Activities of daily living	+
Dual-channel FES with Standard physiotherapy	Sham FES with Standard physiotherapy	Activities of daily living	+
Common peroneal nerve stimulation	Low Frequency rTMS	Neurophysiological measures	–

Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation or Sham	Activities of daily living, balance	+
Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation or Sham	Functional mobility	−
Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation or Sham	Motor recovery	=

Neuromuscular Electrical Stimulation (NMES)



Adopted from: https://swordsphysio.ie/physiotherapy-treatments/neuromuscular-stimulation/

Neuromuscular electrical stimulation (NMES) is a technique used to generate muscle contractions in regions affected by hemiparesis by stimulating lower motor neurons involved in muscle movement through transcutaneous application of electrical currents (Allen & Goodman, 2014; Monte-Silva et al., 2019).

1. Cyclic NMES in which a muscle is repetitively stimulated at near maximum contraction on a pre-set schedule and patient participation is passive (Nascimento et al., 2014). 2. Electromyography (EMG) triggered NMES, in which a target muscle is directly controlled or triggered by volitional EMG activity from the target or a different muscle to elicit a desired stimulation (Monte-Silva et al., 2019).

Interferential current therapy (ICT) is a variation of NMES that uses two medium frequency currents to create a 100Hz interference wave across the skin which exerts its maximal effect deeper in the tissue of the treatment area (Goats, 1990).

A total of 22 RCTs were found that evaluated neuromuscular electrical stimulation (NMES) for lower extremity motor rehabilitation. One RCT compared Cyclic NMES with Conventional Therapy or Neurodevelopmental Techniques (Bakhtiary & Fatemy 2008). Four RCTs compared NMES Therapy with Conventional Therapy (Joy et al. 2024; Bilek et al., 2020; Yang et al. 2018; Yavuzer et al. 2006b). One RCT compared EMG-triggered NMES with Conventional Therapy (Mesci et al. 2009). One RCT compared Interferential Current NMES with Air-pump Massage with Sham (Suh et al. 2014a). One RCT compared Cyclic NMES with Passive Movement Training (Yamaguchi et al. 2012). One RCT compared Cyclic NMES with Trunk/Core Training (Ko et al. 2016). One RCT evaluated Comparison of Cyclic NMES Stimulation Intensity (Wang et al. 2016b). Three RCTs compared Contralaterally Controlled NMES with Cyclic NMES or NMES (Shen et al. 2022; Huang et al. 2022c; Knutson et al. 2013). Two RCTs compared Mirror Therapy with Cyclic NMES with Conventional Therapy (Xu et al. 2017; Lee et al. 2016). One RCT compared NMES Therapy with Mirror Therapy (Pagilla et al. 2019). One RCT compared NMES with Exercise

Therapy with Exercise Therapy (Busk et al. 2021). One RCT compared NMES with Walking Training with Conventional Walking Training with Ankle-Foot Orthosis (Morone et al. 2012b). One RCT evaluated NMES with Botulinum Toxin Type A (Baricich et al. 2019). One RCT compared NMES with Passive Ankle Movement Training with NMES Alone (Cho et al. 2022a). One RCT compared NMES Stimulation with Sham Stimulation (Almutairi et al. 2023).

In addition, ten RCTs in which neuromuscular electrical stimulation (NMES) formed part of a combined or comparative intervention are cross-referenced at the end of Table 29; their primary listings appear in other tables.

The methodological details and results of all 22 RCTs are presented in Table 29.

Table 29. RCTs Evaluating Neuromuscular Electrical Stimulation (NMES) for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Cyclic NMES vs Conventional Therapy or Neurodevelopmental Techniques		
Bakhtiary & Fatemy (2008) RCT (8) Nstart=40 Nend=35 TPS=Not reported A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Cyclic NMES + Bobath C: Bobath Approach Duration: 15min/d bobath & 9min/d NMES, 20d	E vs C: PROM ankle dorsiflexion (+exp) Ankle Dorsiflexion Muscle Manual Test (+exp) Hmax/Mmax Ratio (-) Modified Ashworth Scale(+exp)
NMES vs Conventional Therapy		
Joy et al. (2024) Feasibility/pilot RCT (3) Nstart=36 Nend=36 TPS=Chronic A vs 0	E: Russian current therapy + conventional physiotherapy C: Conventional physiotherapy Duration: 10min/d, 5d/wk, 6wks	E vs C: 10MWT (+exp) BRS (+exp)
Bilek et al. (2020) RCT (5) Nstart=60 Nend=60 TPS=Subacute A vs 0	E: NMES (50Hz) + conventional care C: Conventional care Duration: 45min/d of conventional care, 20min/d of NMES, 5d/wk for 6wks	E vs C: Follow-up (at wk 6) results: Brunnel balance assessment (-) Functional Ambulation classification (-) Adapted Patient Evaluation and Conference system (-) Postural assessment scale for stroke patients (+exp) Short Form-36 (-) Mini-Mental state examination (-) Stroke Rehabilitation Movement Assessment (+exp)
Yang et al. (2018) RCT (6) Nstart=25 Nend=25 TPS=Chronic A + B vs C + B vs D + B	E1: Neuromuscular electrical stimulation (NMES) on tibialis anterior + ambulation training E2: NMES on medial gastrocnemius + ambulation training C: Stretching & ROM exercise + ambulation training	E1/E2 vs C: Walking velocity (-) Cadence (-) Step length affected (-) Step length unaffected (-) Spatial asymmetry (+exp1) Temporal asymmetry (+exp2)

	Duration: 20min/d NMES or stretching & 15min/d ambulation training, 3d/wk, for 7wks	Ankle dorsiflexion strength (+exp1) Ankle plantarflexion strength (-) Modified Ashworth Scale (-) Spasticity Index (-) CV of ankle dorsiflexion at HS (-) CV of ankle plantarflexion in push off (-) MP of dorsiflexion at HS (-) MP of plantarflexion in push off (+exp1) E1 vs E2: Walking velocity (-) Cadence (-) Step length affected (-) Step length unaffected (-) Spatial asymmetry (-) Temporal symmetry (-) Ankle dorsiflexion strength (-) Ankle plantarflexion strength (-) Modified Ashworth Scale (-) Spasticity Index (+exp1) CV of ankle dorsiflexion at HS (-) CV of ankle plantarflexion in push off (-) MP of dorsiflexion at HS (-) MP of plantarflexion in push off (-)
Yavuzer et al. (2006b) RCT (7) Nstart=25 Nend=25 TPS=Subacute A vs 0	E: NMES + Conventional rehabilitation C: Conventional rehabilitation Duration: 10min/d, 5d/wk, for 4wks NMES, 2-5hr/d, 5d/wk, for 4wks Conventional rehabilitation EMG-triggered NMES	E vs C: Brunnstrom Stage for Lower Extremity (-) Walking Velocity (-) Step Length (-) Stance Phase (-) Pelvis/Hip/Knee/Ankle Sagittal Plane Total Excursion (-) Maximum Ankle DF at Swing (-) Maximum Ankle PF at Initial Contact (-) vs Stretching
EMG-triggered NMES vs Conventional Therapy		
Mesci et al. (2009) RCT (6) Nstart=40 Nend=40 TPS=Chronic A vs 0	E: EMG-triggered NMES C: Conventional therapy Duration: 20min/d, 5d/wk, for 4wks NMES & 5d/wk, for 4wks conventional therapy	E vs C: Ankle passive dorsiflexion range of motion (-) modified Ashworth scale (-) Brunnstrom Stage (-) Functional independence measurement (-) Functional Ambulation Categories (-) Rivermead motor assessment score (-)
Interferential Current NMES with Air-pump Massage vs Sham		
Suh et al. (2014a) RCT (6) Nstart=42 Nend=42 TPS=Chronic A + B vs B Also in Table 53 (Acupuncture and Massage)	E: Interferential current therapy (ICT) stimulation of gastrocnemius + air-pump massage + standard rehabilitation C: Placebo-ICT + air-pump massage + standard rehabilitation Duration: 60min/session, 1 session ICT & 30min/session, 1 session standard rehabilitation	E vs C: Modified Ashworth Scale (+exp) Functional Reach Test (+exp) Berg Balance Scale (+exp) Timed Up and Go (+exp) 10-meter walk test (+exp)

Cyclic NMES vs Passive Movement Training		
Yamaguchi et al. (2012) RCT (8) Nstart=27 Nend=27 TPS=Subacute A + B vs B vs A	E1: Passive Movement Training + cyclic NMES E2: Cyclic NMES E3: Passive Movement Training Duration: 20min, 1session	E1/E2 vs E3: 10-m walk test (+exp1) modified Ashworth scale (-) E1 vs E2: 10-m walk test (+exp1) modified Ashworth scale (-)
Cyclic NMES vs Trunk/Core Training		
Ko et al. (2016) RCT (6) Nstart=34 Nend=30 TPS=Acute A + B vs A vs B Also in Table 4 (Trunk Training)	E1: Trunk NMES + Core muscle training E2: Trunk NMES C: Core Training Duration: 20min/d, 3d/wk, for 3wks	E1 vs C: Trunk Impairment Scale (-) Dynamic Sitting Balance (+exp1) Berg Balance Scale (+exp1) Postural Assessment for Stroke Scale (-) Modified Barthel Index (-) E1 vs E2: Trunk Impairment Scale (-) Dynamic Sitting Balance (-) Berg Balance Scale (+exp1) Postural Assessment for Stroke Scale (-) Modified Barthel Index (-)
Comparison of Cyclic NMES Stimulation Intensity		
Wang et al. (2016b) RCT (6) Nstart=72 Nend=66 TPS=Acute A1 vs A2 vs B vs 0	E1: Sensory threshold NMES + Conventional therapy E2: Motor threshold NMES + Conventional therapy E3: Full-movement NMES + Conventional therapy C: Conventional therapy Duration: 60min/d, 5d/wk, for 4wks NMES	E3 vs E1/E2/C: Composite Spasticity Scale (+exp3) Ankle active dorsiflexion (+exp3) Timed Up & Go Test (-)
Contralaterally Controlled NMES vs Cyclic NMES or NMES		
Shen et al. (2022) RCT (9) Nstart=44 Nend=42 TPS=Subacute A1 vs A2	E1: Contralaterally controlled NMES + conventional therapy E2: NMES + conventional therapy Duration: 15min/d, 5d/wk for 3wks	E1 vs E2: FMA-LE (+exp) MBI (+exp) average EMG (-) integrated EMG (-) root mean square (+exp)
Huang et al. (2022c) RCT (7) Nstart=70 Nend=60 TPS=Subacute A vs B Also in Table 28 (Functional Electrical Stimulation)	E: Contralaterally controlled functional electrical stimulation (CCFES) + Routine rehab C: Neuromuscular electrical stimulaion (NMES) + Routine rehab Duration: 80min (20min stimulation + 60min CT)/d 5d/wk, 3 wks	E vs C: Ankle Dorsiflexion AROM (-) FMA-LE (+exp) FMA-LE Subcategories Reflex Activity (-) Flexor Synergy (-) Extensor Synergy (+exp) Movement Combining Synergy (+exp) Movement Out of Synergy (+exp) Normal Reflexes (-) Coordination/speed (-) BI (-) FAC (-) 10 Meter walking test (-) Surface EMG Root Mean Square of Paretic Tibialis Anterior(-)

Knutson et al. (2013) RCT (6) Nstart=26 Nend=24 TPS=Chronic A vs B	E: Contralaterally controlled NMES (self-administered at home) + Conventional gait training C: Cyclic NMES (self- administered at home) + Conventional gait training Duration: 51min, 2x/d, 5d/wk, for 6wks self-administered NMES & 45min/d, 2d/wk, for 6wks conventional gait training	E vs C: Fugl-Meyer assessment (-) Maximum dorsiflexion angle (-) Ankle movement tracking error (-) Maximum isometric dorsiflexion (-) Modified Emory Functional Ambulation profile (-) Gait velocity (-) Dorsiflexion angle (-) Peak knee flexion in swing (-) Peak hip flexion in swing (-) Stride length (-) Cadence (-)
Mirror Therapy with Cyclic NMES vs Conventional Therapy		
Xu et al. (2017) RCT (7) Nstart=69 Nend=69 TPS=Subacute A + B vs A vs 0 Also in Table 19 (Mirror Therapy)	E1: Conventional rehabilitation + mirror therapy + NMES E2: Conventional rehabilitation + mirror therapy C: Conventional rehabilitation + Sham mirror therapy Duration: 240min/d, 5d/wk, for 4wks conventional rehabilitation + 30min/d mirror/sham/mirror+NMES	E1/E2 v C: 10-meter walk test (+exp1, +exp2) Brunnstrom stages of lower extremity (+exp1, +exp2) Modified Ashworth Scale (+exp1) Passive ROM (+exp1, +exp2) E1 v E2: 10-meter walk test (+exp1) Brunnstrom stages of lower extremity (-) Modified Ashworth Scale (-) Passive ROM (-)
Lee et al. (2016) RCT (6) Nstart=30 Nend=27 TPS=Chronic A + B vs 0 Also in Table 19 (Mirror Therapy)	E: Mirror therapy + cyclical NMES + conventional physical therapy C: Conventional therapy Duration: 60min/d, 5d/wk, for 4wks conventional PT & 1x/d, 5d/wk, for 4wks MT + NNES	E vs C: Ankle Dorsiflexor Strength (+exp) Modified Ashworth Scale (-) Berg Balance Scale (+exp) Timed-up-and-go (-) 6-minute Walk Test (-)
NMES vs Mirror Therapy		
Pagilla et al. (2019) RCT (8) Nstart=30 Nend=30 TPS=Acute A vs B	E: NMES + Conventional Therapy C: Mirror Therapy + Conventional Therapy Duration: conventional for 60min, mirror/NMES for 30min, 6 consecutive days	E vs C: Berg Balance Scale (-) Barthel Index (-) Fugl-Meyer Assessment (-)
NMES with Exercise Therapy vs Exercise Therapy		
Busk et al. (2021) RCT (7) Nstart=50 Nend=47 TPS=Acute A vs 0	E: Neuromuscular electrical stimulation + Exercise therapy C: Exercise therapy Duration: 10min/d, 5d/wk, for 2wks	E vs C: Fugl-Meyer Assessment (-) 6 min walk test (-) 10 m Walk Test (-) Guralnik Timed Standing Balance (-) Sit to Stand (-) Timed Up and Go (-) EQ-5D-5L (-) Montreal Cognitive Assessment (-) Becks Depression Inventory (-)

NMES with Walking Training vs Conventional Walking Training with Ankle-Foot Orthosis		
Morone et al. (2012b) RCT (5) Nstart=20 Nend=20 TPS=Acute A vs B	E: NMES (Walkaide) + walking training + conventional therapy C: Walking training + ankle- foot-orthosis + conventional therapy Duration: 40min/d, 5d/wk, for 4wks Walking training with NMES or AFO & 40min/d, 5d/wk, for 4wks conventional therapy	E vs C: 10-Metre Walk Test (+exp) Functional Ambulation Classification (+exp) Barthel Index (-) Rivermead Mobility Index (-) Medical Research Council Scale (-) Canadian Neurological Scale (-) Ashworth Scale (-) Manual Muscle Test (-)
NMES with Botulinum Toxin Type A		
Baricich et al. (2019) RCT (7) Nstart=30 Nend=30 TPS=Chronic A1 + B vs A2 + B Also in Table 46 (Botulinum Toxin)	E: Botox Injections (50U-120U) + Electrical Stimulation of Antagonist and Injected Agonist Muscles C: Botox Injections (50U-120U) + Electrical Stimulation of Injected Agonist Muscles Duration: E: 1hr single session ES + stretching 20min + 1hr/d, 5d ES of Tibialis anterior + conventional physical therapy 1h/d, 5d C: 1hr single session ES + stretching 20min + conventional physical therapy 1h/d, 5d	E vs C: 10-Meter Walk Test (-) Modified Ashworth Scale (-) Passive Range of Motion (-) Medical Research Council (-) 2-Minute Walk Test (-)
NMES with Passive Ankle Movement Training vs NMES Alone		
Cho et al. (2022a) RCT (7) Nstart=35 Nend=30 TPS=Chronic A1 vs A2	E: Electrical stimulation therapy with Passive biaxial ankle movement training + conventional rehabilitation C: Electrical stimulation therapy + conventional rehabilitation Duration: 40 min/d, 5d/wk, 4wks stimulation with ankle movement + 90 min/day, 5d/wk,4wks conventional rehab	E vs C: Proprioception Dorsiflexion (-) plantarflexion (-) supination (-) pronation (-) Passive range of motion Dorsiflexion (-) plantarflexion (-) supination (+exp) pronation (+exp) Strength Dorsiflexion (+exp) plantarflexion (-) supination (-) pronation (-) FMA-LE (-) Berg balance scale (-) TUG (-) Fall efficacy scale (-) Walking speed (-) step length (-) step time (-) step width (-) Joint range of motion (-)
NMES vs Sham Stimulation		
Almutairi et al. (2023) Feasibility/pilot RCT (7) Nstart=19	E: Active NMES C: Sham NMES Duration: 30min/d, 3d/wk, 4wks	E vs C: MAS (+exp) 10MWT (-)

Nend=19 TPS=Chronic A vs 0		FAC (-)
Additional Comparisons from the Source Dataset		
Chen et al. (2005) RCT (7) Nstart=24 Nend=24 TPS=Chronic A vs 0	E: Neuromuscular electrical stimulation (NMES) C: Sham NMES Duration: 20min/d, 6d/wk, 4wks	E vs C: modified Ashworth Scale(No stats) H-reflex latency (No stats) recovery curve (No stats) Tibial fmax/Mmax ratio (No stats) 10-meter walking test (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Xu et al. (2024) RCT (8) Nstart=35 Nend=35 TPS=Chronic A vs 0 Primary listing: Table 31 (Muscle Vibration)	E: Whole-body vibration + conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) C: Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) Duration: E: 230min/d, 6d/wk, 4wks; C: 200min/d, 6d/wk, 4 wks	E vs C: BBS(-) Functional Reach Test (-) Romberg's test of balance length (-) area(-) Ankle joint dorsiflexion-plantar flexion (DP)(+exp) Ankle joint inversion-eversion (+exp)
Lee (2022e) RCT (7) Nstart=44 Nend=41 TPS=Chronic A1 vs A2 Primary listing: Table 8 (Cycle Ergometer Training)	E: EMG-triggered Pedaling training C: Pedaling training Duration: 50min/d, 5d/wk for 4wks	E vs C: Velocity (+exp) Cadence (-) Stride time (-) Step time affected side (+exp) unaffected side (-) Single Limb Support time affected side (+exp) unaffected side (-) Double limb support (+exp) Stride Length (+exp) Step length affected (+exp) unaffected (+exp) Gait symmetery step length (-) step time (+exp) FMA-LE (+exp) Changes in Muscle Activation of Affected side: Rectus Femoris Muscle (+exp) Biceps Femoris muscle (+exp) Tibialis Anterior Muscle (-) Gastrocnemius Muscle (+exp) Changes in Muscle Activation of Unaffected side: Rectus Femoris Muscle (-) Biceps Femoris muscle (-)

		Tibialis Anterior Muscle (-) Gastrocnemius Muscle (-) Symmetry Ratio: Rectus Femoris Muscle (+exp) Biceps Femoris muscle (+exp) Tibialis Anterior Muscle (-) Gastrocnemius Muscle (+exp)
Shim et al. (2020) RCT (4) Nstart=40 Nend=33 TPS=Chronic A + B vs A Primary listing: Table 12 (Stretching or Mobilization Exercises)	E: Proprioceptive neuromuscular facilitation (PNF) trunk pattern + EMG-triggered FES C: proprioceptive neuromuscular facilitation (PNF) trunk pattern Duration: 30min/d, 5d/wk, 4wks	E vs C: Trunk impairment scale (-) Berg balance scale (-) Dynamic gait index (-)
Mitsutake et al. (2019) RCT (6) Nstart=41 Nend=36 TPS=Subacute A + B vs A vs 0 Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Electromyography-triggered neuromuscular electrical stimulation + tilt sensor functional electrical stimulation training (combined electrical stimulation) + conventional physiotherapy E2: Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) + conventional physiotherapy C: Conventional rehabilitation Duration: 60min/day, for 2wks	E1 vs E2: 10-meter walking tests (-) Body sway Vertical plane (-) Mediolateral plane (-) Anterioposterior plane (-) E1/E2 vs C: 10-meter walking tests (+exp1) Body sway Vertical plane (-) Mediolateral plane (+exp1) Anterioposterior plane (-)
Yen et al. (2019) RCT (7) Nstart=42 Nend=40 TPS=Acute A vs B vs 0 Primary listing: Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: Transcutaneous Nerve Stimulation (TENS) + Standard Early Rehabilitation E2: Neuromuscular Electrical Stimulation (NMES) + Standard Early Rehabilitation C: Standard rehabilitation Duration: 30min/d, 5d/wk, for 2wks TENS, NMES, 30min/d, 5d/wk, for 2wks standard rehabilitation in all groups	E1 vs C: Postural Assessment Scale for Stroke (+exp1) Functional Independence Measure (+exp1) E2 vs C: Postural Assessment Scale for Stroke (-) Functional Independence Measure (-) E1 vs E2 ; Postural Assessment Scale for Stroke (-) Functional Independence Measure (-)
Bae et al. (2017) RCT (6) Nstart=18 Nend=18 TPS=Chronic A + B vs C Primary listing: Table 18 (Action Observation)	E: Dual-afferent sensory input (EMG-triggered FES + Action Observation) C: Functional electric stimulation (FES) Duration: 20min/d, 5d/wk, for 4wks	E vs C: Movement-related Cortical Potential Bereitschafts Potential (-) Negative Slope (-) Motor Potential (+exp) Muscle Activity Tibialis Anterior (-) Medial Gastrocnemius (-) H-reflex (-) Balance Surface Area Ellipse (-) Surface Area Length (-) Limit Of Stability (+exp)
Chen et al. (2017) RCT (8) Nstart=54	E: Tele-supervising rehabilitation (PT+ EMG-NMES) C: Conventional Care	E vs C: modified Barthel Index(-) Berg Balance Scale(-)

Nend=51 TPS=Acute A + B vs 0 Primary listing: Table 25 (Telerehabilitation and Technology-Based Home Exercise Programs)	Duration: 1hr, 2x/d, 5d/wk, for 12 wks PT + 20min, 2x/d, 5d/wk, for 12wks	Caregiver Strain Index (-) Root mean square extensor carpi radialis longus (-) tibialis anterior (-)
Beaulieu et al. (2017) RCT crossover (6) Nstart=15 Nend=15 TPS=Chronic A vs B vs C vs 0 Primary listing: Table 36 (Repetitive Peripheral Magnetic Stimulation)	E1: Neuromuscular Electrical Stimulation E2: Repetitive Peripheral Magnetic Stimulation E3: Muscle Tendon Vibration C: Occupational Therapy Duration: 2.5-3h/d, 1d/wk - 1wk washout, 4wks	E1/E2/E3 vs C: Ankle active motor threshold (+exp2) Intracortical inhibition (+exp2) Isometric Eversion Strength (+exp2, +exp3) Range of Motion (-) Stretch reflex of plantar flexors (-)
Lee et al. (2016) RCT (6) Nstart=30 Nend=27 TPS=Chronic A + B vs 0 Primary listing: Table 19 (Mirror Therapy)	E: Mirror therapy + cyclical neuromuscular electrical stimulation + conventional physical therapy C: Conventional therapy Duration: 60min/d, 5d/wk, for 4wks conventional PT & 1session/d, 5d/wk, for 4wks MT + NNES	E vs C: Ankle Dorsiflexor Strength (+exp) Modified Ashworth Scale (-) Berg Balance Scale (+exp) Timed-up-and-go (-) 6-minute Walk Test (-)
Morone et al. (2012b) RCT (5) Nstart=20 Nend=20 TPS=Acute A vs B Primary listing: Table 13 (Orthotic Devices)	E: NMES (Walkaide) + walking training + conventional therapy C: Walking training + ankle-foot- orthosis + conventional therapy Duration: 40min/d, 5d/wk, 4wks Walking training with NMES or AFO & 40min/d, 5d/wk, 4wks conventional therapy	E vs C: 10-Metre Walk Test (+exp) Functional Ambulation Classification (+exp) Barthel Index (-) Rivermead Mobility Index (-) Medical Research Council Scale (-) Canadian Neurological Scale (-) Ashworth Scale (-) Manual Muscle Test (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Neuromuscular electrical stimulation Therapy when compared to Conventional Therapy for improving motor recovery.	2	Joy et al. 2024; Yavuzer et al. 2006b
1b	Electromyography-triggered neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Mesci et al. 2009
1b	Contralaterally controlled neuromuscular electrical stimulation with conventional therapy may produce greater improvements in motor	1	Shen et al. 2022

	recovery than neuromuscular electrical stimulation with conventional therapy.		
1a	There is conflicting evidence about the effect of Contralaterally Controlled neuromuscular electrical stimulation when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving motor recovery.	2	Huang et al. 2022c; Knutson et al. 2013
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Xu et al. 2017
1b	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Mirror Therapy for improving motor recovery.	1	Pagilla et al. 2019
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving motor recovery.	1	Busk et al. 2021
2	Neuromuscular electrical stimulation with Walking Training may not have a difference in efficacy when compared to Conventional Walking Training with Ankle-Foot Orthosis for improving motor recovery.	1	Morone et al. 2012b
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving motor recovery.	1	Cho et al. 2022a
1b	Electromyography-triggered Pedaling training may produce greater improvements in motor recovery than Pedaling training.	1	Lee 2022e
2	Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may not have a difference in efficacy when compared to Walking training with ankle-foot- orthosis and conventional therapy for improving motor recovery.	1	Morone et al. 2012b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving biomechanical gait measures.	2	Yang et al. 2018; Yavuzer et al. 2006b
1b	Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not have a difference in efficacy when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training for improving biomechanical gait measures.	1	Yang et al. 2018
1b	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving biomechanical gait measures.	1	Knutson et al. 2013
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving biomechanical gait measures.	1	Cho et al. 2022a
1b	Electromyography-triggered Pedaling training may produce greater improvements in biomechanical gait measures than Pedaling training.	1	Lee 2022e

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not have a difference in efficacy when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy for improving biomechanical balance measures.	1	Mitsutake et al. 2019
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not have a difference in efficacy when compared to Conventional rehabilitation for improving biomechanical balance measures.	1	Mitsutake et al. 2019
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may produce greater improvements in biomechanical balance measures than Functional electric stimulation (functional electrical stimulation).	1	Bae et al. 2017

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cyclic neuromuscular electrical stimulation may produce greater improvements in muscle strength than Conventional Therapy or Neurodevelopmental Techniques.	1	Bakhtiary & Fatemy 2008
1b	There is conflicting evidence about the effect of Neuromuscular electrical stimulation Therapy when compared to Conventional Therapy for improving muscle strength.	1	Yang et al. 2018
1b	Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not have a difference in efficacy when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training for improving muscle strength.	1	Yang et al. 2018
1b	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving muscle strength.	1	Knutson et al. 2013
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may produce greater improvements in muscle strength than Conventional Therapy.	1	Lee et al. 2016
2	Neuromuscular electrical stimulation with Walking Training may not have a difference in efficacy when compared to Conventional Walking Training with Ankle-Foot Orthosis for improving muscle strength.	1	Morone et al. 2012b
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving muscle strength.	1	Baricich et al. 2019
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving muscle strength.	1	Cho et al. 2022a
1b	Neuromuscular Electrical Stimulation may not have a difference in efficacy when compared to Occupational Therapy for improving muscle strength.	1	Beaulieu et al. 2017

1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may produce greater improvements in muscle strength than Conventional therapy.	1	Lee et al. 2016
2	Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may not have a difference in efficacy when compared to Walking training with ankle-foot- orthosis and conventional therapy for improving muscle strength.	1	Morone et al. 2012b

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cyclic neuromuscular electrical stimulation may produce greater improvements in spasticity than Conventional Therapy or Neurodevelopmental Techniques.	1	Bakhtiary & Fatemy 2008
1b	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	1	Yang et al. 2018
1b	There is conflicting evidence about the effect of Neuromuscular electrical stimulation on tibialis anterior with ambulation training when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training for improving spasticity.	1	Yang et al. 2018
1b	Electromyography-triggered neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	1	Mesci et al. 2009
1b	Interferential Current neuromuscular electrical stimulation with Air-pump Massage may produce greater improvements in spasticity than Sham.	1	Suh et al. 2014a
1b	Passive Movement Training with cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Passive Movement Training for improving spasticity.	1	Yamaguchi et al. 2012
1b	Passive Movement Training with cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation for improving spasticity.	1	Yamaguchi et al. 2012
1b	Sensory threshold neuromuscular electrical stimulation with Conventional therapy may produce greater improvements in spasticity than Conventional therapy.	1	Wang et al. 2016b
1a	Mirror Therapy with Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	2	Xu et al. 2017; Lee et al. 2016
2	Neuromuscular electrical stimulation with Walking Training may not have a difference in efficacy when compared to Conventional Walking Training with Ankle-Foot Orthosis for improving spasticity.	1	Morone et al. 2012b
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving spasticity.	1	Baricich et al. 2019
1b	Neuromuscular electrical stimulation Stimulation may produce greater improvements in spasticity than Sham Stimulation.	1	Almutairi et al. 2023
1b	Neuromuscular electrical stimulation (NMES) may not have a difference in efficacy when compared to Sham NMES for improving spasticity.	1	Chen et al. 2005
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving spasticity.	1	Lee et al. 2016

2	Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may not have a difference in efficacy when compared to Walking training with ankle-foot- orthosis and conventional therapy for improving spasticity.	1	Morone et al. 2012b

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cyclic neuromuscular electrical stimulation may produce greater improvements in range of motion than Conventional Therapy or Neurodevelopmental Techniques.	1	Bakhtiary & Fatemy 2008
1b	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	1	Yang et al. 2018
1b	Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not have a difference in efficacy when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training for improving range of motion.	1	Yang et al. 2018
1b	Electromyography-triggered neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	1	Mesci et al. 2009
1b	Sensory threshold neuromuscular electrical stimulation with Conventional therapy may produce greater improvements in range of motion than Conventional therapy.	1	Wang et al. 2016b
1a	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving range of motion.	2	Huang et al. 2022c; Knutson et al. 2013
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving range of motion.	1	Xu et al. 2017
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving range of motion.	1	Baricich et al. 2019
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving range of motion.	1	Cho et al. 2022a
1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may produce greater improvements in range of motion than Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).	1	Xu et al. 2024

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy or Neurodevelopmental Techniques for improving neurophysiological measures.	1	Bakhtiary & Fatemy 2008

1b	Contralaterally controlled neuromuscular electrical stimulation with conventional therapy may not have a difference in efficacy when compared to neuromuscular electrical stimulation with conventional therapy for improving neurophysiological measures.	1	Shen et al. 2022
1b	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving neurophysiological measures.	1	Huang et al. 2022c
1b	Neuromuscular electrical stimulation (NMES) may not have a difference in efficacy when compared to Sham NMES for improving neurophysiological measures.	1	Chen et al. 2005
1b	There is conflicting evidence about the effect of Electromyography-triggered Pedaling training when compared to Pedaling training for improving neurophysiological measures.	1	Lee 2022e
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may not have a difference in efficacy when compared to Functional electric stimulation (functional electrical stimulation) for improving neurophysiological measures.	1	Bae et al. 2017
1b	Neuromuscular Electrical Stimulation may produce greater improvements in neurophysiological measures than Occupational Therapy.	1	Beaulieu et al. 2017

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving sensory and proprioceptive function.	1	Cho et al. 2022a

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Bilek et al. 2020
1b	Electromyography-triggered neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Mesci et al. 2009
1b	Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Trunk/Core Training for improving activities of daily living.	1	Ko et al. 2016
1b	Trunk neuromuscular electrical stimulation with Core muscle training may not have a difference in efficacy when compared to Trunk neuromuscular electrical stimulation for improving activities of daily living.	1	Ko et al. 2016
1b	Contralaterally controlled neuromuscular electrical stimulation with conventional therapy may produce greater improvements in activities of daily living than neuromuscular electrical stimulation with conventional therapy.	1	Shen et al. 2022
1b	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic	1	Huang et al. 2022c

	neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving activities of daily living.		
1b	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Mirror Therapy for improving activities of daily living.	1	Pagilla et al. 2019
2	Neuromuscular electrical stimulation with Walking Training may not have a difference in efficacy when compared to Conventional Walking Training with Ankle-Foot Orthosis for improving activities of daily living.	1	Morone et al. 2012b
1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may produce greater improvements in activities of daily living than rehabilitation.	1	Yen et al. 2019
1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may not have a difference in efficacy when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation for improving activities of daily living.	1	Yen et al. 2019
1b	Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not have a difference in efficacy when compared to Conventional Care for improving activities of daily living.	1	Chen et al. 2017
2	Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may not have a difference in efficacy when compared to Walking training with ankle-foot- orthosis and conventional therapy for improving activities of daily living.	1	Morone et al. 2012b

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	3	Joy et al. 2024; Yang et al. 2018; Yavuzer et al. 2006b
1b	Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not have a difference in efficacy when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training for improving gait speed.	1	Yang et al. 2018
1b	Interferential Current neuromuscular electrical stimulation with Air-pump Massage may produce greater improvements in gait speed than Sham.	1	Suh et al. 2014a
1b	Passive Movement Training with cyclic neuromuscular electrical stimulation may produce greater improvements in gait speed than Passive Movement Training.	1	Yamaguchi et al. 2012
1b	Passive Movement Training with cyclic neuromuscular electrical stimulation may produce greater improvements in gait speed than Cyclic neuromuscular electrical stimulation.	1	Yamaguchi et al. 2012
1a	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving gait speed.	2	Huang et al. 2022c; Knutson et al. 2013
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may produce greater improvements in gait speed than Conventional Therapy.	1	Xu et al. 2017
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving gait speed.	1	Busk et al. 2021

2	Neuromuscular electrical stimulation with Walking Training may produce greater improvements in gait speed than Conventional Walking Training with Ankle-Foot Orthosis.	1	Morone et al. 2012b
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving gait speed.	1	Baricich et al. 2019
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving gait speed.	1	Cho et al. 2022a
1b	Neuromuscular electrical stimulation Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving gait speed.	1	Almutairi et al. 2023
1b	Neuromuscular electrical stimulation (NMES) may not have a difference in efficacy when compared to Sham NMES for improving gait speed.	1	Chen et al. 2005
1b	Electromyography-triggered Pedaling training may produce greater improvements in gait speed than Pedaling training.	1	Lee 2022e
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not have a difference in efficacy when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy for improving gait speed.	1	Mitsutake et al. 2019
1b	Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may produce greater improvements in gait speed than Conventional rehabilitation.	1	Mitsutake et al. 2019
2	Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may produce greater improvements in gait speed than Walking training with ankle-foot- orthosis and conventional therapy.	1	Morone et al. 2012b

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving gait endurance.	1	Lee et al. 2016
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving gait endurance.	1	Busk et al. 2021
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving gait endurance.	1	Baricich et al. 2019
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving gait endurance.	1	Lee et al. 2016

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Bilek et al. 2020
1b	Electromyography-triggered neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Mesci et al. 2009
1b	Interferential Current neuromuscular electrical stimulation with Air-pump Massage may produce greater improvements in functional mobility than Sham.	1	Suh et al. 2014a
1b	Sensory threshold neuromuscular electrical stimulation with Conventional therapy may not have a difference in efficacy when compared to Conventional therapy for improving functional mobility.	1	Wang et al. 2016b
1a	Contralaterally Controlled neuromuscular electrical stimulation may not have a difference in efficacy when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation for improving functional mobility.	2	Huang et al. 2022c; Knutson et al. 2013
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may not have a difference in efficacy when compared to Conventional Therapy for improving functional mobility.	1	Lee et al. 2016
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving functional mobility.	1	Busk et al. 2021
2	There is conflicting evidence about the effect of Neuromuscular electrical stimulation with Walking Training when compared to Conventional Walking Training with Ankle-Foot Orthosis for improving functional mobility.	1	Morone et al. 2012b
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving functional mobility.	1	Cho et al. 2022a
1b	Neuromuscular electrical stimulation Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving functional mobility.	1	Almutairi et al. 2023
2	Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation trunk pattern for improving functional mobility.	1	Shim et al. 2020
1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may not have a difference in efficacy when compared to Conventional therapy for improving functional mobility.	1	Lee et al. 2016
2	There is conflicting evidence about the effect of Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy when compared to Walking training with ankle-foot- orthosis and conventional therapy for improving functional mobility.	1	Morone et al. 2012b

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Neuromuscular electrical stimulation Therapy when compared to Conventional Therapy for improving balance.	1	Bilek et al. 2020
1b	Interferential Current neuromuscular electrical stimulation with Air-pump Massage may produce greater improvements in balance than Sham.	1	Suh et al. 2014a
1b	There is conflicting evidence about the effect of Cyclic neuromuscular electrical stimulation when compared to Trunk/Core Training for improving balance.	1	Ko et al. 2016
1b	Trunk neuromuscular electrical stimulation with Core muscle training may not have a difference in efficacy when compared to Trunk neuromuscular electrical stimulation for improving balance.	1	Ko et al. 2016
1b	Mirror Therapy with Cyclic neuromuscular electrical stimulation may produce greater improvements in balance than Conventional Therapy.	1	Lee et al. 2016
1b	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Mirror Therapy for improving balance.	1	Pagilla et al. 2019
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving balance.	1	Busk et al. 2021
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving balance.	1	Cho et al. 2022a
1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may not have a difference in efficacy when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) for improving balance.	1	Xu et al. 2024
2	Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation may not have a difference in efficacy when compared to proprioceptive neuromuscular facilitation trunk pattern for improving balance.	1	Shim et al. 2020
1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may produce greater improvements in balance than rehabilitation.	1	Yen et al. 2019
1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may not have a difference in efficacy when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation for improving balance.	1	Yen et al. 2019
1b	Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may not have a difference in efficacy when compared to Functional electric stimulation (functional electrical stimulation) for improving balance.	1	Bae et al. 2017
1b	Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not have a difference in efficacy when compared to Conventional Care for improving balance.	1	Chen et al. 2017

1b	Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may produce greater improvements in balance than Conventional therapy.	1	Lee et al. 2016

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Neuromuscular electrical stimulation with Passive Ankle Movement Training may not have a difference in efficacy when compared to neuromuscular electrical stimulation Alone for improving falls and fear of falling.	1	Cho et al. 2022a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Neuromuscular electrical stimulation Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Bilek et al. 2020
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving quality of life.	1	Busk et al. 2021
1b	Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not have a difference in efficacy when compared to Conventional Care for improving quality of life.	1	Chen et al. 2017

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Neuromuscular electrical stimulation Therapy when compared to Conventional Therapy for improving cognition.	1	Bilek et al. 2020
1b	Neuromuscular electrical stimulation with Exercise Therapy may not have a difference in efficacy when compared to Exercise Therapy for improving cognition.	1	Busk et al. 2021

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electromyography-triggered Pedaling training may not have a difference in efficacy when compared to Pedaling training for improving upper extremity function.	1	Lee 2022e
1b	Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not have a difference in efficacy when compared to Conventional Care for improving upper extremity function.	1	Chen et al. 2017

Key Points

- Cyclic neuromuscular electrical stimulation may be beneficial for improving muscle strength, spasticity, and range of motion, but not neurophysiological measures, after stroke when compared to Conventional Therapy or Neurodevelopmental Techniques.
- Neuromuscular electrical stimulation Therapy may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery, muscle strength, and balance.
- Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not be beneficial for improving biomechanical gait measures, muscle strength, range of motion, and gait speed after stroke when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training; the literature is mixed regarding spasticity.
- Electromyography-triggered neuromuscular electrical stimulation may not be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, and functional mobility after stroke when compared to Conventional Therapy.
- Interferential Current neuromuscular electrical stimulation with Air-pump Massage may be beneficial for improving spasticity, gait speed, functional mobility, and balance after stroke when compared to Sham.
- Passive Movement Training with cyclic neuromuscular electrical stimulation may be beneficial for improving gait speed, but not spasticity, after stroke when compared to Passive Movement Training.
- Passive Movement Training with cyclic neuromuscular electrical stimulation may be beneficial for improving gait speed, but not spasticity, after stroke when compared to Cyclic neuromuscular electrical stimulation.
- Cyclic neuromuscular electrical stimulation may not be beneficial for improving activities of daily living after stroke when compared to Trunk/Core Training; the literature is mixed regarding balance.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living and balance after stroke when compared to Trunk neuromuscular electrical stimulation.
- Sensory threshold neuromuscular electrical stimulation with Conventional therapy may be beneficial for improving spasticity and range of motion, but not functional mobility, after stroke when compared to Conventional therapy.
- Contralaterally controlled neuromuscular electrical stimulation with conventional therapy may be beneficial for improving motor recovery and activities of daily living, but not neurophysiological measures, after stroke when compared to neuromuscular electrical stimulation with conventional therapy.
- Contralaterally Controlled neuromuscular electrical stimulation may not be beneficial for improving range of motion, neurophysiological measures, activities of daily living, gait speed, functional mobility, biomechanical gait measures, and muscle strength after stroke when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation; the literature is mixed regarding motor recovery.
- Mirror Therapy with Cyclic neuromuscular electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance, but not motor recovery, spasticity, range of motion, gait endurance, and functional mobility, after stroke when compared to Conventional Therapy.
- Neuromuscular electrical stimulation Therapy may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Mirror Therapy.
- Neuromuscular electrical stimulation with Exercise Therapy may not be beneficial for improving motor recovery, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Exercise Therapy.
- Neuromuscular electrical stimulation with Walking Training may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Conventional Walking Training with Ankle-Foot Orthosis; the literature is mixed regarding functional mobility.
- Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not be beneficial for improving muscle strength, spasticity, range of motion, gait speed, and gait endurance after stroke when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles.

- Neuromuscular electrical stimulation with Passive Ankle Movement Training may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, range of motion, sensory and proprioceptive function, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to neuromuscular electrical stimulation Alone.
- Neuromuscular electrical stimulation Stimulation may be beneficial for improving spasticity, but not gait speed and functional mobility, after stroke when compared to Sham Stimulation.
- Neuromuscular electrical stimulation (NMES) may not be beneficial for improving spasticity, neurophysiological measures, and gait speed after stroke when compared to Sham NMES.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).
- Electromyography-triggered Pedaling training may be beneficial for improving motor recovery, biomechanical gait measures, and gait speed after stroke when compared to Pedaling training; the literature is mixed regarding neurophysiological measures.
- Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation may not be beneficial for improving functional mobility and balance after stroke when compared to proprioceptive neuromuscular facilitation trunk pattern.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may be beneficial for improving gait speed, but not biomechanical balance measures, after stroke when compared to Conventional rehabilitation.
- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may be beneficial for improving activities of daily living and balance after stroke when compared to rehabilitation.
- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may not be beneficial for improving activities of daily living and balance after stroke when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation.
- Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may be beneficial for improving biomechanical balance measures, but not neurophysiological measures and balance, after stroke when compared to Functional electric stimulation (functional electrical stimulation).
- Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not be beneficial for improving activities of daily living, balance, and quality of life after stroke when compared to Conventional Care.
- Neuromuscular Electrical Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to Occupational Therapy.
- Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may be beneficial for improving muscle strength and balance, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Conventional therapy.
- Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Walking training with ankle-foot- orthosis and conventional therapy; the literature is mixed regarding functional mobility.

Summary of Key Points: Neuromuscular Electrical Stimulation (NMES)

Intervention	Control(s)	Function domain(s)	Effect
Cyclic neuromuscular electrical stimulation	Conventional Therapy or Neurodevelopmental Techniques	Muscle strength, spasticity, range of motion	+
Cyclic neuromuscular electrical stimulation	Conventional Therapy or Neurodevelopmental Techniques	Neurophysiological measures	−
Neuromuscular electrical stimulation Therapy	Conventional Therapy	Biomechanical gait measures, spasticity, range of motion, activities of daily living, gait speed, functional mobility, quality of life	−
Neuromuscular electrical stimulation Therapy	Conventional Therapy	Motor recovery, muscle strength, balance	=
Neuromuscular electrical stimulation on tibialis anterior with ambulation training	neuromuscular electrical stimulation on medial gastrocnemius with ambulation training	Biomechanical gait measures, muscle strength, range of motion, gait speed	−
Neuromuscular electrical stimulation on tibialis anterior with ambulation training	neuromuscular electrical stimulation on medial gastrocnemius with ambulation training	Spasticity	=
Electromyography-triggered neuromuscular electrical stimulation	Conventional Therapy	Motor recovery, spasticity, range of motion, activities of daily living, functional mobility	−
Interferential Current neuromuscular electrical stimulation with Air-pump Massage	Sham	Spasticity, gait speed, functional mobility, balance	+
Passive Movement Training with cyclic neuromuscular electrical stimulation	Passive Movement Training	Gait speed	+
Passive Movement Training with cyclic neuromuscular electrical stimulation	Passive Movement Training	Spasticity	−
Passive Movement Training with cyclic neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation	Gait speed	+
Passive Movement Training with cyclic neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation	Spasticity	−
Cyclic neuromuscular electrical stimulation	Trunk/Core Training	Activities of daily living	−
Cyclic neuromuscular electrical stimulation	Trunk/Core Training	Balance	=
Trunk neuromuscular electrical stimulation with Core muscle training	Trunk neuromuscular electrical stimulation	Activities of daily living, balance	−
Sensory threshold neuromuscular electrical stimulation with Conventional therapy	Conventional therapy	Spasticity, range of motion	+
Sensory threshold neuromuscular electrical stimulation with Conventional therapy	Conventional therapy	Functional mobility	−
Contralaterally controlled neuromuscular electrical stimulation with conventional therapy	neuromuscular electrical stimulation with conventional therapy	Motor recovery, activities of daily living	+
Contralaterally controlled neuromuscular electrical stimulation with conventional therapy	neuromuscular electrical stimulation with conventional therapy	Neurophysiological measures	−

Contralaterally Controlled neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation	Range of motion, neurophysiological measures, activities of daily living, gait speed, functional mobility, biomechanical gait measures, muscle strength	–
Contralaterally Controlled neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation	Motor recovery	=
Contralaterally Controlled neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation	Biomechanical gait measures, muscle strength, range of motion, gait speed, functional mobility	–
Mirror Therapy with Cyclic neuromuscular electrical stimulation	Conventional Therapy	Muscle strength, gait speed, balance	+
Mirror Therapy with Cyclic neuromuscular electrical stimulation	Conventional Therapy	Motor recovery, spasticity, range of motion, gait endurance, functional mobility	–
Neuromuscular electrical stimulation Therapy	Mirror Therapy	Motor recovery, activities of daily living, balance	–
Neuromuscular electrical stimulation with Exercise Therapy	Exercise Therapy	Motor recovery, gait speed, gait endurance, functional mobility, balance, quality of life	–
Neuromuscular electrical stimulation with Walking Training	Conventional Walking Training with Ankle-Foot Orthosis	Gait speed	+
Neuromuscular electrical stimulation with Walking Training	Conventional Walking Training with Ankle-Foot Orthosis	Motor recovery, muscle strength, spasticity, activities of daily living	–
Neuromuscular electrical stimulation with Walking Training	Conventional Walking Training with Ankle-Foot Orthosis	Functional mobility	=
Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles	Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles	Muscle strength, spasticity, range of motion, gait speed, gait endurance	–
Neuromuscular electrical stimulation with Passive Ankle Movement Training	neuromuscular electrical stimulation Alone	Motor recovery, biomechanical gait measures, muscle strength, range of motion, sensory and proprioceptive function, gait speed, functional mobility, balance, falls and fear of falling	–
Neuromuscular electrical stimulation Stimulation	Sham Stimulation	Spasticity	+
Neuromuscular electrical stimulation Stimulation	Sham Stimulation	Gait speed, functional mobility	–
Neuromuscular electrical stimulation (NMES)	Sham NMES	Spasticity, neurophysiological measures, gait speed	–
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Range of motion	+
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training,	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory	Balance	–

acupuncture treatment, occupational therapy)	training, acupuncture treatment, occupational therapy)		
Electromyography-triggered Pedaling training	Pedaling training	Motor recovery, biomechanical gait measures, gait speed	+
Electromyography-triggered Pedaling training	Pedaling training	Neurophysiological measures	=
Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation	proprioceptive neuromuscular facilitation trunk pattern	Functional mobility, balance	–
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy	Biomechanical balance measures, gait speed	–
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Conventional rehabilitation	Gait speed	+
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Conventional rehabilitation	Biomechanical balance measures	–
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	rehabilitation	Activities of daily living, balance	+
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	Neuromuscular Electrical Stimulation with Early Rehabilitation	Activities of daily living, balance	–
Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)	Biomechanical balance measures	+
Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)	Neurophysiological measures, balance	–
Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation)	Conventional Care	Activities of daily living, balance, quality of life	–
Neuromuscular Electrical Stimulation	Occupational Therapy	Neurophysiological measures	+
Neuromuscular Electrical Stimulation	Occupational Therapy	Muscle strength	–
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy	Muscle strength, balance	+
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy	Spasticity, gait endurance, functional mobility	–

Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy	Walking training with ankle-foot-orthosis and conventional therapy	Gait speed	+
Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy	Walking training with ankle-foot-orthosis and conventional therapy	Motor recovery, muscle strength, spasticity, activities of daily living	–
Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy	Walking training with ankle-foot-orthosis and conventional therapy	Functional mobility	=

Transcutaneous Electrical Nerve Stimulation (TENS)



Adopted from: https://nerve-injury.com/transcutaneous-electrical-nerve-stimulation/

Transcutaneous electrical nerve stimulation (TENS) involves the application of electrical current through surface electrodes on the skin to facilitate activation of nerves (Teoli et al., 2024). TENS units are often small, portable, battery-operated devices, and have been used over antagonist muscles to reduce the spasticity of corresponding agonist muscles in stroke rehabilitation practice (Koyama et al., 2016; Teoli et al., 2024).

One possible neural mechanism underlying the reduced spasticity induced by TENS is improved spinal inhibitory reflexes from the stimulated muscle groups or nerve to the reciprocal muscle groups or nerve (Koyama et al., 2016). The application of afferent electrical stimulation at the sensory level may help to enhance neuroplasticity of the brain, through increased activation and recruitment of cortical networks involving contralesional primary sensory cortex, supplementary motor area, dorsal premotor cortex, posterior parietal cortex, and secondary sensory cortices (Sonde et al., 1998; Veldman et al., 2015).

A total of 21 RCTs were found that evaluated transcutaneous electrical nerve stimulation (TENS) for lower extremity motor rehabilitation. Eight RCTs compared TENS Stimulation, Conventional Therapy or No Treatment with Sham Stimulation, Conventional Therapy or No Treatment (Ertzgaard et al. 2018 Mixed population, cerebral palsy; Gurcan et al. 2015; Park et al. 2014a; Cho et al. 2013a; Tyson et al. 2013; Martins et al. 2012; Yan & Hui-Chan 2009; Levin & Hui-Chan 1992). One RCT compared TENS + exercise with Sham TENS + exercise, TENS only, or No Treatment (Tekeoğlu et al. 1998). Five RCTs evaluated TENS + Task-related Training (Laddha et al. 2016; Ng et al. 2016; Chan et al. 2015; Hui-Chan et al. 2009; Ng & Hui-Chan 2007). One RCT compared Unilateral TENS with Bilateral TENS (Kwong et al. 2018). One RCT compared TENS vs Conventional Therapy with NMES vs Conventional Therapy (Yen et al. 2019). One RCT compared TENS Ultrasound vs Botulinum Toxin A with Therapeutic Ultrasound vs Botulinum Toxin A (Picelli et al. 2014). One RCT compared Electroacupuncture and Low Frequency TENS with High and Low Frequency TENS (Johansson et al. 2001). One RCT compared Balance Training + TENS with Sham TENS + Balance Training vs Conventional Care (Jung et al. 2016). One RCT compared Trunk Training with Balance Training and TENS with Treadmill Training and Placebo TENS (Lim et al.

2019). One RCT compared TENS with Heel-raise-lower training with Placebo TENS with Heel-raise-lower training (Jung et al. 2020b).

In addition, seven RCTs in which transcutaneous electrical nerve stimulation (TENS) formed part of a combined or comparative intervention are cross-referenced at the end of Table 30; their primary listings appear in other tables.

The methodological details and results of all 21 RCTs are presented in Table 30.

Table 30. RCTs Evaluating Transcutaneous Electrical Nerve Stimulation (TENS) for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
TENS vs Sham Stimulation, Conventional Therapy or No Treatment		
Ertzgaard et al. (2018) RCT crossover (10) Nstart=29 Nend=27 TPS=Chronic A vs 0 Mixed population (includes cerebral palsy).	E: Full-Body TENS (AT, Mollii) at home C: Sham TENS at home Duration: 60min/d, 3-4x/wk, for 6wks - 6wk washout	E vs C: Goal Attainment scaling (-) 10m walk test Fast (-) Comfortable (-) Action research arm test (-) Wolf motor function test (-) Timed up & go (-) Range of motion (-) Modified Ashworth scale (-) Numerical rating scale- pain (-) Numerical rating scale- spasticity (-) Short form-36 (-) EQ-VAS (-)
Gurcan et al. (2015) RCT (5) Nstart=32 Nend=32 TPS=Chronic A vs 0	E: TENS + Conventional therapy C: Conventional therapy Duration: 20min/d, 5d/wk, for 3wks TENS	E vs C: 10-Metre Walk Test (+exp) Functional Ambulation Scale (-) Functional Independence Measure (-) Brunnstrom Recovery Stage (-) Modified Ashworth Scale (-) Range of Motion dorsiflexion (-) Clonus Score (-)
Park et al. (2014a) RCT (6) Nstart=34 Nend=29 TPS=Chronic A + B vs B	E: Transcutaneous electrical nerve stimulation (TENS) + therapeutic exercise C: Placebo TENS + therapeutic exercise Duration: 30min/d, 5d/wk, for 6wks	E vs C: Modified Ashworth Scale (+exp) Timed Up and Go test (+exp) Anterior-posterior postural sway (+exp) Medial-lateral postural sway (+exp) Velocity moment (+exp) Gait velocity (-) Cadence (+exp) Paretic step length (+exp) Paretic stride length (+exp)
Cho et al. (2013a) RCT (5) Nstart=50 Nend=42 TPS=Chronic	E: TENS 100Hz + physical therapy C: Sham TENS condition + physical therapy Duration: One-time 30min physical therapy+ 60min TENS/sham	E vs C: Modified Ashworth Scale (+exp) Ankle plantarflexor spasticity by handheld dynamometer (+exp) Postural sway

A vs 0		eyes open (-) eyes closed (+exp)
Tyson et al. (2013) RCT crossover (6) Nstart=29 Nend=29 TPS=Chronic A vs 0	E: TENS C: Sham TENS Duration: 2h session	E vs C: Joint position sense of the ankle plantarflexor (+exp) dorsiflexor (-) Maximum isometric strength plantarflexor (+exp) dorsiflexor (-) Reach Test (+exp) 10-m walk (+exp)
Martins et al. (2012) RCT crossover (4) Nstart=20 Nend=16 TPS=Chronic A vs B vs 0 Also in Table 34 (Thermal Stimulation and Cryotherapy)	E1: Transcutaneous electrical nerve stimulation E2: Cryotherapy C: No treatment Duration: 30min, 1d – non- consecutive washout	E1 vs C: Hmax/Mmax ratio (+exp1) H-reflex latency (-) E2 vs C: Hmax/Mmax ratio (+exp2) H-reflex latency (+exp2) E1 vs E2: Hmax/Mmax ratio (+exp1) H-reflex latency (+exp1)
Yan & Hui-Chan (2009) RCT (5) Nstart=62 Nend=56 TPS=Acute A vs 0 vs 0	E1: TENS + standard rehabilitation E2: Sham TENS + standard rehabilitation C: standard rehabilitation Duration: 60min/d, 5d/wk for 3wks TENS/Sham & 60min/d standard rehabilitation	E1/E2 vs C: Composite Spasticity Scale total (-) subjects with normal resistance (+exp1) EMG co-contraction ratio (+exp1) Max Isometric Voluntary Contraction torque (+exp1) Timed Up & Go (-) E1 vs E2: Composite Spasticity Scale total (-) subjects with normal resistance (+exp1) EMG co-contraction ratio (-) Max Isometric Voluntary Contraction torque (-) Timed Up & Go (-)
Levin & Hui-Chan (1992) RCT (5) Nstart=13 Nend=13 TPS=Chronic A vs 0	E: TENS C: Sham TENS Duration: 60min/d, 5d/wk, for 3wks	E vs C: Composite Spasticity Scale (+exp) H/Mmax response ratio (-) Vibratory inhibition H reflex (+exp) Stretch reflexes (+exp) Maximal voluntary isometric plantarflexion (-) Maximal voluntary isometric dorsiflexion (+exp)
TENS + exercise vs Sham TENS + exercise, TENS only, or No Treatment		
Tekeoğlu et al. (1998) RCT (5) Nstart=60 Nend=60 TPS=Subacute A vs 0	E: TENS during exercise C: Sham TENS during exercise Duration: 30min/d, 5d/wk, for 8wks	E vs C: Barthel index (No stats) Ashworth scale (No stats)

TENS + Task-related Training		
Laddha et al. (2016) RCT (5) Nstart=44 Nend=30 TPS=Chronic A1 + B vs A2 + B vs C	E1: TENS (60min) + Task- related training E2: TENS (30min) + Task- related training C: Task-related training Duration: 60min/d, 5d/wk, for 6wks task-oriented training & 30-60min/d, 5d/wk, for 6wks TENS	E1/E2 vs C: Timed-up-and-go (-) Modified Composite Spasticity Scale (+exp1) Ankle passive dorsiflexion ROM (+exp1, +exp2) Ankle clonus (-) E1 vs E2: Time-up-and-go (-) Modified Composite Spasticity Scale (+exp1) Ankle passive dorsiflexion ROM (+exp1) Ankle clonus (-)
Ng et al. (2016) RCT (7) Nstart=76 Nend=69 TPS=Subacute A + B vs C Also in Table 11 (Balance Training)	E: TENS + task-oriented balance training + conventional therapy C: Sham TENS + task- oriented balance training + conventional therapy Duration: 60min/d, 2d/wk, for 8wks. TENS + TOBT concurrent 150min/d conventional physiotherapy	E vs C: Berg Balance Scale (+exp) 6-minute walk test (-) Modified Rivermead Mobility Index (-) Timed up and go test (+exp) SF-36 Physical function(+exp) Role physical (-) Bodily pain (-) General health (-) Vitality (-) Social functioning (-) Role functioning-emotion (-) Mental health (-)
Chan et al. (2015) RCT (8) Nstart=37 Nend=37 TPS=Chronic A + B vs C vs D Also in Table 5 (Task-Specific Training)	E1: TENS + Task-related training E2: Sham TENS + Task- related training C: No active treatment (health education) Duration: 60min/d, 5d/wk, for 6wks	E1/E2 vs C: Trunk impairment score (+exp) trunk muscle strength (+exp) Lateral reach test (+exp1) Static sitting balance (-) Dynamic sitting balance (+exp) E1 vs E2: Trunk impairment scale(+exp1) trunk muscle strength (-) Dynamic sitting balance (+exp1)
Hui-Chan et al. (2009) RCT (7) Nstart=109 Nend=101 TPS=Chronic A vs B vs A + C vs 0 Also in Table 5 (Task-Specific Training)	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No treatment Duration: 60min/d, 5d/wk, for 4wks TENS ; 60min/d, 5d/wk, for 4wks Placebo TENS; 60min/d, 5d/wk, for 4wks Task-related training	E1/E2/E3 vs C: Composite spasticity scale (+exp1, +exp2, +exp3) Maximum isometric contraction Ankle Dorsiflexion (+exp2, +exp3) Ankle Plantarflexion (+exp2, +exp3) Gait velocity (+exp3) 6min Walk test (+exp2, +exp3) Timed Up and Go (+exp2, +exp3) E3 vs E1: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp3) Ankle Plantarflexion (exp3) Gait velocity (+exp3)

		6min Walk test (+exp3) Timed Up and Go (+exp3) E3 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (-) Ankle Plantarflexion (-) Gait velocity (+exp3) 6min Walk test (-) Timed Up and Go (+exp3) E1 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp1) Ankle Plantarflexion (-) Gait velocity (-) 6min Walk test (-) Timed Up and Go (-)
Ng & Hui-Chan (2007) RCT (6) Nstart=88 Nend=80 TPS=Chronic A vs B vs A + C vs D Also in Table 5 (Task-Specific Training)	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No active treatment Duration: 60min/d, 5d/wk for 4wks	E1/E2/E3 vs C: Composite Spasticity scale (+exp1, +exp2, +exp3) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (+exp1, +exp2, +exp3) peak torque-ankle plantarflexors (+exp2, +exp3) Gait velocity (+exp3) E3 vs E1: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3) E3 vs E2: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3)
Unilateral vs Bilateral TENS		
Kwong et al. (2018) RCT (7) Nstart=80 Nend=69 TPS=Chronic A + B vs C + B	E: Bilateral TENS + Task- oriented Training C: Unilateral TENS + Task- oriented Training Duration: 60min/d, 2d/wk for 10wks	E vs C: Maximum Isometric Voluntary Contraction: Ankle dorsiflexion strength Paretic (+exp) Non Paretic (-) Ankle plantarflexion strength Paretic (-) Non Paretic (-) Knee flexion peak torque Paretic (-) Non Paretic (-) Knee extension peak torque Paretic (-)

		Non Paretic (-) Timed-Up-and-Go Test (+exp) Lower Extremity Motor Coordination Test (-) Berg Balance Scale (-) Step Test (-)
TENS vs NMES vs Conventional Therapy		
Yen et al. (2019) RCT (7) Nstart=42 Nend=40 TPS=Acute A vs B vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E1: Transcutaneous Nerve Stimulation (TENS) + Standard Early Rehabilitation E2: Neuromuscular Electrical Stimulation (NMES) + Standard Early Rehabilitation C: Standard rehabilitation Duration: 30min/d, 5d/wk, for 2wks TENS, NMES, 30min/d, 5d/wk, for 2wks standard rehabilitation in all groups	E1 vs C: Postural Assessment Scale for Stroke (+exp1) Functional Independence Measure (+exp1) E2 vs C: Postural Assessment Scale for Stroke (-) Functional Independence Measure (-) E1 vs E2 ; Postural Assessment Scale for Stroke (-) Functional Independence Measure (-)
TENS vs Therapeutic Ultrasound vs Botulinum Toxin A		
Picelli et al. (2014) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C + B vs D + B Also in Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound); Table 46 (Botulinum Toxin)	E1: Therapeutic ultrasound + Home exercises & conventional therapy E2: TENS + Home exercises & conventional therapy E3: Botulinum toxin A (200U) + Home exercises & conventional therapy Duration: 10min/d, 5d/wk for 2wks - Ultrasound, 15min/d, 5d/wk for 2wks - TENS, 1 injection session - Botulinum toxin A, 40min/d, 5d/wk for 2wks - Bobath training	E1 vs E2: Modified Ashworth Scale (-) Ankle passive range of motion (-) E1 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3) E2 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3)
Electroacupuncture vs High and Low Frequency TENS		
Johansson et al. (2001) RCT (8) Nstart=150 Nend=138 TPS=Acute A vs B vs C Also in Table 53 (Acupuncture and Massage); Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E1: Electroacupuncture E2: High-intensity, low- frequency TENS (2Hz) C: Low-intensity, high- frequency electrostimulation (80Hz) Duration: 30min/d, 2d/wk for 10wks	E1 vs E2 vs C: Rivermead Mobility Index (-) 10-Metre Walk Test (-) Nine Hole Peg Test (-) Barthel Index (-) Nottingham Health Profile (-)
Balance Training + TENS vs Sham TENS + Balance Training vs Conventional Care		
Jung et al. (2016) RCT (7) Nstart=61 Nend=60 TPS=Subacute A + B vs A vs 0	E1: Weight-shifting exercise + TENS + Conventional care E2: Weight-shifting training + Placebo TENS + Conventional care C: Conventional care Duration: 30min/d, 5d/wk, for 6wks intervention sessions + 60min/d, 5d/wk, for 6wks conventional care	E1 vs C: Muscle Activity External Oblique (+exp1) External Spinae (+exp1) Maximum Reaching Distance (+exp1) Trunk Impairment Scale (+exp1) Dynamic Sitting balance (+exp1) Coordination (+exp1) Static Sitting Balance (-) E2 vs C: Muscle Activity External Oblique (+exp2)

		External Spinae (-) Maximum Reaching Distance (+exp2) Trunk Impairment Scale (+exp2) Dynamic Sitting Balance (+exp2) Coordination (+exp2) Static Sitting Balance (-) E1 vs E2: Muscle Activity External Oblique (+exp1) External Spinae (-) Maximum Reaching Distance (+exp1) Trunk Impairment Scale (+exp1) Dynamic Sitting Balance (-) Coordination (+exp1) Static Sitting Balance (-)
Trunk Training with Balance Training and TENS vs Treadmill Training and Placebo TENS		
Lim et al. (2019) RCT (7) Nstart=37 Nend=30 TPS=Subacute A + B vs C	E: Multi-sensorimotor training (Stabilize-T and Reha bar exercises + TENS) + Conventional PT C: Treadmill training + Placebo TENS + Conventional PT Duration: 60min/d, 5d/wk for 8wks	E vs C: Balance (-) Anterior-posterior (+exp) Medial-lateral (-) Proprioception (+exp)
TENS with Heel-raise-lower training vs Placebo TENS with Heel-raise-lower training		
Jung et al. (2020b) RCT (8) Nstart=40 Nend=40 TPS=Chronic A + B vs C	E: TENS + Heel-raise-lower training C: Placebo TENS + Heel- raise-lower training Duration: 30min/d, 5d/wk, for 6wks	E vs C: Ankle Plantar-Flexor strength (+exp) Composite Spasticity score (+exp) 10m Walk test (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Ofek et al. (2023) RCT (7) Nstart=64 Nend=47 TPS=Chronic A + B vs C + B Primary listing: Table 32 (Additional Afferent and Peripheral Stimulation Methods)	E: Instructed sensory training + TENS C: Uninstructed sensory training + TENS Duration: 65min/d(45min sensory training, 20min TENS), 2d/wk, 10-12wks	E vs C: TUG(-) Semmeswienstien monofilament(-) LEPT(-) ABC(-) MINIBEST(-) 2MW(-) SIS(-)
In et al. (2021b) RCT (7) Nstart=50 Nend=46 TPS=Chronic A + B vs A Primary listing: Table 13 (Orthotic Devices)	E: TENS + Taping + Exercise C: TENS + Exercise Duration: 30min/d, 5d/wk, for 6wks (30 sessions total TENS) +/- tape during session & 30min/5d/wk, for 6wks exercise	E vs C: Composite spasticity score (+exp) Muscle Strength Knee extensor (+exp) Ankle plantar flexor (+exp) 10m walk test (+exp)
Lim et al. (2019) RCT (7) Nstart=37 Nend=30 TPS=Subacute	E: Multi-sensorimotor training (Stabilize-T and Reha bar exercises + TENS) + Conventional PT C: Treadmill training + placedo TENS + conventional PT	E vs C: Balance (-) Anterior-posterior (+exp) Medial-lateral (-) Proprioception (+exp)

A + B vs C + B Primary listing: Table 4 (Trunk Training)	Duration: 60min/d, 5d/wk for 8wks	
Jung et al. (2017b) RCT (7) Nstart=41 Nend=40 TPS=Chronic A + B vs A Primary listing: Table 2 (Sit-to-Stand Training)	E: Sit-to-stand training + TENS + conventional therapy C: Sit-to-stand training + sham TENS + conventional therapy Duration: 15min/d, 5d/wk, 6wks sit-to-stand training & 30min/d, 5d/wk, 6wks TENS or sham 60min/d, 5d/wk, 6wks conventional physiotherapy	E vs C: Postural sway distance (cm) Eyes open (+exp) Eyes closed (+exp) Muscle strength (kg) Hip extensor (+exp) Knee extensor (-) Ankle plantar flexor (-) CSS score (Spasticity) (+exp)
Hui-Chan et al. (2009) RCT (7) Nstart=109 Nend=101 TPS=Chronic A vs B vs A + C vs 0 Primary listing: Table 5 (Task-Specific Training)	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No treatment Duration: 60min/d, 5d/wk, 4wks TENS ; 60min/d, 5d/wk, 4wks Placebo TENS; 60min/d, 5d/wk, 4wks Task- related training	E1/E2/E3 vs C: Composite spasticity scale (+exp1, +exp2, +exp3) Maximum isometric contraction Ankle Dorsiflexion (+exp2, +exp3) Ankle Plantarflexion (+exp2, +exp3) Gait velocity (+exp3) 6min Walk test (+exp2, +exp3) Timed Up and Go (+exp2, +exp3) E3 vs E1: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp3) Ankle Plantarflexion (exp3) Gait velocity (+exp3) 6min Walk test (+exp3) Timed Up and Go (+exp3) E3 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (-) Ankle Plantarflexion (-) Gait velocity (+exp3) 6min Walk test (-) Timed Up and Go (+exp3) E1 vs E2: Composite spasticity scale (-) Maximum isometric contraction Ankle Dorsiflexion (+exp1) Ankle Plantarflexion (-) Gait velocity (-) 6min Walk test (-) Timed Up and Go (-)
Ng & Hui-Chan (2007) RCT (6) Nstart=88 Nend=80 TPS=Chronic A vs B vs A + C vs D Primary listing: Table 5 (Task-Specific Training)	E1: TENS E2: Placebo TENS + Task- related training E3: TENS + Task-related training C: No active treatment Duration: 60min/d, 5d/wk for 4wks	E1/E2/E3 vs C: Composite Spasticity scale (+exp1, +exp2, +exp3) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (+exp1, +exp2, +exp3) peak torque-ankle plantarflexors (+exp2, +exp3) Gait velocity (+exp3)

		E3 vs E1: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3) E3 vs E2: Composite Spasticity scale (-) Maximum isometric voluntary contradiction peak torque-ankle dorsiflexors (-) peak torque-ankle plantarflexors (-) Gait velocity (+exp3)
Bayram et al. (2006) RCT (5) Nstart=12 Nend=11 TPS=Chronic A + B vs A Primary listing: Table 46 (Botulinum Toxin)	E1: Low-dose Botulinum toxin (100U) + TENS C: High-dose Botulinum toxin (400U) + Sham electrical stimulation Duration: 30min, 6sessions/d, for 3d TENS	E1 vs C: Modified Ashworth Scale (-) AROM-Ankle (-) PROM-Ankle (-) Global Assessment of Spasticity Scale (-) Clonus Score (-) Brace Wear Scale (-) 10-Metre Walk Test (-) Ankle Resting Position Angle (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving motor recovery.	1	Gurcan et al. 2015
1b	Unilateral transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Bilateral transcutaneous electrical nerve stimulation for improving motor recovery.	1	Kwong et al. 2018

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in biomechanical gait measures than Sham Stimulation, Conventional Therapy or No Treatment.	1	Park et al. 2014a

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in biomechanical balance measures than Sham Stimulation, Conventional Therapy or No Treatment.	2	Park et al. 2014a; Cho et al. 2013a
1b	Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy may produce greater improvements in biomechanical balance measures than Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy.	1	Jung et al. 2017b

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in muscle strength than Sham Stimulation, Conventional Therapy or No Treatment.	3	Tyson et al. 2013; Yan & Hui-Chan 2009; Levin & Hui-Chan 1992
2	Transcutaneous electrical nerve stimulation with rehabilitation may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with rehabilitation for improving muscle strength.	1	Yan & Hui-Chan 2009
1b	TENS with Task-related training or Sham TENS and Task- related training may produce greater improvements in muscle strength than No active treatment (health education).	1	Chan et al. 2015
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Chan et al. 2015
1a	There is conflicting evidence about the effect of TENS with Task-related training when compared to TENS for improving muscle strength.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving muscle strength.	1	Hui-Chan et al. 2009
1b	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training for improving muscle strength.	1	Ng & Hui-Chan 2007
1b	Unilateral transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Bilateral transcutaneous electrical nerve stimulation for improving muscle strength.	1	Kwong et al. 2018
1b	Transcutaneous electrical nerve stimulation with Heel-raise-lower training may produce greater improvements in muscle strength than Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training.	1	Jung et al. 2020b
1b	Transcutaneous electrical nerve stimulation with Taping and Exercise may produce greater improvements in muscle strength than transcutaneous electrical nerve stimulation with Exercise.	1	In et al. 2021b

1b	Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy may not have a difference in efficacy when compared to Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy for improving muscle strength.	1	Jung et al. 2017b

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Transcutaneous electrical nerve stimulation may produce greater improvements in spasticity than Sham Stimulation, Conventional Therapy or No Treatment.	6	Ertzgaard et al. 2018; Gurcan et al. 2015; Park et al. 2014a; Cho et al. 2013a; Yan & Hui-Chan 2009; Levin & Hui-Chan 1992
2	Transcutaneous electrical nerve stimulation with rehabilitation may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with rehabilitation for improving spasticity.	1	Yan & Hui-Chan 2009
2	Transcutaneous electrical nerve stimulation with exercise may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment for improving spasticity.	1	Tekeoğlu et al. 1998
2	Transcutaneous electrical nerve stimulation with Task-related Training may produce greater improvements in spasticity than Task-related training.	1	Laddha et al. 2016
2	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation (60min) with Task- related training when compared to transcutaneous electrical nerve stimulation (30min) with Task- related training for improving spasticity.	1	Laddha et al. 2016
1a	TENS with Task-related training may not have a difference in efficacy when compared to TENS for improving spasticity.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving spasticity.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving spasticity.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training for improving spasticity.	1	Ng & Hui-Chan 2007
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving spasticity.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014

1b	Transcutaneous electrical nerve stimulation with Heel-raise-lower training may produce greater improvements in spasticity than Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training.	1	Jung et al. 2020b
1b	Transcutaneous electrical nerve stimulation with Taping and Exercise may produce greater improvements in spasticity than transcutaneous electrical nerve stimulation with Exercise.	1	In et al. 2021b
1b	Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy may produce greater improvements in spasticity than Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy.	1	Jung et al. 2017b
2	Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving spasticity.	1	Bayram et al. 2006

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving range of motion.	2	Ertzgaard et al. 2018; Gurcan et al. 2015
2	Transcutaneous electrical nerve stimulation with Task-related Training may not have a difference in efficacy when compared to Task-related training for improving range of motion.	1	Laddha et al. 2016
2	Transcutaneous electrical nerve stimulation (60min) with Task-related training may produce greater improvements in range of motion than transcutaneous electrical nerve stimulation (30min) with Task- related training.	1	Laddha et al. 2016
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving range of motion.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
2	Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving range of motion.	1	Bayram et al. 2006

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Transcutaneous electrical nerve stimulation may produce greater improvements in neurophysiological measures than Sham Stimulation, Conventional Therapy or No Treatment.	2	Martins et al. 2012; Levin & Hui-Chan 1992
2	Transcutaneous electrical nerve stimulation may produce greater improvements in neurophysiological measures than Cryotherapy.	1	Martins et al. 2012

1b	Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may produce greater improvements in neurophysiological measures than Conventional care.	1	Jung et al. 2016
1b	Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may produce greater improvements in neurophysiological measures than Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care.	1	Jung et al. 2016
1b	Balance Training with transcutaneous electrical nerve stimulation may produce greater improvements in neurophysiological measures than Sham transcutaneous electrical nerve stimulation with Balance Training or Conventional Care.	1	Jung et al. 2016

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving sensory and proprioceptive function.	1	Tyson et al. 2013
1b	Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may produce greater improvements in sensory and proprioceptive function than Treadmill Training and Placebo transcutaneous electrical nerve stimulation.	1	Lim et al. 2019
1b	Instructed sensory training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation for improving sensory and proprioceptive function.	1	Ofek et al. 2023
1b	Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy may produce greater improvements in sensory and proprioceptive function than Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy.	1	Lim et al. 2019

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving pain.	1	Ertzgaard et al. 2018

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving activities of daily living.	2	Ertzgaard et al. 2018; Gurcan et al. 2015
2	Transcutaneous electrical nerve stimulation with exercise may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment for improving activities of daily living.	1	Tekeoğlu et al. 1998

1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may produce greater improvements in activities of daily living than Neuromuscular Electrical Stimulation with Early Rehabilitation.	1	Yen et al. 2019
1b	Transcutaneous electrical nerve stimulation vs Conventional Therapy may not have a difference in efficacy when compared to neuromuscular electrical stimulation or Conventional Therapy for improving activities of daily living.	1	Yen et al. 2019
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation for improving activities of daily living.	1	Johansson et al. 2001

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving gait speed.	3	Ertzgaard et al. 2018; Gurcan et al. 2015; Park et al. 2014a
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in gait speed than No treatment.	1	Hui-Chan et al. 2009
1a	TENS with Task-related training may produce greater improvements in gait speed than TENS.	2	Hui-Chan et al. 2009; Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in gait speed than Placebo transcutaneous electrical nerve stimulation with Task-related training.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving gait speed.	1	Hui-Chan et al. 2009
1b	TENS with Task-related training may produce greater improvements in gait speed than No treatment.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may produce greater improvements in gait speed than No active treatment.	1	Ng & Hui-Chan 2007
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in gait speed than transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training.	1	Ng & Hui-Chan 2007
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation for improving gait speed.	1	Johansson et al. 2001
1b	Transcutaneous electrical nerve stimulation with Heel-raise-lower training may produce greater improvements in gait speed than Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training.	1	Jung et al. 2020b
1b	Transcutaneous electrical nerve stimulation with Taping and Exercise may produce greater improvements in gait speed than transcutaneous electrical nerve stimulation with Exercise.	1	In et al. 2021b
2	Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving gait speed.	1	Bayram et al. 2006

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may not have a difference in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving gait endurance.	1	Ng et al. 2016
1b	TENS with Task-related training may produce greater improvements in gait endurance than TENS.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task-related training for improving gait endurance.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving gait endurance.	1	Hui-Chan et al. 2009

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving functional mobility.	4	Ertzgaard et al. 2018; Gurcan et al. 2015; Park et al. 2014a; Yan & Hui-Chan 2009
2	Transcutaneous electrical nerve stimulation with rehabilitation may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation with rehabilitation for improving functional mobility.	1	Yan & Hui-Chan 2009
2	Transcutaneous electrical nerve stimulation with Task-related Training may not have a difference in efficacy when compared to Task-related training for improving functional mobility.	1	Laddha et al. 2016
1b	There is conflicting evidence about the effect of Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving functional mobility.	1	Ng et al. 2016
1b	TENS with Task-related training may produce greater improvements in functional mobility than TENS.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in functional mobility than Placebo transcutaneous electrical nerve stimulation with Task-related training.	1	Hui-Chan et al. 2009
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training for improving functional mobility.	1	Hui-Chan et al. 2009
1b	There is conflicting evidence about the effect of Unilateral transcutaneous electrical nerve stimulation when compared to Bilateral transcutaneous electrical nerve stimulation for improving functional mobility.	1	Kwong et al. 2018
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation for improving functional mobility.	1	Johansson et al. 2001

1b	Instructed sensory training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation for improving functional mobility.	1	Ofek et al. 2023

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may produce greater improvements in balance than C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy.	1	Ng et al. 2016
1b	TENS with Task-related training or Sham TENS and Task- related training may produce greater improvements in balance than No active treatment (health education).	1	Chan et al. 2015
1b	Transcutaneous electrical nerve stimulation with Task-related training may produce greater improvements in balance than Sham transcutaneous electrical nerve stimulation with Task- related training.	1	Chan et al. 2015
1b	Unilateral transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Bilateral transcutaneous electrical nerve stimulation for improving balance.	1	Kwong et al. 2018
1b	Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may produce greater improvements in balance than Neuromuscular Electrical Stimulation with Early Rehabilitation.	1	Yen et al. 2019
1b	Transcutaneous electrical nerve stimulation vs Conventional Therapy may not have a difference in efficacy when compared to neuromuscular electrical stimulation or Conventional Therapy for improving balance.	1	Yen et al. 2019
1b	Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may produce greater improvements in balance than Conventional care.	1	Jung et al. 2016
1b	Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may produce greater improvements in balance than Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care.	1	Jung et al. 2016
1b	There is conflicting evidence about the effect of Balance Training with transcutaneous electrical nerve stimulation when compared to Sham transcutaneous electrical nerve stimulation with Balance Training or Conventional Care for improving balance.	1	Jung et al. 2016
1b	Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation for improving balance.	1	Lim et al. 2019
1b	Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy may not have a difference in efficacy when compared to Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy for improving balance.	1	Lim et al. 2019

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Instructed sensory training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation for improving falls and fear of falling.	1	Ofek et al. 2023

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving quality of life.	1	Ertzgaard et al. 2018
1b	Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may not have a difference in efficacy when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy for improving quality of life.	1	Ng et al. 2016
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation for improving quality of life.	1	Johansson et al. 2001
1b	Instructed sensory training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation for improving quality of life.	1	Ofek et al. 2023

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Sham Stimulation, Conventional Therapy or No Treatment for improving upper extremity function.	1	Ertzgaard et al. 2018

Key Points

- Transcutaneous electrical nerve stimulation may be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, and neurophysiological measures, but not range of motion, pain, activities of daily living, functional mobility, and quality of life, after stroke when compared to Sham Stimulation, Conventional Therapy or No Treatment; the literature is mixed regarding motor recovery, sensory and proprioceptive function, and gait speed.
- Transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Cryotherapy.
- Transcutaneous electrical nerve stimulation with rehabilitation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Sham transcutaneous electrical nerve stimulation with rehabilitation.
- Transcutaneous electrical nerve stimulation with exercise may not be beneficial for improving spasticity and activities of daily living after stroke when compared to Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment.

- Transcutaneous electrical nerve stimulation with Task-related Training may be beneficial for improving spasticity, but not range of motion and functional mobility, after stroke when compared to Task-related training.
- Transcutaneous electrical nerve stimulation (60min) with Task- related training may be beneficial for improving range of motion after stroke when compared to transcutaneous electrical nerve stimulation (30min) with Task- related training; the literature is mixed regarding spasticity.
- Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- TENS with Task-related training or Sham TENS and Task- related training may be beneficial for improving muscle strength and balance after stroke when compared to No active treatment (health education).
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving balance, but not muscle strength, after stroke when compared to Sham transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No treatment.
- TENS with Task-related training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity, after stroke when compared to TENS; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed and functional mobility, but not muscle strength, spasticity, and gait endurance, after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No active treatment.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed, but not muscle strength and spasticity, after stroke when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Unilateral transcutaneous electrical nerve stimulation may not be beneficial for improving motor recovery, muscle strength, and balance after stroke when compared to Bilateral transcutaneous electrical nerve stimulation; the literature is mixed regarding functional mobility.
- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may be beneficial for improving activities of daily living and balance after stroke when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation.
- Transcutaneous electrical nerve stimulation vs Conventional Therapy may not be beneficial for improving activities of daily living and balance after stroke when compared to neuromuscular electrical stimulation or Conventional Therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation.

- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures and balance after stroke when compared to Conventional care.
- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures and balance after stroke when compared to Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care.
- Balance Training with transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Sham transcutaneous electrical nerve stimulation with Balance Training or Conventional Care; the literature is mixed regarding balance.
- Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation.
- Transcutaneous electrical nerve stimulation with Heel-raise-lower training may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training.
- Instructed sensory training with transcutaneous electrical nerve stimulation may not be beneficial for improving sensory and proprioceptive function, functional mobility, falls and fear of falling, and quality of life after stroke when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation.
- Transcutaneous electrical nerve stimulation with Taping and Exercise may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to transcutaneous electrical nerve stimulation with Exercise.
- Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy.
- Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy may be beneficial for improving biomechanical balance measures and spasticity, but not muscle strength, after stroke when compared to Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy.
- Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation.
- TENS with Task-related training may be beneficial for improving gait speed after stroke when compared to No treatment.

Summary of Key Points: Transcutaneous Electrical Nerve Stimulation (TENS)

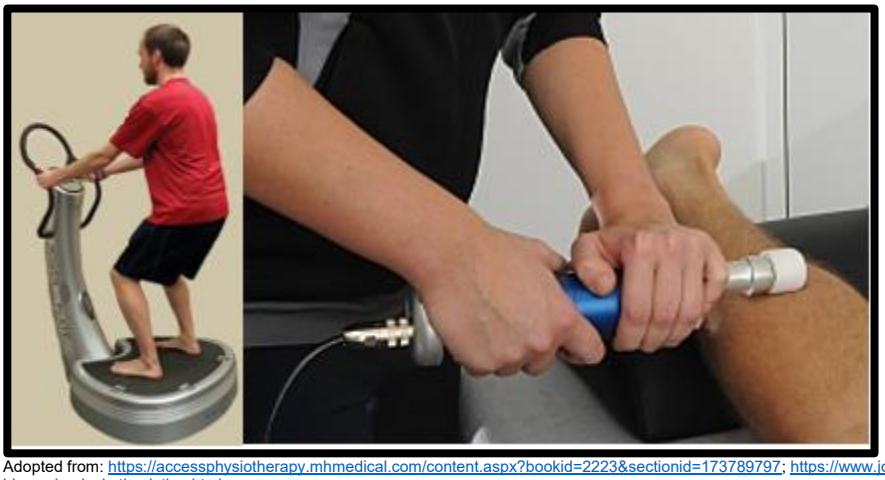
Intervention	Control(s)	Function domain(s)	Effect
Transcutaneous electrical nerve stimulation Stimulation, Conventional Therapy or No Treatment	Sham Stimulation, Conventional Therapy or No Treatment	Biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures	+
Transcutaneous electrical nerve stimulation Stimulation, Conventional Therapy or No Treatment	Sham Stimulation, Conventional Therapy or No Treatment	Range of motion, pain, activities of daily living, functional mobility, quality of life	–
Transcutaneous electrical nerve stimulation Stimulation, Conventional Therapy or No Treatment	Sham Stimulation, Conventional Therapy or No Treatment	Motor recovery, sensory and proprioceptive function, gait speed	=
Transcutaneous electrical nerve stimulation	Cryotherapy	Neurophysiological measures	+
Transcutaneous electrical nerve stimulation with rehabilitation	Sham transcutaneous electrical nerve stimulation with rehabilitation	Muscle strength, spasticity, functional mobility	–

Transcutaneous electrical nerve stimulation with exercise	Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment	Spasticity, activities of daily living	–
Transcutaneous electrical nerve stimulation with Task-related Training	Task-related training	Spasticity	+
Transcutaneous electrical nerve stimulation with Task-related Training	Task-related training	Range of motion, functional mobility	–
Transcutaneous electrical nerve stimulation (60min) with Task- related training	transcutaneous electrical nerve stimulation (30min) with Task-related training	Range of motion	+
Transcutaneous electrical nerve stimulation (60min) with Task- related training	transcutaneous electrical nerve stimulation (30min) with Task-related training	Spasticity	=
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Balance	+
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Gait endurance, quality of life	–
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy	Functional mobility	=
TENS with Task-related training or Sham TENS and Task- related training	No active treatment (health education)	Muscle strength, balance	+
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training	Balance	+
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training	Muscle strength	–
Transcutaneous electrical nerve stimulation	No treatment	Gait speed	+
TENS with Task-related training	TENS	Gait speed, gait endurance, functional mobility	+
TENS with Task-related training	TENS	Spasticity	–
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task-related training	Gait speed, functional mobility	+
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task-related training	Muscle strength, spasticity, gait endurance	–
Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task-related training	Spasticity, gait speed, gait endurance, functional mobility	–
Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task-related training	Muscle strength	=

Transcutaneous electrical nerve stimulation	No active treatment	Gait speed	+
TENS with Task-related training	TENS	Gait speed	+
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training	Gait speed	+
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training	Muscle strength, spasticity	–
Unilateral transcutaneous electrical nerve stimulation	Bilateral transcutaneous electrical nerve stimulation	Motor recovery, muscle strength, balance	–
Unilateral transcutaneous electrical nerve stimulation	Bilateral transcutaneous electrical nerve stimulation	Functional mobility	=
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	Neuromuscular Electrical Stimulation with Early Rehabilitation	Activities of daily living, balance	+
Transcutaneous electrical nerve stimulation vs Conventional Therapy	neuromuscular electrical stimulation vs Conventional Therapy	Activities of daily living, balance	–
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Spasticity, range of motion	–
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Electroacupuncture	Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation	Activities of daily living, gait speed, functional mobility, quality of life	–
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Conventional care	Neurophysiological measures, balance	+
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care	Neurophysiological measures, balance	+
Balance Training with transcutaneous electrical nerve stimulation	Sham transcutaneous electrical nerve stimulation with Balance Training vs Conventional Care	Neurophysiological measures	+
Balance Training with transcutaneous electrical nerve stimulation	Sham transcutaneous electrical nerve stimulation with Balance Training vs Conventional Care	Balance	=
Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation	Sensory and proprioceptive function	+

Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation	Balance	−
Transcutaneous electrical nerve stimulation with Heel-raise-lower training	Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training	Muscle strength, spasticity, gait speed	+
Instructed sensory training with transcutaneous electrical nerve stimulation	Uninstructed sensory training with transcutaneous electrical nerve stimulation	Sensory and proprioceptive function, functional mobility, falls and fear of falling, quality of life	−
Transcutaneous electrical nerve stimulation with Taping and Exercise	transcutaneous electrical nerve stimulation with Exercise	Muscle strength, spasticity, gait speed	+
Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy	Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy	Sensory and proprioceptive function	+
Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy	Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy	Balance	−
Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy	Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy	Biomechanical balance measures, spasticity	+
Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy	Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy	Muscle strength	−
Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation	High-dose Botulinum toxin (400U) with Sham electrical stimulation	Spasticity, range of motion, gait speed	−
TENS with Task-related training	No treatment	Gait speed	+
Transcutaneous electrical nerve stimulation	Sham Stimulation, Conventional Therapy or No Treatment	Motor recovery, sensory and proprioceptive function, gait speed	=
Transcutaneous electrical nerve stimulation	Sham Stimulation, Conventional Therapy or No Treatment	Biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures	+
Transcutaneous electrical nerve stimulation	Sham Stimulation, Conventional Therapy or No Treatment	Range of motion, pain, activities of daily living, functional mobility, quality of life	−
TENS with Task-related training	TENS	Muscle strength	=

Muscle Vibration



Adopted from: https://accessphysiotherapy.mhmedical.com/content.aspx?bookid=2223&sectionid=173789797; https://www.joint-surgeon.com/rehabilitation/matrix-therapy/matrix-therapy-and-biomechanical-stimulation.html

Whole body muscle vibration is administered through a vibrating platform which stimulates sensory receptors and can facilitate muscle contractions (Brogårdh et al. 2012). The patient may stand or perform other movements while on the vibration platform. Whole body muscle vibration is being investigated as a therapeutic method of improving muscle function, muscle strength, and gait function following a stroke (Cochrane, 2011; Lee, 2015a).

Muscle vibration produces an indirect vibration to the whole body which can limit the specificity and strength of the vibratory stimulus (Moran et al., 2007). As such, local muscle vibration has recently been examined as a more specific and direct method of applying a vibration stimulation to targeted muscles with the ability to stimulate either the agonist or antagonist muscles, as opposed to stimulating both as would occur during muscle vibration (Custer et al., 2017; Pamukoff et al., 2014; Souron et al., 2017; Tankisheva et al. 2014).

A total of 36 RCTs were found that evaluated muscle vibration for lower extremity motor rehabilitation. 21 RCTs compared Whole Body Vibration with Sham Stimulation, No Stimulation, or Conventional Care (Xu et al. 2024; Duray et al. 2023; Ahmed Burq et al. 2021; Burq et al. 2021b; Sales et al. 2020; Sade et al. 2020; Lee 2019e; Alp et al. 2018; Lee et al. 2017c; Silva et al. 2016; Guo et al. 2015; Lee 2015e; Silva et al. 2014; Tankisheva et al. 2014; Marin et al. 2013; Pang et al. 2013; Chan et al. 2012; Brogårdh et al. 2012; Lau et al. 2012; Tihanyi et al. 2010; Tihanyi et al. 2007). One RCT compared Matrix Rhythm Therapy with Bobath Therapy (Unal et al. 2021). One RCT compared Whole Body Vibration with Musical Exercise Therapy (Van Nes et al. 2006). One RCT compared Balance Training + Whole Body Vibration with Conventional Rehabilitation (Merkert et al. 2011). One RCT compared Whole Body Vibration + Treadmill Training with Treadmill Training (Choi et al. 2017b). Six RCTs compared Local Muscle Vibration with Conventional Therapy or Sham Muscle Vibration (Chen et al. 2023a; Onal et al. 2022; Toscano et al. 2019; Lee et al. 2013a; Paoloni et al. 2010; Magnusson et al. 1994). Three RCTs evaluated Comparing Whole-Body Vibration Intensity (Wei et al. 2022; Yang et al. 2021; Liao et al. 2016). One RCT compared Whole Body Vibration with Strength Training (Irshad et al. 2022).

In addition, four RCTs in which muscle vibration formed part of a combined or comparative intervention are cross-referenced at the end of Table 31; their primary listings appear in other tables.

The methodological details and results of all 36 RCTs are presented in Table 31.

Table 31. RCTs Evaluating Muscle Vibration for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Whole Body Vibration vs Sham Stimulation, No Stimulation, or Conventional Care		
Xu et al. (2024) RCT (8)	E: Whole-body vibration + conventional rehab (physiotherapy, neuromuscular	E vs C: BBS(-)

Nstart=35 Nend=35 TPS=Chronic A vs 0 Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning); Table 29 (Neuromuscular Electrical Stimulation (NMES)); Table 53 (Acupuncture and Massage)	electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) C: Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) Duration: E: 230min/d, 6d/wk, 4wks; C: 200min/d, 6d/wk, 4 wks	Functional Reach Test (-) Romberg's test of balance length (-) area(-) Ankle joint dorsiflexion-plantar flexion (DP)(+exp) Ankle joint inversion-eversion (+exp)
Duray et al. (2023) RCT (5) Nstart=34 Nend=28 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Whole body vibration + Neurodevelopmental treatment C: Neurodevelopmental treatment Duration: 60min NDT/d, 3d/wk, 4wks; 20min WBV/d, 2d/wk, same 4 wks	E vs C: 6MWT (+exp) Walking Distance (+exp) VO2max (+exp) FEV (-) FVC (-) PEF (-) ERV (-) IC (-) VC (-) IRV (-) chest circumference measurements epigastric (-) subcostal (-) axillar (-)
Ahmed Burq et al. (2021) RCT (5) Nstart=64 Nend=64 TPS=Chronic A vs 0	E: Whole-Body Vibration (amplitude: 3 mm, frequency: 20 Hz) + Routine Physiotherapy C: Routine physiotherapy Duration: 15min, 6d/wk, for 2wks vibration & 45min/session, for 2wks physiotherapy	E vs C: Stair Negotiation Time (+exp) Obstacle Clearance Height (+exp) Obstacle Clearance Depth (-)
Burq et al. (2021b) RCT (6) Nstart=64 Nend=64 TPS=Chronic A vs 0	E: Whole body vibration (WBV, 20Hz) + Conventional therapy C: Conventional therapy Duration: 15min, 6d/wk, for 2wks WBV	E vs C: Timed up and go (-) 10-meter walk test Self-speed (-) Fast speed (-)
Sales et al. (2020) RCT (8) Nstart=21 Nend=21 TPS=Chronic A vs 0	E: Whole-body vibration C: Sham Duration: 10min/1session	E vs C: Hmax/Mmax ratio (-) Modified Ashworth Scale (-) Global perception of change (-)
Sade et al. (2020) RCT (5) Nstart=46 Nend=43 TPS=Chronic A vs B + C vs 0 vs C	E: Whole body vibration (35- 40Hz) + Conventional therapy C: Conventional therapy Duration: E: 4min/session, 5d/wk, for 3wks vibration + 5d/wk, for 3wks conventional therapy C: 5d/wk, for 3wks conventional therapy	E vs C: Berg Balance Scale (+exp) Timed Up and Go Test (+exp) Cadence (-) Single support (-) Double support (-) Step length (+exp) Step time (-)

		Walking speed (+exp)
Lee (2019e) RCT (6) Nstart=24 Nend=21 TPS=Chronic A vs 0	E: Horizontal whole-body vibration + Conventional rehabilitation training C: Conventional rehabilitation training Duration: 30min/d, 3d/wk, for 6wks Whole-body vibration, 60min/d, 3d/wk, for 6wks Conventional rehabilitation	E vs C: Gait Velocity (-) Cadence (-) Step Length (-) Single Limb Support Time (-) Double Limb Support Time (-) Stride Length (-) Movement of the Centre of Pressure (-)
Alp et al. (2018) RCT (6) Nstart=22 Nend=21 TPS=Chronic A vs 0 Also in Table 12 (Stretching or Mobilization Exercises)	E: Whole Body Vibration (40 hz,4 mm) + Exercise (Stretching and active ROM exercise) C: Sham Vibration + Exercise (Stretching and active ROM exercise) Duration: 15min, 3d/wk, for 4wks Exercise & 5min, 3d/wk, for 4wks WBV/Sham	E vs C: 10-meter Walk Test (+exp) Functional Independence Measurement (-) Modified Ashworth Scale-Ankle (-)
Lee et al. (2017c) RCT (7) Nstart=30 Nend=30 TPS=Acute A vs 0	E: Whole Body Vibration + Conventional Therapy C: Conventional Therapy Duration: 60min/d, 5d/wk, for 2wks	E vs C: Functional Ambulation Categories (-) Berg Balance Scale (-) Trunk Impairment Scale (-) Korean Modified Barthel Index (-)
Silva et al. (2016) RCT (6) Nstart=35 Nend=28 TPS=Subacute A vs B	E: Whole-body vibration training C: No stimulation Duration: 4-8min/d, 3d/wk for 8wks	E vs C: Plantar impression area Affected side (-) Unaffected side (-) 6-Minute Walk Test (-)
Guo et al. (2015) RCT (6) Nstart=30 Nend=30 TPS=Subacute A vs 0	E: Whole-body vibration C: Sham stimulation Duration: 80min/d for 8wks	E vs C: 10-Metre Walk Test (+exp) Knee hyperextension (+exp) Fugl-Meyer Assessment (-)
Lee (2015e) RCT (4) Nstart=26 Nend=21 TPS=Chronic A vs B	E: Whole-body vibration in the horizontal direction + Conventional rehabilitation C: No stimulation + Conventional rehabilitation Duration: 15min/d, 3d/wk for 6wks whole body vibration & 30min/d, 5d/wk, for 6wks conventional rehabilitation	E vs C: Berg Balance Scale (+exp) Timed Up-and-Go Test (-) Fugl-Meyer Assessment (-)
Silva et al. (2014) RCT (5) Nstart=43 Nend=38 TPS=Chronic A vs 0	E: Whole body vibration therapy while standing with knees flexed C: Sham Duration: 9min/session - whole body vibration,10min/session - flexed knee position	E vs C: Fugl-Meyer assessment (-) Surface EMG (-) Voluntary Isometric contraction (-) Stair Climb test (-) 6min Walk test (-) Timed Up and Go (-)
Tankisheva et al. (2014) RCT (7) Nstart=15	E: Whole body vibration during exercise C: No intervention	E vs C: Ashworth Scale (-) Muscle strength:

Nend=13 TPS=Chronic A vs B	Duration: 10-19min/d, 3d/wk, for 6wks vibration	Isometric knee extension 60° Paretic leg (+exp) Non-paretic leg (-) Isometric knee flexion 60° Paretic leg (-) Non-paretic leg (-) Isokinetic knee extension 240°/s Paretic leg (-) Non-paretic leg (-) Isokinetic knee flexion 240°/s Paretic leg (+exp) Non-paretic leg (-) Isokinetic knee extension 60°/s Paretic leg (-) Non-paretic leg (-) Isokinetic knee flexion 60°/s Paretic leg (-) Non-paretic leg (-) Sensory Organization Test C1 (-) C2 (-) C3 (-) C4 (+exp) C5 (-) C6 (-)
Marin et al. (2013) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Whole-body vibration C: Sham stimulation Duration: 1-2d/wk, 12wks (17 total sessions) ; 120min/session, 10 sessions/1mo, for 3mo rehabilitation sessions	E vs C: Berg Balance Scale (-) Lower limb muscle architecture (-) Isometric knee extension (-)
Pang et al. (2013) RCT (8) Nstart=82 Nend=76 TPS=Chronic A vs 0	E: Exercise training + vertical Whole Body Vibration stimulation C: Exercise training + sham WBV Duration: 15min/d, 3d/wk, for 8wks	E vs C: Chedoke McMaster Assessment paretic leg (-) paretic foot (-) Bone turn over marker levels (CTx and BAP) (-) Modified Ashworth Scale knee (-) ankle (-) Knee peak power-both sides (-)
Chan et al. (2012) RCT (8) Nstart=32 Nend=30 TPS=Chronic A vs 0	E: Whole body vibration + regular exercise C: Sham Vibration + regular exercise Duration: single session, 30min	E vs C: Hoffman reflex unaffected side (-) affected side (-) Maximum Hoffman reflex/Maximum M response ratio unaffected side (+exp) affected side (-) Modified Ashworth Scale (+exp) Visual Analog Scale – ankle spasticity (+exp) Achilles Deep Tendon Reflex (-)

		Timed up and Go (+exp) 10-metre walk test (+exp) Cadence (-) Total body weight affected (+exp) unaffected (+exp)
Brogårdh et al. (2012) RCT (9) Nstart=31 Nend=31 TPS=Chronic A vs 0	E: Whole Body Vibration (3.75mm amplitude) C: Sham Vibration (0.2mm Amplitude) Duration: 12 x (40 – 60s) vibration/session, 2 sessions/wk for 6wk	E vs C: Stroke Impact Scale (-) Modified Ashworth Scale (-) Berg Balance Scale (-) Timed UP-and-Go (-) 6-minute walk test (-) Knee Muscle Strength isometric extension (-) isokinetic flexion (-) isokinetic extension (-) 10-meters walk test comfortable speed (-) fast speed (-)
Lau et al. (2012) RCT (8) Nstart=82 Nend=76 TPS=Chronic A + B vs B	E: Whole body vibration + dynamic leg exercises C: Dynamic leg exercises Duration: 9-15min/d, 3d/wk, for 8wks	E vs C: Berg Balance scale (-) Dynamic Postural Control (-) 6-minute walk test (-) 10-meter walk test (-) Isometric muscle strength (peak torque value) (-) Activities-specific balance confidence (-) Fall-related self-efficacy (-)
Tihanyi et al. (2010) RCT (4) Nstart=20 Nend=20 TPS=Acute A vs 0	E: Whole Body Vibration (20Hz) + Conventional Care C: Conventional Care Duration: 3x/wk, for 4wks	E vs C: Maximum isometric torque paretic (+exp) Maximum isometric torque non-paretic (+exp) Rate of torque development paretic (-) Rate of torque development non-paretic (-) Maximum eccentric torque paretic (+exp) Maximum eccentric torque non-paretic (+exp) Mechanical work during eccentric contraction paretic (-) Mechanical work during eccentric contraction non-paretic (-) Maximum isometric torque of vastus lateralis muscle during isometric in paretic (+exp) Maximum isometric torque of vastus lateralis muscle during isometric in non-paretic (-) Maximum eccentric torque of vastus lateralis muscle during isometric in paretic (+exp) Maximum eccentric torque of vastus lateralis muscle during isometric in non-paretic (-) Myoelectrical activity (EMG) (+exp)

Tihanyi et al. (2007) RCT (6) Nstart=18 Nend=16 TPS=Acute A vs 0	E: Whole-body vibration C: Sham Duration: ~18min/ single session	E vs C: Maximum Voluntary isometric and eccentric torque (No stats) rate of torque development (No stats) root-mean-squared EMG (No stats) median frequency of vastus lateralis (No stats) co-activation of knee flexors (No stats) fast isometric contraction (No stats)
Matrix Rhythm Therapy vs Bobath Therapy		
Unal et al. (2021) RCT (6) Nstart=32 Nend=30 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity + Bobath Therapy C: Bobath Therapy Duration: 60min/d, 3d/wk, for 4wks - Bobath therapy & 60min/d, 3d/wk, for 4wks - Matrix rhythm therapy	E vs C: Modified Ashworth Scale Quadriceps (+exp) Hip adductors (-) Gastrocnemius (+exp) Lower extremity total (+exp) ROM Active knee flexion (+exp) passive knee flexion (+exp) active ankle dorsiflexion (-) passive ankle dorsiflexion (+exp) active ankle plantar flexion (+exp) passive ankle plantar flexion (+exp) Static balance Single Leg Stance Test right leg (-) Single Leg Stance Test left leg (+exp) Single Leg Stance Test total (+exp) Timed Get up and go test (+exp) Gait parameters Cadence (+exp) Velocity (+exp) Left gait cycle duration (-) Right gait cycle duration (-) Left stride length (-) Right stride length (-) Left % stride length (-) Right % stride length (-) Left step length (-) Right step length (-) Left stance phase (-) Right stance phase (+exp) Left swing phase (-) Right swing phase (+exp) Left double support phase (+exp) Right double support phase (+exp) Left single support phase (+exp) Right single support phase (-) Gait cycle symmetry (-) Pelvic kinematics in gait Symmetry of pelvic tilt (-) Left pelvic tilt angle (-) right pelvic tilt angle (-) Symmetry of pelvic obliquity (-) left pelvic obliquity angle (-)

		Right pelvic obliquity angle (-) Symmetry of pelvic rotation (+exp) Left pelvic rotation angle (+exp) Right pelvic rotation angle (-)
Whole Body Vibration vs Musical Exercise Therapy		
Van Nes et al. (2006) RCT (8) Nstart=53 Nend=51 TPS=Subacute A vs B	E: Whole-body vibration + Conventional therapy C: Musical exercise therapy + Conventional therapy Duration: 30-60min/d, 3-5d Regular rehabilitation, 3min/d, 5d/wk for 6wks Whole body vibration or musical exercise therapy	E vs C: Berg Balance Scale (-) Trunk Control Test (-) Rivermead Mobility Index (-) Functional Ambulation Categories (-) Barthel Index (-) Motricity Index (-) Somatosensory Threshold (-)
Balance Training + Whole Body Vibration vs Conventional Rehabilitation		
Merkert et al. (2011) RCT (3) Nstart=66 Nend=48 TPS=Acute A + B vs C Also in Table 11 (Balance Training)	E: Vibrosphere (balance training+ whole body vibration) + conventional geriatric rehabilitation. C: Conventional geriatric rehabilitation. Duration: 15 sessions of Vibrosphere training	E vs C: Berg Balance scale (-) Functional test of Lower trunk stability (-) Tinetti Gait test (-) Timed Up and Go (-) Mini-mental State examination (-) Barthel index (-) transfer (+exp) dressing (+exp) feeding (+exp) walking (-) climbing stairs (-)
Whole Body Vibration + Treadmill Training vs Treadmill Training		
Choi et al. (2017b) RCT (8) Nstart=30 Nend=26 TPS=Chronic A + B vs C + B Also in Table 9 (Treadmill Training)	E: Whole body vibration + Treadmill training C: Exercises on platform without vibration + Treadmill training Duration: 4.5min whole body vibration/ exercises on platform without vibration + 20min treadmill training, 3x/wk, for 6wks	E vs C: 6-minute walk test (-) Walking speed (+exp) Cadence (-) Step length Affected side (+exp) Less affected side (+exp) Stride length (+exp) Single limb support Affected side (-) Less affected side (-) Double limb support (+exp)
Local Muscle Vibration vs Conventional Therapy or Sham Muscle Vibration		
Chen et al. (2023a) RCT (6) Nstart=69 Nend=64 TPS=Subacute A vs B vs 0	E1: Gastrocnemius vibration + conventional E2: Tibialis anterior vibration + conventional C: Conventional Rehab Duration: 20min/d, 5d/wk, 3wks	E1 vs C: MAS(+exp1) Clonus scale(+exp1) FAC(-) Shear modulus(+exp1) Shear wave velocity(+exp1) FMA-LE (-) mBI (-) Hmax/Mmax (-) E2 vs C: MAS(+exp2)

		Clonus scale(+exp2) FAC(+exp2) Shear modulus(-) Shear wave velocity(-) FMA-LE (-) mBI (-) Hmax/Mmax (-) E1 vs E2: MAS(-) Clonus scale(-) FAC(+exp2) Shear modulus(+exp1) Shear wave velocity(+exp1) FMA-LE (-) mBI (-) Hmax/Mmax (-)
Onal et al. (2022) RCT (5) Nstart=36 Nend=30 TPS=Chronic A vs 0	E: Plantar vibration therapy (80Hz) + conventional PT C: Conventional PT Duration: C: 60min/d, 5d/wk, 4wks conventional PT ; E: 15min vibration + 45min conventional PT/d, 3d/wk, 4wks + 60min/d, 2d/wk, 4wks conventional PT	E vs C: Overall Stability Index (+exp) Anteroposterior Stability Index (+exp) Mediolateral Stability Index (+exp) Fall risk (+exp) Berg Balance Scale (+exp) Functional Reach Test (+exp) Timed Up & Go (+exp) Trunk Impairment Scale (-) 10-Metre Walk Test (+exp)
Toscano et al. (2019) RCT (9) Nstart=22 Nend=22 TPS=Acute A vs 0	E: Repetitive Focal Muscle Vibration + Physiotherapy C: Sham Muscle Vibration + Physiotherapy Duration: 30min/d, for 3d Vibration & 60min/d for 3d - Physiotherapy	E vs C: NIH Stroke scale (+exp) Motricity index (+exp) Fugl-Meyer assessment (+exp) Modified Ashworth scale (-)
Lee et al. (2013a) RCT (7) Nstart=34 Nend=31 TPS=Chronic A vs 0	E: Standard rehabilitation programme + local vibration stimulus training C: Standard rehabilitation programme + sham local vibration stimulus training Duration: 30min/d, 5d/wk, for 6wks vibration & 80min/d, 5d/wk, for 6wks standard rehabilitation program	E vs C: Postural sway Velocity (eyes-open and eyes-closed) (+exp) Distance (eyes-open and eyes-closed) (+exp) 3-meter walk test-speed (+exp) Cadence (+exp) Paretic side step length (-) Paretic single limb support time (+exp)
Paoloni et al. (2010) RCT (8) Nstart=44 Nend=44 TPS=Chronic A vs 0	E: Segmental Muscle Vibration + Conventional Therapy C: Conventional Therapy Duration: 50min/d, 3d/wk, for 4wks general therapy & 30min, 3x/wk, for 4wks SMV	E vs C: Toe-off normal (-) Toe-off paretic (+exp) Cadence (-) Step length normal (-) Step length paretic (-) Stride length normal (-) Stride length paretic (-) Step width normal (-) Step width paretic (-) Swing velocity normal (-)

		Swing velocity paretic (-) Gait speed (-) Normal ankle angle (-) Paretic ankle angle (-) Normal knee angle (-) Paretic knee angle (-) Normal hip angle (-) Paretic hip angle (-) Ankle ROM normal (-) Ankle ROM plegic (-) Normal ankle ROM (-) Paretic ankle ROM (-) Paretic ankle plantarflexion (-) Paretic ankle dorsiflexion (+exp) EMG parameters (No stats)
Magnusson et al. (1994) RCT (3) Nstart=47 Nend=24 TPS=Chronic A vs 0	E: Vibratory stimulus applied to calf muscles or galvanic stimulation of vestibular nerves C: Conventional care Duration: 30mins	E vs C: Maintaining stance during perturbations (+exp) Sway velocity (-) Swiftness (+exp) Stiffness (+exp)
Comparing Whole-Body Vibration Intensity		
Wei et al. (2022) RCT (7) Nstart=78 Nend=72 TPS=Chronic A1 vs A2 vs 0	E1: High-frequency (26 Hz) Whole-body vibration training + Standard therapy E2: Low-frequency (13 Hz) Whole-body vibration training + Standard therapy C: Sham + standard therapy Duration: 6min/d vibration & 40min/d conventional therapy, 5d/wk, for 2wks	E1/E2 vs C: Five sit-to-stand test (+exp2, +exp1) 10-metre walking test (-) Timed-up and-go test (+exp1) Berg Balance Scale (-) E1 vs E2: Five sit-to-stand test (-) 10-metre walking test (-) Timed-up and-go test (-) Berg Balance Scale (-)
Yang et al. (2021) RCT (8) Nstart=84 Nend=80 TPS=Chronic A1 vs A2	E1: High frequency (30Hz) whole body vibration E2: Low frequency (20Hz) whole body vibration Duration: 1 session/d, 3d/wk, for 8wks	E1 vs E2: Knee extensor work non-paretic concentric (-) paretic concentric (-) non-paretic eccentric (-) paretic eccentric (+exp) Serum cross-linked N-telopeptides of type I collagen (-) 6-min walk test (-)
Liao et al. (2016) RCT (8) Nstart=84 Nend=74 TPS=Chronic A1 vs A2 vs 0	E1: Low-intensity whole-body vibration E2: High-intensity whole-body vibration C: Conventional therapy Duration: 12-18min/d, 3d/wk, for 10wks vibration sessions	E1v E2 vs C: maximal voluntary isometric contraction (paretic/nonparetic) (-) Modified Ashworth Scale (knee/ankle)(+exp) VO2 max (-) Timed Up and Go (-) 6 minute walk test (-) Mini BES Test (-) Activities-specific Balance Confidence (-) Frenchay Activity Index (-)

		Craig Hospital Inventory of Environmental Factors (-) Short-Form 12 Health Survey (-)
Whole Body Vibration vs Strength Training		
Irshad et al. (2022) RCT (7) Nstart=86 Nend=86 TPS=Chronic A vs B	E: Whole body vibration + Conventional therapy C: Squatting Training Excercises + Conventional therapy Duration: 5x/wk,6 wk WBV + 30min, 5x/wk for 6wk conventional therapy	E vs C: BBS (+exp) TUG (+exp)
Additional Comparisons from the Source Dataset		
Huang et al. (2020) RCT crossover (7) Nstart=36 Nend=36 TPS=Chronic A vs 0	E: 30 Hz Whole Body Vibration C: Non-Whole Body Vibration Duration: 5min/1session - 15 min washout	E vs C: H/M ratio (+exp) Ultrasound measurement muscle blood perfusion (+exp) muscle passive stiffness (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Sun et al. (2024b) RCT (6) Nstart=100 Nend=100 TPS=Not reported A + B vs B Primary listing: Table 53 (Acupuncture and Massage)	E: Vibrational and Heated Stone-Needle Therapy + Meridian Dredging Exercise C: Meridian Dredging Exercise Duration: E: 35-45 mins/d (15 mins of VHS + 20-30 mins of MDE), 3ds/wk, 4wks; Control: 20-30mins/d, 3ds/wk, 4wks	E vs C: MAS (+exp) FMA-UE (-) FMA-LE (+exp) Activity of daily living scale (-) Stroke-specific quality of life scale (-)
Onal et al. (2020) RCT (6) Nstart=34 Nend=30 TPS=Chronic A1 vs A2 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Vibration on sole of foot C: Contact on sole of foot with No vibration Duration: 15min single treatment	E vs C: Postural Stability Test (+exp) Anteroposterior stability test (+exp) Mediolateral stability (-) Fall risk test (+exp)
Beaulieu et al. (2017) RCT crossover (6) Nstart=15 Nend=15 TPS=Chronic A vs B vs C vs 0 Primary listing: Table 36 (Repetitive Peripheral Magnetic Stimulation)	E1: Neuromuscular Electrical Stimulation E2: Repetitive Peripheral Magnetic Stimulation E3: Muscle Tendon Vibration C: Occupational Therapy Duration: 2.5-3h/d, 1d/wk - 1wk washout, 4wks	E1/E2/E3 vs C: Ankle active motor threshold (+exp2) Intracortical inhibition (+exp2) Isometric Eversion Strength (+exp2, +exp3) Range of Motion (-) Stretch reflex of plantar flexors (-)
Marin et al. (2013) RCT (8) Nstart=20 Nend=20 TPS=Chronic A + B vs A Primary listing: Table 5 (Task-Specific Training)	E: Task-Specific Training + Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) C: Task-Specific Training + Sham Vibration Duration: 1-2d/wk, 12wks (17 total sessions WBV, 120min/session, 10 sessions/mo, for 3mo Task- specific sessions	E vs C: Muscle thickness (-) Berg Balance Scale (-) Maximal isometric voluntary contraction of knee extensor (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving motor recovery.	3	Guo et al. 2015; Lee 2015e; Silva et al. 2014
1a	There is conflicting evidence about the effect of Local Muscle Vibration when compared to Conventional Therapy or Sham Muscle Vibration for improving motor recovery.	2	Chen et al. 2023a; Toscano et al. 2019
1b	Gastrocnemius vibration with conventional may not have a difference in efficacy when compared to Tibialis anterior vibration with conventional for improving motor recovery.	1	Chen et al. 2023a
1b	There is conflicting evidence about the effect of Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise when compared to Meridian Dredging Exercise for improving motor recovery.	1	Sun et al. 2024b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving biomechanical gait measures.	3	Sade et al. 2020; Lee 2019e; Chan et al. 2012
1b	Matrix Rhythm Therapy may not have a difference in efficacy when compared to Bobath Therapy for improving biomechanical gait measures.	1	Unal et al. 2021
1b	Whole Body Vibration with Treadmill Training may produce greater improvements in biomechanical gait measures than Treadmill Training.	1	Choi et al. 2017b
1a	Local Muscle Vibration may not have a difference in efficacy when compared to Conventional Therapy or Sham Muscle Vibration for improving biomechanical gait measures.	3	Lee et al. 2013a; Paoloni et al. 2010; Magnusson et al. 1994

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving biomechanical balance measures.	3	Lee 2019e; Tankisheva et al. 2014; Lau et al. 2012
2	Local Muscle Vibration may produce greater improvements in biomechanical balance measures than Conventional Therapy or Sham Muscle Vibration.	1	Onal et al. 2022

1b	Vibration on sole of foot may produce greater improvements in biomechanical balance measures than Contact on sole of foot with No vibration.	1	Onal et al. 2020

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving muscle strength.	7	Silva et al. 2014; Tankisheva et al. 2014; Marin et al. 2013; Brogårdh et al. 2012; Lau et al. 2012; Tihanyi et al. 2010; Tihanyi et al. 2007
1b	Whole Body Vibration may not have a difference in efficacy when compared to Musical Exercise Therapy for improving muscle strength.	1	Van Nes et al. 2006
1b	Local Muscle Vibration may produce greater improvements in muscle strength than Conventional Therapy or Sham Muscle Vibration.	1	Toscano et al. 2019
1b	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving muscle strength.	1	Liao et al. 2016
1b	Neuromuscular Electrical Stimulation may not have a difference in efficacy when compared to Occupational Therapy for improving muscle strength.	1	Beaulieu et al. 2017
1b	Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) may not have a difference in efficacy when compared to Task-Specific Training with Sham Vibration for improving muscle strength.	1	Marin et al. 2013

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving spasticity.	6	Sales et al. 2020; Alp et al. 2018; Tankisheva et al. 2014; Pang et al. 2013; Chan et al. 2012; Brogårdh et al. 2012
1b	Matrix Rhythm Therapy may produce greater improvements in spasticity than Bobath Therapy.	1	Unal et al. 2021
1a	Local Muscle Vibration may produce greater improvements in spasticity than Conventional Therapy or Sham Muscle Vibration.	2	Chen et al. 2023a; Toscano et al. 2019
1b	Gastrocnemius vibration with conventional may not have a difference in efficacy when compared to Tibialis anterior vibration with conventional for improving spasticity.	1	Chen et al. 2023a
1b	Comparing Whole-Body Vibration Intensity may produce greater improvements in spasticity than Sham with therapy.	1	Liao et al. 2016
1b	Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise may produce greater improvements in spasticity than Meridian Dredging Exercise.	1	Sun et al. 2024b
1b	30 Hz Whole Body Vibration may not have a difference in efficacy when compared to Non-Whole Body Vibration for improving spasticity.	1	Huang et al. 2020

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Whole Body Vibration may produce greater improvements in range of motion than Sham Stimulation, No Stimulation, or Conventional Care.	1	Xu et al. 2024
1b	Matrix Rhythm Therapy may produce greater improvements in range of motion than Bobath Therapy.	1	Unal et al. 2021
1b	Local Muscle Vibration may not have a difference in efficacy when compared to Conventional Therapy or Sham Muscle Vibration for improving range of motion.	1	Paoloni et al. 2010

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving neurophysiological measures.	6	Duray et al. 2023; Sales et al. 2020; Silva et al. 2014; Chan et al. 2012; Tihanyi et al. 2010; Tihanyi et al. 2007
1a	Local Muscle Vibration may not have a difference in efficacy when compared to Conventional Therapy or Sham Muscle Vibration for improving neurophysiological measures.	2	Chen et al. 2023a; Paoloni et al. 2010
1b	Gastrocnemius vibration with conventional may not have a difference in efficacy when compared to Tibialis anterior vibration with conventional for improving neurophysiological measures.	1	Chen et al. 2023a
1b	High frequency (30Hz) whole body vibration may not have a difference in efficacy when compared to Low frequency (20Hz) whole body vibration for improving neurophysiological measures.	1	Yang et al. 2021
1b	Neuromuscular Electrical Stimulation may produce greater improvements in neurophysiological measures than Occupational Therapy.	1	Beaulieu et al. 2017
1b	30 Hz Whole Body Vibration may produce greater improvements in neurophysiological measures than Non-Whole Body Vibration.	1	Huang et al. 2020

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving aerobic measures.	1	Duray et al. 2023
1b	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving aerobic measures.	1	Liao et al. 2016

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Whole Body Vibration may not have a difference in efficacy when compared to Musical Exercise Therapy for improving sensory and proprioceptive function.	1	Van Nes et al. 2006

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving activities of daily living.	2	Alp et al. 2018; Lee et al. 2017c
1b	Whole Body Vibration may not have a difference in efficacy when compared to Musical Exercise Therapy for improving activities of daily living.	1	Van Nes et al. 2006
2	There is conflicting evidence about the effect of Balance Training with Whole Body Vibration when compared to Conventional Rehabilitation for improving activities of daily living.	1	Merkert et al. 2011
1b	Local Muscle Vibration may not have a difference in efficacy when compared to Conventional Therapy or Sham Muscle Vibration for improving activities of daily living.	1	Chen et al. 2023a
1b	Gastrocnemius vibration with conventional may not have a difference in efficacy when compared to Tibialis anterior vibration with conventional for improving activities of daily living.	1	Chen et al. 2023a

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving gait speed.	8	Burq et al. 2021b; Sade et al. 2020; Lee 2019e; Alp et al. 2018; Guo et al. 2015; Chan et al. 2012; Brogårdh et al. 2012; Lau et al. 2012
1b	Matrix Rhythm Therapy may produce greater improvements in gait speed than Bobath Therapy.	1	Unal et al. 2021
1b	Whole Body Vibration with Treadmill Training may produce greater improvements in gait speed than Treadmill Training.	1	Choi et al. 2017b
1a	Local Muscle Vibration may produce greater improvements in gait speed than Conventional Therapy or Sham Muscle Vibration.	5	Chen et al. 2023a; Onal et al. 2022; Lee et al. 2013a; Paoloni et al. 2010; Magnusson et al. 1994
1b	Gastrocnemius vibration with conventional may produce greater improvements in gait speed than Tibialis anterior vibration with conventional.	1	Chen et al. 2023a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving gait endurance.	5	Duray et al. 2023; Silva et al. 2016; Silva et al. 2014; Brogårdh et al. 2012; Lau et al. 2012
1b	Whole Body Vibration with Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving gait endurance.	1	Choi et al. 2017b
1b	High frequency (30Hz) whole body vibration may not have a difference in efficacy when compared to Low frequency (20Hz) whole body vibration for improving gait endurance.	1	Yang et al. 2021
1b	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving gait endurance.	1	Liao et al. 2016

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving functional mobility.	8	Ahmed Burq et al. 2021; Burq et al. 2021b; Sade et al. 2020; Lee et al. 2017c; Lee 2015e; Silva et al. 2014; Chan et al. 2012; Brogårdh et al. 2012
1b	Matrix Rhythm Therapy may produce greater improvements in functional mobility than Bobath Therapy.	1	Unal et al. 2021
1b	Whole Body Vibration may not have a difference in efficacy when compared to Musical Exercise Therapy for improving functional mobility.	1	Van Nes et al. 2006
2	Balance Training with Whole Body Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving functional mobility.	1	Merkert et al. 2011
1b	Local Muscle Vibration may produce greater improvements in functional mobility than Conventional Therapy or Sham Muscle Vibration.	2	Chen et al. 2023a; Onal et al. 2022
1b	There is conflicting evidence about the effect of Gastrocnemius vibration with conventional when compared to Tibialis anterior vibration with conventional for improving functional mobility.	1	Chen et al. 2023a
1b	There is conflicting evidence about the effect of High-frequency (26 Hz) Whole-body vibration training with therapy when compared to Low-frequency (13 Hz) Whole-body vibration training with therapy for improving functional mobility.	1	Wei et al. 2022
1a	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving functional mobility.	2	Wei et al. 2022; Liao et al. 2016
1b	Whole Body Vibration may produce greater improvements in functional mobility than Strength Training.	1	Irshad et al. 2022

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving balance.	7	Xu et al. 2024; Sade et al. 2020; Lee et al. 2017c; Lee 2015e; Marin et al. 2013; Brogårdh et al. 2012; Lau et al. 2012
1b	Matrix Rhythm Therapy may produce greater improvements in balance than Bobath Therapy.	1	Unal et al. 2021
1b	Whole Body Vibration may not have a difference in efficacy when compared to Musical Exercise Therapy for improving balance.	1	Van Nes et al. 2006
2	Balance Training with Whole Body Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving balance.	1	Merkert et al. 2011
2	Local Muscle Vibration may produce greater improvements in balance than Conventional Therapy or Sham Muscle Vibration.	1	Onal et al. 2022
1b	High-frequency (26 Hz) Whole-body vibration training with therapy may not have a difference in efficacy when compared to Low-frequency (13 Hz) Whole-body vibration training with therapy for improving balance.	1	Wei et al. 2022

1b	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving balance.	1	Wei et al. 2022
1b	Whole Body Vibration may produce greater improvements in balance than Strength Training.	1	Irshad et al. 2022
1b	Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) may not have a difference in efficacy when compared to Task-Specific Training with Sham Vibration for improving balance.	1	Marin et al. 2013

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving falls and fear of falling.	1	Lau et al. 2012
2	Local Muscle Vibration may produce greater improvements in falls and fear of falling than Conventional Therapy or Sham Muscle Vibration.	1	Onal et al. 2022
1b	Comparing Whole-Body Vibration Intensity may not have a difference in efficacy when compared to Sham with therapy for improving falls and fear of falling.	1	Liao et al. 2016
1b	Vibration on sole of foot may produce greater improvements in falls and fear of falling than Contact on sole of foot with No vibration.	1	Onal et al. 2020

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Whole Body Vibration may not have a difference in efficacy when compared to Sham Stimulation, No Stimulation, or Conventional Care for improving quality of life.	1	Brogårdh et al. 2012
1b	Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise may not have a difference in efficacy when compared to Meridian Dredging Exercise for improving quality of life.	1	Sun et al. 2024b

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Balance Training with Whole Body Vibration may not have a difference in efficacy when compared to Conventional Rehabilitation for improving cognition.	1	Merkert et al. 2011

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise may not have a difference in efficacy when compared to Meridian Dredging Exercise for improving upper extremity function.	1	Sun et al. 2024b

Key Points

- Whole Body Vibration may be beneficial for improving range of motion, but not motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Sham Stimulation, No Stimulation, or Conventional Care.
- Matrix Rhythm Therapy may be beneficial for improving spasticity, range of motion, gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Bobath Therapy.
- Whole Body Vibration may not be beneficial for improving muscle strength, sensory and proprioceptive function, activities of daily living, functional mobility, and balance after stroke when compared to Musical Exercise Therapy.
- Balance Training with Whole Body Vibration may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding activities of daily living.
- Whole Body Vibration with Treadmill Training may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Treadmill Training.
- Local Muscle Vibration may be beneficial for improving biomechanical balance measures, muscle strength, spasticity, gait speed, functional mobility, balance, and falls and fear of falling, but not biomechanical gait measures, range of motion, neurophysiological measures, and activities of daily living, after stroke when compared to Conventional Therapy or Sham Muscle Vibration; the literature is mixed regarding motor recovery.
- Gastrocnemius vibration with conventional may be beneficial for improving gait speed, but not motor recovery, spasticity, neurophysiological measures, and activities of daily living, after stroke when compared to Tibialis anterior vibration with conventional; the literature is mixed regarding functional mobility.
- High-frequency (26 Hz) Whole-body vibration training with therapy may not be beneficial for improving balance after stroke when compared to Low-frequency (13 Hz) Whole-body vibration training with therapy; the literature is mixed regarding functional mobility.
- Comparing Whole-Body Vibration Intensity may be beneficial for improving spasticity, but not functional mobility, balance, muscle strength, aerobic measures, gait endurance, and falls and fear of falling, after stroke when compared to Sham with therapy.
- High frequency (30Hz) whole body vibration may not be beneficial for improving neurophysiological measures and gait endurance after stroke when compared to Low frequency (20Hz) whole body vibration.
- Whole Body Vibration may be beneficial for improving functional mobility and balance after stroke when compared to Strength Training.
- Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise may be beneficial for improving spasticity, but not quality of life, after stroke when compared to Meridian Dredging Exercise; the literature is mixed regarding motor recovery.
- Vibration on sole of foot may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Contact on sole of foot with No vibration.
- Neuromuscular Electrical Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to Occupational Therapy.
- Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) may not be beneficial for improving muscle strength and balance after stroke when compared to Task-Specific Training with Sham Vibration.
- 30 Hz Whole Body Vibration may be beneficial for improving neurophysiological measures, but not spasticity, after stroke when compared to Non-Whole Body Vibration.

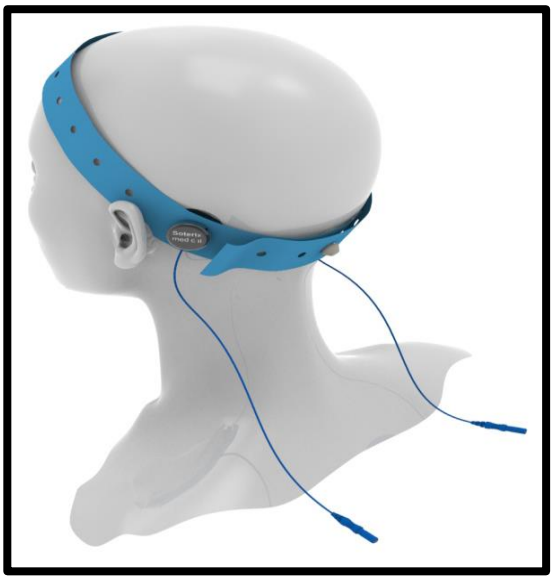
Summary of Key Points: Muscle Vibration

Intervention	Control(s)	Function domain(s)	Effect

Whole Body Vibration	Sham Stimulation, No Stimulation, or Conventional Care	Range of motion	+
Whole Body Vibration	Sham Stimulation, No Stimulation, or Conventional Care	Motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Matrix Rhythm Therapy	Bobath Therapy	Spasticity, range of motion, gait speed, functional mobility, balance	+
Matrix Rhythm Therapy	Bobath Therapy	Biomechanical gait measures	–
Whole Body Vibration	Musical Exercise Therapy	Muscle strength, sensory and proprioceptive function, activities of daily living, functional mobility, balance	–
Balance Training with Whole Body Vibration	Conventional Rehabilitation	Functional mobility, balance	–
Balance Training with Whole Body Vibration	Conventional Rehabilitation	Activities of daily living	=
Whole Body Vibration with Treadmill Training	Treadmill Training	Biomechanical gait measures, gait speed	+
Whole Body Vibration with Treadmill Training	Treadmill Training	Gait endurance	–
Local Muscle Vibration	Conventional Therapy or Sham Muscle Vibration	Biomechanical balance measures, muscle strength, spasticity, gait speed, functional mobility, balance, falls and fear of falling	+
Local Muscle Vibration	Conventional Therapy or Sham Muscle Vibration	Biomechanical gait measures, range of motion, neurophysiological measures, activities of daily living	–
Local Muscle Vibration	Conventional Therapy or Sham Muscle Vibration	Motor recovery	=
Gastrocnemius vibration with conventional	Tibialis anterior vibration with conventional	Gait speed	+
Gastrocnemius vibration with conventional	Tibialis anterior vibration with conventional	Motor recovery, spasticity, neurophysiological measures, activities of daily living	–
Gastrocnemius vibration with conventional	Tibialis anterior vibration with conventional	Functional mobility	=
High-frequency (26 Hz) Whole-body vibration training with therapy	Low-frequency (13 Hz) Whole-body vibration training with therapy	Balance	–
High-frequency (26 Hz) Whole-body vibration training with therapy	Low-frequency (13 Hz) Whole-body vibration training with therapy	Functional mobility	=
Comparing Whole-Body Vibration Intensity	Sham with therapy	Functional mobility, balance, muscle strength, aerobic measures, gait endurance, falls and fear of falling	–
High frequency (30Hz) whole body vibration	Low frequency (20Hz) whole body vibration	Neurophysiological measures, gait endurance	–

Comparing Whole-Body Vibration Intensity	Sham with therapy	Spasticity	+
Comparing Whole-Body Vibration Intensity	Sham with therapy	Muscle strength, aerobic measures, gait endurance, functional mobility, falls and fear of falling	–
Whole Body Vibration	Strength Training	Functional mobility, balance	+
Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise	Meridian Dredging Exercise	Spasticity	+
Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise	Meridian Dredging Exercise	Quality of life	–
Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise	Meridian Dredging Exercise	Motor recovery	=
Vibration on sole of foot	Contact on sole of foot with No vibration	Biomechanical balance measures, falls and fear of falling	+
Neuromuscular Electrical Stimulation	Occupational Therapy	Neurophysiological measures	+
Neuromuscular Electrical Stimulation	Occupational Therapy	Muscle strength	–
Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time)	Task-Specific Training with Sham Vibration	Muscle strength, balance	–
30 Hz Whole Body Vibration	Non-Whole Body Vibration	Spasticity	–
30 Hz Whole Body Vibration	Non-Whole Body Vibration	Neurophysiological measures	+

Additional Afferent and Peripheral Stimulation Methods



Adopted from: https://soterixmedical.com/research/vestibular

Additional sensory stimulation methods evaluated for motor rehabilitation included short wave therapy, repetitive peripheral magnetic stimulation, intermittent pneumatic compression and other sensory stimulation techniques.

Short-wave therapy is a non-invasive intervention in which electromagnetic radiation is applied to the region of the body typically at 27.12MHz in a continuous or pulse fashion (Wang et al., 2017a). In repetitive peripheral magnetic stimulation coils are placed over paralysed muscles that generates a magnetic field that passes through the skin, and in turn can depolarize neurons to allow a muscle contraction (Momosaki et al., 2017). Repetitive peripheral magnetic stimulation can stimulate painlessly deep muscle structures that are out of range of traditional electrical stimulation (Momosaki et al., 2017). Intermittent pneumatic compression is the application of inflatable splints where pressure is applied intermittently to increase sensory input (Cambier et al., 2003).

A total of eleven RCTs were found that evaluated additional afferent and peripheral stimulation methods for lower extremity motor rehabilitation. Two RCTs compared Tactile Sensory Stimulation with Conventional Care (Goliwas et al. 2015; Lynch et al. 2007). One RCT compared Afferent Electrical Stimulation with Mirror Therapy with Sham (Lee & Lee 2019b). One RCT compared Intermittent Pneumatic Compression with Conventional Therapy (Wei et al. 2021). One RCT compared Laser Photo-biomodulation with Sham (Casalechi et al. 2020). One RCT compared Sensory Training with Trunk Training with Trunk Training Alone (Karaca et al. 2024). One RCT compared Sensory Training with Conventional Therapy (Evers et al. 2024). One RCT compared Instructed Sensory Training with TENS with Uninstructed Sensory Training with TENS (Ofek et al. 2023). One RCT compared Transcutaneous Auricular Vagus Nerve Stimulation with or without tDCS with Conventional Therapy (Wang et al. 2024a).

The methodological details and results of all eleven RCTs are presented in Table 32.

Table 32. RCTs Evaluating Additional Afferent and Peripheral Stimulation Methods for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Tactile Sensory Stimulation vs Conventional Care		
Goliwas et al. (2015) RCT (6) Nstart=27 Nend=20 TPS=Chronic A vs 0	E: Sensorimotor Foot Stimulation Training C: Conventional Care Duration: 45min/d, 5d/wk, for 5wks	E vs C: Weight Distribution Eyes Open (+exp) Eyes Closed (-)
Lynch et al. (2007) RCT (6) Nstart=21 Nend=21 TPS=Subacute A vs B	E: Sensory Training Program + standard PT C: Relaxation Control + standard PT Duration: 30min/d, 5d/wk, for 2wks Sensory retraining/relaxation sessions & 90-120min/session 2wks standard PT	E vs C: Semmes-Weinstein monofilaments First Metatarsal (+exp) Heel (-) Lateral Border of Foot (-) Big Toe (-) Little Toe (-) Medial Border f Foot (-) Fifth Metatarsal (-) Distal Proprioception test (-) Berg balance scale (-) 10-meter timed gait (-) Use of walking aid (-) Timed Iowa Level of Assistance Scale (-)
Afferent Electrical Stimulation with Mirror Therapy vs Sham		
Lee & Lee (2019b) RCT (7) Nstart=30 Nend=30 TPS=Chronic	E: Electrical stimulation + mirror therapy C: Sham electrical stimulation + sham mirror therapy Duration: 60min/d, 5d/wk, for 4wks	E vs C: Muscle strength (+exp) Modified ashworth scale (-) Berg Balance Scale (+exp) Gait Velocity (+exp)

A + B vs 0 Also in Table 19 (Mirror Therapy)		Cadence (-) Step length (+exp) Stride length (+exp) Single Support time (-) Double Support time (-)
Intermittent Pneumatic Compression vs Conventional Therapy		
Wei et al. (2021) RCT (6) Nstart=74 Nend=72 TPS=Acute A vs 0	E: Intermittent pneumatic compression + Conventional therapy C: Conventional therapy Duration: 30-45min/d for 14d Conventional therapy; 60min/d, for 14d Intermittent pneumatic compression	E vs C: Fugl-Meyer Motor Function Scores (+exp) Barthel Index (+exp)
Laser Photo-biomodulation vs Sham		
Casalechi et al. (2020) RCT crossover (10) Nstart=10 Nend=10 TPS=Chronic A1 vs A2 vs A3 vs 0	E1: Photobiomodulation Therapy (50 Jules) E2: Photobiomodulation Therapy (30 Jules) E3: Photobiomodulation Therapy (10 Jules) C: Sham photobiomodulation Therapy (0 Jules) Duration: single session - 1- week washout	E1/E2/E3 vs C: 6-Minute Walk Test (+exp2) Timed up and Go Test (+exp2)
Sensory Training with Trunk Training vs Trunk Training Alone		
Karaca et al. (2024) RCT (5) Nstart=27 Nend=23 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning); Table 4 (Trunk Training)	E: Sensory training + Trunk-centred Bobath exercise C: Trunk-centred Bobath exercise Duration: 40 mins/d, 3ds/wk, 8wks	E vs C: TIS static sitting balance (-) dynamic sitting balance (-) coordination (-) total (-) Trunk reposition error (+exp) Berg balance scale (-) 2 minute walk test (-) Barthel index (-)
Sensory Training vs Conventional Therapy		
Evers et al. (2024) Feasibility/pilot RCT (5) Nstart=20 Nend=19 TPS=Not reported A vs 0	E: Neuroathletic training + conventional rehab C: Conventional rehab Duration: 15min/d, ~3-5/wk, 4 wks	E vs C: BBS (-)
Instructed vs Uninstructed Sensory Training with TENS		
Ofek et al. (2023) RCT (7) Nstart=64 Nend=47 TPS=Chronic A + B vs C + B Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E: Instructed sensory training + TENS C: Uninstructed sensory training + TENS Duration: 65min/d(45min sensory training, 20min TENS), 2d/wk, 10-12wks	E vs C: TUG(-) Semmeswienstien monofilament(-) LEPT(-) ABC(-) MINIBEST(-) 2MW(-) SIS(-)

Transcusaneous Auricular Vagus Nerve Stimulation with or without tDCS vs Conventional Therapy		
Wang et al. (2024a) RCT (8) Nstart=169 Nend=169 TPS=Acute A + B vs B vs A vs C Also in Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: taVNS + dual tDCS , E2: dual tDCS, E3: taVNS C: Neurodevelopmental Bobath supplemented with Occupational Therapy Duration: 30min/d, 5d/wk, 4wk taVNS/tDCS + 45min/d, 5d/wk for 4wks Bobath + OT	E1/E2/E3 vs C: FMA-LL (+exp1) TUG (+exp1) MBI (+exp1) Berg Balance Scale (+exp1) gait parameters gait cycle (+exp1) swing phase time (+exp1) stride length (+exp1) ankle dorsiflexion angle (+exp1) stride height (+exp1) stride speed (+exp1)
Additional Comparisons from the Source Dataset		
Aries et al. (2021) RCT (6) Nstart=34 Nend=32 TPS=Subacute A + B vs X	E: Tactile stimulation and mobilization + task specific gait training C: task specific gait training + unlimited textured insole wearing Duration: E: 30min/session TSGT + 30-60min/session MTS over 6wks, C: 30min/session for 6 wks, TSGT	E vs C: Ankle range of motion (No stats) Motricity Index (No stats) Functional Ambulation Category (No stats) 5-m walk test (No stats) modified Rivermead Mobility Index (No stats)
Cha et al. (2019) RCT (8) Nstart=26 Nend=26 TPS=Chronic A1 vs A2	E: NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode C: Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode Duration: 30min rehabilitation + 15min COP, 3x/wk, 6wks	E vs C: Timed Up and Go (-) COP -pathway velocity (+exp) pathway length (+exp) Limit of stability using Biodex Balance System (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Intermittent Pneumatic Compression may produce greater improvements in motor recovery than Conventional Therapy.	1	Wei et al. 2021
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in motor recovery than Conventional Therapy.	1	Wang et al. 2024a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tactile Sensory Stimulation may not have a difference in efficacy when compared to Conventional Care for improving biomechanical gait measures.	1	Lynch et al. 2007
1b	Afferent Electrical Stimulation with Mirror Therapy may not have a difference in efficacy when compared to Sham for improving biomechanical gait measures.	1	Lee & Lee 2019b
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Wang et al. 2024a

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Tactile Sensory Stimulation when compared to Conventional Care for improving biomechanical balance measures.	1	Goliwas et al. 2015
1b	NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode may not have a difference in efficacy when compared to Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode for improving biomechanical balance measures.	1	Cha et al. 2019

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Afferent Electrical Stimulation with Mirror Therapy may produce greater improvements in muscle strength than Sham.	1	Lee & Lee 2019b
1b	Tactile stimulation and mobilization + task specific gait training may not have a difference in efficacy when compared to task specific gait training + unlimited textured insole wearing for improving muscle strength.	1	Aries et al. 2021

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Afferent Electrical Stimulation with Mirror Therapy may not have a difference in efficacy when compared to Sham for improving spasticity.	1	Lee & Lee 2019b

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in range of motion than Conventional Therapy.	1	Wang et al. 2024a
1b	Tactile stimulation and mobilization + task specific gait training may not have a difference in efficacy when compared to task specific gait training + unlimited textured insole wearing for improving range of motion.	1	Aries et al. 2021

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tactile Sensory Stimulation may not have a difference in efficacy when compared to Conventional Care for improving sensory and proprioceptive function.	1	Lynch et al. 2007
2	Sensory Training with Trunk Training may produce greater improvements in sensory and proprioceptive function than Trunk Training Alone.	1	Karaca et al. 2024
1b	Instructed Sensory Training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation for improving sensory and proprioceptive function.	1	Ofek et al. 2023

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Intermittent Pneumatic Compression may produce greater improvements in activities of daily living than Conventional Therapy.	1	Wei et al. 2021
2	Sensory Training with Trunk Training may not have a difference in efficacy when compared to Trunk Training Alone for improving activities of daily living.	1	Karaca et al. 2024
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in activities of daily living than Conventional Therapy.	1	Wang et al. 2024a

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Afferent Electrical Stimulation with Mirror Therapy may produce greater improvements in gait speed than Sham.	1	Lee & Lee 2019b
1b	Tactile stimulation and mobilization + task specific gait training may not have a difference in efficacy when compared to task specific gait training + unlimited textured insole wearing for improving gait speed.	1	Aries et al. 2021
1b	NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode may produce greater improvements in gait speed than Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode.	1	Cha et al. 2019

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Laser Photo-biomodulation may produce greater improvements in gait endurance than Sham.	1	Casalechi et al. 2020
2	Sensory Training with Trunk Training may not have a difference in efficacy when compared to Trunk Training Alone for improving gait endurance.	1	Karaca et al. 2024

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tactile Sensory Stimulation may not have a difference in efficacy when compared to Conventional Care for improving functional mobility.	1	Lynch et al. 2007
1b	Laser Photo-biomodulation may produce greater improvements in functional mobility than Sham.	1	Casalechi et al. 2020
1b	Instructed Sensory Training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation for improving functional mobility.	1	Ofek et al. 2023
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in functional mobility than Conventional Therapy.	1	Wang et al. 2024a
1b	Tactile stimulation and mobilization + task specific gait training may not have a difference in efficacy when compared to task specific gait training + unlimited textured insole wearing for improving functional mobility.	1	Aries et al. 2021
1b	NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode may not have a difference in efficacy when compared to Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode for improving functional mobility.	1	Cha et al. 2019

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tactile Sensory Stimulation may not have a difference in efficacy when compared to Conventional Care for improving balance.	1	Lynch et al. 2007
1b	Afferent Electrical Stimulation with Mirror Therapy may produce greater improvements in balance than Sham.	1	Lee & Lee 2019b
2	Sensory Training with Trunk Training may not have a difference in efficacy when compared to Trunk Training Alone for improving balance.	1	Karaca et al. 2024
2	Sensory Training may not have a difference in efficacy when compared to Conventional Therapy for improving balance.	1	Evers et al. 2024
1b	Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may produce greater improvements in balance than Conventional Therapy.	1	Wang et al. 2024a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Instructed Sensory Training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation for improving falls and fear of falling.	1	Ofek et al. 2023

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Instructed Sensory Training with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation for improving quality of life.	1	Ofek et al. 2023

Key Points

- Tactile Sensory Stimulation may not be beneficial for improving biomechanical gait measures, sensory and proprioceptive function, functional mobility, and balance after stroke when compared to Conventional Care; the literature is mixed regarding biomechanical balance measures.
- Afferent Electrical Stimulation with Mirror Therapy may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Sham.
- Intermittent Pneumatic Compression may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy.
- Laser Photo-biomodulation may be beneficial for improving gait endurance and functional mobility after stroke when compared to Sham.
- Sensory Training with Trunk Training may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk Training Alone.
- Sensory Training may not be beneficial for improving balance after stroke when compared to Conventional Therapy.
- Instructed Sensory Training with transcutaneous electrical nerve stimulation may not be beneficial for improving sensory and proprioceptive function, functional mobility, falls and fear of falling, and quality of life after stroke when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation.
- Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, and balance after stroke when compared to Conventional Therapy.
- Tactile stimulation and mobilization + task specific gait training may not be beneficial for improving muscle strength, range of motion, gait speed, and functional mobility after stroke when compared to task specific gait training + unlimited textured insole wearing.
- NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode may be beneficial for improving gait speed, but not biomechanical balance measures and functional mobility, after stroke when compared to Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode.

Summary of Key Points: Additional Afferent and Peripheral Stimulation Methods

Intervention	Control(s)	Function domain(s)	Effect
Tactile Sensory Stimulation	Conventional Care	Biomechanical gait measures, sensory and proprioceptive function, functional mobility, balance	–
Tactile Sensory Stimulation	Conventional Care	Biomechanical balance measures	=
Afferent Electrical Stimulation with Mirror Therapy	Sham	Muscle strength, gait speed, balance	+
Afferent Electrical Stimulation with Mirror Therapy	Sham	Biomechanical gait measures, spasticity	–

Intermittent Pneumatic Compression	Conventional Therapy	Motor recovery, activities of daily living	+
Laser Photo-biomodulation	Sham	Gait endurance, functional mobility	+
Sensory Training with Trunk Training	Trunk Training Alone	Sensory and proprioceptive function	+
Sensory Training with Trunk Training	Trunk Training Alone	Activities of daily living, gait endurance, balance	–
Sensory Training	Conventional Therapy	Balance	–
Instructed Sensory Training with transcutaneous electrical nerve stimulation	Uninstructed Sensory Training with transcutaneous electrical nerve stimulation	Sensory and proprioceptive function, functional mobility, falls and fear of falling, quality of life	–
Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation	Conventional Therapy	Motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, balance	+
Tactile stimulation and mobilization + task specific gait training	task specific gait training + unlimited textured insole wearing	Muscle strength, range of motion, gait speed, functional mobility	–
NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode	Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode	Gait speed	+
NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode	Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode	Biomechanical balance measures, functional mobility	–

Remote Ischemic Conditioning



Adopted from: https://unsplash.com/

Remote ischemic conditioning (RIC) is a procedure that aims to trigger the body's natural responses against ischemic injury after a stroke and reduce the severity of the damage from the injury (Murray & Lopez, 1997). RIC is accomplished by multiple temporary reductions of blood flow to an upper or lower extremity vascular bed by chemical, mechanical or electrical stimulus (Heusch et al., 2015). After the induced ischemic procedure, physiological and homeostatic processes will upregulate natural protective factors and it is believed that this may benefit the initial injury site. It is sometimes referred to as a synthetic form of aerobic exercise as the cardio-protective benefits from both interventions share some overlap. RIC remains a controversial intervention with some benefits being observed in animal studies but little to no clinical evidence in large human trials.

A total of two RCTs were found that evaluated remote ischemic conditioning for lower extremity motor rehabilitation. Two RCTs compared Remote Ischemic Conditioning with Sham or Conventional Therapy (Durand et al. 2019; Hyngstrom et al. 2018).

The methodological details and results of all two RCTs are presented in Table 33.

Table 33. RCTs Evaluating Remote Ischemic Conditioning for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Remote Ischemic Conditioning vs Sham or Conventional Therapy		
Durand et al. (2019) RCT (6) Nstart=22 Nend=20 TPS=Chronic A vs 0	E: Ischemic Conditioning Training (225 mmHg) C: Sham Duration: 30min/d, 3-4d/wk, for 2wks (7 session totally)	E vs C: 10-Meter Walk Test: Self-selected walking speed (+exp) Fast walking speed (-) Knee extensor Maximum Voluntary Contractions: MVC (-) fatigue task duration (+exp) Reduction in MVC Post Fatigue (-) Resting Twitch Torque (-)
Hyngstrom et al. (2018) RCT crossover (7) Nstart=10 Nend=10 TPS=Chronic A vs 0	E: Ischemic conditioning (225mmHg) C: Sham ischemic conditioning (25mmHg) Duration: Single session: 5min of compression then 5min of rest, repeated 5 times	E vs C: Knee extensor maximum voluntary contractions (MVCs) (+exp) EMG magnitude (No stats)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Remote Ischemic Conditioning may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving muscle strength.	2	Durand et al. 2019; Hyngstrom et al. 2018

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Remote Ischemic Conditioning may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving neurophysiological measures.	1	Hyngstrom et al. 2018

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Remote Ischemic Conditioning when compared to Sham or Conventional Therapy for improving gait speed.	1	Durand et al. 2019

Other Associated Outcome Measures

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Remote Ischemic Conditioning may produce greater improvements in fatigue and sleep than Sham or Conventional Therapy.	1	Durand et al. 2019

Key Points

- Remote Ischemic Conditioning may not be beneficial for improving muscle strength and neurophysiological measures after stroke when compared to Sham or Conventional Therapy; the literature is mixed regarding gait speed.

Summary of Key Points: Remote Ischemic Conditioning

Intervention	Control(s)	Function domain(s)	Effect
Remote Ischemic Conditioning	Sham or Conventional Therapy	Muscle strength, neurophysiological measures	−
Remote Ischemic Conditioning	Sham or Conventional Therapy	Gait speed	=

Thermal Stimulation and Cryotherapy



Adopted from: https://premierhealthmn.com/services/benefits-of-ice-heat-therapy/

Thermal stimulation is a neurologic rehabilitation strategy used to facilitate sensorimotor function by applying thermal stimulation in a noxious or innocuous form on sensory receptors in the body (Lin et al., 2017). Thermal gradations can be distinguished by three types of receptors: cold, warmth, and pain receptors (Tai et al., 2014). Thermal stimulation stimulates innocuous or noxious receptors, which send the signals to several areas in the somatosensory cortex. Imaging studies show that innocuous and noxious stimulation may activate different regions of the brain: whereas innocuous stimulation seems to activate the primary and secondary somatosensory cortex, thalamus, and insula, noxious stimulation induces larger sensory and motor-cortical activations in the brain (Tai et al., 2014). Innocuous thermal stimulation has also been found to induce greater corticomotor excitability, and as such has been suggested to influence cortical reorganization and neuroplasticity (Lin et al., 2017). Cryotherapy decreases tissue temperature and can be used to reduce inflammation, pain and muscle spasms (Costello & Donnelly, 2010). Applications may include ice, water immersion and cooling pads (Costello & Donnelly, 2010).

A total of nine RCTs were found that evaluated thermal stimulation and cryotherapy for lower extremity motor rehabilitation. Six RCTs compared Thermal Stimulation with Sham or No Stimulation (Alwhaibi et al. 2021; Matsumoto et al. 2014; Hsu et al. 2013; Liang et al. 2012; Martins et al. 2012; Chen et al. 2011). One RCT compared Cryotherapy with Sham (Alcantara et al. 2019). One RCT compared Cryotherapy + Physical Therapy with Ankle foot Orthosis with Physical Therapy with Ankle foot Orthosis (Elnassag et al. 2019). One RCT compared Ankle Proprioceptive Training with Thermotherapy with Conventional Therapy (Kim et al. 2022d).

In addition, one RCT in which thermal stimulation and cryotherapy formed part of a combined or comparative intervention are cross-referenced at the end of Table 34; their primary listings appear in other tables.

The methodological details and results of all nine RCTs are presented in Table 34.

Table 34. RCTs Evaluating Thermal Stimulation and Cryotherapy for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Thermal Stimulation vs Sham or No Stimulation		
Alwhaibi et al. (2021) RCT (6) Nstart=30 Nend=30	E: Thermal stimulation + Standard physiotherapy program C: Standard physiotherapy program Duration: 30-60min/d, 3d/wk, for 8wks	E vs C: Functional Independence Measure (+exp) Quantitative Electroencephalogram Motor area (-)

TPS=Chronic A vs 0		Parietal area (-) Frontal area (-)
Matsumoto et al. (2014) RCT (8) Nstart=22 Nend=22 TPS=Subacute A vs 0	E: Hot footbath C: No treatment Duration: 15min-sessions	E vs C: Modified Ashworth Scale (+exp) F-wave parameters F-wave amplitude (+exp) F/M ratio (+exp) F-wave persistence (+exp) M-response (-) Physiological measurements Body temperature (+exp) Surface skin temperature of thigh (+exp) Surface skin temperature of ankle (+exp) Systolic blood pressure (-) Diastolic blood pressure (-) Heart rate (-)
Hsu et al. (2013) RCT (6) Nstart=34 Nend=23 TPS=Chronic A vs 0	E: Thermal stimulation + conventional therapy C: Sham thermal stimulation + conventional therapy Duration: 30min/d, 3d/wk for 8wks	E vs C: Stroke Rehabilitation Assessment of Movement Lower extremity (-) Mobility (-) Functional ambulation category (-) Barthel Index (-) Postural Assessment Scale for stroke patients (-) Modified ashworth scale (-)
Liang et al. (2012) RCT (8) Nstart=30 Nend=25 TPS=Acute A vs B	E: Standard rehabilitation (PT, OT) + Thermal Stimulation C: Standard rehabilitation (PT, OT) + discussion sessions Duration: 80 min/d, 5d/wk, for 6wks Standard rehabilitation & 40 min/d, 5d/wk, for 6wks Thermal Stimulation & 20min/d 3d/wk, for 6wks discussion sessions	E vs C: Fugl-Meyer lower extremity score (+exp) Medical Research Council Scale for the Lower Extremity (+exp) Berg Balance Scale (-) Modified Motor Assessment Scale(+exp) Functional Ambulation Classification(+exp) Barthel Index (-)
Martins et al. (2012) RCT crossover (4) Nstart=20 Nend=16 TPS=Chronic A vs B vs 0 Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: Transcutaneous electrical nerve stimulation E2: Cryotherapy C: No treatment Duration: 30min, 1d – non- consecutive washout	E1 vs C: Hmax/Mmax ratio (+exp1) H-reflex latency (-) E2 vs C: Hmax/Mmax ratio (+exp2) H-reflex latency (+exp2) E1 vs E2: Hmax/Mmax ratio (+exp1) H-reflex latency (+exp1)
Chen et al. (2011) RCT (7) Nstart=35 Nend=33 TPS=Acute A vs 0	E: Thermal stimulation + Standard rehabilitation C: Standard Rehabilitation Duration: 30-40min/d, 5d/wk, for 6wks thermal stimulation & 40min/d, 5d/wk, for 6wks rehabilitation	E vs C: Fugl-Meyer Assessment - Lower Extremity (+exp) Modified Motor Assessment Scale (+exp) Functional Ambulation Classification (+exp) Medical Research Council Scale - Lower Extremity (+exp) Berg Balance Scale (+exp) Postural Assessment Scale for Stroke (-) independent walking rate (-)

Cryotherapy vs Sham		
Alcantara et al. (2019) RCT crossover (7) Nstart=16 Nend=16 TPS=Chronic A vs 0	E: Cryotherapy C: Sham Duration: 20min/d, 3d Therapy + 1d Assessment familiarization, 1d/wk, for 4wks - 15d washout	E vs C: Modified Ashworth Scale (+exp) Dynamometer- Ankle Flexors Strength (-) Gait Kinematics Ankle (-) Knee (-) Hip (-)
Cryotherapy + Physical Therapy with Ankle foot Orthosis vs Physical Therapy with Ankle foot Orthosis		
Elnassag et al. (2019) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs B Also in Table 13 (Orthotic Devices)	E: Cryo-airflow therapy for calf muscle + Physical therapy + Ankle foot orthosis at night C: Physical therapy + Ankle foot orthosis Duration: 3d/wk, for 4wks	E vs C: Modified Ashworth Scale (+exp) EMG H/ M ratio (-) Ankle Range of Motion (+exp)
Ankle Proprioceptive Training with Thermotherapy vs Conventional Therapy		
Kim et al. (2022d) RCT (6) Nstart=36 Nend=30 TPS=Chronic A + B vs 0	E: Ankle proprioceptive training + Ankle joint thermotherapy + Conventional therapy C: Conventional therapy Duration: E: 60 mins/d (15 mins proprioceptive training + 15 mins joint thermotherapy + 30 mins conservative treatment), 5ds/wk, 8wks; C: 60 mins/d, 5ds/wk, 8wks	E vs C: TIS (+exp) Centre of pressure (+exp) Limits of stability (+exp) Berg balance scale (+exp) Functional reach test (+exp) Affected step length (+exp) Affected single support (+exp) Gait cycle (+exp) cadence (+exp) 10 meter walk test (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Mao et al. (2022b) RCT (6) Nstart=60 Nend=60 TPS=Subacute A + B vs 0 Primary listing: Table 27 (Electromechanical and Robotic Devices)	E: Robot guided ankle proprioceptive training + Thermal tactile stimulation + Conventional therapy C: Conventional Therapy Duration: E: 1 session/d, 5d/wk, 6 wks	E vs C: AROM (+exp) PROM (+exp) Ankle Joint Sensitivity (+exp) FMA-LE (+exp) BBS(+exp) 10MWT (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Thermal Stimulation may produce greater improvements in motor recovery than Sham or No Stimulation.	2	Liang et al. 2012; Chen et al. 2011
1b	Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may produce greater improvements in motor recovery than Conventional Therapy.	1	Mao et al. 2022b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cryotherapy may not have a difference in efficacy when compared to Sham for improving biomechanical gait measures.	1	Alcantara et al. 2019
1b	Ankle Proprioceptive Training with Thermotherapy may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Kim et al. 2022d

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Ankle Proprioceptive Training with Thermotherapy may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Kim et al. 2022d

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Thermal Stimulation may produce greater improvements in muscle strength than Sham or No Stimulation.	2	Liang et al. 2012; Chen et al. 2011
1b	Cryotherapy may not have a difference in efficacy when compared to Sham for improving muscle strength.	1	Alcantara et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Thermal Stimulation when compared to Sham or No Stimulation for improving spasticity.	2	Matsumoto et al. 2014; Hsu et al. 2013
1b	Cryotherapy may produce greater improvements in spasticity than Sham.	1	Alcantara et al. 2019
1b	Cryotherapy with Physical Therapy with Ankle foot Orthosis may produce greater improvements in spasticity than Physical Therapy with Ankle foot Orthosis.	1	Elnassag et al. 2019

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cryotherapy with Physical Therapy with Ankle foot Orthosis may produce greater improvements in range of motion than Physical Therapy with Ankle foot Orthosis.	1	Elnassag et al. 2019
1b	Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may produce greater improvements in range of motion than Conventional Therapy.	1	Mao et al. 2022b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Thermal Stimulation may produce greater improvements in neurophysiological measures than Sham or No Stimulation.	2	Matsumoto et al. 2014; Martins et al. 2012
2	Transcutaneous electrical nerve stimulation may produce greater improvements in neurophysiological measures than Cryotherapy.	1	Martins et al. 2012
1b	Cryotherapy with Physical Therapy with Ankle foot Orthosis may not have a difference in efficacy when compared to Physical Therapy with Ankle foot Orthosis for improving neurophysiological measures.	1	Elnassag et al. 2019

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Thermal Stimulation may not have a difference in efficacy when compared to Sham or No Stimulation for improving aerobic measures.	1	Matsumoto et al. 2014

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Thermal Stimulation may not have a difference in efficacy when compared to Sham or No Stimulation for improving activities of daily living.	3	Alwhaibi et al. 2021; Hsu et al. 2013; Liang et al. 2012

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Ankle Proprioceptive Training with Thermotherapy may produce greater improvements in gait speed than Conventional Therapy.	1	Kim et al. 2022d
1b	Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may produce greater improvements in gait speed than Conventional Therapy.	1	Mao et al. 2022b

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Thermal Stimulation may produce greater improvements in functional mobility than Sham or No Stimulation.	3	Hsu et al. 2013; Liang et al. 2012; Chen et al. 2011

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Thermal Stimulation may not have a difference in efficacy when compared to Sham or No Stimulation for improving balance.	3	Hsu et al. 2013; Liang et al. 2012; Chen et al. 2011
1b	Ankle Proprioceptive Training with Thermotherapy may produce greater improvements in balance than Conventional Therapy.	1	Kim et al. 2022d

1b	Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may produce greater improvements in balance than Conventional Therapy.	1	Mao et al. 2022b

Key Points

- Thermal Stimulation may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and functional mobility, but not aerobic measures, activities of daily living, and balance, after stroke when compared to Sham or No Stimulation; the literature is mixed regarding spasticity.
- Transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Cryotherapy.
- Cryotherapy may be beneficial for improving spasticity, but not biomechanical gait measures and muscle strength, after stroke when compared to Sham.
- Cryotherapy with Physical Therapy with Ankle foot Orthosis may be beneficial for improving spasticity and range of motion, but not neurophysiological measures, after stroke when compared to Physical Therapy with Ankle foot Orthosis.
- Ankle Proprioceptive Training with Thermotherapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and balance after stroke when compared to Conventional Therapy.
- Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may be beneficial for improving motor recovery, range of motion, gait speed, and balance after stroke when compared to Conventional Therapy.

Summary of Key Points: Thermal Stimulation and Cryotherapy

Intervention	Control(s)	Function domain(s)	Effect
Thermal Stimulation	Sham or No Stimulation	Motor recovery, muscle strength, neurophysiological measures, functional mobility	+
Thermal Stimulation	Sham or No Stimulation	Aerobic measures, activities of daily living, balance	–
Thermal Stimulation	Sham or No Stimulation	Spasticity	=
Transcutaneous electrical nerve stimulation	Cryotherapy	Neurophysiological measures	+
Cryotherapy	Sham	Spasticity	+
Cryotherapy	Sham	Biomechanical gait measures, muscle strength	–
Cryotherapy with Physical Therapy with Ankle foot Orthosis	Physical Therapy with Ankle foot Orthosis	Spasticity, range of motion	+
Cryotherapy with Physical Therapy with Ankle foot Orthosis	Physical Therapy with Ankle foot Orthosis	Neurophysiological measures	–
Ankle Proprioceptive Training with Thermotherapy	Conventional Therapy	Biomechanical gait measures, biomechanical balance measures, gait speed, balance	+
Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy	Conventional Therapy	Motor recovery, range of motion, gait speed, balance	+

Extracorporeal Shockwave Therapy and Therapeutic Ultrasound



Adopted from: https://www.sportsmedbiologic.com.au/shockwave-therapy.html

Extracorporeal shockwave therapy involves the delivery of high-intensity ultrasound waves to affected soft tissue regions of the body. When it comes to stroke treatment, this therapy is used to alleviate spasticity in stroke patients (Taheri et al. 2017). Therapeutic ultrasound may be delivered in a continuous or pulsed mode (Radinmehr et al. 2019). Continuous ultrasound provides a thermal effect, and pulsed effects are usually nonthermal (Ansari et al. 2007). The use of ultrasound has been studied in aiding spasticity.

A total of fourteen RCTs were found that evaluated extracorporeal shockwave therapy and therapeutic ultrasound for lower extremity motor rehabilitation. Six RCTs compared Extracorporeal Shockwave Therapy with Sham or Conventional Therapy (Deniz et al. 2024; Nada et al. 2024; Zhu et al. 2023; Yoldas Aslan et al. 2021; Lee et al. 2019c; Taheri et al. 2017). One RCT compared Focused Shockwave Therapy with Radial Shockwave Therapy (Wu et al. 2018). One RCT evaluated Location of Extracorporeal Shockwave Therapy (Yoon et al. 2017). Two RCTs compared Therapeutic Ultrasound with Sham or Conventional Therapy (Sahin et al. 2011; Ansari et al. 2007). One RCT compared Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training with Sham with Visual Feedback Balance Training (Mihai et al. 2022). One RCT compared Therapeutic Ultrasound with TENS vs Botulinum Toxin A (Picelli et al. 2014). One RCT compared Therapeutic Ultrasound with Radial Extracorporeal Shock Wave Therapy (Radinmehr et al. 2019). One RCT evaluated Comparison of Extracorporeal Shockwave Therapy Dosage (Yang et al. 2024b).

In addition, two RCTs in which extracorporeal shockwave therapy and therapeutic ultrasound formed part of a combined or comparative intervention are cross-referenced at the end of Table 35; their primary listings appear in other tables.

The methodological details and results of all fourteen RCTs are presented in Table 35.

Table 35. RCTs Evaluating Extracorporeal Shockwave Therapy and Therapeutic Ultrasound for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Extracorporeal Shockwave Therapy vs Sham or Conventional Therapy		
Deniz et al. (2024) RCT (6) Nstart=40 Nend=40 TPS=Chronic	E: Extracorporeal Shock Wave Therapy C: Conventional care Duration: E: 3d/wk, 6wks; C: 60min/d, 5d/wk, 6wks	E vs C: Total weight transfer affected side (+exp) unaffected side (-) pressure analysis

A vs 0		forefoot (-) hindfoot (+exp) maximum plantar pressure (-) foot angle (-) step cycle duration (+exp) swing phase (-) step length (+exp) cadence (+exp) gait cycle distance (+exp) SWM (+exp) VST (+exp)
Nada et al. (2024) RCT (10) Nstart=100 Nend=100 TPS=Chronic A + B + C vs B + C Also in Table 12 (Stretching or Mobilization Exercises)	E: Radial Extracorporeal Shock Wave Therapy + antispastic meds + stretching excercises C: Sham Radial Extracorporeal Shock Wave Therapy + antispastic meds + stretching excercises Duration: Radial Extracorporeal Shock Wave Therapy: weekly session for 4 wks total; anti-spastic meds: 4 weeks total; stretching: 30 min/d,5 days/wk, 4 wks	E vs C: Modified Ashworth Scale (+exp) Passive ankle dorsiflexion motion (+exp) 10 meter walk test (+exp) H/M ratio (+exp) Heckmatt Scale (-)
Zhu et al. (2023) RCT (6) Nstart=45 Nend=45 TPS=Chronic A vs B + C vs 0 Also in Table 21 (Strength and Resistance Training)	E1: Extracorpeal shockwave therapy E2: ESWT + Isokinetic strength training C: conventional rehab Duration: ESWT: 1d/wk, 4wks Strength training: 30min/d, 5d/wk, 4wks	E1 vs E2: MAS(-) EMG(+exp) rPT(-) E1 vs C: MAS(+exp) EMG(+exp) rPT(-) E2 vs C: MAS(+exp) EMG(-) rPT(-)
Yoldas Aslan et al. (2021) RCT (8) Nstart=51 Nend=49 TPS=Chronic A vs 0 vs 0	E1: Radial Extracorporeal shockwave therapy + Conventional rehabilitation E2: Sham Extracorporeal shockwave therapy + Conventional rehabilitation C: Conventional rehabilitation (Bobath techniques) Duration: 2sessions/wk, for 2wks ESWT or sham ESWT & 120-180min/d, 5d/wk, for 2wks conventional care	E1 vs E2 + C: Modified Ashworth Scale (+exp1) Tardieu scale-spasticity angle (+exp1) Ankle Range of Motion (-) Strain Index (-) Modified Barthel Index (-) 6-Minute Walk Test (-)
Lee et al. (2019c) RCT (7) Nstart=20 Nend=18 TPS=Chronic A vs 0	E: Extracorporeal shock wave therapy to the medial head of gastrocnemius muscle on spastic side (4Hz, 2000shots with intensity of stimulation using energy of 0.1mJ/mm2) C: Sham stimulation Duration: Single Session	E vs C: Modified Ashworth Scale (-) Passive Range of Motion (-) Fugl-Meyer Assessment (-) Ultrasonographic measures of spasticity Achilles tendon length (+exp) Muscle fasicle length (+exp) Muscle thickness (+exp) Pennation angle (+exp)
Taheri et al. (2017) RCT (5) Nstart=28	E: Extracorporeal Shock Wave Therapy + Standard stretching + Oral anti-spastic drugs	E vs C: passive ROM (-) Clonus score (-)

Nend=25 TPS=Subacute A + B vs B Also in Table 12 (Stretching or Mobilization Exercises)	C: Standard stretching + Oral anti-spastic drugs Duration: 1x/wk for 3wks Extracorporeal shock wave therapy; 30min/d, 5x/wk, for 3wks Standard Stretching; 2mg/d for 4d then 4mg/d, for 3wks oral anti-spastic	3m Walk test (-) Lower extremity Functional Score (-) Visual Analogue scale-pain (-) Modified Ashworth scale (-)
Focused vs Radial Shockwave Therapy		
Wu et al. (2018) RCT (7) Nstart=32 Nend=31 TPS=Chronic A vs B	E1: Focused Shockwave Therapy E2: Radial Shockwave Therapy Duration: 1 session/wk, for 3wks	E1 v E2: Modified Ashworth scale (-) Tardieu scale-angles (-) Ankle Passive range of motion (+exp2) Dynamic foot plantar contact area-affected side (+exp2) 10m Walk test (-) Adverse events (no stats)
Location of Extracorporeal Shockwave Therapy		
Yoon et al. (2017) RCT (5) Nstart=54 Nend=44 TPS=Chronic A vs B vs 0	E1: Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots) E2: Extracorporeal Shock-wave Therapy on Myotendinous Junction (0.068 0.093 mJ/mm², 1,500 shots) C: Sham Extracorporeal Shock- wave Therapy (sound only) Duration: 1 session/d, 1d/wk, for 3wks (3 sessions total)	E1 Vs C: Modified Ashworth (+exp1) Modified Tardieu Scale (+exp1) E2 Vs C: Modified Ashworth (+exp2) Modified Tardieu Scale (+exp2) E1 Vs E2: Modified Ashworth (-) Modified Tardieu Scale (-)
Therapeutic Ultrasound vs Sham or Conventional Therapy		
Sahin et al. (2011) RCT (6) Nstart=46 Nend=41 TPS=Chronic A + B vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Therapeutic ultrasound + passive stretching exercise C: Passive stretching exercise Duration: 5d/wk, for 4wks stretching exercise & 10min/d, 5d/wk, for 4wks ultrasound	E vs C: Modified Ashworth scale(-) Ankle dorsiflexion ROM (active/passive) (-) Brunnstrom Motor Recovery Stage (lower) (-) Functional Independency Measure (-) MAS, Hmax/Mmax ratio (-)
Ansari et al. (2007) RCT (5) Nstart=12 Nend=12 TPS=Chronic A vs 0	E: Therapeutic ultrasound C: Sham therapeutic ultrasound Duration: 10min/d, 3d/wk for 5wks	E vs C: Hmax/Mmax Ratio (+exp) Ashworth Scale (-) Passive ROM (-) Active ROM (-)
Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training vs Sham with Visual Feedback Balance Training		
Mihai et al. (2022) RCT (6) Nstart=24 Nend=23 TPS=Chronic A + B vs B Also in Table 11 (Balance Training); Table 15 (Biofeedback)	E: Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy C: Sham Radial Extracorporeal Shock Wave Therapy + Prokin (visual feedback balance training) + Conventional therapy Duration: 60min/day, 5d/wk, for 2 wks conventional therapy 7min/day, 1d/wk, for 2 wks rEWST 20min/day, 5d/wk, for 2 wks visual feedback balance training	E vs C: Modified ashworth scale (+exp) Passive Range of Motion Knee (-) Ankle (+exp) Visual analogue scale (+exp) Clonus score (+exp) Trunk Impairment Scale (-) Tinetti Assessment Tool (+exp) Functional Ambulation Categories (-)

		Fugl-Meyer Assessment for Lower Extremity (+exp) Stabilometric Outcome measures Dynamic (+exp) Static (+exp) Limit of stability (+exp) Static-perimeter, mm (EO) (+exp) Static-ellipse area, mm2 (EO) (+exp) Static-perimeter, mm (EC) (-) Static-ellipse area, mm2 (EC) (+exp)
Therapeutic Ultrasound vs TENS vs Botulinum Toxin A		
Picelli et al. (2014) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C + B vs D + B Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS)); Table 46 (Botulinum Toxin)	E1: Therapeutic ultrasound + Home exercises & conventional therapy E2: TENS + Home exercises & conventional therapy E3: Botulinum toxin A (200U) + Home exercises & conventional therapy Duration: 10min/d, 5d/wk for 2wks - Ultrasound, 15min/d, 5d/wk for 2wks - TENS, 1 injection session - Botulinum toxin A, 40min/d, 5d/wk for 2wks - Bobath training	E1 vs E2: Modified Ashworth Scale (-) Ankle passive range of motion (-) E1 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3) E2 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3)
Therapeutic Ultrasound vs Radial Extracorporeal Shock Wave Therapy		
Radinmehr et al. (2019) RCT (7) Nstart=32 Nend=32 TPS=Chronic A vs B	E1: Therapeutic ultrasound E2: Radial extracorporeal shock wave therapy (rESWT) Duration: 1session rESWT & 10min therapeutic ultrasound	E1 vs E2: Hmax/Mmax ratio (-) H-reflex latency (-) Modified Modified Ashworth Scale (-) Active range of motion (-) Passive range of motion (-) Passive plantar flexor torque (-) Timed up and go (-)
Comparison of Extracorporeal Shockwave Therapy Dosage		
Yang et al. (2024b) RCT (7) Nstart=39 Nend=39 TPS=Chronic A vs B	E: Double dose extracorporeal shockwave therapy C: Single dose extracorpeal shockwave therapy Duration: 2ds/wk, 2wks	E vs C: Modified ashworth scale (-) change in R2-R1 angle of Modified tardieu scale (-) Passive range of motion (-) TUG (+exp) Bathel index (-) Strain elastography (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving motor recovery.	1	Lee et al. 2019c
1b	Therapeutic Ultrasound may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving motor recovery.	1	Sahin et al. 2011
1b	Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may produce greater improvements in motor recovery than Sham with Visual Feedback Balance Training.	1	Mihai et al. 2022

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may produce greater improvements in biomechanical gait measures than Sham or Conventional Therapy.	1	Deniz et al. 2024

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may produce greater improvements in biomechanical balance measures than Sham with Visual Feedback Balance Training.	1	Mihai et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may produce greater improvements in muscle strength than Sham or Conventional Therapy.	1	Lee et al. 2019c
1b	Therapeutic ultrasound may not have a difference in efficacy when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy) for improving muscle strength.	1	Radinmehr et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Extracorporeal Shockwave Therapy may produce greater improvements in spasticity than Sham or Conventional Therapy.	5	Nada et al. 2024; Zhu et al. 2023; Yoldas Aslan et al. 2021; Lee et al. 2019c; Taheri et al. 2017
1b	Extracorpeal shockwave therapy may not have a difference in efficacy when compared to extracorporeal shockwave therapy with Isokinetic strength training for improving spasticity.	1	Zhu et al. 2023
1b	Focused Shockwave Therapy may not have a difference in efficacy when compared to Radial Shockwave Therapy for improving spasticity.	1	Wu et al. 2018
2	Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots) may not have a difference in efficacy when compared to Sham Extracorporeal Shock- wave Therapy (sound only) for improving spasticity.	1	Yoon et al. 2017

1b	Therapeutic Ultrasound may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving spasticity.	2	Sahin et al. 2011; Ansari et al. 2007
1b	Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may produce greater improvements in spasticity than Sham with Visual Feedback Balance Training.	1	Mihai et al. 2022
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving spasticity.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Therapeutic ultrasound may not have a difference in efficacy when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy) for improving spasticity.	1	Radinmehr et al. 2019
1b	Double dose extracorporeal shockwave therapy may not have a difference in efficacy when compared to Single dose extracorpeal shockwave therapy for improving spasticity.	1	Yang et al. 2024b

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving range of motion.	4	Nada et al. 2024; Yoldas Aslan et al. 2021; Lee et al. 2019c; Taheri et al. 2017
1b	Focused Shockwave Therapy may not have a difference in efficacy when compared to Radial Shockwave Therapy for improving range of motion.	1	Wu et al. 2018
1b	Therapeutic Ultrasound may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving range of motion.	2	Sahin et al. 2011; Ansari et al. 2007
1b	Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may produce greater improvements in range of motion than Sham with Visual Feedback Balance Training.	1	Mihai et al. 2022
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving range of motion.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Therapeutic ultrasound may not have a difference in efficacy when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy) for improving range of motion.	1	Radinmehr et al. 2019

1b	Double dose extracorporeal shockwave therapy may not have a difference in efficacy when compared to Single dose extracorpeal shockwave therapy for improving range of motion.	1	Yang et al. 2024b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving neurophysiological measures.	1	Zhu et al. 2023
1b	There is conflicting evidence about the effect of Extracorpeal shockwave therapy when compared to extracorporeal shockwave therapy with Isokinetic strength training for improving neurophysiological measures.	1	Zhu et al. 2023
1b	There is conflicting evidence about the effect of Therapeutic Ultrasound when compared to Sham or Conventional Therapy for improving neurophysiological measures.	2	Sahin et al. 2011; Ansari et al. 2007
1b	Therapeutic ultrasound may not have a difference in efficacy when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy) for improving neurophysiological measures.	1	Radinmehr et al. 2019

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving pain.	1	Taheri et al. 2017

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving activities of daily living.	1	Yoldas Aslan et al. 2021

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving gait speed.	2	Nada et al. 2024; Taheri et al. 2017
1b	Focused Shockwave Therapy may not have a difference in efficacy when compared to Radial Shockwave Therapy for improving gait speed.	1	Wu et al. 2018

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Extracorporeal Shockwave Therapy may not have a difference in efficacy when compared to Sham or Conventional Therapy for improving gait endurance.	1	Yoldas Aslan et al. 2021

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training when compared to Sham with Visual Feedback Balance Training for improving functional mobility.	1	Mihai et al. 2022
1b	Therapeutic ultrasound may not have a difference in efficacy when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy) for improving functional mobility.	1	Radinmehr et al. 2019
1b	Double dose extracorporeal shockwave therapy may produce greater improvements in functional mobility than Single dose extracorpeal shockwave therapy.	1	Yang et al. 2024b

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may not have a difference in efficacy when compared to Sham with Visual Feedback Balance Training for improving balance.	1	Mihai et al. 2022

Key Points

- Extracorporeal Shockwave Therapy may be beneficial for improving biomechanical gait measures, muscle strength, and spasticity, but not motor recovery, range of motion, neurophysiological measures, pain, activities of daily living, gait speed, and gait endurance, after stroke when compared to Sham or Conventional Therapy.
- Extracorpeal shockwave therapy may not be beneficial for improving spasticity after stroke when compared to extracorporeal shockwave therapy with Isokinetic strength training; the literature is mixed regarding neurophysiological measures.
- Focused Shockwave Therapy may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Radial Shockwave Therapy.
- Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots) may not be beneficial for improving spasticity after stroke when compared to Sham Extracorporeal Shock- wave Therapy (sound only).
- Therapeutic Ultrasound may not be beneficial for improving motor recovery, spasticity, and range of motion after stroke when compared to Sham or Conventional Therapy; the literature is mixed regarding neurophysiological measures.
- Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham with Visual Feedback Balance Training; the literature is mixed regarding functional mobility.
- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Therapeutic ultrasound may not be beneficial for improving muscle strength, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy).

- Double dose extracorporeal shockwave therapy may be beneficial for improving functional mobility, but not spasticity and range of motion, after stroke when compared to Single dose extracorpeal shockwave therapy.

Summary of Key Points: Extracorporeal Shockwave Therapy and Therapeutic Ultrasound

Intervention	Control(s)	Function domain(s)	Effect
Extracorporeal Shockwave Therapy	Sham or Conventional Therapy	Biomechanical gait measures, muscle strength, spasticity	+
Extracorporeal Shockwave Therapy	Sham or Conventional Therapy	Motor recovery, range of motion, neurophysiological measures, pain, activities of daily living, gait speed, gait endurance	–
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training	Spasticity	–
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training	Neurophysiological measures	=
Focused Shockwave Therapy	Radial Shockwave Therapy	Spasticity, range of motion, gait speed	–
Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots)	Sham Extracorporeal Shock-wave Therapy (sound only)	Spasticity	–
Therapeutic Ultrasound	Sham or Conventional Therapy	Motor recovery, spasticity, range of motion	–
Therapeutic Ultrasound	Sham or Conventional Therapy	Neurophysiological measures	=
Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training	Sham with Visual Feedback Balance Training	Motor recovery, biomechanical balance measures, spasticity, range of motion	+
Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training	Sham with Visual Feedback Balance Training	Balance	–
Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training	Sham with Visual Feedback Balance Training	Functional mobility	=
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Spasticity, range of motion	–
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Therapeutic ultrasound	Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy)	Muscle strength, spasticity, range of motion, neurophysiological measures, functional mobility	–
Double dose extracorporeal shockwave therapy	Single dose extracorpeal shockwave therapy	Functional mobility	+
Double dose extracorporeal shockwave therapy	Single dose extracorpeal shockwave therapy	Spasticity, range of motion	–

Repetitive Peripheral Magnetic Stimulation



Adopted from: https://www.youtube.com/watch?v=h7O5z-_eydw

Repetitive peripheral magnetic stimulation is a treatment that stimulates deep tissue through the usage of magnetic waves (Beaulieu et al. 2017). This can help patients regain function of their limbs which may have been compromised by a traumatic event such as an accident or a stroke (Beaulieu et al. 2015).

A total of three RCTs were found that evaluated repetitive peripheral magnetic stimulation for lower extremity motor rehabilitation. One RCT compared Repetitive Peripheral Magnetic Stimulation with NMES, Muscle Vibration, and Conventional therapy (Beaulieu et al. 2017). Two RCTs compared Repetitive Peripheral Magnetic Stimulation with Sham (Ke et al. 2022; Beaulieu et al. 2015).

The methodological details and results of all three RCTs are presented in Table 36.

Table 36. RCTs Evaluating Repetitive Peripheral Magnetic Stimulation for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Repetitive Peripheral Magnetic Stimulation vs NMES, Muscle Vibration, and Conventional therapy		
Beaulieu et al. (2017) RCT crossover (6) Nstart=15 Nend=15 TPS=Chronic A vs B vs C vs 0 Also in Table 29 (Neuromuscular Electrical Stimulation (NMES)); Table 31 (Muscle Vibration)	E1: Neuromuscular Electrical Stimulation E2: Repetitive Peripheral Magnetic Stimulation E3: Muscle Tendon Vibration C: Occupational Therapy Duration: 2.5-3h/d, 1d/wk - 1wk washout, 4wks	E1/E2/E3 vs C: Ankle active motor threshold (+exp2) Intracortical inhibition (+exp2) Isometric Eversion Strength (+exp2, +exp3) Range of Motion (-) Stretch reflex of plantar flexors (-)

Repetitive Peripheral Magnetic Stimulation vs Sham		
Ke et al. (2022) RCT (6) Nstart=30 Nend=26 TPS=Acute A vs 0	E: High-Frequency Repetitive Peripheral Magnetic Stimulation + conventional treatment C: Sham Repetitive Peripheral Magnetic Stimulation + conventional treatment Duration: 90 min/d, 10ds (rPMS: 30 mins/d, 10d; Conventional treatment: 60 min)	E vs C: FMA-UE total (+exp) proximal (+exp) wrist (-) hand (+exp) coordination (-) FMA-LE (+exp) The Medical Research Council scale proximal upper extremity (+exp) distal upper extremity (-) proximal lower extremity (+exp) distal lower extremity (+exp)
Beaulieu et al. (2015) RCT (5) Nstart=18 Nend=18 TPS=Chronic A vs 0	E: Repetitive peripheral magnetic stimulation C: Sham stimulation Duration: Single session	E vs C: Plantar flexor resistance to stretch (+exp) Dorsiflexor PROM (-) Dorsiflexor AROM (-) Dorsiflexor Strength (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Repetitive Peripheral Magnetic Stimulation may produce greater improvements in motor recovery than Sham.	1	Ke et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Repetitive Peripheral Magnetic Stimulation may not have a difference in efficacy when compared to neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy for improving muscle strength.	1	Beaulieu et al. 2017
1b	Repetitive Peripheral Magnetic Stimulation may produce greater improvements in muscle strength than Sham.	2	Ke et al. 2022; Beaulieu et al. 2015

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Repetitive Peripheral Magnetic Stimulation may not have a difference in efficacy when compared to Sham for improving range of motion.	1	Beaulieu et al. 2015

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Repetitive Peripheral Magnetic Stimulation may produce greater improvements in neurophysiological measures than neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy.	1	Beaulieu et al. 2017

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Repetitive Peripheral Magnetic Stimulation may produce greater improvements in upper extremity function than Sham.	1	Ke et al. 2022

Key Points

- Repetitive Peripheral Magnetic Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy.
- Repetitive Peripheral Magnetic Stimulation may be beneficial for improving motor recovery and muscle strength, but not range of motion, after stroke when compared to Sham.

Summary of Key Points: Repetitive Peripheral Magnetic Stimulation

Intervention	Control(s)	Function domain(s)	Effect
Repetitive Peripheral Magnetic Stimulation	neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy	Neurophysiological measures	+
Repetitive Peripheral Magnetic Stimulation	neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy	Muscle strength	−
Repetitive Peripheral Magnetic Stimulation	Sham	Motor recovery, muscle strength	+
Repetitive Peripheral Magnetic Stimulation	Sham	Range of motion	−

Repetitive Transcranial Magnetic Stimulation (rTMS)



Adopted from: https://www.rtmscentre.co.uk/rtms-treatment-in-the-uk/

Transcranial magnetic stimulation is a painless and non-invasive method of affecting neural activity through the exogenous generation of an electromagnetic field through a coil placed on the scalp, that consequently induces a change in the electrical fields of the brain (Peterchev et al., 2012). The voltage and current of the electromagnetic field generated are dependent on the parameters of the stimulation device, which is not distorted by the biological tissues in which it is applied in (Peterchev et al. 2012). The neuromodulatory effects of transcranial magnetic stimulation are attributed largely to neural membrane polarization shifts that can lead to changes in neuron activity, synaptic transmission, and activation of neural networks (Peterchev et al. 2012). Repetitive transcranial magnetic stimulation (rTMS) is the application of repetitive trains of transcranial magnetic stimulation at regular intervals.

After a stroke, interhemispheric competition is altered; with cortical excitability increasing in the unaffected hemisphere increasing and decreasing in the affected hemisphere (Zhang et al., 2017a). rTMS can be used to help modulate this interhemispheric competition, with low stimulation frequencies (≤1Hz) decreasing cortical excitability and inhibiting activity of the contralesional hemisphere, while high frequency (>1Hz) stimulation increases excitability and have a facilitatory effect on activity of the ipsilesional hemisphere (Dionisio et al., 2018).

A total of 33 RCTs were found that evaluated repetitive transcranial magnetic stimulation (rTMS) for lower extremity motor rehabilitation. Eleven RCTs compared Low frequency (1Hz) rTMS with Sham Stimulation (Wang et al. 2024d; Zhao et al. 2024; Yu et al. 2022; Chen et al. 2021c; Huang et al. 2018; Cha et al. 2017c; Meng & Song 2017; Rastgoo et al. 2016; Lin et al. 2015; Kim et al. 2014e; Wang et al. 2012). Seven RCTs compared High Frequency (>1Hz) rTMS with Sham Stimulation (Chieffo et al. 2021; Gu & Chang 2017; Guan et al. 2017; Sasaki et al. 2017; Choi et al. 2016; Chieffo et al. 2014; Kakuda et al. 2013). Four RCTs compared High Frequency rTMS or Sham rTMS with Low Frequency rTMS or Sham rTMS (Wang et al. 2020c; Du et al. 2016; Cha et al. 2014a; Khedr et al. 2010). One RCT compared Combined High and Low Frequency rTMS with Standard Therapy (Bintang et al. 2020). One RCT compared Low Frequency rTMS with tDCS or Combined rTMS and tDCS or Sham (Gong et al. 2021). Two RCTs compared High Frequency rTMS Combined with Treadmill Training with Treadmill Training (Lee et al. 2020a; Wang et al. 2019b). One RCT evaluated Ankle Strengthening Exercises With rTMS (Cha et al. 2017c). One RCT compared High Frequency rTMS with Cathodal tDCS with rTMS (Cho et al. 2017). One RCT compared Low Frequency (1Hz) rTMS with Conventional Therapy (Shu et al. 2024). One RCT compared rTMS Combined with Cycling Exercise with Cycling Exercise Alone (Wang et al. 2024b). Two RCTs compared rTMS Combined with Virtual/Augmented Reality Gait Training with Virtual/Augmented Reality Gait Training Alone (Fang et al. 2024; Zhang et al. 2024a). One RCT compared rTMS Combined with Motor Relearning with Motor Relearning Alone (Chen et al. 2023b).

In addition, two RCTs in which repetitive transcranial magnetic stimulation (rTMS) formed part of a combined or comparative intervention are cross-referenced at the end of Table 37; their primary listings appear in other tables.

The methodological details and results of all 33 RCTs are presented in Table 37.

Table 37. RCTs Evaluating Repetitive Transcranial Magnetic Stimulation (rTMS) for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Low frequency (1Hz) rTMS vs Sham Stimulation		
Wang et al. (2024d) RCT (6) Nstart=72 Nend=72 TPS=Acute A vs 0 vs 0	E1: LF-rTMS + Conventional rehab, E2: Sham rTMS + Conventional rehab C: Conventional rehab Duration: 15min/d, 5d/wk, 6wks	E1/E2 vs C: FMA (+exp1/2) BBS (+exp1) MBI (+exp1/2) gait cycle (+exp1) support phase time (+exp1/2) swing phase time (+exp1) stride length (+exp1) step height (+exp1) circle radius (+exp1) dorsiflexion angle (+exp1/2) gait speed (+exp1) E1 vs E2: FMA (-) BBS (+exp1) MBI (+exp1) gait cycle (+exp1) support phase time (+exp1) swing phase time (+exp1) stride length (+exp1) step height (+exp1) circule radius (+exp1) dorsiflexion angle (+exp1) gait speed (+exp1)
Zhao et al. (2024) RCT (7) Nstart=54 Nend=48 TPS=Acute A1 vs A2 vs 0 Also in Table 52 (Supplements and Vitamins)	E1: Primary motor area rTMS E2: Supplementary motor area rTMS C: Sham rTMS Duration: 20 mins/d, 5 ds/wk, 4 wks	E1 vs C: FMA-UE (+exp1) FMA-LE (+exp1) Berg balance scale (+exp1) amplitude of low frequency fluctuation right marginal gyrus (+exp1) E1 vs E2: FMA-UE (-) FMA-LE (-) Berg balance scale (+exp2) amplitude of low frequency fluctuation left precuneus (+exp1) left superior marginal gyrus (+exp2) Middle frontal gyrus (+exp) regional homogeneity cingulate gyrus (+exp1) left parietal lobe (+exp2) angular gyrus (+exp2) Functional connection (+exp2) E2 vs C:

		FMA-UE (+exp2) FMA-LE (+exp2) Berg balance scale (+exp2) amplitude of low frequency fluctuation right middle temporal gyrus
Yu et al. (2022) RCT (4) Nstart=18 Nend=18 TPS=Subacute A vs 0	E: rTMS + Routine rehab C: Sham rTMS + Routine rehab Duration: 1x/d, 5d/wk, 2wks	E vs C: Stroop Colour Word Test SCWT-Time (+exp) SCWT-Correct Number (-) Stroop Intereference Effect SIE-Time (+exp) SIE-Correct Count (+exp) FMA-LE (-) 10MWT (-) BBS (+exp) TUGT (-) GT (-) WT (-) TT (+exp) ST (+exp) Stride Length (-) Step Width (-) Center of Pressure (-)
Chen et al. (2021c) RCT (8) Nstart=48 Nend=47 TPS=Acute A vs 0	E: Bilateral inhibitory and facilitatory rTMS (1Hz and 10Hz) + Routine treatment C: Sham rTMS + Routine treatment Duration: 30min/d, 5d/wk, for 4wks	E vs C: Fugl-Meyer Assessment(+exp) Upper Limb(+exp) Modified Rankin Scale (+exp) Activities of daily living (+exp) GABA +/Cr ratio lesioned (+exp) non-lesioned (-) Mini Mental State Examination (+exp)
Huang et al. (2018) RCT (7) Nstart=38 Nend=37 TPS=Acute A vs 0	E: Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: Sham rTMS Duration: 15min/d, 7d	E vs C: Timed Up and Go Test (-) Postural Assessment Scale for Stroke (-) Barthel Index (-) Fugl-Meyer Assessment (-) Stroke Specific Quality of Life Chinese version (-) MEP Amplitude (-)
Cha et al. (2017a) RCT (7) Nstart=52 Nend=30 TPS=Subacute A + B vs B Also in Table 19 (Mirror Therapy)	E: Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) + mirror therapy C: Sham rTMS + mirror therapy Duration: 15min/d rTMS + 30min/d mirror therapy, 5d/wk, 4 wks	E vs C: Postural Sway (+exp) Wisconsin Gait Scale (+exp) 6-Minute Walk Test (+exp) Timed Up and Go Test (+exp)
Meng & Song (2017) RCT (5) Nstart=20 Nend=20 TPS=Subacute	E: Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: Sham rTMS Duration: 30min/d, 7d/wk, 2wks rTMS or sham 80min/d, 7d/wk, 2 wks physical therapy	E vs C: National Institute of Health Stroke Scale (+exp) Barthel Index (+exp) Fugl-Meyer Assessment (+exp)

A vs 0		
Rastgoo et al. (2016) RCT crossover (5) Nstart=20 Nend=14 TPS=Chronic A vs 0	E: Low frequency (1Hz) rTMS C: Sham rTMS Duration: 20min/d for 5d, 4wks washout	E vs C: Modified Modified Ashworth scale lower extremity (-) Hmax/Mmax ratio (-) Timed Up and Go (-) Fugl-Meyer assessment lower extremity (-)
Lin et al. (2015) RCT (8) Nstart=32 Nend=31 TPS=Subacute A vs 0	E: rTMS (1Hz) + Physical therapy C: Sham rTMS + Physical therapy Duration: 15min/d rTMS + 45min/d Physical therapy, 5d/wk, for 3wks	E vs C: Postural Assessment Scale for Stroke Patients (+exp) Tinetti Performance Oriented Mobility Assessment (+exp) Timed Up and Go Test (+exp) Barthel Index (+exp) Fugl-Meyer Assessment (-)
Kim et al. (2014e) RCT (9) Nstart=32 Nend=32 TPS=Acute A vs 0	E: Low frequency (1Hz) Repetitive transcranial magnetic stimulation over cerebellum C: Sham rTMS Duration: 15min, 5d/wk, for 1wk (5 consecutive sessions)	E vs C: 10-meter walk test Time (-) Steps (-) Berg balance scale (-)
Wang et al. (2012) RCT (8) Nstart=28 Nend=24 TPS=Chronic A vs 0	E: Low frequency (1Hz) rTMS C: Sham rTMS Duration: 10min/d, 5d/wk, 2wks rTMS/sham ; 30min, 5d/wk, 2wks task oriented training	E vs C: Motor evoked potential Latency affected hemisphere (+exp) Latency non-affected hemisphere (-) amplitude affected hemisphere (+exp) amplitude non-affected hemisphere (+exp) latency asymmetry (-) amplitude asymmetry (+exp) Fugl-meyer assessment (+exp) Speed (+exp) Cadence (+exp) Step length affected () non-affected (-) Single leg support time affected (+exp) non-affected (-) Double leg support time (+exp) Spatial asymmetry ratio (+exp) Temporal asymmetry ratio (-)
High Frequency (>1Hz) rTMS vs Sham Stimulation		
Chieffo et al. (2021) RCT crossover (9) Nstart=12 Nend=11 TPS=Chronic A vs 0 Also in Table 8 (Cycle Ergometer Training)	E: HF-rTMS with Hesed coil during active cycling C: Sham rTMS during cycling Duration: 11 sessions over 3wks, 4wks washout	E vs C: Fugl-Meyer Assessment lower extremity (+exp) Modified Ashworth Scale (+exp) 10-metre Walk test (-) 6-min Walk test (-) Resting motor threshold (+exp)

Gu & Chang (2017) RCT (8) Nstart=24 Nend=24 TPS=Chronic A + B vs B	E: Repetitive transcranial magnetic stimulation, high frequency (10 Hz) + movement therapy C: Sham Repetitive transcranial magnetic stimulation + movement therapy Duration: ~20min/d, 5d/wk, for 2wks rTMS/ sham, 60- 150min/d, 6d/wk movement therapy	E vs C: Beck Depression Inventory (+exp) Hamilton-Depression Rating scale 17 (+exp) Motricity Index -upper extremity (-) Lower index (-) Modified Brunnstrom Classification (-) Functional ambulation category (-)
Guan et al. (2017) RCT (6) Nstart=42 Nend=27 TPS=Acute A vs 0	E: High frequency (5Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: Sham rTMS Duration: 1 session/d, 10 consecutive days	E vs C: National Institutes of Health Stroke Scale (-) Barthel Index (-) Modified Rank Score Fugl-Meyer Upper limb (-) Lower limb (-) resting motor threshold of hemiplegic upper limbs (-)
Sasaki et al. (2017) RCT (8) Nstart=21 Nend=21 TPS=Acute A vs 0	E: E: High frequency rTMS (10Hz) + Conventional therapy C: Sham rTMS + Conventional therapy Duration: 10min/d for 5d - rTMS or Sham stimulation, 40- 80min/d for 5d - Conventional therapy	E vs C: Brunnstrom Recovery stages-lower limb (No stats) Ability for Basic Movement scale-revised (+exp)
Choi et al. (2016) RCT crossover (7) Nstart=33 Nend=30 TPS=Chronic A vs 0	E: High frequency (10Hz) rTMS C: Sham rTMS Duration: 10min/d, 5d/wk for 2wks – 4wk washout	E vs C: Berg Balance Scale (+exp) Sensory Organization Test (+exp) On-axis Velocity – R (+exp) On-axis Velocity – L (+exp) Directional Control L-R (+exp) Directional Control Front-back (+exp)
Chieffo et al. (2014) RCT crossover (9) Nstart=10 Nend=9 TPS=Chronic A vs 0	E: Deep rTMS with using H- coil (20Hz) C: Sham rTMS Duration: 30min/session, 11x over 3wks-4wks washout	E vs C: Fugl-Meyer Assessment (+exp) 6-Minute walk test (-) 10-Metre walk test (-)
Kakuda et al. (2013) RCT crossover (6) Nstart=18 Nend=18 TPS=Chronic A vs 0	E: High frequency (10Hz) rTMS C: Sham rTMS Duration: 20min/session - 24hr washout	E vs C: Gait speed (+exp) Physiological cost index (-)
High vs Low Frequency rTMS or Sham rTMS		
Wang et al. (2020c) RCT (7) Nstart=45 Nend=45 TPS=Acute A1 vs A2 vs 0	E1: High frequency rTMS (10Hz) + Conventional therapy E2: Low frequency rTMS (1Hz) + Conventional therapy C: Sham stimulation + Conventional therapy Duration: 7d/wk, for 2wks rTMS & 40min/d, 7d/wk, for 2wks Conventional therapy	E1 vs C: Fugl-Meyer Motor Assessment (+exp1) Barthel Index (+exp1) Motor evoked potential amplitude Abductor pollicis brevis (+exp1) Biceps brachii (+exp1) Motor evoked potential latency Abductor pollicis brevis (+exp1)

		Biceps brachii (+exp1) Corticomotor conduction time (+exp1) Surface electromyography (+exp1) E1 vs E2: Fugl-Meyer Motor Assessment (+exp1) Barthel Index (+exp1) Motor evoked potential amplitude Abductor pollicis brevis (+exp1) Biceps brachii (+exp1) Motor evoked potential latency Abductor pollicis brevis (-) Biceps brachii (+exp1) Corticomotor conduction time (+exp1) Surface electromyography (+exp1) E2 vs C: Fugl-Meyer Motor Assessment (-) Barthel Index (-) Motor evoked potential amplitude Abductor pollicis brevis (-) Biceps brachii (-) Motor evoked potential latency Abductor pollicis brevis (-) Biceps brachii (-) Corticomotor conduction time (-) Surface electromyography (-)
Du et al. (2016) RCT (9) Nstart=69 Nend=69 TPS=Acute A vs B vs 0	E1: Ipsilesional rTMS (3Hz) + Physical therapy E2: Contralesional rTMS (1Hz) + Physical therapy C: Sham rTMS + Physical therapy Duration: 1session/d (1200 pulses), 5d/wk, for 1wk rTMS & 60min/d, 5d/wk, for 1wk physical therapy	E1/E2 vs C: Fugl-Meyer Assessment (+exp1, +exp2) Medical Record Council Scale (+exp1, +exp2) Barthel Index (+exp1, +exp2) Modified Rankin Scale (+exp1, +exp2) NIH Stroke Scale (+exp1, +exp2) Cortical Excitability Affected Hemisphere (+exp1, +exp2) Cortical Excitability Unaffected Hemisphere (+exp2) E1 vs E2: Fugl-Meyer Assessment (-) Medical Record Council Scale (-) Barthel Index (-) Modified Rankin Scale (-) NIH Stroke Scale (-) Cortical Excitability Affected Hemisphere (-) Cortical Excitability Unaffected Hemisphere (+exp2)
Cha et al. (2014a) RCT (7) Nstart=24 Nend=24 TPS=Subacute A1 vs A2	E: High frequency (10Hz) rTMS C: Low frequency (1Hz) rTMS Duration: 20min/d, 5d/wk for 4wks	E vs C: Balance Index (+exp) Berg Balance Scale (+exp) MEP Amplitude (+exp)

Khedr et al. (2010) RCT (7) Nstart=48 Nend=38 TPS=Acute A1 vs A2 vs 0	E1: Low frequency (3Hz) repetitive transcranial magnetic stimulation + conventional care E2: High frequency (10Hz) repetitive transcranial magnetic stimulation + conventional care C: Sham repetitive transcranial magnetic stimulation + conventional care Duration: 1session/d, 5d/wk, for 1wk rTMS (5 consecutive days)	E vs C: Hemispheric stroke scale Hand grip (No stats) Shoulder abduction (No stats) Hip flexion (No stats) Toe dorsiflexion (No stats) National institute of health stroke scale (No stats) Modified rankin scale (No stats) Resting motor threshold (No stats) Active motor threshold (No stats) Motor evoked potential (No stats)
Combined High and Low Frequency rTMS vs Standard Therapy		
Bintang et al. (2020) RCT (8) Nstart=27 Nend=27 TPS=Subacute A vs B	E: High frequency (5Hz) rTMS ipsilateral lesions and low frequency contralesion (1Hz) + standard stroke treatment C: Standard ischemic stroke therapy Duration: ~20min/d 5d/wk, for 2wks (1200 stimulus per session) rTMS & PT duration not specified	E vs C: Stroke Rehabilitation Assessment of Movement Upper Extremity (-) Lower Extremity (-) Mobility (+exp) Motor Impairment degree (+exp) Serum BDNF (-)
Low Frequency rTMS vs tDCS or Combined rTMS and tDCS or Sham		
Gong et al. (2021) RCT (7) Nstart=65 Nend=60 TPS=Acute A vs B + A vs C + A vs 0 Also in Table 39 (Transcranial Direct Current Stimulation (tDCS))	E1: rTMS (1Hz) + conventional therapy E2: Cathodal tDCS + rTMS (1Hz) + conventional therapy E3: Anodal tDCS + rTMS (1Hz) + conventional therapy C: Sham rTMS Duration: 40min/d, 5d/wk, for 4wks conventional therapy & 20min/d, 5d/wk, for 4wks tDCS +/- rTMS (total of 1200 pulses)	E1/E2/E3 vs C: National Institute of Health Stroke Scale (-) Fugl-Meyer Upper Limb (-) Lower Limb (+exp3) Bilateral Motor Evoked Potentials (+exp2, +exp3) Barthel Index score (-) Resting Motion Threshold (-) Central Motor Conduction Time (-) E1 vs E2 vs E3: National Institute of Health Stroke Scale (-) Fugl-Meyer Upper Limb (-) Lower Limb (+exp3) Bilateral Motor Evoked Potentials (-) Barthel Index score (-) Resting Motion Threshold (-) Central Motor Conduction Time (-)
High Frequency rTMS Combined with Treadmill Training vs Treadmill Training		
Lee et al. (2020a) RCT (8) Nstart=13 Nend=13 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: High frequency rTMS + Treadmill Training C: Sham rTMS + Treadmill Training Duration: 15min/d rTMS or sham + 20min/d treadmill training, 5d/wk, for 4wks	E vs C: 10-Meter Walk Test (+exp) 6-Minute Walk Test (+exp) Timed Up and Go Test (+exp)
Wang et al. (2019b) RCT (7)	E: High Frequency rTMS (5Hz) + Treadmill Training	E vs C: Walking speed (+exp)

Nstart=14 Nend=14 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	C: Sham rTMS + Treadmill Training Duration: 15min/d, 3d/wk, for 3wks rTMS 30min, 3d/wk, for 3wks treadmill training	Spatial asymmetry ratio (+exp) Temporal asymmetry ratio (-) MEP Unaffected (-) Affected (-) Brain asymmetry ratio (-) EMG for TA and RA muscles (-) Fugl-Meyer assessment (+exp)
Ankle Strengthening Exercises With rTMS		
Cha et al. (2017c) RCT (7) Nstart=30 Nend=30 TPS=Subacute A1 vs A2 vs B Also in Table 21 (Strength and Resistance Training)	E1: Ankle Strengthening E2: Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: rTMS Duration: 10min/d, 5d/wk, for 8wks	E2 vs C: Motor evoked potential amplitude (+exp2) Peak torque Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2) E2 vs E1: Motor evoked potential amplitude (+exp2) Peak torque Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2)
High Frequency rTMS with Cathodal tDCS vs rTMS		
Cho et al. (2017) RCT (6) Nstart=30 Nend=30 TPS=Acute A + B vs B Also in Table 39 (Transcranial Direct Current Stimulation (tDCS))	E: Dual-mode transcranial direct current stimulation (2mA) + rTMS (10Hz) C: rTMS (10Hz) Duration: 20min/d, 5d/wk for 2wks	E vs C: Fugl-Meyer assessment Lower extremity (-) upper extremity (+exp) total (+exp)
Low Frequency (1Hz) rTMS vs Conventional Therapy		
Shu et al. (2024) RCT (4) Nstart=72 Nend=60 TPS=Subacute A vs 0	E: LF-rTMS + Conventional therapy C: Conventional therapy Duration: 30-40min (20min rtMS + 10-20min rehab)/d, 5d/wk, 2wks	E vs C: Gait spatiotemporal parameters stride speed (+exp) stride frequency (+exp) stride length (+exp) stride width (-) affected side stride length (+exp) affected side gait period (+exp) affect side stance phase (+exp) affected side swing phase (+exp) ROM hip sagittal (+exp) hip coronal (-) hip horizontal (-) knee sagittal (+exp) ankle sagittal (+exp) ankle coronal (-) Ahead ground reaction force (+exp) Upward ground reaction force (+exp) Ankle plantar flexion moment (+exp) MEP latency (+exp)

		Central motor conduction time (+exp)
rTMS Combined with Cycling Exercise vs Cycling Exercise Alone		
Wang et al. (2024b) Feasibility/pilot RCT (8) Nstart=32 Nend=32 TPS=Chronic A + B vs B Also in Table 8 (Cycle Ergometer Training)	E: r-TMS + Visual-Feedback Cycling Exercise C: Sham r-TMS + Visual-Feedback Cycling Exercise Duration: 20min/d, 5d/wk, 2wks	E vs C: FMA-LE (+exp) BBS (+exp) 2-Minute Walk Test cadence (-) speed (+exp) stride length (+exp) gait cycle restoration (+exp) step duration (+exp) affected foot duration (+exp) single limb support (+exp) swing phase (-) double support phase (-) initial contact angle (+exp) toe-off angle (-)
rTMS Combined with Virtual/Augmented Reality Gait Training vs Virtual/Augmented Reality Gait Training Alone		
Fang et al. (2024) RCT (6) Nstart=40 Nend=36 TPS=Acute A + B vs B Also in Table 26 (Virtual Reality)	E: Repetitive transcranial magnetic stimulation + Augmented reality gait adaptive training C: Augmented reality gait adaptive training Duration: Experimental group: 40 mins/wk (20 mins of rTMS + 20 mins of ARGAT), 5ds/wk, 4wks; Control group: 20 mins/wk of ARGAT, 5ds/wk, 4wks	E vs C: Berg balance scale (+exp) FMA-LE (+exp) Walking speed (+exp) Cadence (-) Symmetry index (-) Affected step length (+exp) Affected stride length (+exp) step width (-) Unaffected step length (-) Unaffected stride length (-) Knee co-contraction index (-) Ankle co-contraction index (-)
Zhang et al. (2024a) Feasibility/pilot RCT (6) Nstart=30 Nend=27 TPS=Subacute A + B vs B	E: Low-frequency rTMS + C-mill smart gait training system C: C-mill smart gait training system Duration: 20min/d, 5d/wk, 4 wks	E vs C: FMA (+exp) BBS (-) 10MWT (+exp) Brain symmetry index (+exp)
rTMS Combined with Motor Relearning vs Motor Relearning Alone		
Chen et al. (2023b) RCT (8) Nstart=60 Nend=60 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: rTMS + Motor relearning procedure C: Motor relearning procedure + Conventional rehabilitation Duration: 80-90min (20min rTMS + 20-30min MRP + 40min routine)/d, 6d/wk, 4wks	E vs C: MAS (+exp) FMA LL (+exp) balance (+exp) Brunnstrom stage (+exp) Hoffer walking scale (-) MEP extration rate (+exp) threshold (+exp) latency (-) central motor conduction time (+exp)

Cross-Referenced RCTs: Combined or Comparative Interventions		
Cha et al. (2017c) RCT (7) Nstart=30 Nend=30 TPS=Subacute A1 vs A2 vs B Primary listing: Table 21 (Strength and Resistance Training)	E1: Ankle Strengthening E2: Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation (rTMS) C: rTMS Duration: 10min/d, 5d/wk, for 8wks	E2 vs C: Motor evoked potential amplitude (+exp2) plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2) E2 vs E1: Motor evoked potential amplitude (+exp2) Plantar flexor (+exp2) Dorsiflexor (+exp2) 10-Meter walk test (+exp2)
Cha & Kim (2015) RCT (6) Nstart=36 Nend=31 TPS=Subacute A + B vs A Primary listing: Table 19 (Mirror Therapy)	E: Mirror therapy + Repetitive transcranial magnetic stimulation C: Mirror therapy + Sham stimulation Duration: 30min/d, 5d/wk for 4wks Mirror therapy & 10min/d, 5d/wk, for 4wks rTMS or Sham	E vs C: Dynamic limits of stability (+exp) Berg Balance Scale (-) Timed Up & Go Test (-) Balance Index (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in motor recovery than Sham Stimulation.	8	Zhao et al. 2024; Yu et al. 2022; Chen et al. 2021c; Huang et al. 2018; Meng & Song 2017; Rastgoo et al. 2016; Lin et al. 2015; Wang et al. 2012
1b	LF-rTMS with Conventional rehab or Sham rTMS with Conventional rehab may produce greater improvements in motor recovery than Conventional rehab.	1	Wang et al. 2024d
1b	LF-rTMS with Conventional rehab may not have a difference in efficacy when compared to Sham rTMS with Conventional rehab for improving motor recovery.	1	Wang et al. 2024d
1b	Primary motor area repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Supplementary motor area repetitive transcranial magnetic stimulation for improving motor recovery.	1	Zhao et al. 2024
1a	There is conflicting evidence about the effect of High Frequency (>1Hz) repetitive transcranial magnetic stimulation when compared to Sham Stimulation for improving motor recovery.	5	Chieffo et al. 2021; Gu & Chang 2017; Guan et al. 2017; Sasaki et al. 2017; Chieffo et al. 2014
1b	High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy may produce greater improvements in	1	Wang et al. 2020c

	motor recovery than Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy.		
1a	There is conflicting evidence about the effect of High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation when compared to Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation for improving motor recovery.	2	Wang et al. 2020c; Du et al. 2016
1b	Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not have a difference in efficacy when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care for improving motor recovery.	1	Khedr et al. 2010
1b	Combined High and Low Frequency repetitive transcranial magnetic stimulation may produce greater improvements in motor recovery than Therapy.	1	Bintang et al. 2020
1b	There is conflicting evidence about the effect of Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy when compared to Sham repetitive transcranial magnetic stimulation for improving motor recovery.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving motor recovery.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving motor recovery.	1	Gong et al. 2021
1b	High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may produce greater improvements in motor recovery than Treadmill Training.	1	Wang et al. 2019b
1b	There is conflicting evidence about the effect of High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation when compared to repetitive transcranial magnetic stimulation for improving motor recovery.	1	Cho et al. 2017
1b	Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may produce greater improvements in motor recovery than Cycling Exercise Alone.	1	Wang et al. 2024b
1a	Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may produce greater improvements in motor recovery than Virtual/Augmented Reality Gait Training Alone.	2	Fang et al. 2024; Zhang et al. 2024a
1b	Repetitive transcranial magnetic stimulation Combined with Motor Relearning may produce greater improvements in motor recovery than Motor Relearning Alone.	1	Chen et al. 2023b

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical gait measures than Sham Stimulation.	3	Wang et al. 2024d; Yu et al. 2022; Wang et al. 2012
1b	LF-rTMS with Conventional rehab or Sham rTMS with Conventional rehab may produce greater improvements in biomechanical gait measures than Conventional rehab.	1	Wang et al. 2024d

1b	LF-rTMS with Conventional rehab may produce greater improvements in biomechanical gait measures than Sham rTMS with Conventional rehab.	1	Wang et al. 2024d
2	Low Frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Shu et al. 2024
1b	Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may produce greater improvements in biomechanical gait measures than Cycling Exercise Alone.	1	Wang et al. 2024b
1a	Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may not have a difference in efficacy when compared to Virtual/Augmented Reality Gait Training Alone for improving biomechanical gait measures.	2	Fang et al. 2024; Zhang et al. 2024a

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Low frequency (1Hz) repetitive transcranial magnetic stimulation when compared to Sham Stimulation for improving biomechanical balance measures.	2	Yu et al. 2022; Cha et al. 2017a
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical balance measures than Sham Stimulation.	1	Choi et al. 2016
1b	High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical balance measures than Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation.	1	Cha et al. 2014a
1b	Mirror therapy with Repetitive transcranial magnetic stimulation may produce greater improvements in biomechanical balance measures than Mirror therapy with Sham stimulation.	1	Cha & Kim 2015

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving muscle strength.	1	Gu & Chang 2017
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in muscle strength than Ankle Strengthening.	1	Cha et al. 2017c
1b	Ankle Strengthening may produce greater improvements in muscle strength than repetitive transcranial magnetic stimulation.	1	Cha et al. 2017c
1b	Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may not have a difference in efficacy when compared to Virtual/Augmented Reality Gait Training Alone for improving muscle strength.	1	Fang et al. 2024

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Low frequency (1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving spasticity.	1	Rastgoo et al. 2016

1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in spasticity than Sham Stimulation.	1	Chieffo et al. 2021
1b	Repetitive transcranial magnetic stimulation Combined with Motor Relearning may produce greater improvements in spasticity than Motor Relearning Alone.	1	Chen et al. 2023b

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	LF-rTMS with Conventional rehab or Sham rTMS with Conventional rehab may produce greater improvements in range of motion than Conventional rehab.	1	Wang et al. 2024d
1b	LF-rTMS with Conventional rehab may produce greater improvements in range of motion than Sham rTMS with Conventional rehab.	1	Wang et al. 2024d
2	Low Frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in range of motion than Conventional Therapy.	1	Shu et al. 2024

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in neurophysiological measures than Sham Stimulation.	4	Zhao et al. 2024; Huang et al. 2018; Rastgoo et al. 2016; Wang et al. 2012
1b	Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures when compared to Supplementary motor area repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1a	There is conflicting evidence about the effect of High Frequency (>1Hz) repetitive transcranial magnetic stimulation when compared to Sham Stimulation for improving neurophysiological measures.	2	Chieffo et al. 2021; Guan et al. 2017
1b	There is conflicting evidence about the effect of High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy when compared to Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy for improving neurophysiological measures.	1	Wang et al. 2020c
1a	There is conflicting evidence about the effect of High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation when compared to Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation for improving neurophysiological measures.	3	Wang et al. 2020c; Du et al. 2016; Cha et al. 2014a
1b	Ipsilesional repetitive transcranial magnetic stimulation (3Hz) with Physical therapy may produce greater improvements in neurophysiological measures than Contralesional repetitive transcranial magnetic stimulation (1Hz) with Physical therapy.	1	Du et al. 2016
1b	Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not have a difference in efficacy when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care for improving neurophysiological measures.	1	Khedr et al. 2010
1b	Combined High and Low Frequency repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Therapy for improving neurophysiological measures.	1	Bintang et al. 2020

1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving neurophysiological measures.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving neurophysiological measures.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving neurophysiological measures.	1	Gong et al. 2021
1b	High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may not have a difference in efficacy when compared to Treadmill Training for improving neurophysiological measures.	1	Wang et al. 2019b
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in neurophysiological measures than Ankle Strengthening.	1	Cha et al. 2017c
1b	Ankle Strengthening may produce greater improvements in neurophysiological measures than repetitive transcranial magnetic stimulation.	1	Cha et al. 2017c
2	Low Frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in neurophysiological measures than Conventional Therapy.	1	Shu et al. 2024
1b	Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may not have a difference in efficacy when compared to Virtual/Augmented Reality Gait Training Alone for improving neurophysiological measures.	1	Fang et al. 2024
1b	Repetitive transcranial magnetic stimulation Combined with Motor Relearning may produce greater improvements in neurophysiological measures than Motor Relearning Alone.	1	Chen et al. 2023b

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving aerobic measures.	1	Kakuda et al. 2013

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in activities of daily living than Sham Stimulation.	4	Chen et al. 2021c; Huang et al. 2018; Meng & Song 2017; Lin et al. 2015
1b	LF-rTMS with Conventional rehab or Sham rTMS with Conventional rehab may produce greater improvements in activities of daily living than Conventional rehab.	1	Wang et al. 2024d

1b	LF-rTMS with Conventional rehab may produce greater improvements in activities of daily living than Sham rTMS with Conventional rehab.	1	Wang et al. 2024d
1b	There is conflicting evidence about the effect of High Frequency (>1Hz) repetitive transcranial magnetic stimulation when compared to Sham Stimulation for improving activities of daily living.	1	Guan et al. 2017
1b	High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy may produce greater improvements in activities of daily living than Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy.	1	Wang et al. 2020c
1a	There is conflicting evidence about the effect of High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation when compared to Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation for improving activities of daily living.	2	Wang et al. 2020c; Du et al. 2016
1b	Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not have a difference in efficacy when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care for improving activities of daily living.	1	Khedr et al. 2010
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving activities of daily living.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving activities of daily living.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving activities of daily living.	1	Gong et al. 2021

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving gait speed.	4	Wang et al. 2024d; Yu et al. 2022; Kim et al. 2014e; Wang et al. 2012
1b	LF-rTMS with Conventional rehab may produce greater improvements in gait speed than Conventional rehab.	1	Wang et al. 2024d
1b	Sham rTMS with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving gait speed.	1	Wang et al. 2024d
1b	LF-rTMS with Conventional rehab may produce greater improvements in gait speed than Sham rTMS with Conventional rehab.	1	Wang et al. 2024d
1a	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in gait speed than Sham Stimulation.	4	Chieffo et al. 2021; Choi et al. 2016; Chieffo et al. 2014; Kakuda et al. 2013

1a	High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may produce greater improvements in gait speed than Treadmill Training.	2	Lee et al. 2020a; Wang et al. 2019b
1b	Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may produce greater improvements in gait speed than Ankle Strengthening.	1	Cha et al. 2017c
1b	Ankle Strengthening may produce greater improvements in gait speed than repetitive transcranial magnetic stimulation.	1	Cha et al. 2017c
1b	Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may produce greater improvements in gait speed than Cycling Exercise Alone.	1	Wang et al. 2024b
1a	Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may produce greater improvements in gait speed than Virtual/Augmented Reality Gait Training Alone.	2	Fang et al. 2024; Zhang et al. 2024a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in gait endurance than Sham Stimulation.	1	Cha et al. 2017a
1a	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving gait endurance.	2	Chieffo et al. 2021; Chieffo et al. 2014
1b	High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may produce greater improvements in gait endurance than Treadmill Training.	1	Lee et al. 2020a

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in functional mobility than Sham Stimulation.	4	Huang et al. 2018; Cha et al. 2017a; Rastgoo et al. 2016; Lin et al. 2015
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving functional mobility.	1	Gu & Chang 2017
1b	Combined High and Low Frequency repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Therapy for improving functional mobility.	1	Bintang et al. 2020
1b	High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may produce greater improvements in functional mobility than Treadmill Training.	1	Lee et al. 2020a
1b	Repetitive transcranial magnetic stimulation Combined with Motor Relearning may not have a difference in efficacy when compared to Motor Relearning Alone for improving functional mobility.	1	Chen et al. 2023b
1b	Mirror therapy with Repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Mirror therapy with Sham stimulation for improving functional mobility.	1	Cha & Kim 2015

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in balance than Sham Stimulation.	6	Wang et al. 2024d; Zhao et al. 2024; Yu et al. 2022; Huang et al. 2018; Lin et al. 2015; Kim et al. 2014e
1b	LF-rTMS with Conventional rehab may produce greater improvements in balance than Conventional rehab.	1	Wang et al. 2024d
1b	Sham rTMS with Conventional rehab may not have a difference in efficacy when compared to Conventional rehab for improving balance.	1	Wang et al. 2024d
1b	LF-rTMS with Conventional rehab may produce greater improvements in balance than Sham rTMS with Conventional rehab.	1	Wang et al. 2024d
1b	Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in balance than Sham Stimulation.	1	Choi et al. 2016
1b	High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation may produce greater improvements in balance than Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation.	1	Cha et al. 2014a
1b	Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may produce greater improvements in balance than Cycling Exercise Alone.	1	Wang et al. 2024b
1a	There is conflicting evidence about the effect of Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training when compared to Virtual/Augmented Reality Gait Training Alone for improving balance.	2	Fang et al. 2024; Zhang et al. 2024a
1b	Mirror therapy with Repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Mirror therapy with Sham stimulation for improving balance.	1	Cha & Kim 2015

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Low frequency (1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving quality of life.	1	Huang et al. 2018

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in mood than Sham Stimulation.	1	Gu & Chang 2017

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in cognition than Sham Stimulation.	2	Yu et al. 2022; Chen et al. 2021c

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Low frequency (1Hz) repetitive transcranial magnetic stimulation may produce greater improvements in upper extremity function than Sham Stimulation.	2	Zhao et al. 2024; Chen et al. 2021c
1b	Primary motor area repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Supplementary motor area repetitive transcranial magnetic stimulation for improving upper extremity function.	1	Zhao et al. 2024
1b	High Frequency (>1Hz) repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving upper extremity function.	1	Guan et al. 2017
1b	There is conflicting evidence about the effect of High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy when compared to Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy for improving upper extremity function.	1	Wang et al. 2020c
1b	High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation may produce greater improvements in upper extremity function than Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation.	1	Wang et al. 2020c
1b	Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not have a difference in efficacy when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care for improving upper extremity function.	1	Khedr et al. 2010
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving upper extremity function.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving upper extremity function.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving upper extremity function.	1	Gong et al. 2021
1b	High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation may produce greater improvements in upper extremity function than repetitive transcranial magnetic stimulation.	1	Cho et al. 2017

Key Points

- Low frequency (1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, and balance, but not spasticity, gait speed, and quality of life, after stroke when compared to Sham Stimulation; the literature is mixed regarding biomechanical balance measures.
- Primary motor area repetitive transcranial magnetic stimulation may not be beneficial for improving motor recovery after stroke when compared to Supplementary motor area repetitive transcranial magnetic stimulation; Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures and balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.
- High Frequency (>1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, spasticity, gait speed, and balance, but not muscle strength, aerobic measures, gait endurance, and functional mobility, after stroke when compared to Sham Stimulation; the literature is mixed regarding motor recovery, neurophysiological measures, and activities of daily living.
- High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy; the literature is mixed regarding neurophysiological measures.
- High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures and balance after stroke when compared to Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery, neurophysiological measures, and activities of daily living.
- Ipsilesional repetitive transcranial magnetic stimulation (3Hz) with Physical therapy may be beneficial for improving neurophysiological measures after stroke when compared to Contralesional repetitive transcranial magnetic stimulation (1Hz) with Physical therapy.
- Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care.
- Combined High and Low Frequency repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, but not neurophysiological measures and functional mobility, after stroke when compared to Therapy.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy.
- High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility, but not neurophysiological measures, after stroke when compared to Treadmill Training.
- Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to Ankle Strengthening.
- Ankle Strengthening may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to repetitive transcranial magnetic stimulation.
- The literature is mixed regarding the effect of High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation on motor recovery after stroke when compared to repetitive transcranial magnetic stimulation.
- Low Frequency (1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical gait measures, range of motion, and neurophysiological measures after stroke when compared to Conventional Therapy.

- Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Cycling Exercise Alone.
- Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may be beneficial for improving motor recovery and gait speed, but not biomechanical gait measures, muscle strength, and neurophysiological measures, after stroke when compared to Virtual/Augmented Reality Gait Training Alone; the literature is mixed regarding balance.
- Repetitive transcranial magnetic stimulation Combined with Motor Relearning may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not functional mobility, after stroke when compared to Motor Relearning Alone.
- Mirror therapy with Repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, but not functional mobility and balance, after stroke when compared to Mirror therapy with Sham stimulation.
- LF-rTMS with Conventional rehab may be beneficial for improving biomechanical gait measures, range of motion, activities of daily living, gait speed, and balance, but not motor recovery, after stroke when compared to Sham rTMS with Conventional rehab.
- Cathodal tDCS with rTMS (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy.
- LF-rTMS with Conventional rehab may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, gait speed, and balance after stroke when compared to Conventional rehab.
- Sham rTMS with Conventional rehab may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, and activities of daily living, but not gait speed and balance, after stroke when compared to Conventional rehab.

Summary of Key Points: Repetitive Transcranial Magnetic Stimulation (rTMS)

Intervention	Control(s)	Function domain(s)	Effect
Low frequency (1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, balance	+
Low frequency (1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Spasticity, gait speed, quality of life	–
Low frequency (1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Biomechanical balance measures	=
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation	Motor recovery	–
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation	Neurophysiological measures, balance	–
High Frequency (>1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Biomechanical balance measures, spasticity, gait speed, balance	+
High Frequency (>1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Muscle strength, aerobic measures, gait endurance, functional mobility	–
High Frequency (>1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation	Motor recovery, neurophysiological measures, activities of daily living	=
High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy	Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy	Motor recovery, activities of daily living	+

High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation	Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation	Biomechanical balance measures, balance	+
High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation	Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation	Motor recovery, neurophysiological measures, activities of daily living	=
Ipsilesional repetitive transcranial magnetic stimulation (3Hz) with Physical therapy	Contralesional repetitive transcranial magnetic stimulation (1Hz) with Physical therapy	Neurophysiological measures	+
Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care	High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care	Motor recovery, neurophysiological measures, activities of daily living	–
Combined High and Low Frequency repetitive transcranial magnetic stimulation	Therapy	Motor recovery	+
Combined High and Low Frequency repetitive transcranial magnetic stimulation	Therapy	Neurophysiological measures, functional mobility	–
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation	Neurophysiological measures, activities of daily living	–
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation	Motor recovery	=
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy	Motor recovery, neurophysiological measures, activities of daily living	–
High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training	Treadmill Training	Motor recovery, gait speed, gait endurance, functional mobility	+
High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training	Treadmill Training	Neurophysiological measures	–
Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation	Ankle Strengthening	Muscle strength, neurophysiological measures, gait speed	+
Ankle Strengthening	repetitive transcranial magnetic stimulation	Muscle strength, neurophysiological measures, gait speed	+
High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation	repetitive transcranial magnetic stimulation	Motor recovery	=
Low Frequency (1Hz) repetitive transcranial magnetic stimulation	Conventional Therapy	Biomechanical gait measures, range of motion, neurophysiological measures	+
Repetitive transcranial magnetic stimulation Combined with Cycling Exercise	Cycling Exercise Alone	Motor recovery, biomechanical gait measures, gait speed, balance	+

Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training	Virtual/Augmented Reality Gait Training Alone	Motor recovery, gait speed	+
Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training	Virtual/Augmented Reality Gait Training Alone	Biomechanical gait measures, muscle strength, neurophysiological measures	–
Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training	Virtual/Augmented Reality Gait Training Alone	Balance	=
Repetitive transcranial magnetic stimulation Combined with Motor Relearning	Motor Relearning Alone	Motor recovery, spasticity, neurophysiological measures	+
Repetitive transcranial magnetic stimulation Combined with Motor Relearning	Motor Relearning Alone	Functional mobility	–
Mirror therapy with Repetitive transcranial magnetic stimulation	Mirror therapy with Sham stimulation	Biomechanical balance measures	+
Mirror therapy with Repetitive transcranial magnetic stimulation	Mirror therapy with Sham stimulation	Functional mobility, balance	–
LF-rTMS with Conventional rehab	Sham rTMS with Conventional rehab	Biomechanical gait measures, range of motion, activities of daily living, gait speed, balance	+
LF-rTMS with Conventional rehab	Sham rTMS with Conventional rehab	Motor recovery	–
Cathodal tDCS with rTMS (1Hz) with conventional therapy	Anodal tDCS with rTMS (1Hz) with conventional therapy	Motor recovery, neurophysiological measures, activities of daily living	–
High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy	Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy	Neurophysiological measures	=
LF-rTMS with Conventional rehab	Conventional rehab	Motor recovery, biomechanical gait measures, range of motion, activities of daily living, gait speed, balance	+
Sham rTMS with Conventional rehab	Conventional rehab	Motor recovery, biomechanical gait measures, range of motion, activities of daily living	+
Sham rTMS with Conventional rehab	Conventional rehab	Gait speed, balance	–

Theta Burst Stimulation (TBS)



Adopted from: https://www.psychiatryadvisor.com/home/depression-advisor/intermittent-theta-burst-stimulation-for-major-depressive-disorder-treatment/

Theta Burst Stimulation (TBS) is an emerging treatment modality that is a patterned form of rTMS where stimulation pulses are delivered in triplets or bursts at a high frequency (50Hz), and in a short interval (200ms), intending to mimic naturally occurring theta brain oscillations (Schwippel et al., 2019). TBS can also be used to adjust interhemispheric rivalry after a stroke and promote motor recovery through the delivery of continuous TBS (cTBS) to reduce cortical excitability in the contralesional hemisphere (600 pulses over 40 seconds); or intermittent TBS (iTBS) to increase cortical excitability in the ipsilesional hemisphere (600 pulses over 190 seconds) (Cotoi et al., 2019; Schwippel et al., 2019).

A total of eight RCTs were found that evaluated theta burst stimulation (TBS) for lower extremity motor rehabilitation. Three RCTs compared Intermittent Theta Burst Stimulation with Sham Stimulation (Liao et al. 2024; Liao et al. 2021; Lin et al. 2019). Three RCTs compared Cerebellar Intermittent Theta Burst Stimulation with Sham (Zhu et al. 2024; Xie et al. 2021a; Koch et al. 2019). One RCT compared Peripheral Intermittent Theta Burst Stimulation with Sham (El Nahas et al. 2022). One RCT evaluated Comparison of Intermittent Theta Burst Stimulation Sites (Xia et al. 2022).

The methodological details and results of all eight RCTs are presented in Table 38.

Table 38. RCTs Evaluating Theta Burst Stimulation (TBS) for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Intermittent Theta Burst Stimulation vs Sham Stimulation		
Liao et al. (2024) RCT (9) Nstart=36 Nend=34 TPS=Subacute A vs B vs 0	E1: iTBS to M1 + Conventional physiotherapy, E2: iTBS to contralateral cerebellar hemisphere + Conventional physiotherapy C: Sham iTBS + Conventional physiotherapy Duration: 3-5min/d, 5d/wk, 3wks	E1/E2 vs C: BBS (+exp1/2) FMA-LE (+exp2) TIS (-) BI (-) mRS (-) FAC (+exp1/2)

		HAMA (-) HAMD (-) MEP amplitude (+exp1/2) E1 vs E2: BBS (-) FMA-LE (+exp2) TIS (-) BI (-) mRS (no stat) FAC (no stat) HAMA (-) HAMD (-) MEP amplitude (+exp1)
Liao et al. (2021) RCT (7) Nstart=30 Nend=25 TPS=Subacute A vs 0	E: Intermittent theta-burst stimulation (iTBS) + physiotherapy C: Sham iTBS + physiotherapy Duration: 50min/d, 5d/wk, for 2wks	E vs C: Berg Balance Scale (+exp) Trunk Impairment Scale (+exp) Fugl-Meyer Assessment (-) Barthel Index (-) Corticospinal excitability Resting motor threshold (-) Cortical silent period (-) Motor-evoked potential (-)
Lin et al. (2019) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs 0	E: Intermittent Theta Burst Stimulation (5Hz) + Physiotherapy C: Sham + Physiotherapy Duration: 1200 pulses iTBS, 2d/wk, 5wks iTBS 45min/d, 2d/wk, for 5wks (10 sessions)	E vs C: Berg Balance Scale (-) I Timed Up and Go Test (-) 10-Meter Walk Test (-) Fugl-Meyer Assessment Lower extremity (-) Barthel Index (-) Biodex balance Overall index (-) Mediolateral (-) Eyes-open firm surface ()- Eyes-closed firm surface (-) Eyes-open unstable surface (-) Eyes-closed unstable surface (-)
Cerebellar Intermittent Theta Burst Stimulation vs Sham		
Zhu et al. (2024) RCT (7) Nstart=38 Nend=36 TPS=Subacute A + B vs B	E: Cerebellar Theta-burst Stimulation (iTBS) + Standardized Physical Therapy C: Sham Stimulation + Standardized Physical Therapy Duration: 2x/d iTBS + 60min Standard PT, 5ds/wk, 2wks	E vs C: FMA-LE (+exp) Berg balance scale (+exp) TUG (+exp) Barthel Index (+exp) Cadence (+exp) Stride length (+exp) Gait velocity (+exp) step length affected lower limb (+exp) healthy lower limb (-)
Xie et al. (2021a) RCT (9) Nstart=36 Nend=34 TPS=Subacute	E: Cerebellar intermittent TBS + Conventional therapy C: Sham TBS + Conventional therapy	E vs C: Fugl-Meyer assessment-lower extremity (-) 10m Walk test: Comfortable walking time (+exp) Maximum walking time (+exp)

A vs 0	Duration: 1session/d, 5d/wk, for 2wks iTBS (600 pulses/session) & 50min/d, 5d/wk, for 2wks conventional therapy	Timed Up and Go (-) Functional ambulation category (-) MEP Peak amplitude (-) Latency (-)
Koch et al. (2019) RCT (8) Nstart=36 Nend=34 TPS=Chronic A vs 0	E: Cerebellar iTBS + Physical therapy C: Sham iTBS + Physical therapy Duration: 90min/d, 7d/wk, for 3wks Physical therapy & 2 runs of CRB-iTBS/d, 7d/wk, for 3wks	E vs C: Berg Balance Scale (+exp) Fugl-Meyer Assessment (-) Barthel Index (-) Gait Analysis Step length (-) Step width (+exp) speed (No stats) Stance (-) Cortical Activity Primary motor cortex (-) posterior parietal cortex (+exp)
Peripheral Intermittent Theta Burst Stimulation vs Sham		
El Nahas et al. (2022) Feasibility/pilot RCT (8) Nstart=42 Nend=36 TPS=Chronic A vs 0	E: Peripheral intermittent theta burst stimulation (piTBS) C: Sham TBS Duration: 3-4d/wk, 8 sessions in total	E vs C: Modifed Ashworth Scale total (+exp) upper extremity (+exp) lower extremity (+exp) estimated Botulinum Toxin Dose total (+exp) upper extremity (+exp) lower extremity (+exp)
Comparison of Intermittent Theta Burst Stimulation Sites		
Xia et al. (2022) Feasibility/pilot RCT (4) Nstart=31 Nend=31 TPS=Subacute A vs B1 vs B2 Also in Table 52 (Supplements and Vitamins)	E1: iTBS unilateral cerebellar area (CB Single group), E2: iTBS Cerebellar primary motor cortex area (CB-M1 group), E3: iTBS Cerebellar Supplementary Motor Area (CB-SMA group) Duration: CB-M1/CB-SMA = 2 iTBS session; CB-Single group = 1 iTBS session	E1 vs E2 vs E3: Eyes open condition COPs (-) COPa (+exp2) ML-COPd (-) AP-COPd (+exp3) ML-COPs (-) AP-COPs (+exp2/3) ML-COPa (-) AP-COPa (+exp2) L-COPda (-) S-COPda (-) L-COPdv (-) S-COPdv (+exp2) COParea (-) summary balance score (-) Eyes closed condition COPs (-) COPa (-) ML-COPd (-) AP-COPd (-) ML-COPs (-) AP-COPs (-) ML-COPa (-)

		AP-COPa (-) L-COPda (-) S-COPda (-) L-COPdv (-) S-COPdv (-) COParea (-) summary balance score (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving motor recovery.	3	Liao et al. 2024; Liao et al. 2021; Lin et al. 2019
1b	iTBS to M1 with Conventional physiotherapy may not have a difference in efficacy when compared to Sham iTBS with Conventional physiotherapy for improving motor recovery.	1	Liao et al. 2024
1b	iTBS to M1 with Conventional physiotherapy may result in lesser improvements in motor recovery when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy.	1	Liao et al. 2024
1b	iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may produce greater improvements in motor recovery than Sham iTBS with Conventional physiotherapy.	1	Liao et al. 2024
1a	Cerebellar Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham for improving motor recovery.	3	Zhu et al. 2024; Xie et al. 2021a; Koch et al. 2019

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cerebellar Intermittent Theta Burst Stimulation may produce greater improvements in biomechanical gait measures than Sham.	2	Zhu et al. 2024; Koch et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Peripheral Intermittent Theta Burst Stimulation may produce greater improvements in spasticity than Sham.	1	El Nahas et al. 2022

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving neurophysiological measures.	1	Liao et al. 2021
1b	iTBS to M1 with Conventional physiotherapy or iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may produce greater improvements in neurophysiological measures than Sham iTBS with Conventional physiotherapy.	1	Liao et al. 2024
1b	iTBS to M1 with Conventional physiotherapy may produce greater improvements in neurophysiological measures than iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy.	1	Liao et al. 2024
1a	Cerebellar Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham for improving neurophysiological measures.	2	Xie et al. 2021a; Koch et al. 2019

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving activities of daily living.	3	Liao et al. 2024; Liao et al. 2021; Lin et al. 2019
1b	iTBS to M1 with Conventional physiotherapy or iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may not have a difference in efficacy when compared to Sham iTBS with Conventional physiotherapy for improving activities of daily living.	1	Liao et al. 2024
1b	iTBS to M1 with Conventional physiotherapy may not have a difference in efficacy when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy for improving activities of daily living.	1	Liao et al. 2024
1a	There is conflicting evidence about the effect of Cerebellar Intermittent Theta Burst Stimulation when compared to Sham for improving activities of daily living.	2	Zhu et al. 2024; Koch et al. 2019

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving gait speed.	1	Lin et al. 2019
1a	Cerebellar Intermittent Theta Burst Stimulation may produce greater improvements in gait speed than Sham.	3	Zhu et al. 2024; Xie et al. 2021a; Koch et al. 2019

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Cerebellar Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham for improving functional mobility.	2	Zhu et al. 2024; Xie et al. 2021a
1b	iTBS to M1 with Conventional physiotherapy or iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may	1	Liao et al. 2024

	produce greater improvements in functional mobility than Sham iTBS with Conventional physiotherapy.		

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Intermittent Theta Burst Stimulation may not have a difference in efficacy when compared to Sham Stimulation for improving balance.	3	Liao et al. 2024; Liao et al. 2021; Lin et al. 2019
1b	iTBS to M1 with Conventional physiotherapy or iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may produce greater improvements in balance than Sham iTBS with Conventional physiotherapy.	1	Liao et al. 2024
1b	iTBS to M1 with Conventional physiotherapy may not have a difference in efficacy when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy for improving balance.	1	Liao et al. 2024
1a	Cerebellar Intermittent Theta Burst Stimulation may produce greater improvements in balance than Sham.	2	Zhu et al. 2024; Koch et al. 2019
2	Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not have a difference in efficacy when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group) for improving balance.	1	Xia et al. 2022

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Peripheral Intermittent Theta Burst Stimulation may produce greater improvements in upper extremity function than Sham.	1	El Nahas et al. 2022

Key Points

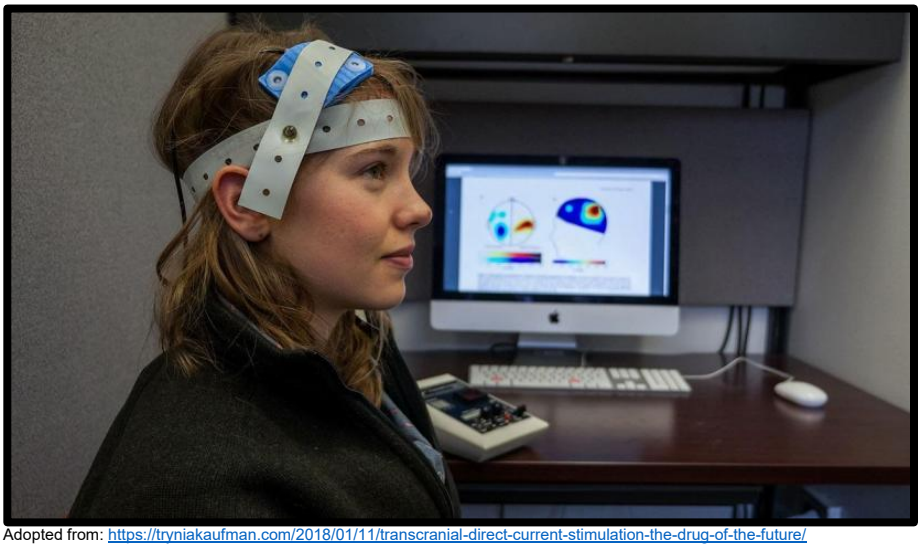
- Intermittent Theta Burst Stimulation may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, and balance after stroke when compared to Sham Stimulation.
- Cerebellar Intermittent Theta Burst Stimulation may be beneficial for improving biomechanical gait measures, gait speed, and balance, but not motor recovery, neurophysiological measures, and functional mobility, after stroke when compared to Sham; the literature is mixed regarding activities of daily living.
- Peripheral Intermittent Theta Burst Stimulation may be beneficial for improving spasticity after stroke when compared to Sham.
- Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not be beneficial for improving balance after stroke when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group).
- iTBS to M1 with Conventional physiotherapy may be beneficial for improving neurophysiological measures, but not activities of daily living and balance, after stroke when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy; iTBS to M1 with Conventional physiotherapy may result in lesser improvements in motor recovery when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy.
- iTBS to M1 with Conventional physiotherapy may be beneficial for improving neurophysiological measures, functional mobility, and balance, but not motor recovery and activities of daily living, after stroke when compared to Sham iTBS with Conventional physiotherapy.

- iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may be beneficial for improving motor recovery, neurophysiological measures, functional mobility, and balance, but not activities of daily living, after stroke when compared to Sham iTBS with Conventional physiotherapy.

Summary of Key Points: Theta Burst Stimulation (TBS)

Intervention	Control(s)	Function domain(s)	Effect
Intermittent Theta Burst Stimulation	Sham Stimulation	Motor recovery, neurophysiological measures, activities of daily living, gait speed, balance	−
Cerebellar Intermittent Theta Burst Stimulation	Sham	Biomechanical gait measures, gait speed, balance	+
Cerebellar Intermittent Theta Burst Stimulation	Sham	Motor recovery, neurophysiological measures, functional mobility	−
Cerebellar Intermittent Theta Burst Stimulation	Sham	Activities of daily living	=
Peripheral Intermittent Theta Burst Stimulation	Sham	Spasticity	+
Intermittent theta burst stimulation unilateral cerebellar area (CB Single group)	intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group)	Balance	−
iTBS to M1 with Conventional physiotherapy	iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy	Motor recovery, activities of daily living, balance	−
iTBS to M1 with Conventional physiotherapy	iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy	Neurophysiological measures	+
iTBS to M1 with Conventional physiotherapy	Sham iTBS with Conventional physiotherapy	Neurophysiological measures, functional mobility, balance	+
iTBS to M1 with Conventional physiotherapy	Sham iTBS with Conventional physiotherapy	Motor recovery, activities of daily living	−
iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy	Sham iTBS with Conventional physiotherapy	Motor recovery, neurophysiological measures, functional mobility, balance	+
iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy	Sham iTBS with Conventional physiotherapy	Activities of daily living	−

Transcranial Direct Current Stimulation (tDCS)



Adopted from: https://tryniakaufman.com/2018/01/11/transcranial-direct-current-stimulation-the-drug-of-the-future/

Another form of non-invasive brain stimulation is transcranial direct-current stimulation (tDCS). This procedure involves the application of mild electrical currents (1-2 mA) conducted through two saline-soaked, surface electrodes applied to the scalp, overlaying the area of interest and the contralateral forehead above the orbit. Anodal stimulation is performed over the affected hemisphere and increases cortical excitability, while cathodal stimulation is performed over the unaffected hemisphere and decreases cortical excitability (Schlaug et al., 2008). Additionally, tDCS can be applied on both hemispheres concurrently, this is known as dual tDCS. In contrast to transcranial magnetic stimulation, tDCS does not induce action potentials, but instead modulates the resting membrane potential of the neurons (Cramer, 2016).

A total of 57 RCTs were found that evaluated transcranial direct current stimulation (tDCS) for lower extremity motor rehabilitation. 21 RCTs evaluated Comparison of tDCS Stimulation Conditions (Seamon et al. 2023; Wong et al. 2022; Klomjai et al. 2022; Pinto et al. 2021; Shah et al. 2021; Ojardias et al. 2020; Bornheim et al. 2020; Cattagni et al. 2019; Geiger et al. 2019; Klomjai et al. 2018; Koo et al. 2018; Utarapichat & Kitisomprayoonkul 2018; Andrade et al. 2017; Van Asseldonk & Boonstra 2016; Chang et al. 2015; Saeys et al. 2015; Fusco et al. 2014; Tahtis et al. 2014; Khedr et al. 2013; Rossi et al. 2013; Tanaka et al. 2011). Six RCTs compared tDCS with Robot-assisted Gait Training with Sham tDCS + Robot-assisted gait training (Kim et al. 2024b; Leon et al. 2017; Seo et al. 2017; Picelli et al. 2015; Danzl et al. 2013; Geroin et al. 2011). Three RCTs compared Dual tDCS + Task-oriented training with Sham tDCS + Task-oriented training (Toktas et al. 2024; Hsu et al. 2023; Aneksan et al. 2021). One RCT compared Cerebellar tDCS + Split-belt treadmill training with Sham ctDCS + Split-belt treadmill training (Kumari et al. 2020). One RCT compared tDCS + Ankle Motor Tracking + High-intensity speed-based treadmill training with High-intensity speed-based treadmill training (Madhavan et al. 2020). One RCT compared tDCS + Body weight supported treadmill training with tDCS + Body weight supported treadmill training (Manji et al. 2018). One RCT compared tDCS + Task-related training with Task-related training (Park et al. 2015b). One RCT compared tDCS + Aerobic exercise with Sham tDCS + Aerobic exercise or tDCS (Sivaramakrishnan & Madhavan 2021). One RCT compared Contralesionally Cathodal tcDCS (2mA) + Cathodal tsDCS + Robot-Assisted Gait Training with Ipsileisonally Cathodal tcDCS (2mA) + Cathodal tsDCS + Robot-Assisted Gait Training (Picelli et al. 2019). Two RCTs compared tDCS Combined with High or Low Frequency rTMS with rTMS or Sham (Gong et al. 2021; Cho et al. 2017). Three RCTs compared Transcranial Direct Current Stimulation with Functional Electrical Stimulation (Ehsani et al. 2022; Zhang et al. 2021b; Mitsutake et al. 2021). One RCT compared tDCS + Trunk Training with Sham tDCS + Trunk Training (Tedla et al. 2022). Two RCTs compared tDCS + Videogame Training with Sham tDCS + Videogame Training (Qurat-Ul-Ain et al. 2023; Qurat-ul-ain et al. 2022). Three RCTs compared tDCS + Gait Training with Sham tDCS + Gait Training (Kim et al. 2024a; Tseng et al. 2024; da Cunha et al. 2024). Three RCTs compared tDCS + Conventional Therapy with Sham tDCS + Conventional Therapy (Shakeb et al. 2024; Vimolratana et al. 2024; Duan et al. 2023). Two RCTs compared tDCS + Treadmill Training with Sham tDCS + Treadmill Training (Dumont et al. 2023; Wong et al. 2023). Two RCTs compared tDCS + Individualized Physiotherapy with Sham tDCS + Individualized Physiotherapy (Massaferri et al. 2023; Youssef et al. 2023). One RCT compared tDCS + Foot Drop Stimulator + Treadmill Training with Sham tDCS + Foot Drop Stimulator + Treadmill Training (da Cunha et al. 2022). One RCT compared tDCS + Home-Based Exercise with Sham tDCS + Home-Based Exercise (Prathum et al. 2022).

In addition, four RCTs in which transcranial direct current stimulation (tDCS) formed part of a combined or comparative intervention are cross-referenced at the end of Table 39; their primary listings appear in other tables.

The methodological details and results of all 57 RCTs are presented in Table 39.

Table 39. RCTs Evaluating Transcranial Direct Current Stimulation (tDCS) for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Comparison of tDCS Stimulation Conditions		
Seamon et al. (2023) RCT crossover (7) Nstart=16 Nend=16 TPS=Chronic A vs B vs C vs 0	E1: Excitatory tDCS E2: Inhibitory tDCS E3: Dual tDCS C: Sham tDCS Duration: 20min, single session for each - 48hr washout	E1 vs E2 vs E3 vs C: E1/2/3 V C: Gait speed(-) Paretic step ratio(-) Paretic propulsion(-)
Wong et al. (2022) RCT (8) Nstart=48 Nend=48 TPS=Chronic A vs B vs C vs 0	E1: Anodal tDCS (2mA) E2: Bilateral tDCS (2mA) E3: Cathodal tDCS (2mA) C: Sham tDCS Duration: 20min/session for 1 session	E vs C: Cognitive dual task walking performance Cadence (-) Step time unaffected (-) Step time affected (-) Step length unaffected (-) Step length affected (-) dual task cost (-) Motor dual task walking performance Cadence (-) Step time unaffected (-) Step time affected (-) Step length unaffected (-) Step length affected (-) dual task cost (-) Single walking performance Step time unaffected (-) Step time affected (-) Step length unaffected (-) Step length affected Corticomotor activity Resting motor threshold (-) Short interval intracortical inhibition (-) Fugl-Meyer assessment (-) E1 vs E2: CDT speed (-) MDT speed (+exp2) SW speed (+exp2) SW cadence (-) Silent period (+exp2) E1 vs E3: CDT speed (-) MDT speed (+exp3) SW speed (-)

		SW cadence (-) Silent period (-) E1 vs C: CDT speed (-) MDT speed (-) SW speed (-) SW cadence (-) Silent period (-) E2 vs E3: CDT speed (-) MDT speed (-) SW speed (-) SW cadence (-) Silent period (-) E2 vs C: CDT speed (+exp2) MDT speed (+exp2) SW speed (+exp2) SW cadence (+exp2) Silent period (+exp2) E3 vs C: CDT speed (+exp3) MDT speed (+exp3) SW speed (-) SW cadence (-) Silent period (+exp3)
Klomjai et al. (2022) RCT (8) Nstart=82 Nend=78 TPS=Acute A vs B vs C vs 0	E1: Anodal tDCS + Conventional therapy E2: Cathodal tDCS + Conventional therapy E3: Dual tDCS + Conventional therapy; C: Sham tDCS + conventional rehab Duration: 20 mins/d, tDCS + 60 min conventional therapy, for 5d total	E3 vs E1: FMA LE(-) UE(-) WMFT Pencil(+exp3) Can(+exp3) FTSTST(-) TUG(-) Muscle strength Wrist ext.(-) Elbow ext.(-) Hip flex.(-) Hip ext.(-) Knee ext.(+exp3) Ankle flex.(-) mean blood flow velocity (-) E3 vs E2: FMA LE(-) UE(-) WMFT Pencil(-) Can(+exp3) FTSTST(-) TUG(+exp3) Muscle strength Wrist ext.(-)

		Elbow ext.(-) Hip flex.(+exp3) Hip ext.(-) Knee ext.(-) Ankle flex.(-) mean blood flow velocity (-) E1/E2/E3 vs C: FMA LE(-) UE(-) WMFT Pencil(+exp3) Can(-) FTSTST(-) TUG(+exp3) Muscle strength Wrist ext.(-) Elbow ext.(-) Hip flex.(+exp3) Hip ext.(-) Knee ext.(+exp3) Ankle flex.(-+exp1) mean blood flow velocity (-)
Pinto et al. (2021) RCT (7) Nstart=60 Nend=53 TPS=Acute A + B vs B	E: tDCS + Treatment as usual C: Sham tDCS + Treatment as usual Duration: 30min/d, 2sessions/d, 6d/wk for 2wks	E vs C: Fugl-Meyer assessment (-): upper extremity (-) lower extremity (-) Jebson-Taylor Had Function test (-) Barthel index (-) Hamilton Anxiety rating scale (-) Hamilton depression rating scale (-) Scandinavian Stroke scale (-) Digit span test (-): forward (-) backward (-) Spatial span forward (-) backward (-) Serial subtraction test (-) Category fluency test (-) Complex figure test (-) Complex passage test (-) Paired word associate learning test (-) Tower of London test initiation time (-) execution time (-) total correct score (-) total move score (-) total time violations (-) total rule violations (-)
Shah et al. (2021) RCT (5) Nstart=30 Nend=30	E1: Anodal tDCS (2mA) + Conventional care E2: Cathodal tDCS (2mA) + Conventional care C: Sham tDCS + Conventional care	E1 v E2: Berg Balance scale (+exp1) Stroke Specific QoL scale (-) E1/E2 v C:

TPS=Not reported A vs B vs 0	Duration: 20min/d, 4d/wk, for 3wks (12 sessions total) stimulation	Berg Balance scale (+exp1, +exp2) Stroke Specific QoL scale (-)
Ojardias et al. (2020) RCT crossover (6) Nstart=20 Nend=18 TPS=Chronic A vs 0	E: Anodal tDCS (2mA) C: Sham tDCS Duration: 20min/1session - 11d washout	E vs C: 6-meter walk test (-) Wade test (gait speed) (-) Balance Assessment Excursion of COP (EO&EC) (-) COP trajectory length (EO&EC) (-) Step time difference (-) Step length difference (-)
Bornheim et al. (2020) RCT (9) Nstart=50 Nend=50 TPS=Acute A vs 0	E: Anodal tDCS (2mA) + Conventional therapy C: Sham tDCS + Conventional therapy Duration: 20min/d, 5d/wk tDCS or sham for 4wks + 120min/d, 5d/wk for 4wks physical therapy	E vs C: Wolf Motor Function Test (+exp) Semmes Weinstein Monofilament Test (+exp) Fugl Meyer Assessment Test Upper extremity (-) Lower extremity(+exp) Sensory (+exp) The Tardieu Spasticity Scale (+exp) Stroke Impact Scale (-) Hospital Anxiety and Depression Scale (+exp) Barthel Index (-)
Cattagni et al. (2019) RCT crossover (8) Nstart=24 Nend=24 TPS=Chronic A vs 0	E: Anodal tDCS 2mA C: Sham tDCS Duration: 30min/1session, +1wk washout	E vs C: Gait velocity (-) Step length (-) Swing phase angles Peak knee flexion (-) Peak dorsiflexion (-) Peak plantar flexion (-) Stance phase angles Peak knee extension (-) Peak dorsiflexion (-) EMG intensity Swing phase (-) Stance phase (-) EMG duration Swing phase (-) Stance phase (-)
Geiger et al. (2019) RCT crossover (7) Nstart=14 Nend=13 TPS=Chronic A vs 0	E: Bilateral transcranial direct current stimulation (tDCS) C: Sham tDCS Duration: 20min/d, 1d - 1wk washout	E vs C: Maximum voluntary contraction (-) Voluntary activation (-) Potentiated twitch (-) Contraction time (-) Half-relaxation time (+exp) RMS Rectus femoris (-) RMS Vastus lateralis (-) Amplitude rectus femoris (-) Amplitude vastus lateralis (-) Duration vastus lateralis (-) Duration rectus femoris (-)
Klomjai et al. (2018) RCT crossover (8)	E: Dual tDCS (2mA) + Conventional physiotherapy	E vs C: Timed Up and Go Test (-)

Nstart=19 Nend=19 TPS=Subacute A vs 0	C: Sham dual tDCS + Conventional physiotherapy Duration: 60min/1session conventional physiotherapy & 20min/1session tDCS - 1wk washout	Five Times Sit to Stand Test (+exp) Maximum Voluntary Contraction of knee extensor (-)
Koo et al. (2018) RCT (8) Nstart=24 Nend=24 TPS=Acute A vs 0	E: 1mA Anodal transcranial Direct Current Stimulation (tDCS) C: Sham tDCS Duration: 1 mA for 20mins/d, 10d	E vs C: Erasmus MC modification to revised Nottingham Sensory Assessment (-) Tactile sense (-) Light touch (-) Pressure (-) Pin prick (-) Kinesthesia affected (+exp) Kinesthesia unaffected (-) Sharp-blunt discrimination (-) Revised Nottingham Sensory Assessment Affected (+exp) Unaffected (-) Semmes Weinstein Monofilament Test (-) Manual function test (-) Modified Brunnstrom classification (-) Modified Barthel Index (+exp) Functional Ambulation Category (-)
Utarapichat & Kitisomprayoonkul (2018) RCT crossover (6) Nstart=10 Nend=10 TPS=Chronic A vs 0	E: Anodal tDCS (2 mA) C: Sham Stimulation Duration: 1 session for 10min Anodal tDCS, 30 seconds Sham Stimulation; 48 hr washout period	E vs C: Root mean squared amplitude Tibalis anterior (-) Vastus medialis oblique (-) Median frequency Tibalis anterior (-) Vastus medialis oblique (-) Timed Up and Go (-)
Andrade et al. (2017) RCT (9) Nstart=60 Nend=60 TPS=Subacute A vs B vs C vs 0	E1: Anodal tDCS E2: Dual tDCS E3: Cathodal tDCS C: Sham tDCS Duration: 5d/wk for 2wks	E1/E2/E3 vs C: Rate of falls (+exp1, +exp2, +exp3) Four Square Step Test (+exp1, +exp2, +exp3) Overall Stability Index (+exp1, +exp2, +exp3) Falls Efficacy Scale-international (+exp1, +exp2, +exp3) Berg Balance Scale (+exp1, +exp2, +exp3) 6-Minute Walk Test (+exp1, +exp2, +exp3) Sit-to-Stand Test (+exp1, +exp2, +exp3) E2 vs E1/E3: Rate of falls (-) Four Square Step Test (-) Overall Stability Index (-) Falls Efficacy Scale (+exp2) Berg Balance Scale (+exp2) 6-Minute Walk Test (+exp2) Sit-to-Stand Test (+exp2)
Van Asseldonk & Boonstra (2016) RCT crossover (7) Nstart=10	E1: Anodal tDCS E2: Dual tDCS C: Sham Stimulation	E vs C: Inter-individual variability (+exp2) step length (-)

Nend=10 TPS=Chronic A vs B vs 0	Duration: 10min/d, 1d/wk, for 3wks - 1wk washout	Stance Duration, Cycle time
Chang et al. (2015) RCT (8) Nstart=24 Nend=24 TPS=Acute A vs 0	E: Anodal tDCS + conventional care C: Sham tDCS + conventional care Duration: 10min/session tDCS, 5d/wk for 2wks	E vs C: Motricity Index (+exp) Fugl-Meyer Assessment (+exp) Functional Ambulation Category (-) Balance Berg Scale (-) Gait speed (-) Cadence (-) Stride length (+exp) Step time (+exp) Step length (-) Transcranial Magnetic stimulation Latency (+exp) Amplitude (+exp)
Saeys et al. (2015) RCT crossover (8) Nstart=31 Nend=31 TPS=Subacute A vs 0	E: Transcranial Direct Current Stimulation + Conventional Therapy C: Sham Transcranial Direct Current Stimulation + Conventional therapy Duration: 20mins/d, 4d/wk, tDCS/sham & 1hr/d, 5d/wk for 4wks Conventional Therapy	E vs C: Tinetti test (-) Rivermead Motor Assessment (-) Trunk Impairment Scale (-)
Fusco et al. (2014) RCT (6) Nstart=14 Nend=11 TPS=Acute A vs 0	E: Cathodal transcranial direct current stimulation + conventional therapy C: Sham transcranial direct current stimulation + conventional therapy Duration: 10min/d, 5d/wk, for 2wks tDCS or sham 45min/session 2sessions/d, 5d/wk, for 2wks conventional therapy	E vs C: Barthel index (-) Functional ambulation category (-) Canadian Neurological Scale (-) Rivermead mobility scale (-) Upper limb fugl-meyer (-) 10 meter walk test (-) 6 minute walk test (-) Timed up and go (-) 9-hole peg test (-) Pinch force (-) Grasp force (-)
Tahtis et al. (2014) RCT (8) Nstart=14 Nend=14 TPS=Acute A vs 0	E: Bi-cephalic tDCS (2mA) C: Sham stimulation Duration: 15min/single session	E vs C: Timed Up and Go (+exp) Performance Oriented Mobility Assessment (-)
Khedr et al. (2013) RCT (8) Nstart=40 Nend=40 TPS=Acute A vs B vs 0	E1: Anodal tDCS + Conventional care E2: Cathodal tDCS + Conventional care C: Sham tDCS + conventional care Duration: 25 min/d, 6days tDCS & 30min/d, 3d/wk, for 12wks conventional therapy	E1/E2 vs. C: Barthel index (+exp1, +exp2) Orgogozo's MCA scale (+exp1, +exp2) National Institute of Health Stroke Scale (-) Medical Research Council muscle strength scale Hand grip (-) Shoulder abduction (-) Hip flexion (-) Foot dorsiflexion (-) Resting motor threshold Unaffected hemisphere (-)

		Affected hemisphere (+exp1, +exp2) Active Motor Threshold Unaffected hemisphere (-) Affected hemisphere (+exp1, +exp2) E1 vs. E2: Barthel index (-) Orgogozo's MCA scale (-) National institute of stroke scale (-) Medical Research Council muscle strength scale Hand grip (-) Shoulder abduction (-) Hip flexion (-) Foot dorsiflexion (-) Resting motor threshold Unaffected hemisphere (-) Affected hemisphere (-) Active Motor Threshold Unaffected hemisphere (-) Affected hemisphere (-)
Rossi et al. (2013) RCT (6) Nstart=50 Nend=50 TPS=Acute A vs 0	E: Anodal tDCS (2mA) C: Sham stimulation Duration: 20min/d for 5d	E vs C: Fugl-Meyer motor scale (-) National Institute of Health Stroke Scale (-) Barthel Index (-) Modified Rankin Scale (-)
Tanaka et al. (2011) RCT crossover (7) Nstart=8 Nend=8 TPS=Chronic A vs 0	E: Anodal tDCS C: Sham tDCS Duration: Single session of each – 1wk washout	E vs C: Maximal knee extension force (+exp)
tDCS with Robot-assisted Gait Training vs Sham tDCS + Robot-assisted gait training		
Kim et al. (2024b) RCT (7) Nstart=27 Nend=24 TPS=Chronic A + B vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: High definition transcranial direct current stimulation (dual) + Robot assisted gait training C: Sham High definition transcranial direct current stimulation + Robot assisted gait training Duration: 45mins/d, 3x/wk, 4wks	E vs C: 10 meter walk test (-) Functional Reach Test (-) Dynamic gait index (-) FMA total (+exp) lower extremity (-) TUG (-) Berg balance scale (-) Korean-Modified Barthel Index (+exp)
Leon et al. (2017) RCT (6) Nstart=50 Nend=49 TPS=Subacute A1 vs A2 vs B Also in Table 27 (Electromechanical and Robotic Devices)	E1: Robot-assisted gait training and anodal tDCS over the leg motor cortex area E2: Robot-assisted gait training and anodal tDCS over the hand motor cortex area C: Robot-assisted gait training only Duration: 5h/d, 5d/wk for 4wks	E1/E2 vs C: Functional Ambulation Category (-) 10-Metre Walk Test (-)

Seo et al. (2017) RCT (9) Nstart=21 Nend=21 TPS=Chronic A vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E: Robot-assisted gait training and anodal tDCS C: Robot-assisted gait training and sham stimulation Duration: 20min/d, 5d/wk, for 4wks tDCS/Sham, 45min/d, 5d/wk, for 4wks RAGT	E vs C: Functional Ambulation Category (-) 10-Meter Walk Test (-) 6-Minute Walk Test (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-) Medical Research Council Scale (-) Motor-Evoked Potential Parameters (-)
Picelli et al. (2015) RCT (9) Nstart=30 Nend=30 TPS=Chronic A + B vs A + C vs A + B + C Also in Table 27 (Electromechanical and Robotic Devices)	E1: Robot-assisted gait training (G-EO) + Anodal tDCS (2mA) + sham tsDCS (transcutaneous spinal direct current stimulation) E2: Robot-assisted gait training (G-EO) + sham tDCS + Cathodal tsDCS (2.5mA) E3: Robot-assisted gait training (G-EO) + Anodal tDCS (2mA) + Cathodal tsDCS (2.5mA) Duration: 20min/d, 5d/wk for 2wks RAGT	E1 vs E2: 6min Walk test (-) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (-) Single-double limb support time ratio (-) E1 vs E3: 6min Walk test (+exp3) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (+exp3) Single-double limb support time ratio (-) E2 vs E3: 6min Walk test (+exp3) Functional Ambulation category (-) Motricity index-leg (-) Ashworth scale (-) Cadence (+exp3) Single-double limb support time ratio (-)
Danzl et al. (2013) RCT (6) Nstart=10 Nend=8 TPS=Chronic A + B vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Anodal tDCS + Robot- assisted gait training C: Sham tDCS + Robot- assisted gait training Duration: 20min tDCS + 20- 40min/d lokomat, 3d/wk for 4wks	E vs C: Functional Ambulation Category (+exp) Berg Balance Scale (-) Timed Up and Go Test (-) 10-Metre Walk Test (-) Stroke Impact Scale (-)
Geroin et al. (2011) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs B vs 0 Also in Table 27 (Electromechanical and Robotic Devices)	E1: Anodal tDCS + Robot- assisted gait training E2: Sham tDCS + Robot- assisted gait training C: Gait training Duration: 50min/d, 5d/wk for 2wks	E1 vs E2: 10-Meter Walk Test (-) 6-Minute Walk Test (-) cadence (-) temporal symmetry ratio (-) single-double support duration ratio (-) Functional Ambulation categories (-) Rivermead Mobility Index (-) Motoricity Index leg subscore (-) E1/E2 vs C: 10-Meter Walk Test (+exp1, +exp2) 6-Minute Walk Test (+exp1, +exp2) cadence (+exp1, +exp2) temporal symmetry ratio (+exp) single-double support duration ratio (+exp) Functional Ambulation categories (+exp) Rivermead Mobility Index (+exp)

		Motoricity Index leg subscore (+exp)
Dual tDCS + Task-oriented training vs Sham tDCS + Task-oriented training		
Toktas et al. (2024) RCT (7) Nstart=32 Nend=28 TPS=Chronic A + B vs C Also in Table 5 (Task-Specific Training)	E: dual tDCS + Task-specific training C: Sham tDCS + Task specific training Duration: 80min(20min tDCS + 60min physio)/d, 5d/wk, 4wks	E vs C: TUG (-) BBS (-) 10MWT (-) FMA-LE (-) Stroke Specific Quality of Life (-) energy(-) family roles(-) language(-) mobility(+exp) mood(-) personality(-) self-care(-) social roles(-) thinking(-) upper extremity(-) vision(-) work/productivity(-)
Hsu et al. (2023) RCT (8) Nstart=27 Nend=27 TPS=Acute A + B vs B Also in Table 5 (Task-Specific Training)	E: bihemispheric tDCS + task oriented training C: Sham tDCS + task oriented therapy Duration: 40min/d, 5d/wk, 2wks	E vs C: FMA-UE(+exp) ARAT(-) FMA-LE(+exp) mRS(-)
Aneksan et al. (2021) RCT (5) Nstart=25 Nend=25 TPS=Subacute A + B vs B	E: Dual-tDCS (Anodal and Cathodal, 2 mA) + Task- oriented Training C: Sham tDCS + Task- oriented Training Duration: 20min/d Stimulation & 50min/d Training, 5d, consecutively	E vs C: Gait Velocity (-) Cadence (-) Step Time Affected side (-) Unaffected side (-) Step Length Affected side (-) Unaffected side (-) Timed-Up-and-Go Test (-) Five-Time Sit-to-Stand Test (-) Muscle Strength Hip Knee Ankle (-) Gait Cycle Stance phase (-) Swing Phase-affected side (+exp) Swing phase-affected side (-) Single leg support (-) Double leg support (-)

Cerebellar tDCS + Split-belt treadmill training vs Sham ctDCS + Split-belt treadmill training		
Kumari et al. (2020) RCT (8) Nstart=4 Nend=4 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: Cerebellar transcranial direct current stimulation (ctDCS) + split-belt treadmill training C: Sham ctDCS + split-belt treadmill training Duration: 20min/d, 3d/wk, for 1wk	E vs C: Treadmill step length symmetry (No stats) Over-ground step length symmetry (No stats) Change in step length symmetry (No stats) 10-Metre Walk Test (No stats)
tDCS + Ankle Motor Tracking + High-intensity speed-based treadmill training vs High-intensity speed-based treadmill training		
Madhavan et al. (2020) RCT (8) Nstart=81 Nend=72 TPS=Chronic A + B vs C + B vs A + C + B vs D + E Also in Table 9 (Treadmill Training)	E1: tDCS priming only (Transcranial Direct Current Stimulation + High-intensity speed-based treadmill training) E2: AMT priming only (Ankle motor tracking + Sham Transcranial Direct Current Stimulation+ High-intensity speed-based treadmill training) E3: tDCS & AMT priming (Transcranial Direct Current Stimulation + Ankle motor tracking + High-intensity speed-based treadmill training) C: 15min rest + High- intensity speed-based treadmill training Duration: 15mins/d, 3d/wk, for 4wks + 40mins/d, 3d/wk, for 4wks High-intensity speed-based treadmill training	E1 vs E2: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E2 vs E3: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E1 vs E3: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-)

		6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E1 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (+exp1) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E2 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-) Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-) E3 vs C: 10-mt walk test Comfortable Walking speed (-) Maximal walking speed (-) Corticomotor excitability Active motor threshold paretic (-) Active motor threshold Non-Paretic (-) Slope paretic (-) slope non-paretic (-) 6-minute walk test (-) Berg Balance Scale (-) Stroke Impact Scale (-) Timed up and go (-)

		Mini Balance Evaluation Systems Test (-) Fugl-Meyer Assessment motor function (-) Activities-Specific Balance Confidence Scale (-)
tDCS + Body weight supported treadmill training vs tDCS + Body weight supported treadmill training		
Manji et al. (2018) RCT crossover (7) Nstart=30 Nend=30 TPS=Subacute A + B vs 0 Also in Table 9 (Treadmill Training)	E: Body weight supported treadmill training + anodal tDCS C: Body weight supported treadmill training with sham tDCS Duration: 20min/d, 7d/wk for 1wk; 3d washout	E vs C: 10-Meter Walk Test (+exp) Timed Up and Go Test (+exp) Fugl-Meyer Assessment (-) Performed Oriented Mobility Assessment (-) Trunk Control Test (-)
tDCS + Task-related training vs Task-related training		
Park et al. (2015b) RCT (5) Nstart=24 Nend=24 TPS=Chronic A + B vs C vs B Also in Table 5 (Task-Specific Training)	E1: tDCS + Task-related training E2: Sham tDCS + Task- related training C: Task-related training Duration: 30min/d, 3d/wk for 4wks	E1 vs C: Gait Speed (+exp1) Stance/Swing Phase (+exp1) Step Length (-)
tDCS + Aerobic exercise vs Sham tDCS + Aerobic exercise or tDCS		
Sivaramakrishnan & Madhavan (2021) RCT crossover (7) Nstart=29 Nend=26 TPS=Chronic A vs B vs C + A	E1: Anodal tDCS E2: Aerobic exercise + Sham tDCS E3: Aerboic exercise + Anodal tDCS Duration: 20min/single session – 5-7d washout	E1/E3 vs E2: Corticomotor excitability (+exp2) Short interval intra cortical inhibition (-) Ipsilateral silent period (-) Index of transcallosal inhibition for tibialis anterior (-) Index of transcallosal inhibition for ankle reaction time (-)
Contralesionally Cathodal tcDCS (2mA) + Cathodal tsDCS + Robot-Assisted Gait Training vs Ipsileisonally Cathodal tcDCS (2mA) + Cathodal tsDCS + Robot-Assisted Gait Training		
Picelli et al. (2019) RCT (8) Nstart=40 Nend=40 TPS=Chronic A1 + B + C vs A2 + B + C Also in Table 27 (Electromechanical and Robotic Devices)	E1: Contralesionally cathodal tcDCS (2mA) + cathodal tsDCS + Robot-assisted gait training E2: Ipsileisonally cathodal tcDCS (2mA) + cathodal tsDCS + Robot-assisted gait training Duration: 20min/d, 5d/wk for 2wks	E1 vs E2: 6-meter walk test (-) Functional Ambulation Category (-) Motricity Index (-) Modified Ashworth Scale (-) Cadence (-) Single/Double Support duration (-)
tDCS Combined with High or Low Frequency rTMS vs rTMS or Sham		
Gong et al. (2021) RCT (7) Nstart=65 Nend=60 TPS=Acute A vs B + A vs C + A vs 0 Also in Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E1: rTMS (1Hz) + conventional therapy E2: Cathodal tDCS + rTMS (1Hz) + conventional therapy E3: Anodal tDCS + rTMS (1Hz) + conventional therapy C: Sham rTMS Duration: 40min/d, 5d/wk, for 4wks conventional therapy & 20min/d, 5d/wk, for 4wks tDCS +/- rTMS (total of 1200 pulses)	E1/E2/E3 vs C: National Institute of Health Stroke Scale (-) Fugl-Meyer Upper Limb (-) Lower Limb (+exp3) Bilateral Motor Evoked Potentials (+exp2, +exp3) Barthel Index score (-) Resting Motion Threshold (-) Central Motor Conduction Time (-) E1 vs E2 vs E3:

		National Institute of Health Stroke Scale (-) Fugl-Meyer Upper Limb (-) Lower Limb (+exp3) Bilateral Motor Evoked Potentials (-) Barthel Index score (-) Resting Motion Threshold (-) Central Motor Conduction Time (-)
Cho et al. (2017) RCT (6) Nstart=30 Nend=30 TPS=Acute A + B vs C	E: Dual-mode transcranial direct current stimulation (2mA) + repetitive transcrainial magnetic stimulation (10Hz) C: rTMS (10Hz) Duration: 20min/d, 5d/wk for 2wks	E vs C: Fugl-Meyer Assessment Lower Extremity (-) Upper Extremity (+exp) Total (+exp)
Transcranial Direct Current Stimulation vs Functional Electrical Stimulation		
Ehsani et al. (2022) RCT (7) Nstart=32 Nend=32 TPS=Subacute A + B vs B1 vs B1 + C vs B2 vs B2 + C Also in Table 28 (Functional Electrical Stimulation)	E1: M1 anodal tDCS + FES + Conventional care E2: Sham tDCS + FES + Conventional care C: 20min/d FES + Conventional care E2: 30s of a-tDCS during 20min/d FES + 20min/d conventional care 5d/wk, for 2wks; C: 20min/d FES + 20min/d conventional care, 5d/wk, for 2wks Duration: Experimental groups: 40 mins/d (20 mins of tDCS/sham + 20 mins of routine physiotherapy), 5ds/wk, 2wks	E vs C: Modified Ashworth Scale (+exp) Berg balance scale (+exp) EMG data lateral gastrocnemius muscle (+exp) tibialis anterior muscle (-)
Zhang et al. (2021b) RCT (5) Nstart=122 Nend=122 TPS=Subacute A vs B Also in Table 28 (Functional Electrical Stimulation)	E1: Transcranial direct current stimulation + conventional therapy E2: Functional electrical stimulation + conventional therapy Duration: 20min/d, 5d/wk, for 8wks	E1 vs E2: Fugl-Meyer Assessment (+exp1) Barthel index (+exp1) Functional Ambulation Category (+exp1) Somatosensory evoked potential (-) P40 latency and amplitude (-) N45 latency and amplitude (-)
Mitsutake et al. (2021) RCT (7) Nstart=37 Nend=34 TPS=Subacute A1 vs A2 vs A3 Also in Table 28 (Functional Electrical Stimulation)	E1: Gait training with FES + sham tDCS+ conventional rehabilitation E2: Gait training with tDCS + conventional rehabilitation E3: Gait training with tDCS and FES + conventional rehabilitation Duration: 40min/d, 7d/wk Conventional rehabilitation & 20min/d, 7d/wk Gait with Stimulation, 1wk	E1 vs E2: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Root mean squared Vertical axis (-) Mediolateral axis (-) Anteroposterior axis (-) E1 vs E3: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-)

		Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (+exp3) Anteroposterior axis (+exp3) Root mean squared Vertical axis (-) Mediolateral axis (-) Anteroposterior axis (-) E2 vs E3: 10m Walk test (-) Trunk Acceleration Harmonic ratio-vertical axis (-) Mediolateral (-) Anteroposterior axis (-) Autocorrelation coefficient Vertical axis (-) Mediolateral (-) Anteroposterior axis (+exp3) Root mean squared Vertical axis (-) Mediolateral axis (-) Anteroposterior axis (-)
tDCS + Trunk Training vs Sham tDCS + Trunk Training		
Tedla et al. (2022) RCT (9) Nstart=54 Nend=54 TPS=Subacute A + B vs A vs C Also in Table 12 (Stretching or Mobilization Exercises)	E1: Trunk-targeted,proprioceptive neuromuscular facilitation + Bihemispheric tDCS + Conventional physiotherapy E2: Trunk-targeted,proprioceptive neuromuscular facilitation + sham transcranial direct current stimulation + Conventional physiotherapy C: Convetional physiotherapy Duration: E1/2: 90 mins/d (20 mins of tDCS/sham tDCS + 30 mins of PNF + 40 mins of conventional physiotherapy), 4ds/wk, 6wks; C: 90 mins/d (90 mins of conventional physiotherapy), 4ds/wk, 6wks	E1 vs C: TIS (+exp1) FMA-UE (+exp1) WMFT time score (+exp1) function score (+exp1) 10 meter walk test (-) Stroke specific quality of life (+exp1) E2 vs C: TIS (+exp2) FMA-UE (+exp2) WMFT time score (+exp2) function score (+exp2) 10 meter walk test (-) Stroke specific quality of life (+exp2) E1 vs E2: TIS (+exp1) FMA-UE (+exp1) WMFT time score (+exp1) function score (+exp1) 10 meter walk test (-) Stroke specific quality of life (+exp1)
tDCS + Videogame Training vs Sham tDCS + Videogame Training		
Qurat-Ul-Ain et al. (2023) RCT (7) Nstart=83	E1: Xbox training during anodal tDCS stimulation to cerebellum E2: Xbox	E1 vs E2: BBS(-) TUG(-)

Nend=66 TPS=Chronic A1 vs B vs A2 Also in Table 26 (Virtual Reality)	training during nodal tDCS stimulation to motor cortex C: Sham tDCS + xbox training Duration: 1hr xbox training, 20min tDCS, single session	BESTest(+exp2) 6MWT(-) 25FWT(-) JHFRAT(-) MMSE(-) MOCA(-) E1 vs C: BBS(+exp) TUG(+exp) BESTest(+exp) 6MWT(-) 25FWT(+exp) JHFRAT(-) MMSE(+exp) MOCA(-) E2 vs C: BBS(+exp) TUG(-) BESTest(-) 6MWT(-) 25FWT(-) JHFRAT-() MMSE(+exp) MOCA(-)
Qurat-ul-ain et al. (2022) RCT (8) Nstart=79 Nend=66 TPS=Not reported A + B vs B Also in Table 26 (Virtual Reality)	E1: Anodal Cerebellar tDCS + Xbox Kinect games ; E2: Anodal M1 tDCS + Xbox Kinect games C: Sham Stimulation Group + Xbox Kinect games Duration: 70min/d, 3d	E1/E2 vs C: Berg Balance Scale (+exp1/2) TUG (+exp1/2) 6MWT (-) 25-ft walk test (-) Fall Risk Assessment Tool (+exp1) BESTest total(+exp1/2) Biomechanical restraints (+exp2) Stability limits (+exp1/2) Anticipatory postural adjustment (+exp1/2) Reactive postural response (+exp1/2) Sensory orientation (+exp1/2) Stability in gait (+exp2) MMSE (+exp2) MoCA (-) E1 vs E2: Berg Balance Scale (-) TUG (-) 6MWT (-) 25-ft Walk Test (-) Fall Risk Assessment Tool (+exp1) BESTest total(-) Biomechanical restraints (-) Stability limits (-) Anticipatory postural adjustment (-) Reactive postural response (-) Sensory orientation (-) Stability in gait (-)

		MMSE (+exp1) MoCA (-)
tDCS + Gait Training vs Sham tDCS + Gait Training		
Kim et al. (2024a) Feasibility/pilot RCT (6) Nstart=20 Nend=8 TPS=Not reported A vs 0	E: Anodal tDCS + gait training C: Sham tDCS + gait training Duration: 20min/d, 3d/wk, 4wks	E vs C: 10-MWT (-) TUG (-) Berg Balance Scale (+exp) Functioal Ambulatory Scale (-) MBI (-) EQ-5-D (-)
Tseng et al. (2024) Feasibility/pilot RCT (6) Nstart=10 Nend=10 TPS=Chronic A + B vs B	E: Anodal transcranial direct current stimulation + Visuomotor stepping training C: Sham transcranial direct current stimulation + Visuomotor stepping training Duration: 20 min/d tDCS during 60min/d stepping training, 3d/wk, 4wks	E vs C: Step initiation test response time phase (-) weight transfer phase (-) step execution phase (-) baseline paretic weight bearing (-) peak paretic weight bearing (-) retention of response time phase (-) Retention of baseline paretic weight bearing (+exp)
da Cunha et al. (2024) RCT (8) Nstart=44 Nend=32 TPS=Chronic A + B vs B Also in Table 13 (Orthotic Devices); Table 28 (Functional Electrical Stimulation)	E: Bicephalic tDCS + gait training + foot drop stimulator (Walkaide orthosis) C: Sham tDCS + gait training + foot drop stimulator Duration: 30min/d, 5d/wk, 2wks	E vs C: FMA(-) TUG(-) BDNF(-) Cortisol(-) Insulin growth factor 1/3(-) Interleukin 6/10(-) tumor necrosis factor(-)
tDCS + Conventional Therapy vs Sham tDCS + Conventional Therapy		
Shakeb et al. (2024) RCT (8) Nstart=36 Nend=36 TPS=Subacute A vs 0	E:anodal tDCS + Conventional rehab C: Sham tDCS + Conventional rehab Duration: 60min/d (20min tDCS + 20min conventional rehab), 5d/wk, 6 wks	E vs C: PASS (+exp) TIS (+exp) Functional reach test (-) TUG (-) Stroke Specific Quality of Life (-)
Vimolratana et al. (2024) RCT (8) Nstart=34 Nend=34 TPS=Acute A vs 0	E: Anodal tDCS + Conventional PT C: Sham tDCS + Conventional PT Duration: 50-60min (20min tDCS + 30-40min PT)/d, 5d	E vs C: qEEG high frequency bands (-) low frequency bands (-) FMA UE (-) LE(-) WMFT pencil (-) can (-)
Duan et al. (2023) RCT (6) Nstart=112 Nend=91 TPS=Subacute A vs 0	E: cathodal tDCS C: Sham tDCS + conventional Duration: 20min/d, 7d/wk, 3wks	E vs C: FMA-LE(+exp) 10MWT(+exp) TUG(+exp) Tinetti POMA(+exp) IADL(+exp)

		HAM-D
tDCS + Treadmill Training vs Sham tDCS + Treadmill Training		
Dumont et al. (2023) RCT (6) Nstart=28 Nend=28 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: Anodal tDCS + Treadmill training C: Sham tDCS + Treadmill training Duration: 20min/d, 5d/wk, 2wks	E vs C: stance phase (-) double support phase (-) step length (-) velocity (-) step width (-) pelvic tilt initial contact (+exp) tilt max (-) tilt min (-) tilt ROM (-) obliquity max (-) obliquity min (-) obliquity ROM (-) rotation max (-) rotation min (-) rotation ROM (-) hip flexion initial contact (-) max flexion/extension in stance (-) min flexion/extension in stance (-) ROM in stance (-) abduction/adduction ROM (+exp) rotation initial contact (-) rotation mean (-) knee flexion initial contact (-) flexion in swing phase (-) minimum flexion in stance (-) ROM (+exp) ankle dorsiflexsion/plantarflexion initial contact (-) max dorsiflexion in stance phase (-) ROM in stance phase (-) max dorsiflexion in swing phase (-) min plantarflexion in stance phase (-) foot progression angle initial contact (-) mean progression (-)
Wong et al. (2023) RCT (9) Nstart=45 Nend=42 TPS=Chronic A1 vs A2 vs A3 Also in Table 9 (Treadmill Training)	E1: Bilateral tDCS and Treadmill E2: Cathodal tDCS and Treadmill C: Sham tDCS + Treadmill Duration: 50min/d, 3d/wk, 4wks	E1 vs C: Cognitive DTW(-) Motor DTW(-) Gait speed(-) Cadence(-) Step time(-) Step Length(-) Resting Motor Threshold MEPS(-) FMA-LE(-) E2 vs C: Cognitive DTW(-) Motor DTW(-)

		Gait speed(+exp2) Cadence(+exp2) Step time(+exp2) Step Length(-) Resting Motor Threshold MEPS(+exp2) FMA-LE(+exp) E1 vs E2: Cognitive DTW(-) Motor DTW(-) Gait speed(+exp) Cadence(+exp) Step time(-) Step Length(-) Resting Motor Threshold MEPS(+exp2) FMA-LE(-)
tDCS + Individualized Physiotherapy vs Sham tDCS + Individualized Physiotherapy		
Massaferri et al. (2023) RCT (8) Nstart=23 Nend=18 TPS=Chronic A + B vs C	E: bicephalic tDCS + individualized PT C: Sham tDCS + individual PT Duration: 80-90min/d (20min tDCS or Sham + 60-70min physical training), 2d/wk, 12-16 wks	E vs C: FMA total(-) FMA-LE(-) 10MWT(-) VO2MAX(-) Max power output(-) Peak torque of paretic knee(-) Peak torque of non paretic knee(-) Bilateral strength deficit(-)
Youssef et al. (2023) RCT (8) Nstart=35 Nend=35 TPS=Subacute A + B vs C + B vs D	E1: Bihemisphere tDCS + individual physio plan E2: Unihemisphere tDCS + individual physio plan C: Sham tDCS + individual PT Duration: 20min/d, 3d/wk, 4wks	E1 vs E2: FMA UE(-) LE (-) BBS(-) MAS knee(-) elbow(-) wrist(-) plantar(-) BDNF (-) E1 vs C: FMA UE(+exp1) LE (+exp1) BBS(+exp1) MAS knee(-) elbow(+exp1) wrist(+exp1) plantar(-) BDNF (+exp1) E2 vs C: FMA UE (+exp2) LE (+exp2) BBS(+exp2) MAS

		knee(-) elbow(+exp2) wrist(+exp2) plantar(-) BDNF (+exp2)
tDCS + Foot Drop Stimulator + Treadmill Training vs Sham tDCS + Foot Drop Stimulator + Treadmill Training		
da Cunha et al. (2022) RCT (9) Nstart=32 Nend=30 TPS=Chronic A + B + C vs B + C Also in Table 9 (Treadmill Training); Table 28 (Functional Electrical Stimulation)	E: Bicephalic Transcranial direct-current stimulation + Footdrop stimulator +Treadmill gait training C: Sham transcranial direct-current stimulation + Footdrop stimulator +treadmill gait training Duration: 30 mins/d (10 mins of tDCS/sham + 20 mins of treadmill gait training), 5ds/wk, 2wks	E vs C: TUG (-) MAS (-) Stroke-Specific Quality of Life Scale (-) Total Distance Walked (-)
tDCS + Home-Based Exercise vs Sham tDCS + Home-Based Exercise		
Prathum et al. (2022) RCT (6) Nstart=26 Nend=24 TPS=Chronic A + B vs B Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Active dual-hemispheric tDCS + Home-based exercise C: Sham tDCS + Home-based exercise Duration: 20min/d, 3d/wk, 4wks	E vs C: FMA (-) UE (-) LE (-) WMFT FAS (-) Time (-) TUG (-) 6mWT (-) FTSST (-) grip strength (-) muscle strength wrist extensor (-) elbow extensor (-) ankle dorsiflexor (-) knee extensor (-) hip flexor (-) hip extensor (-)
Additional Comparisons from the Source Dataset		
Picelli et al. (2018) RCT (8) Nstart=20 Nend=20 TPS=Chronic A + B vs X	E1: cathodal cerebellar stimulation (tcDCS) + cathodal spinal stimulation (tsDCS) + Robot-assisted Gait training E2: anodal cerebral stimulation (tDCS) + cathodal spinal stimulation (tsDCS) + Robot-assisted Gait training Duration: 20min/d, 5d/wk for 2wks	E1 vs E2: 6min Walk test (+exp1) Functional Ambulation category (-) Motricity index-leg (+exp1) Modified Ashworth scale (-) Cadence (+exp1) Single limb support (-) Double limb support (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Wang et al. (2024a) RCT (8) Nstart=169 Nend=169 TPS=Acute A + B vs B vs A vs C	E1: taVNS + dual tDCS , E2: dual tDCS, E3: taVNS C: Neurodevelopmental Bobath supplemented with Occupational Therapy Duration: 30min/d, 5d/wk, 4wk taVNS/tDCS + 45min/d, 5d/wk for 4wks Bobath + OT	E1/E2/E3 vs C: FMA-LL (+exp1) TUG (+exp1) MBI (+exp1) Berg Balance Scale (+exp1) gait parameters gait cycle (+exp1)

Primary listing: Table 32 (Additional Afferent and Peripheral Stimulation Methods)		swing phase time (+exp1) stride length (+exp1) ankle dorsiflexion angle (+exp1) stride height (+exp1) stride speed (+exp1)
Zhang et al. (2021b) RCT (5) Nstart=122 Nend=122 TPS=Subacute A vs B Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Transcranial direct current stimulation + conventional therapy E2: Functional electrical stimulation + conventional therapy Duration: 20min/d, 5d/wk, for 8wks	E1 V E2: Fugl-Meyer Assessment (+exp1) Barthel index (+exp1) Functional Ambulation Category (+exp1) Somatosensory evoked potential (-) P40 latency and amplitude (-) N45 latency and amplitude (-)
Mitsutake et al. (2021) RCT (7) Nstart=37 Nend=34 TPS=Subacute A1 vs A2 vs A3 Primary listing: Table 28 (Functional Electrical Stimulation)	E1: Gait training with FES + sham tDCS+ conventional rehabilitation E2: Gait training with tDCS + conventional rehabilitation E3: Gait training with tDCS and FES + conventional rehabilitation Duration: 40min/d , 7d/wk Conventional rehabilitation & 20min/d, 7d/wk Gait with Stimulation, for 1wk	E1 vs E2: 10m Walk test (-) Trunk Acceleration harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-) Autocorrelation coefficient vertical axis (-) mediolateral (-) anteroposterior axis (-) Root mean squared vertical axis (-) mediolateral axis (-) anteroposterior axis (-) E1 vs E3: 10m Walk test (-) Trunk Acceleration harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-) Autocorrelation coefficient vertical axis (-) mediolateral (+exp3) anteroposterior axis (+exp3) Root mean squared vertical axis (-) mediolateral axis (-) anteroposterior axis (-) E2 vs E3: 10m Walk test (-) Trunk Acceleration: harmonic ratio-vertical axis (-) mediolateral (-) anteroposterior axis (-) Autocorrelation coefficient: vertical axis (-) mediolateral (-) anteroposterior axis (+exp3) Root mean squared: vertical axis (-) mediolateral axis (-) anteroposterior axis (-)

Cho et al. (2017) RCT (6) Nstart=30 Nend=30 TPS=Acute A + B vs B Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E: Dual-mode transcranial direct current stimulation (2mA) + rTMS (10Hz) C: rTMS (10Hz) Duration: 20min/d, 5d/wk for 2wks	E vs C: Fugl-Meyer assessment Lower extremity (-) upper extremity (+exp) total (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving motor recovery.	1	Wong et al. 2022
1b	Bilateral tDCS (2mA) or Cathodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving motor recovery.	1	Wong et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy or Dual tDCS with Conventional therapy may not have a difference in efficacy when compared to Sham tDCS with conventional rehab for improving motor recovery.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Dual tDCS with Conventional therapy for improving motor recovery.	1	Klomjai et al. 2022
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving motor recovery.	7	Pinto et al. 2021; Bornheim et al. 2020; Koo et al. 2018; Saeys et al. 2015; Chang et al. 2015; Fusco et al. 2014; Rossi et al. 2013
1b	Anodal transcranial direct current stimulation with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with Conventional care for improving motor recovery.	1	Khedr et al. 2013
1a	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving motor recovery.	2	Kim et al. 2024b; Seo et al. 2017
1a	There is conflicting evidence about the effect of Dual transcranial direct current stimulation with Task-oriented training when compared to Sham transcranial direct current stimulation with Task-oriented training for improving motor recovery.	2	Toktas et al. 2024; Hsu et al. 2023
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to	1	Madhavan et al. 2020

	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving motor recovery.		
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving motor recovery.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving motor recovery.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving motor recovery.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving motor recovery.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Body weight supported treadmill training may not have a difference in efficacy when compared to transcranial direct current stimulation with Body weight supported treadmill training for improving motor recovery.	1	Manji et al. 2018
1b	There is conflicting evidence about the effect of Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy when compared to Sham repetitive transcranial magnetic stimulation for improving motor recovery.	1	Gong et al. 2021
1b	There is conflicting evidence about the effect of Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving motor recovery.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving motor recovery.	1	Gong et al. 2021
1b	There is conflicting evidence about the effect of Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz) when compared to repetitive transcranial magnetic stimulation (10Hz) for improving motor recovery.	1	Cho et al. 2017
2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in motor recovery than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b
1b	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving motor recovery.	1	da Cunha et al. 2024

1a	There is conflicting evidence about the effect of Transcranial direct current stimulation with Conventional Therapy when compared to Sham transcranial direct current stimulation with Conventional Therapy for improving motor recovery.	2	Vimolratana et al. 2024; Duan et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation and Treadmill for improving motor recovery.	1	Wong et al. 2023
1b	Transcranial direct current stimulation with Treadmill Training may produce greater improvements in motor recovery than Sham transcranial direct current stimulation with Treadmill Training.	1	Wong et al. 2023
1b	Transcranial direct current stimulation with Individualized Physiotherapy may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Individualized Physiotherapy for improving motor recovery.	1	Massaferri et al. 2023
1b	Bihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Unihemisphere tDCS with individual physio plan for improving motor recovery.	1	Youssef et al. 2023
1b	Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may produce greater improvements in motor recovery than Sham tDCS with individual PT.	1	Youssef et al. 2023
1b	Transcranial direct current stimulation with Home-Based Exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-Based Exercise for improving motor recovery.	1	Prathum et al. 2022
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in motor recovery than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving biomechanical gait measures.	1	Wong et al. 2022
1b	Anodal transcranial direct current stimulation (2mA) may not have a difference in efficacy when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA) for improving biomechanical gait measures.	1	Wong et al. 2022
1b	Bilateral transcranial direct current stimulation (2mA) may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation (2mA) for improving biomechanical gait measures.	1	Wong et al. 2022
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving biomechanical gait measures.	5	Wong et al. 2022; Ojardias et al. 2020; Cattagni et al. 2019; Van Asseldonk & Boonstra 2016; Chang et al. 2015
1b	Bilateral tDCS (2mA) may produce greater improvements in biomechanical gait measures than Sham tDCS.	1	Wong et al. 2022
1b	Cathodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving biomechanical gait measures.	1	Wong et al. 2022
1b	Transcranial direct current stimulation with Robot-assisted Gait Training may produce greater improvements in biomechanical gait	1	Geroin et al. 2011

	measures than Sham transcranial direct current stimulation with Robot-assisted gait training.		
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving biomechanical gait measures.	1	Picelli et al. 2015
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).	1	Picelli et al. 2015
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving biomechanical gait measures.	1	Geroin et al. 2011
2	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving biomechanical gait measures.	1	Aneksan et al. 2021
1b	Cerebellar transcranial direct current stimulation with Split-belt treadmill training may not have a difference in efficacy when compared to Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training for improving biomechanical gait measures.	1	Kumari et al. 2020
2	There is conflicting evidence about the effect of Transcranial direct current stimulation with Task-related training when compared to Task-related training for improving biomechanical gait measures.	1	Park et al. 2015b
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving biomechanical gait measures.	1	Picelli et al. 2019
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021
1b	Gait training with transcranial direct current stimulation with conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving biomechanical gait measures.	1	Mitsutake et al. 2021

1a	There is conflicting evidence about the effect of Transcranial direct current stimulation with Treadmill Training when compared to Sham transcranial direct current stimulation with Treadmill Training for improving biomechanical gait measures.	2	Dumont et al. 2023; Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation and Treadmill for improving biomechanical gait measures.	1	Wong et al. 2023
1b	Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may produce greater improvements in biomechanical gait measures than Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training.	1	Picelli et al. 2018
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in biomechanical gait measures than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving biomechanical balance measures.	1	Ojardias et al. 2020
1b	Dual transcranial direct current stimulation may not have a difference in efficacy when compared to Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation for improving biomechanical balance measures.	1	Andrade et al. 2017
1b	Anodal tDCS or Dual tDCS or Cathodal tDCS may produce greater improvements in biomechanical balance measures than Sham tDCS.	1	Andrade et al. 2017
1b	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving biomechanical balance measures.	1	Tseng et al. 2024

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cathodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Sham tDCS with conventional rehab for improving muscle strength.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy or Dual tDCS with Conventional therapy may produce greater improvements in muscle strength than Sham tDCS with conventional rehab.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy may result in lesser improvements in muscle strength when compared to Dual tDCS with Conventional therapy.	1	Klomjai et al. 2022
1b	Bilateral transcranial direct current stimulation (tDCS) may not have a difference in efficacy when compared to Sham tDCS for improving muscle strength.	1	Geiger et al. 2019
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when	2	Klomjai et al. 2018; Chang et al. 2015

	compared to Sham transcranial direct current stimulation for improving muscle strength.		
1b	Anodal transcranial direct current stimulation with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with Conventional care for improving muscle strength.	1	Khedr et al. 2013
1b	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving muscle strength.	1	Seo et al. 2017
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving muscle strength.	1	Picelli et al. 2015
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving muscle strength.	1	Picelli et al. 2015
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving muscle strength.	1	Picelli et al. 2019
1b	Transcranial direct current stimulation with Individualized Physiotherapy may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Individualized Physiotherapy for improving muscle strength.	1	Massaferri et al. 2023
1b	Transcranial direct current stimulation with Home-Based Exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-Based Exercise for improving muscle strength.	1	Prathum et al. 2022
1b	Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may produce greater improvements in muscle strength than Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training.	1	Picelli et al. 2018

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Comparison of transcranial direct current stimulation Stimulation Conditions may produce greater improvements in spasticity than Sham transcranial direct current stimulation.	1	Bornheim et al. 2020
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham	1	Picelli et al. 2015

	transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving spasticity.		
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving spasticity.	1	Picelli et al. 2015
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving spasticity.	1	Picelli et al. 2019
1b	Transcranial Direct Current Stimulation may produce greater improvements in spasticity than Functional Electrical Stimulation.	1	Ehsani et al. 2022
1b	Bihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Unihemisphere tDCS with individual physio plan for improving spasticity.	1	Youssef et al. 2023
1b	Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Sham tDCS with individual PT for improving spasticity.	1	Youssef et al. 2023
1b	Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training for improving spasticity.	1	da Cunha et al. 2022
1b	Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may not have a difference in efficacy when compared to Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training for improving spasticity.	1	Picelli et al. 2018

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anodal tDCS may produce greater improvements in range of motion than Sham tDCS.	1	Tanaka et al. 2011
1b	Transcranial direct current stimulation with Treadmill Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill Training for improving range of motion.	1	Dumont et al. 2023
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in range of motion than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving neurophysiological measures.	1	Wong et al. 2022

1b	Anodal transcranial direct current stimulation (2mA) may result in lesser improvements in neurophysiological measures when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA).	1	Wong et al. 2022
1b	Bilateral transcranial direct current stimulation (2mA) may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation (2mA) for improving neurophysiological measures.	1	Wong et al. 2022
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving neurophysiological measures.	4	Wong et al. 2022; Cattagni et al. 2019; Utarapichat & Kitisomprayoonkul 2018; Chang et al. 2015
1b	Bilateral tDCS (2mA) may produce greater improvements in neurophysiological measures than Sham tDCS.	1	Wong et al. 2022
1b	Cathodal tDCS (2mA) may produce greater improvements in neurophysiological measures than Sham tDCS.	1	Wong et al. 2022
1b	Bilateral transcranial direct current stimulation (tDCS) may not have a difference in efficacy when compared to Sham tDCS for improving neurophysiological measures.	1	Geiger et al. 2019
1b	Anodal transcranial direct current stimulation with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with Conventional care for improving neurophysiological measures.	1	Khedr et al. 2013
1b	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving neurophysiological measures.	1	Seo et al. 2017
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving neurophysiological measures.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving neurophysiological measures.	1	Madhavan et al. 2020

1b	Anodal tDCS or Aerboic exercise with Anodal tDCS may not have a difference in efficacy when compared to Aerobic exercise with Sham tDCS for improving neurophysiological measures.	1	Sivaramakrishnan & Madhavan 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving neurophysiological measures.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving neurophysiological measures.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving neurophysiological measures.	1	Gong et al. 2021
1b	There is conflicting evidence about the effect of Transcranial Direct Current Stimulation when compared to Functional Electrical Stimulation for improving neurophysiological measures.	1	Ehsani et al. 2022
2	Transcranial direct current stimulation with conventional therapy may not have a difference in efficacy when compared to Functional electrical stimulation with conventional therapy for improving neurophysiological measures.	1	Zhang et al. 2021b
1b	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving neurophysiological measures.	1	da Cunha et al. 2024
1b	Transcranial direct current stimulation with Treadmill Training may produce greater improvements in neurophysiological measures than Sham transcranial direct current stimulation with Treadmill Training.	1	Wong et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may result in lesser improvements in neurophysiological measures when compared to Cathodal transcranial direct current stimulation and Treadmill.	1	Wong et al. 2023
1b	Bihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Unihemisphere tDCS with individual physio plan for improving neurophysiological measures.	1	Youssef et al. 2023
1b	Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may produce greater improvements in neurophysiological measures than Sham tDCS with individual PT.	1	Youssef et al. 2023
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy or Dual tDCS with Conventional therapy may not have a difference in efficacy when compared to Sham tDCS with conventional rehab for improving neurophysiological measures.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Dual tDCS with Conventional therapy for improving neurophysiological measures.	1	Klomjai et al. 2022

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Transcranial direct current stimulation with Individualized Physiotherapy may not have a difference in efficacy when compared	1	Massaferri et al. 2023

	to Sham transcranial direct current stimulation with Individualized Physiotherapy for improving aerobic measures.		

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving sensory and proprioceptive function.	2	Bornheim et al. 2020; Koo et al. 2018
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in sensory and proprioceptive function than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving sensory and proprioceptive function.	1	Qurat-ul-ain et al. 2022

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving activities of daily living.	5	Pinto et al. 2021; Bornheim et al. 2020; Koo et al. 2018; Fusco et al. 2014; Rossi et al. 2013
1b	Anodal transcranial direct current stimulation with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with Conventional care for improving activities of daily living.	1	Khedr et al. 2013
1b	Transcranial direct current stimulation with Robot-assisted Gait Training may produce greater improvements in activities of daily living than Sham transcranial direct current stimulation with Robot-assisted gait training.	1	Kim et al. 2024b
1b	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving activities of daily living.	1	Hsu et al. 2023
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving activities of daily living.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving activities of daily living.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving activities of daily living.	1	Gong et al. 2021

2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in activities of daily living than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b
1b	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving activities of daily living.	1	Kim et al. 2024a
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in activities of daily living than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving gait speed.	6	Seamon et al. 2023; Wong et al. 2022; Ojardias et al. 2020; Cattagni et al. 2019; Chang et al. 2015; Fusco et al. 2014
1b	Anodal transcranial direct current stimulation (2mA) may result in lesser improvements in gait speed when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA).	1	Wong et al. 2022
1b	Bilateral transcranial direct current stimulation (2mA) may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation (2mA) for improving gait speed.	1	Wong et al. 2022
1b	Bilateral tDCS (2mA) may produce greater improvements in gait speed than Sham tDCS.	1	Wong et al. 2022
1b	Cathodal tDCS (2mA) may produce greater improvements in gait speed than Sham tDCS.	1	Wong et al. 2022
1a	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving gait speed.	4	Kim et al. 2024b; Leon et al. 2017; Seo et al. 2017; Danzl et al. 2013
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving gait speed.	1	Geroin et al. 2011
1b	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving gait speed.	2	Toktas et al. 2024; Aneksan et al. 2021
1b	Cerebellar transcranial direct current stimulation with Split-belt treadmill training may not have a difference in efficacy when compared to Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training for improving gait speed.	1	Kumari et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait speed.	1	Madhavan et al. 2020

1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving gait speed.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait speed.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait speed.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait speed.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Body weight supported treadmill training may produce greater improvements in gait speed than transcranial direct current stimulation with Body weight supported treadmill training.	1	Manji et al. 2018
2	Transcranial direct current stimulation with Task-related training may produce greater improvements in gait speed than Task-related training.	1	Park et al. 2015b
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving gait speed.	1	Picelli et al. 2019
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Gait training with transcranial direct current stimulation with conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not have a difference in efficacy when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation for improving gait speed.	1	Mitsutake et al. 2021
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may not have a difference in efficacy when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy for improving gait speed.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Trunk Training may not have a difference in efficacy when compared to Sham transcranial	1	Tedla et al. 2022

	direct current stimulation with Trunk Training for improving gait speed.		
1b	Transcranial direct current stimulation with Conventional Therapy may produce greater improvements in gait speed than Sham transcranial direct current stimulation with Conventional Therapy.	1	Duan et al. 2023
1a	There is conflicting evidence about the effect of Transcranial direct current stimulation with Treadmill Training when compared to Sham transcranial direct current stimulation with Treadmill Training for improving gait speed.	2	Dumont et al. 2023; Wong et al. 2023
1b	There is conflicting evidence about the effect of Bilateral transcranial direct current stimulation and Treadmill when compared to Cathodal transcranial direct current stimulation and Treadmill for improving gait speed.	1	Wong et al. 2023
1b	Transcranial direct current stimulation with Individualized Physiotherapy may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Individualized Physiotherapy for improving gait speed.	1	Massaferri et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may produce greater improvements in gait speed than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving gait speed.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving gait speed.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving gait speed.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving gait speed.	1	Qurat-ul-ain et al. 2022

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dual transcranial direct current stimulation may produce greater improvements in gait endurance than Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation.	1	Andrade et al. 2017
1b	Anodal tDCS or Dual tDCS or Cathodal tDCS may produce greater improvements in gait endurance than Sham tDCS.	1	Andrade et al. 2017
1b	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving gait endurance.	1	Fusco et al. 2014
1b	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving gait endurance.	1	Seo et al. 2017
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham	1	Picelli et al. 2015

	transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving gait endurance.		
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).	1	Picelli et al. 2015
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving gait endurance.	1	Geroin et al. 2011
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait endurance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving gait endurance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait endurance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving gait endurance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving gait endurance.	1	Madhavan et al. 2020
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving gait endurance.	1	Qurat-Ul-Ain et al. 2023
1a	Transcranial direct current stimulation with Videogame Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Videogame Training for improving gait endurance.	2	Qurat-Ul-Ain et al. 2023; Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving gait endurance.	1	Qurat-ul-ain et al. 2022
1b	Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not have a difference in efficacy when	1	da Cunha et al. 2022

	compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training for improving gait endurance.		
1b	Transcranial direct current stimulation with Home-Based Exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-Based Exercise for improving gait endurance.	1	Prathum et al. 2022
1b	Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may produce greater improvements in gait endurance than Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training.	1	Picelli et al. 2018

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Anodal tDCS (2mA) may not have a difference in efficacy when compared to Sham tDCS for improving functional mobility.	1	Wong et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Sham tDCS with conventional rehab for improving functional mobility.	1	Klomjai et al. 2022
1b	Dual tDCS with Conventional therapy may produce greater improvements in functional mobility than Sham tDCS with conventional rehab.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Dual tDCS with Conventional therapy for improving functional mobility.	1	Klomjai et al. 2022
1b	Cathodal tDCS with Conventional therapy may result in lesser improvements in functional mobility when compared to Dual tDCS with Conventional therapy.	1	Klomjai et al. 2022
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving functional mobility.	7	Klomjai et al. 2018; Koo et al. 2018; Utarapichat & Kitisomprayoonkul 2018; Chang et al. 2015; Saeys et al. 2015; Tahtis et al. 2014; Fusco et al. 2014
1b	Dual transcranial direct current stimulation may produce greater improvements in functional mobility than Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation.	1	Andrade et al. 2017
1b	Anodal tDCS or Dual tDCS or Cathodal tDCS may produce greater improvements in functional mobility than Sham tDCS.	1	Andrade et al. 2017
1a	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving functional mobility.	5	Kim et al. 2024b; Leon et al. 2017; Seo et al. 2017; Danzl et al. 2013; Geroin et al. 2011
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving functional mobility.	1	Picelli et al. 2015
1b	Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not have a difference in efficacy when	1	Picelli et al. 2015

	compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA) for improving functional mobility.		
1b	Anodal transcranial direct current stimulation with Robot- assisted gait training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot- assisted gait training for improving functional mobility.	1	Geroin et al. 2011
1b	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving functional mobility.	2	Toktas et al. 2024; Aneksan et al. 2021
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving functional mobility.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving functional mobility.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving functional mobility.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving functional mobility.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving functional mobility.	1	Madhavan et al. 2020
1b	There is conflicting evidence about the effect of Transcranial direct current stimulation with Body weight supported treadmill training when compared to transcranial direct current stimulation with Body weight supported treadmill training for improving functional mobility.	1	Manji et al. 2018
1b	Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not have a difference in efficacy when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training for improving functional mobility.	1	Picelli et al. 2019
2	Transcranial direct current stimulation with conventional therapy may produce greater improvements in functional mobility than Functional electrical stimulation with conventional therapy.	1	Zhang et al. 2021b

1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving functional mobility.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may produce greater improvements in functional mobility than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving functional mobility.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving functional mobility.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in functional mobility than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1a	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving functional mobility.	2	Kim et al. 2024a; da Cunha et al. 2024
1a	There is conflicting evidence about the effect of Transcranial direct current stimulation with Conventional Therapy when compared to Sham transcranial direct current stimulation with Conventional Therapy for improving functional mobility.	2	Shakeb et al. 2024; Duan et al. 2023
1b	Bilateral transcranial direct current stimulation and Treadmill may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation and Treadmill for improving functional mobility.	1	Wong et al. 2023
1b	Transcranial direct current stimulation with Treadmill Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Treadmill Training for improving functional mobility.	1	Wong et al. 2023
1b	Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training for improving functional mobility.	1	da Cunha et al. 2022
1b	Transcranial direct current stimulation with Home-Based Exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-Based Exercise for improving functional mobility.	1	Prathum et al. 2022
1b	Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may not have a difference in efficacy when compared to Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training for improving functional mobility.	1	Picelli et al. 2018
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in functional mobility than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Anodal transcranial direct current stimulation (2mA) with Conventional care may produce greater improvements in balance than Cathodal transcranial direct current stimulation (2mA) with Conventional care.	1	Shah et al. 2021
1b	There is conflicting evidence about the effect of Dual transcranial direct current stimulation when compared to Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation for improving balance.	1	Andrade et al. 2017
1b	Anodal tDCS or Dual tDCS or Cathodal tDCS may produce greater improvements in balance than Sham tDCS.	1	Andrade et al. 2017
1a	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving balance.	2	Chang et al. 2015; Saeys et al. 2015
1a	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving balance.	3	Kim et al. 2024b; Seo et al. 2017; Danzl et al. 2013
1b	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving balance.	1	Toktas et al. 2024
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving balance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving balance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving balance.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving balance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving balance.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Body weight supported treadmill training may not have a difference in efficacy when compared to transcranial direct current stimulation with Body weight supported treadmill training for improving balance.	1	Manji et al. 2018

1b	Transcranial Direct Current Stimulation may produce greater improvements in balance than Functional Electrical Stimulation.	1	Ehsani et al. 2022
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in balance than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Trunk Training may produce greater improvements in balance than Sham transcranial direct current stimulation with Trunk Training.	1	Tedla et al. 2022
1b	Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may produce greater improvements in balance than Sham tDCS with xbox training.	1	Qurat-Ul-Ain et al. 2023
1b	Anodal Cerebellar tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Anodal M1 tDCS with Xbox Kinect games for improving balance.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games or Anodal M1 tDCS with Xbox Kinect games may produce greater improvements in balance than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	There is conflicting evidence about the effect of Transcranial direct current stimulation with Gait Training when compared to Sham transcranial direct current stimulation with Gait Training for improving balance.	1	Kim et al. 2024a
1b	Transcranial direct current stimulation with Conventional Therapy may produce greater improvements in balance than Sham transcranial direct current stimulation with Conventional Therapy.	1	Shakeb et al. 2024
1b	Bihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Unihemisphere tDCS with individual physio plan for improving balance.	1	Youssef et al. 2023
1b	Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may produce greater improvements in balance than Sham tDCS with individual PT.	1	Youssef et al. 2023
1b	Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may produce greater improvements in balance than Neurodevelopmental Bobath supplemented with Occupational Therapy.	1	Wang et al. 2024a

FALLS AND FEAR OF FALLS			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Dual transcranial direct current stimulation when compared to Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation for improving falls and fear of falling.	1	Andrade et al. 2017
1b	Anodal tDCS or Dual tDCS or Cathodal tDCS may produce greater improvements in falls and fear of falling than Sham tDCS.	1	Andrade et al. 2017
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial	1	Madhavan et al. 2020

	Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving falls and fear of falling.		
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving falls and fear of falling.	1	Madhavan et al. 2020
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in falls and fear of falling than Sham Stimulation Group with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Anodal M1 tDCS with Xbox Kinect games may not have a difference in efficacy when compared to Sham Stimulation Group with Xbox Kinect games for improving falls and fear of falling.	1	Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in falls and fear of falling than Anodal M1 tDCS with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022
1b	Xbox training during anodal tDCS stimulation to cerebellum or Xbox training during nodal tDCS stimulation to motor cortex may not have a difference in efficacy when compared to Sham tDCS with xbox training for improving falls and fear of falling.	1	Qurat-Ul-Ain et al. 2023
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving falls and fear of falling.	1	Qurat-Ul-Ain et al. 2023

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Anodal transcranial direct current stimulation (2mA) with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation (2mA) with Conventional care for improving quality of life.	1	Shah et al. 2021
1b	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving quality of life.	1	Bornheim et al. 2020

1b	Transcranial direct current stimulation with Robot-assisted Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Robot-assisted gait training for improving quality of life.	1	Danzl et al. 2013
1b	Dual transcranial direct current stimulation with Task-oriented training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Task-oriented training for improving quality of life.	1	Toktas et al. 2024
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving quality of life.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not have a difference in efficacy when compared to High-intensity speed-based treadmill training for improving quality of life.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to 15min rest with High- intensity speed-based treadmill training for improving quality of life.	1	Madhavan et al. 2020
1b	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not have a difference in efficacy when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) for improving quality of life.	1	Madhavan et al. 2020
1b	Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may produce greater improvements in quality of life than 15min rest with High- intensity speed-based treadmill training.	1	Madhavan et al. 2020
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in quality of life than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Trunk Training may produce greater improvements in quality of life than Sham transcranial direct current stimulation with Trunk Training.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Gait Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Gait Training for improving quality of life.	1	Kim et al. 2024a
1b	Transcranial direct current stimulation with Conventional Therapy may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Conventional Therapy for improving quality of life.	1	Shakeb et al. 2024
1b	Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training for improving quality of life.	1	da Cunha et al. 2022

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving mood.	2	Pinto et al. 2021; Bornheim et al. 2020

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Comparison of transcranial direct current stimulation Stimulation Conditions may not have a difference in efficacy when compared to Sham transcranial direct current stimulation for improving cognition.	1	Pinto et al. 2021
1b	Xbox training during anodal tDCS stimulation to cerebellum may not have a difference in efficacy when compared to Xbox training during nodal tDCS stimulation to motor cortex for improving cognition.	1	Qurat-Ul-Ain et al. 2023
1a	There is conflicting evidence about the effect of Transcranial direct current stimulation with Videogame Training when compared to Sham transcranial direct current stimulation with Videogame Training for improving cognition.	2	Qurat-Ul-Ain et al. 2023; Qurat-ul-ain et al. 2022
1b	Anodal Cerebellar tDCS with Xbox Kinect games may produce greater improvements in cognition than Anodal M1 tDCS with Xbox Kinect games.	1	Qurat-ul-ain et al. 2022

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dual tDCS with Conventional therapy may produce greater improvements in upper extremity function than Sham tDCS with conventional rehab.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy may result in lesser improvements in upper extremity function when compared to Dual tDCS with Conventional therapy.	1	Klomjai et al. 2022
1b	Anodal tDCS with Conventional therapy or Cathodal tDCS with Conventional therapy may not have a difference in efficacy when compared to Sham tDCS with conventional rehab for improving upper extremity function.	1	Klomjai et al. 2022
1b	Cathodal tDCS with Conventional therapy may result in lesser improvements in upper extremity function when compared to Dual tDCS with Conventional therapy.	1	Klomjai et al. 2022
1a	There is conflicting evidence about the effect of Comparison of transcranial direct current stimulation Stimulation Conditions when compared to Sham transcranial direct current stimulation for improving upper extremity function.	3	Pinto et al. 2021; Bornheim et al. 2020; Fusco et al. 2014
1b	Anodal transcranial direct current stimulation with Conventional care may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with Conventional care for improving upper extremity function.	1	Khedr et al. 2013
1b	There is conflicting evidence about the effect of Dual transcranial direct current stimulation with Task-oriented training when compared to Sham transcranial direct current stimulation with Task-oriented training for improving upper extremity function.	1	Hsu et al. 2023

1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Sham repetitive transcranial magnetic stimulation for improving upper extremity function.	1	Gong et al. 2021
1b	Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not have a difference in efficacy when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy for improving upper extremity function.	1	Gong et al. 2021
1b	Cathodal tDCS with rTMS (1Hz) with conventional therapy may not have a difference in efficacy when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy for improving upper extremity function.	1	Gong et al. 2021
1b	Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz) may produce greater improvements in upper extremity function than repetitive transcranial magnetic stimulation (10Hz).	1	Cho et al. 2017
1b	Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may produce greater improvements in upper extremity function than Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Trunk Training may produce greater improvements in upper extremity function than Sham transcranial direct current stimulation with Trunk Training.	1	Tedla et al. 2022
1b	Transcranial direct current stimulation with Conventional Therapy may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Conventional Therapy for improving upper extremity function.	1	Vimolratana et al. 2024
1b	Bihemisphere tDCS with individual physio plan may not have a difference in efficacy when compared to Unihemisphere tDCS with individual physio plan for improving upper extremity function.	1	Youssef et al. 2023
1b	Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may produce greater improvements in upper extremity function than Sham tDCS with individual PT.	1	Youssef et al. 2023
1b	Transcranial direct current stimulation with Home-Based Exercise may not have a difference in efficacy when compared to Sham transcranial direct current stimulation with Home-Based Exercise for improving upper extremity function.	1	Prathum et al. 2022

Key Points

- Comparison of transcranial direct current stimulation Stimulation Conditions may be beneficial for improving spasticity, but not gait speed, biomechanical balance measures, quality of life, balance, and gait endurance, after stroke when compared to Sham transcranial direct current stimulation; the literature is mixed regarding biomechanical gait measures, neurophysiological measures, motor recovery, activities of daily living, sensory and proprioceptive function, muscle strength, and functional mobility.
- Anodal tDCS (2mA) may not be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, and functional mobility after stroke when compared to Sham tDCS.
- Anodal transcranial direct current stimulation (2mA) may not be beneficial for improving biomechanical gait measures after stroke when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA); Anodal transcranial direct current stimulation (2mA) may result in lesser improvements in neurophysiological measures and gait speed when compared

to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA).

- Bilateral transcranial direct current stimulation (2mA) may not be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Cathodal transcranial direct current stimulation (2mA).
- Bilateral tDCS (2mA) may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed, but not motor recovery, after stroke when compared to Sham tDCS.
- Cathodal tDCS (2mA) may be beneficial for improving neurophysiological measures and gait speed, but not biomechanical gait measures and motor recovery, after stroke when compared to Sham tDCS.
- Anodal transcranial direct current stimulation (2mA) with Conventional care may be beneficial for improving balance, but not quality of life, after stroke when compared to Cathodal transcranial direct current stimulation (2mA) with Conventional care.
- Bilateral transcranial direct current stimulation (tDCS) may not be beneficial for improving muscle strength and neurophysiological measures after stroke when compared to Sham tDCS.
- Dual transcranial direct current stimulation may be beneficial for improving gait endurance and functional mobility, but not biomechanical balance measures, after stroke when compared to Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation; the literature is mixed regarding balance and falls and fear of falling.
- Anodal transcranial direct current stimulation with Conventional care may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with Conventional care.
- Anodal tDCS may be beneficial for improving range of motion, biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Transcranial direct current stimulation with Robot-assisted Gait Training may be beneficial for improving biomechanical gait measures and activities of daily living, but not motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Sham transcranial direct current stimulation with Robot-assisted gait training.
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA); Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures and gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Anodal transcranial direct current stimulation with Robot- assisted gait training may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Robot- assisted gait training.
- Dual transcranial direct current stimulation with Task-oriented training may not be beneficial for improving gait speed, functional mobility, balance, quality of life, activities of daily living, and biomechanical gait measures after stroke when compared to Sham transcranial direct current stimulation with Task-oriented training; the literature is mixed regarding motor recovery.

- Cerebellar transcranial direct current stimulation with Split-belt treadmill training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training.
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to High-intensity speed-based treadmill training.
- Transcranial direct current stimulation with Body weight supported treadmill training may be beneficial for improving gait speed, but not motor recovery and balance, after stroke when compared to transcranial direct current stimulation with Body weight supported treadmill training; the literature is mixed regarding functional mobility.
- Transcranial direct current stimulation with Task-related training may be beneficial for improving gait speed after stroke when compared to Task-related training; the literature is mixed regarding biomechanical gait measures.
- Anodal tDCS or Aerboic exercise with Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and functional mobility after stroke when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy; the literature is mixed regarding motor recovery.
- The literature is mixed regarding the effect of Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz) on motor recovery after stroke when compared to repetitive transcranial magnetic stimulation (10Hz).
- Transcranial Direct Current Stimulation may be beneficial for improving spasticity and balance after stroke when compared to Functional Electrical Stimulation; the literature is mixed regarding neurophysiological measures.
- Transcranial direct current stimulation with conventional therapy may be beneficial for improving motor recovery, activities of daily living, and functional mobility, but not neurophysiological measures, after stroke when compared to Functional electrical stimulation with conventional therapy.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation.
- Gait training with transcranial direct current stimulation with conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.

- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.
- Transcranial direct current stimulation with Trunk Training may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Sham transcranial direct current stimulation with Trunk Training.
- Xbox training during anodal tDCS stimulation to cerebellum may not be beneficial for improving gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Xbox training during nodal tDCS stimulation to motor cortex; Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.
- Transcranial direct current stimulation with Videogame Training may not be beneficial for improving gait endurance after stroke when compared to Sham transcranial direct current stimulation with Videogame Training.
- Transcranial direct current stimulation with Gait Training may not be beneficial for improving activities of daily living, functional mobility, quality of life, biomechanical balance measures, motor recovery, and neurophysiological measures after stroke when compared to Sham transcranial direct current stimulation with Gait Training; the literature is mixed regarding balance.
- Transcranial direct current stimulation with Conventional Therapy may be beneficial for improving balance and gait speed, but not quality of life, after stroke when compared to Sham transcranial direct current stimulation with Conventional Therapy; the literature is mixed regarding functional mobility and motor recovery.
- Transcranial direct current stimulation with Treadmill Training may be beneficial for improving motor recovery and neurophysiological measures, but not range of motion and functional mobility, after stroke when compared to Sham transcranial direct current stimulation with Treadmill Training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Bilateral transcranial direct current stimulation and Treadmill may not be beneficial for improving motor recovery, biomechanical gait measures, and functional mobility after stroke when compared to Cathodal transcranial direct current stimulation and Treadmill; the literature is mixed regarding gait speed; Bilateral transcranial direct current stimulation and Treadmill may result in lesser improvements in neurophysiological measures when compared to Cathodal transcranial direct current stimulation and Treadmill.
- Transcranial direct current stimulation with Individualized Physiotherapy may not be beneficial for improving motor recovery, muscle strength, aerobic measures, and gait speed after stroke when compared to Sham transcranial direct current stimulation with Individualized Physiotherapy.
- Bihemisphere tDCS with individual physio plan may not be beneficial for improving motor recovery, spasticity, neurophysiological measures, and balance after stroke when compared to Unihemisphere tDCS with individual physio plan.
- Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training.
- Transcranial direct current stimulation with Home-Based Exercise may not be beneficial for improving motor recovery, muscle strength, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Home-Based Exercise.
- Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, and balance after stroke when compared to Neurodevelopmental Bobath supplemented with Occupational Therapy.

- Cathodal tDCS with rTMS (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy.
- Anodal tDCS with Conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Dual tDCS with Conventional therapy; Anodal tDCS with Conventional therapy may result in lesser improvements in muscle strength when compared to Dual tDCS with Conventional therapy.
- Cathodal tDCS with Conventional therapy may not be beneficial for improving motor recovery and neurophysiological measures after stroke when compared to Dual tDCS with Conventional therapy; Cathodal tDCS with Conventional therapy may result in lesser improvements in muscle strength and functional mobility when compared to Dual tDCS with Conventional therapy.
- Dual tDCS may be beneficial for improving biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Cathodal tDCS may be beneficial for improving biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Anodal tDCS with Conventional therapy may be beneficial for improving muscle strength, but not motor recovery, neurophysiological measures, and functional mobility, after stroke when compared to Sham tDCS with conventional rehab.
- Cathodal tDCS with Conventional therapy may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and functional mobility after stroke when compared to Sham tDCS with conventional rehab.
- Dual tDCS with Conventional therapy may be beneficial for improving muscle strength and functional mobility, but not motor recovery and neurophysiological measures, after stroke when compared to Sham tDCS with conventional rehab.
- Xbox training during anodal tDCS stimulation to cerebellum may be beneficial for improving gait speed, functional mobility, and balance, but not falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.
- Xbox training during nodal tDCS stimulation to motor cortex may be beneficial for improving balance, but not gait speed, functional mobility, and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may be beneficial for improving quality of life, but not motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- Aerboic exercise with Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving falls and fear of falling, but not sensory and proprioceptive function, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Anodal M1 tDCS with Xbox Kinect games.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, balance, and falls and fear of falling, but not gait speed, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.

- Anodal M1 tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, and balance, but not gait speed and falls and fear of falling, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may be beneficial for improving motor recovery, neurophysiological measures, and balance, but not spasticity, after stroke when compared to Sham tDCS with individual PT.
- Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may be beneficial for improving biomechanical gait measures, muscle strength, and gait endurance, but not spasticity and functional mobility, after stroke when compared to Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training.

Summary of Key Points: Transcranial Direct Current Stimulation (tDCS)

Intervention	Control(s)	Function domain(s)	Effect
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Gait speed, biomechanical balance measures, quality of life, balance, gait endurance	–
Anodal tDCS (2mA)	Sham tDCS	Motor recovery, biomechanical gait measures, neurophysiological measures, functional mobility	–
Anodal transcranial direct current stimulation (2mA)	Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA)	Biomechanical gait measures	–
Anodal transcranial direct current stimulation (2mA)	Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA)	Neurophysiological measures, gait speed	–
Bilateral transcranial direct current stimulation (2mA)	Cathodal transcranial direct current stimulation (2mA)	Biomechanical gait measures, neurophysiological measures, gait speed	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Gait speed	–
Bilateral tDCS (2mA)	Sham tDCS	Biomechanical gait measures, neurophysiological measures, gait speed	+
Cathodal tDCS (2mA)	Sham tDCS	Neurophysiological measures, gait speed	+
Cathodal tDCS (2mA)	Sham tDCS	Biomechanical gait measures, motor recovery	–
Anodal transcranial direct current stimulation (2mA) with Conventional care	Cathodal transcranial direct current stimulation (2mA) with Conventional care	Balance	+
Anodal transcranial direct current stimulation (2mA) with Conventional care	Cathodal transcranial direct current stimulation (2mA) with Conventional care	Quality of life	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Biomechanical balance measures, gait speed	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Spasticity	+

Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Quality of life	–
Bilateral transcranial direct current stimulation (tDCS)	Sham tDCS	Muscle strength, neurophysiological measures	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Functional mobility, biomechanical gait measures, neurophysiological measures, motor recovery, activities of daily living, sensory and proprioceptive function, muscle strength	=
Dual transcranial direct current stimulation	Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation	Gait endurance, functional mobility	+
Dual transcranial direct current stimulation	Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation	Biomechanical balance measures	–
Dual transcranial direct current stimulation	Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation	Balance, falls and fear of falling	=
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Gait speed, balance	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Biomechanical gait measures	=
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Balance	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Gait speed, gait endurance	–
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation	Functional mobility	=
Anodal transcranial direct current stimulation with Conventional care	Cathodal transcranial direct current stimulation with Conventional care	Motor recovery, muscle strength, neurophysiological measures, activities of daily living	–
Anodal tDCS	Sham tDCS	Range of motion, biomechanical balance measures, gait endurance, functional mobility, balance, falls and fear of falling	+
Transcranial direct current stimulation with Robot-assisted Gait Training	Sham transcranial direct current stimulation with Robot-assisted gait training	Biomechanical gait measures, activities of daily living	+
Transcranial direct current stimulation with Robot-assisted Gait Training	Sham transcranial direct current stimulation with Robot-assisted gait training	Motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, quality of life	–
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal	Biomechanical gait measures, muscle strength, spasticity, gait endurance, functional mobility	–

transcutaneous spinal direct current stimulation	transcutaneous spinal direct current stimulation (2.5mA)		
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Muscle strength, spasticity, functional mobility	–
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Biomechanical gait measures, gait endurance	–
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training	Biomechanical gait measures, gait speed, gait endurance, functional mobility	–
Dual transcranial direct current stimulation with Task-oriented training	Sham transcranial direct current stimulation with Task-oriented training	Gait speed, functional mobility, balance, quality of life, activities of daily living, biomechanical gait measures	–
Dual transcranial direct current stimulation with Task-oriented training	Sham transcranial direct current stimulation with Task-oriented training	Activities of daily living	–
Dual transcranial direct current stimulation with Task-oriented training	Sham transcranial direct current stimulation with Task-oriented training	Biomechanical gait measures, gait speed, functional mobility	–
Cerebellar transcranial direct current stimulation with Split-belt treadmill training	Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training	Biomechanical gait measures, gait speed	–
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training	High-intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Transcranial direct current stimulation with Body weight supported treadmill training	transcranial direct current stimulation with Body weight supported treadmill training	Gait speed	+
Transcranial direct current stimulation with Body weight supported treadmill training	transcranial direct current stimulation with Body weight supported treadmill training	Motor recovery, balance	–

Transcranial direct current stimulation with Body weight supported treadmill training	transcranial direct current stimulation with Body weight supported treadmill training	Functional mobility	=
Transcranial direct current stimulation with Task-related training	Task-related training	Gait speed	+
Transcranial direct current stimulation with Task-related training	Task-related training	Biomechanical gait measures	=
Anodal tDCS or Aerboic exercise with Anodal tDCS	Aerobic exercise with Sham tDCS	Neurophysiological measures	–
Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Biomechanical gait measures, muscle strength, spasticity, gait speed, functional mobility	–
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation	Neurophysiological measures, activities of daily living	–
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation	Motor recovery	=
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy	Neurophysiological measures, activities of daily living	–
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy	Motor recovery	=
Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz)	repetitive transcranial magnetic stimulation (10Hz)	Motor recovery	=
Transcranial Direct Current Stimulation	Functional Electrical Stimulation	Spasticity, balance	+
Transcranial Direct Current Stimulation	Functional Electrical Stimulation	Neurophysiological measures	=
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy	Motor recovery, activities of daily living, functional mobility	+
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy	Neurophysiological measures	–
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	–

Gait training with transcranial direct current stimulation with conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	−
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation	Biomechanical gait measures, gait speed	−
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy	Balance, quality of life	+
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy	Gait speed	−
Transcranial direct current stimulation with Trunk Training	Sham transcranial direct current stimulation with Trunk Training	Balance, quality of life	+
Transcranial direct current stimulation with Trunk Training	Sham transcranial direct current stimulation with Trunk Training	Gait speed	−
Xbox training during anodal tDCS stimulation to cerebellum	Xbox training during nodal tDCS stimulation to motor cortex	Gait speed, gait endurance, functional mobility, balance, falls and fear of falling	−
Transcranial direct current stimulation with Videogame Training	Sham transcranial direct current stimulation with Videogame Training	Gait endurance	−
Transcranial direct current stimulation with Gait Training	Sham transcranial direct current stimulation with Gait Training	Activities of daily living, functional mobility, quality of life	−
Transcranial direct current stimulation with Gait Training	Sham transcranial direct current stimulation with Gait Training	Balance	=
Transcranial direct current stimulation with Gait Training	Sham transcranial direct current stimulation with Gait Training	Biomechanical balance measures	−
Transcranial direct current stimulation with Gait Training	Sham transcranial direct current stimulation with Gait Training	Motor recovery, neurophysiological measures, functional mobility	−
Transcranial direct current stimulation with Conventional Therapy	Sham transcranial direct current stimulation with Conventional Therapy	Balance, gait speed	+
Transcranial direct current stimulation with Conventional Therapy	Sham transcranial direct current stimulation with Conventional Therapy	Quality of life	−
Transcranial direct current stimulation with Conventional Therapy	Sham transcranial direct current stimulation with Conventional Therapy	Gait speed	+
Transcranial direct current stimulation with Treadmill Training	Sham transcranial direct current stimulation with Treadmill Training	Range of motion, functional mobility	−
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill	Motor recovery, biomechanical gait measures, neurophysiological measures, functional mobility	−
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill	Gait speed	=

Transcranial direct current stimulation with Treadmill Training	Sham transcranial direct current stimulation with Treadmill Training	Motor recovery, neurophysiological measures	+
Transcranial direct current stimulation with Treadmill Training	Sham transcranial direct current stimulation with Treadmill Training	Functional mobility	−
Transcranial direct current stimulation with Individualized Physiotherapy	Sham transcranial direct current stimulation with Individualized Physiotherapy	Motor recovery, muscle strength, aerobic measures, gait speed	−
Bihemisphere tDCS with individual physio plan	Unihemisphere tDCS with individual physio plan	Motor recovery, spasticity, neurophysiological measures, balance	−
Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training	Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training	Spasticity, gait endurance, functional mobility, quality of life	−
Transcranial direct current stimulation with Home-Based Exercise	Sham transcranial direct current stimulation with Home-Based Exercise	Motor recovery, muscle strength, gait endurance, functional mobility	−
Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation	Neurodevelopmental Bobath supplemented with Occupational Therapy	Motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, balance	+
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA)	Spasticity	−
Cathodal tDCS with rTMS (1Hz) with conventional therapy	Anodal tDCS with rTMS (1Hz) with conventional therapy	Motor recovery, neurophysiological measures, activities of daily living	−
Bilateral tDCS (2mA)	Sham tDCS	Motor recovery	−
Anodal tDCS with Conventional therapy	Dual tDCS with Conventional therapy	Motor recovery, muscle strength, neurophysiological measures, functional mobility	−
Cathodal tDCS with Conventional therapy	Dual tDCS with Conventional therapy	Motor recovery, muscle strength, neurophysiological measures, functional mobility	−
Dual tDCS	Sham tDCS	Biomechanical balance measures, gait endurance, functional mobility, balance, falls and fear of falling	+
Cathodal tDCS	Sham tDCS	Biomechanical balance measures, gait endurance, functional mobility, balance, falls and fear of falling	+
Anodal tDCS with Conventional therapy	Sham tDCS with conventional rehab	Muscle strength	+
Anodal tDCS with Conventional therapy	Sham tDCS with conventional rehab	Motor recovery, neurophysiological measures, functional mobility	−
Cathodal tDCS with Conventional therapy	Sham tDCS with conventional rehab	Motor recovery, muscle strength, neurophysiological measures, functional mobility	−
Dual tDCS with Conventional therapy	Sham tDCS with conventional rehab	Muscle strength, functional mobility	+
Dual tDCS with Conventional therapy	Sham tDCS with conventional rehab	Motor recovery, neurophysiological measures	−

Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan	Sham tDCS with individual PT	Motor recovery, neurophysiological measures, balance	+
Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan	Sham tDCS with individual PT	Spasticity	–
Xbox training during anodal tDCS stimulation to cerebellum	Sham tDCS with xbox training	Gait speed, functional mobility, balance	+
Xbox training during anodal tDCS stimulation to cerebellum	Sham tDCS with xbox training	Falls and fear of falling	–
Xbox training during nodal tDCS stimulation to motor cortex	Sham tDCS with xbox training	Balance	+
Xbox training during nodal tDCS stimulation to motor cortex	Sham tDCS with xbox training	Gait speed, functional mobility, falls and fear of falling	–
Dual transcranial direct current stimulation with Task-oriented training	Sham transcranial direct current stimulation with Task-oriented training	Motor recovery	=
Transcranial direct current stimulation with Conventional Therapy	Sham transcranial direct current stimulation with Conventional Therapy	Functional mobility, motor recovery	=
Transcranial direct current stimulation with Treadmill Training	Sham transcranial direct current stimulation with Treadmill Training	Biomechanical gait measures, gait speed	=
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill; Bilateral transcranial direct current stimulation and Treadmill may result in lesser improvements in neurophysiological measures when compared to Cathodal transcranial direct current stimulation and Treadmill	Motor recovery, biomechanical gait measures, gait speed, functional mobility	–
AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training)	Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, quality of life	–
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling	–
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training	Quality of life	+
Aerboic exercise with Anodal tDCS	Aerobic exercise with Sham tDCS	Neurophysiological measures	–
Anodal tDCS	Aerobic exercise with Sham tDCS	Neurophysiological measures	–

Anodal Cerebellar tDCS with Xbox Kinect games	Anodal M1 tDCS with Xbox Kinect games	Falls and fear of falling	+
Anodal Cerebellar tDCS with Xbox Kinect games	Anodal M1 tDCS with Xbox Kinect games	Sensory and proprioceptive function, gait speed, gait endurance, functional mobility, balance	–
Anodal Cerebellar tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Sensory and proprioceptive function, functional mobility, balance, falls and fear of falling	+
Anodal Cerebellar tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Gait speed	–
Anodal M1 tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Sensory and proprioceptive function, functional mobility, balance	+
Anodal M1 tDCS with Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games	Gait speed, falls and fear of falling	–
Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training	Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training	Biomechanical gait measures, muscle strength, gait endurance	+
Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training	Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training	Spasticity, functional mobility	–

Antidepressants



Adopted from https://www.abc.net.au/news/2018-09-18/common-antidepressants-may-fuel-growth-of-super-bugs-study-says/10246000

Antidepressants of various kinds are available for medical use, including tricyclics (TCAs), monoamine oxidase inhibitors (MAOIs), selective serotonin reuptake inhibitors (SSRIs), serotonin-noradrenaline reuptake inhibitors (SNRIs, such as venlafaxine, duloxetine and milnacipran), and other agents (mirtazapine, reboxetine, bupropion). SSRIs and SNRIs are two commonly prescribed agents that work by acting to inhibit the reuptake of serotonin and norepinephrine, respectively, from the synaptic cleft (Cipriani et al., 2012). Fluoxetine, citalopram and escitalopram are commonly prescribed selective serotonin reuptake inhibitors (SSRI). There has been interest in examining the effectiveness of pharmacological interventions for motor recovery after stroke. Antidepressants may be helpful in recovery after stroke through improving mood, which may in turn improve activity and functional outcome, but also through modulating cerebral sensory-motor activation.

A total of eight RCTs were found that evaluated antidepressants for lower extremity motor rehabilitation. Four RCTs compared Fluoxetine with Placebo (Hankey et al. 2020; Marquez-Romero et al. 2020; Shah et al. 2016; Chollet et

al. 2011). One RCT compared Fluoxetine vs Placebo with Maprotiline vs Placebo (Dam et al. 1996). One RCT compared Shu-Gan-Jie-Yu vs Placebo with Fluoxetine vs Placebo (Gong et al. 2020). One RCT compared Escitalopram with Placebo (Gourab et al. 2015). One RCT compared Citalopram vs Placebo with Fluoxetine vs Placebo (Asadollahi et al. 2018).

In addition, one RCT in which antidepressants formed part of a combined or comparative intervention are cross-referenced at the end of Table 40; their primary listings appear in other tables.

The methodological details and results of all eight RCTs are presented in Table 40.

Table 40. RCTs Evaluating Antidepressants for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Fluoxetine vs Placebo		
Hankey et al. (2020) RCT (10) Nstart=1280 Nend=1256 TPS=Acute A vs 0	E: Fluoxetine (20mg) C: Placebo Duration: 20mg/d, for 6mo	E vs C: Modified Rankin Scale (-) Stroke Impact Scale Strength (-) Hand ability (-) Mobility (-) Motor (-) Daily activities (-) Physical function (-) Memory (-) Communication (-) Mood and emotional control (+exp) Participation (-) Recovery (VAS) (-) EQ-5D-5L (-) Mood (PHQ-9) (-) SF-36Fatigue (subscale) (-)
Marquez-Romero et al. (2020) RCT (7) Nstart=32 Nend=30 TPS=Acute A vs 0	E: Receiving 20 mg/day of fluoxetine C: Placebo Duration: 90 days	E vs C: Fugl-Meyer Motor Scale (+exp) National Institutes of Health stroke scale (-) Barthel Index (+exp) Modified Rankin scale (+exp)
Shah et al. (2016) RCT (6) Nstart=89 Nend=84 TPS=Acute A vs 0	E: Fluoxetine (10mg to start, increase to 20mg/d after 1wk) C: Placebo Duration: 3mo	E vs C: Fugl-Meyer Assessment (+exp) Modified Rankin Scale (-)
Chollet et al. (2011) RCT (8) Nstart=118 Nend=113 TPS=Acute A vs 0	E: Fluoxetine (20mg/d) + standard physiotherapy C: Placebo + standard physiotherapy Duration: 1/d, 90d medications	E vs C: Fugl-Meyer Assessment (+exp) Upper Extremity (+exp) Lower Extremity (+exp) Modified Rankin Scale (+exp) National Institute of Health Stroke Scale (-)

Fluoxetine vs Maprotiline vs Placebo		
Dam et al. (1996) RCT (5) Nstart=52 Nend=46 TPS=Subacute A vs B vs 0	E1: Fluoxetine (20mg/d) E2: Maprotiline (150mg/d) C: Placebo Duration: 12wks	E1 vs E2: Barthel Index (+exp1) Hemispheric Stroke Scale Gait score (+exp1) Hamilton Depression Rating Scale (-) E1/E2 vs C: Barthel Index (-) Hemispheric Stroke Scale (-) Hamilton Depression Rating Scale (-)
Shu-Gan-Jie-Yu vs Fluoxetine vs Placebo		
Gong et al. (2020) RCT (7) Nstart=254 Nend=222 TPS=Acute A1 vs B vs A2 vs 0	E1: Shu-Gan-Jie-Yu capsule, 720 mg E2: Fluoxetine, 20 mg PO daily E3: Shu-Gan-Jie-Yu (2160 mg daily) C: Placebo Duration: E1: 720 mg, 3/d, 7d/wk, for 12wks (2160 mg daily) Shu-Gan-Jie-Yu; E2: 20mg 1/d, 7d/wk, for 12wks fluoxetine; E3: 720 mg, 3/d, 7d/wk, for 12wks (2160 mg daily) Shu-Gan-Jie-Yu + 20mg 1/d, 7d/wk, for 12wks fluoxetine	E1/E2/E3 v C: Modified Rankin Scale (+exp1, +exp2, +exp3) Fugl-Meyer Motor (+exp1, +exp2, +exp3)
Escitalopram vs Placebo		
Gourab et al. (2015) RCT crossover (8) Nstart=11 Nend=10 TPS=Chronic A vs 0	E: Escitalopram (10mg) C: Placebo Duration: Single dose, 1wk washout	E vs C: Stretch reflex high stretch velocity (+exp) Fugl-Meyer Assessment (-) 6-Minute Walk Test (-) 10-m walk test (Fast) (-) Muscle strength peak torque Ankle dorsiflexion (-) ankle plantarflexion (-) knee flexion (-) knee extension (-) Medial gastrocnemius EMG activity (-)
Citalopram vs Fluoxetine vs Placebo		
Asadollahi et al. (2018) RCT (8) Nstart=90 Nend=75 TPS=Acute A vs B vs 0	E1: 20mg/d Citalopram & Physiotherapy E2: 20mg/day Fluoxetine & Physiotherapy C: Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT	E1 vs E2: Fugl-Meyer Motor Scale (-) E1/E2 vs C: Fugl-Meyer Motor Scale (+exp1, +exp2)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Gong et al. (2020) RCT (7) Nstart=254 Nend=222 TPS=Acute A1 vs B vs A2 vs 0 Primary listing: Table 55 (Traditional Herbal Medicines)	E1: Shu-Gan-Jie-Yu capsule, 720 mg E2: Fluoxetine, 20 mg PO daily E3: Shu-Gan-Jie-Yu (2160 mg daily) C: Placebo Duration: E1: 720 mg, 3/d, 7d/wk, 12wks (2160 mg daily) Shu-Gan- Jie-Yu; E2: 20mg 1/d, 7d/wk, for 12wks fluoxetine; E3: 720 mg, 3/d, 7d/wk, for 12wks (2160 mg daily) Shu-Gan-Jie-Yu + 20mg 1/d, 7d/wk, for 12wks fluoxetine	E1/E2/E3 vs C: Modified Rankin Scale (+exp1, +exp2, +exp3) Fugl-Meyer Motor (+exp1, +exp2, +exp3)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group
+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group
+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group
- indicates no statistically significant between groups differences at α=0.05
no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Fluoxetine when compared to Placebo for improving motor recovery.	3	Marquez-Romero et al. 2020; Shah et al. 2016; Chollet et al. 2011
2	There is conflicting evidence about the effect of Fluoxetine (20mg/d) when compared to Maprotiline (150mg/d) for improving motor recovery.	1	Dam et al. 1996
2	Fluoxetine vs Placebo may not have a difference in efficacy when compared to Maprotiline or Placebo for improving motor recovery.	1	Dam et al. 1996
1b	Escitalopram may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Gourab et al. 2015
1b	20mg/d Citalopram & Physiotherapy may not have a difference in efficacy when compared to 20mg/day Fluoxetine & Physiotherapy for improving motor recovery.	1	Asadollahi et al. 2018
1b	20mg/d Citalopram & Physiotherapy or 20mg/day Fluoxetine & Physiotherapy may produce greater improvements in motor recovery than Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT.	1	Asadollahi et al. 2018
1b	Shu-Gan-Jie-Yu capsule (720 mg) or Fluoxetine (20 mg) or Shu-Gan-Jie-Yu (2160 mg daily) may produce greater improvements in motor recovery than Placebo.	1	Gong et al. 2020

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Escitalopram may not have a difference in efficacy when compared to Placebo for improving muscle strength.	1	Gourab et al. 2015

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Escitalopram may not have a difference in efficacy when compared to Placebo for improving range of motion.	1	Gourab et al. 2015

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Escitalopram when compared to Placebo for improving neurophysiological measures.	1	Gourab et al. 2015

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Fluoxetine may produce greater improvements in activities of daily living than Placebo.	4	Hankey et al. 2020; Marquez-Romero et al. 2020; Shah et al. 2016; Chollet et al. 2011
2	Fluoxetine (20mg/d) may produce greater improvements in activities of daily living than Maprotiline (150mg/d).	1	Dam et al. 1996
2	Fluoxetine vs Placebo may not have a difference in efficacy when compared to Maprotiline or Placebo for improving activities of daily living.	1	Dam et al. 1996
2	Fluoxetine (20mg/d) or Maprotiline (150mg/d) may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Dam et al. 1996
1b	Shu-Gan-Jie-Yu capsule (720 mg) or Fluoxetine (20 mg) or Shu-Gan-Jie-Yu (2160 mg daily) may produce greater improvements in activities of daily living than Placebo.	1	Gong et al. 2020

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Escitalopram may not have a difference in efficacy when compared to Placebo for improving gait speed.	1	Gourab et al. 2015

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Escitalopram may not have a difference in efficacy when compared to Placebo for improving gait endurance.	1	Gourab et al. 2015

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Fluoxetine may not have a difference in efficacy when compared to Placebo for improving quality of life.	1	Hankey et al. 2020

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Fluoxetine may produce greater improvements in mood than Placebo.	1	Hankey et al. 2020

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Fluoxetine may produce greater improvements in upper extremity function than Placebo.	1	Chollet et al. 2011

Key Points

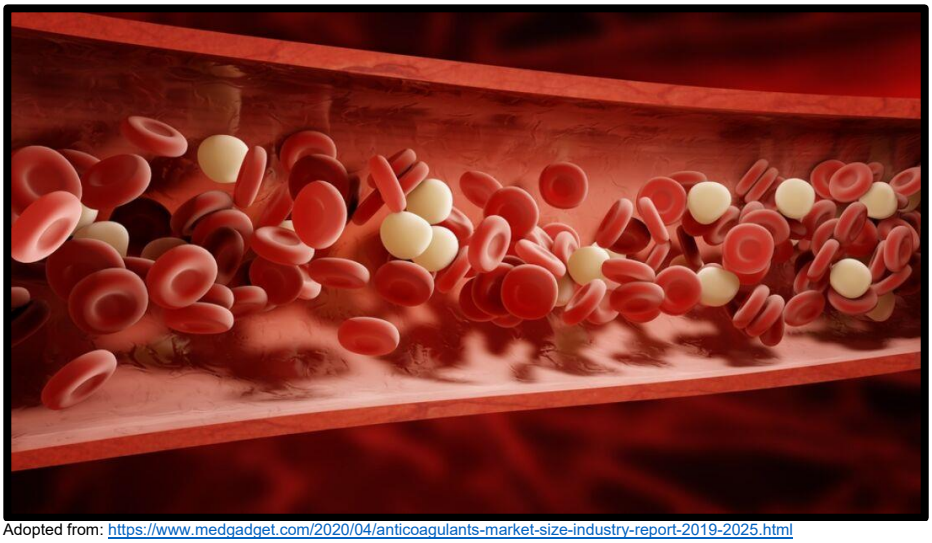
- Fluoxetine may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to Placebo; the literature is mixed regarding motor recovery.
- Fluoxetine (20mg/d) may be beneficial for improving activities of daily living after stroke when compared to Maprotiline (150mg/d); the literature is mixed regarding motor recovery.
- Fluoxetine vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Maprotiline or Placebo.
- Escitalopram may not be beneficial for improving motor recovery, muscle strength, range of motion, gait speed, and gait endurance after stroke when compared to Placebo; the literature is mixed regarding neurophysiological measures.
- 20mg/d Citalopram & Physiotherapy may not be beneficial for improving motor recovery after stroke when compared to 20mg/day Fluoxetine & Physiotherapy.
- Fluoxetine (20mg/d) may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- Maprotiline (150mg/d) may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- 20mg/d Citalopram & Physiotherapy may be beneficial for improving motor recovery after stroke when compared to Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT.
- 20mg/day Fluoxetine & Physiotherapy may be beneficial for improving motor recovery after stroke when compared to Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT.
- Fluoxetine (20 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu (2160 mg daily) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu capsule (720 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.

Summary of Key Points: Antidepressants

Intervention	Control(s)	Function domain(s)	Effect
Fluoxetine	Placebo	Activities of daily living	+
Fluoxetine	Placebo	Quality of life	–
Fluoxetine	Placebo	Motor recovery	=
Fluoxetine	Notriptyline vs Placebo	Activities of daily living	=
Fluoxetine (20mg/d)	Maprotiline (150mg/d)	Activities of daily living	+
Fluoxetine (20mg/d)	Maprotiline (150mg/d)	Motor recovery	=
Fluoxetine vs Placebo	Maprotiline vs Placebo	Motor recovery, activities of daily living	–
Escitalopram	Placebo	Motor recovery, muscle strength, range of motion, gait speed, gait endurance	–
Escitalopram	Placebo	Neurophysiological measures	=
20mg/d Citalopram & Physiotherapy	20mg/day Fluoxetine & Physiotherapy	Motor recovery	–
Fluoxetine (20mg/d)	Placebo	Activities of daily living	–

Maprotiline (150mg/d)	Placebo	Activities of daily living	–
20mg/d Citalopram & Physiotherapy	Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT	Motor recovery	+
20mg/day Fluoxetine & Physiotherapy	Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT	Motor recovery	+
Fluoxetine (20 mg)	Placebo	Motor recovery, activities of daily living	+
Shu-Gan-Jie-Yu (2160 mg daily)	Placebo	Motor recovery, activities of daily living	+
Shu-Gan-Jie-Yu capsule (720 mg)	Placebo	Motor recovery, activities of daily living	+

Secondary Prevention Medications



Adopted from: https://www.medgadget.com/2020/04/anticoagulants-market-size-industry-report-2019-2025.html

Approximately 25% of stroke patients will face a second stroke (Esenwa & Gutierrez, 2015). In addition, many stroke patients face reduced mobility which can lead to increased risk of muscle atrophy in the chronic phase, even if a secondary event does not occur (Naritomi et al., 2010). As such, recovery and secondary prevention is critical for reducing the likelihood of a further injury and increasing quality of life.

Secondary prevention is often a comprehensive approach to managing cardiovascular risk factors such as hypertension, diabetes, dyslipidemia, and smoking cessation. Changes in lifestyle like a healthy diet and aerobic exercise are also recommended strategies (Esenwa & Gutierrez, 2015). Pharmaceuticals such as antithrombotic agents and vasodilators can be deployed to help address these risk factors and manage disease while promoting recovery.

Antithrombotic agents aim to reduce the likelihood of blood clot formation by modulating the clotting cascade but can pose risk to causing a hemorrhagic event. As such, care must be taken in selecting the appropriate agent on a case-by-case basis. However, there is evidence that they can be beneficial for preventing secondary recurrence (Del Brutto et al., 2019). Vasodilators are a class of medications that help open blood vessels all around the body. This causes increased blood flow to targeted areas of the body which can lead to increased strength and endurance thereby promoting recovery (Di Cesare et al. 2016).

A total of seven RCTs were found that evaluated secondary prevention medications for lower extremity motor rehabilitation. One RCT compared Tirofiban with Placebo (Bai et al. 2018). One RCT compared PF-3049423 with Placebo (Di Cesare et al. 2016). One RCT compared Olmesartan with Amlodipine (Matsumoto et al. 2009). One RCT compared Naftidrofuryl fumarate with Placebo (Gray 1990). One RCT compared Nimodipine with Placebo

(Kaste et al. 1994). One RCT compared DLBS1033 (Lumbrokinase) with Conventional Therapy (Pinzon et al. 2020). One RCT compared Alteplase with Aspirin (Sun et al. 2024a).

The methodological details and results of all seven RCTs are presented in Table 41.

Table 41. RCTs Evaluating Secondary Prevention Medications for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Tirofiban vs Placebo		
Bai et al. (2018) RCT (7) Nstart=66 Nend=60 TPS=Acute A vs 0	E: Tirofiban injection + Conventional Rehabilitation C: Placebo injection + Conventional Rehabilitation Duration: 1/d, for 3wks Tirofiban/sham injection & 180min/d, 5d/wk, for 3wks Conventional Rehabilitation	E vs C: Fugl-Meyer Assessment (+exp) Sensorimotor network connectivity (-) Diffusivity of corticospinal tract (-)
PF-3049423 vs Placebo		
Di Cesare et al. (2016) RCT (6) Nstart=139 Nend=137 TPS=Acute A vs 0	E: PF-3049423 Phosphodiesterase-5 Inhibitor (6mg) C: Placebo Duration: 1/d, for 90d	E vs C: Modified Rankin scale (-) Barthel index (-) National Institute for Health Stroke Severity (-) Box Block test (-) Hand-grip strength (-) 10-Meter Walk test (-) Repeatable Battery assessment of Neuropsychological status (-) Modified Albert's test (-)
Olmesartan vs Amlodipine		
Matsumoto et al. (2009) RCT (6) Nstart=35 Nend=35 TPS=Subacute A vs B	E: Olmesartan (10mg) C: Amlodipine (2.5mg with dose increase as needed) Duration: 8wks	E vs C: Brunnstrom Stage Total (+exp) Lower extremity (+exp) Barthel Index (-) Mini-Mental State Examination (-) Blood Pressure (-)
Naftidrofuryl fumarate vs Placebo		
Gray (1990) RCT (5) Nstart=100 Nend=89 TPS=Acute A vs 0	E: Naftidrofuryl fumarate (316.5 mg) C: Placebo Duration: 12 wks	E vs C: Cumulative fatality (-) Hospital-bed occupancy (-) Recovery of motor function (-)
Nimodipine vs Placebo		
Kaste et al. (1994) RCT (6) Nstart=350	E: Nimodipine taken orally (120 mg/d) C: Placebo Duration: 30mg, 4doses/d, 120mg total/d, for 21d	E vs C: Rankin Grades (-) Mobility (-)

Nend=299 TPS=Acute A vs 0		Neurological Score (-)
DLBS1033 (Lumbrokinase) vs Conventional Therapy		
Pinzon et al. (2020) RCT (6) Nstart=60 Nend=54 TPS=Acute A vs 0 Also in Table 52 (Supplements and Vitamins)	E: DLBS1033 supplement (Lumbrokinase) + Standard therapy C: Standard therapy Duration: 3doses/d - DLBS1033 until discharge	E vs C: Modified rankin scale (+exp) National institute of health stroke scale (+exp) Barthel index (+exp) physiological and lab tests (No stats)
Alteplase vs Aspirin		
Sun et al. (2024a) RCT (5) Nstart=60 Nend=60 TPS=Acute A vs B	E: Alteplase IV thrombolysis + conventional care C: Aspirin + conventional care Duration: E: 0.9mg/kg; C: 0.3g-0.1g/d, for 2 wks	E vs C: NIHSS (+exp) BI (+exp) FMA (+exp) Berg Balance Scale (+exp) MoCA (+exp) mRS (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tirofiban may produce greater improvements in motor recovery than Placebo.	1	Bai et al. 2018
1b	Olmesartan may produce greater improvements in motor recovery than Amlodipine.	1	Matsumoto et al. 2009
2	Naftidrofuryl fumarate may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Gray 1990
1b	DLBS1033 (Lumbrokinase) may produce greater improvements in motor recovery than Conventional Therapy.	1	Pinzon et al. 2020
2	Alteplase may produce greater improvements in motor recovery than Aspirin.	1	Sun et al. 2024a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tirofiban may not have a difference in efficacy when compared to Placebo for improving neurophysiological measures.	1	Bai et al. 2018

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Olmesartan may not have a difference in efficacy when compared to Amlodipine for improving aerobic measures.	1	Matsumoto et al. 2009

SENSORY/PROPRIOCEPTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tirofiban may not have a difference in efficacy when compared to Placebo for improving sensory and proprioceptive function.	1	Bai et al. 2018

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	PF-3049423 may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Di Cesare et al. 2016
1b	Olmesartan may not have a difference in efficacy when compared to Amlodipine for improving activities of daily living.	1	Matsumoto et al. 2009
1b	Nimodipine may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Kaste et al. 1994
1b	DLBS1033 (Lumbrokinase) may produce greater improvements in activities of daily living than Conventional Therapy.	1	Pinzon et al. 2020
2	There is conflicting evidence about the effect of Alteplase when compared to Aspirin for improving activities of daily living.	1	Sun et al. 2024a

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	PF-3049423 may not have a difference in efficacy when compared to Placebo for improving gait speed.	1	Di Cesare et al. 2016

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Alteplase may produce greater improvements in balance than Aspirin.	1	Sun et al. 2024a

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Olmesartan may not have a difference in efficacy when compared to Amlodipine for improving cognition.	1	Matsumoto et al. 2009

2	Alteplase may produce greater improvements in cognition than Aspirin.	1	Sun et al. 2024a

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	PF-3049423 may not have a difference in efficacy when compared to Placebo for improving upper extremity function.	1	Di Cesare et al. 2016

Key Points

- Tirofiban may be beneficial for improving motor recovery, but not neurophysiological measures and sensory and proprioceptive function, after stroke when compared to Placebo.
- PF-3049423 may not be beneficial for improving activities of daily living and gait speed after stroke when compared to Placebo.
- Olmesartan may be beneficial for improving motor recovery, but not aerobic measures and activities of daily living, after stroke when compared to Amlodipine.
- Naftidrofuryl fumarate may not be beneficial for improving motor recovery after stroke when compared to Placebo.
- Nimodipine may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- DLBS1033 (Lumbrokinase) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy.
- Alteplase may be beneficial for improving motor recovery and balance after stroke when compared to Aspirin; the literature is mixed regarding activities of daily living.

Summary of Key Points: Secondary Prevention Medications

Intervention	Control(s)	Function domain(s)	Effect
Tirofiban	Placebo	Motor recovery	+
Tirofiban	Placebo	Neurophysiological measures, sensory and proprioceptive function	–
PF-3049423	Placebo	Activities of daily living, gait speed	–
Olmesartan	Amlodipine	Motor recovery	+
Olmesartan	Amlodipine	Aerobic measures, activities of daily living	–
Naftidrofuryl fumarate	Placebo	Motor recovery	–
Nimodipine	Placebo	Activities of daily living	–
DLBS1033 (Lumbrokinase)	Conventional Therapy	Motor recovery, activities of daily living	+
Alteplase	Aspirin	Motor recovery, balance	+
Alteplase	Aspirin	Activities of daily living	=

Edaravone



Adopted from: https://www.newswire.ca/news-releases/mitsubishi-tanabe-pharma-canada-announces-that-company-s-treatment-for-amyotrophic-lateral-sclerosis-als-has-been-added-to-the-provincial-drug-plan-in-alberta-816188000.html

Edaravone (Radicava, Radicut) is a small-molecule drug that with antioxidant properties and has been hypothesized to be beneficial for stroke recovery. It is thought to act as a free-radical scavenger and reduce the oxidative stress that accompanies muscle paralysis following stroke and subsequently improve leg locomotor function (Naritomi et al. 2010; Petrov et al., 2017). However, the precise mechanism of action remains unknown. Edaravone has been approved for use early-stage ALS patients in Japan and is seeking approval for acute stroke in other nations. There remains very limited clinical data for stroke recovery despite some promising pre-clinical studies.

A total of two RCTs were found that evaluated edaravone for lower extremity motor rehabilitation. One RCT compared Long-Term Edaravone with Short-Term Edaravone (Naritomi et al. 2010). One RCT compared Edaravone Injection with Conventional Treatment (Sun et al. 2019).

The methodological details and results of all two RCTs are presented in Table 42.

Table 42. RCTs Evaluating Edaravone for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Long-Term Edaravone vs Short-Term Edaravone		
Naritomi et al. (2010) RCT (5) Nstart=47 Nend=41 TPS=Acute A vs B	E1: Short term intravenous Edaravone (30mg) + Conventional care E2: Long term intravenous Edaravone (30mg) + Conventional care Duration: 30mg 2x/d, 3 days for short term, 10-14 days for long term	E1 vs E2: Disuse muscle atrophy Paretic leg (+exp2) Non-paretic leg (+exp2) Brunnstrom Recovery Stage (-) 10-Metre Walk Test (+exp2)
Edaravone Injection vs Conventional Treatment		
Sun et al. (2019) RCT (6) Nstart=130 Nend=130 TPS=Acute	E: Edaravone injection (30 mg edaravone) + Conventional Treatment (80mg Ligustrazine in 250mL 0.9% sodium chloride and 100mg aspirin tab) C: Conventional Treatment Duration: E: 30mins/d, 2x/d, for 2wks	E vs C: Adverse events (-) Barthel Index (+exp) Fugl-Meyer Assessment (+exp)

A vs 0 vs B	C: 30mins/d, 1x/d, for 2wks	National Institute of Health Stroke Scale (+exp) Total treatment Efficacy (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Long term intravenous Edaravone (30mg) with Conventional care may not have a difference in efficacy when compared to Short term intravenous Edaravone (30mg) with Conventional care for improving motor recovery.	1	Naritomi et al. 2010
1b	Edaravone Injection may produce greater improvements in motor recovery than Conventional Treatment.	1	Sun et al. 2019

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Long term intravenous Edaravone (30mg) with Conventional care may produce greater improvements in muscle strength than Short term intravenous Edaravone (30mg) with Conventional care.	1	Naritomi et al. 2010

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Edaravone Injection may produce greater improvements in activities of daily living than Conventional Treatment.	1	Sun et al. 2019

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Long term intravenous Edaravone (30mg) with Conventional care may produce greater improvements in gait speed than Short term intravenous Edaravone (30mg) with Conventional care.	1	Naritomi et al. 2010

Key Points

- Edaravone Injection may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Treatment.
- Long term intravenous Edaravone (30mg) with Conventional care may be beneficial for improving muscle strength and gait speed, but not motor recovery, after stroke when compared to Short term intravenous Edaravone (30mg) with Conventional care.

Summary of Key Points: Edaravone

Intervention	Control(s)	Function domain(s)	Effect
Edaravone Injection	Conventional Treatment	Motor recovery, activities of daily living	+
Long term intravenous Edaravone (30mg) with Conventional care	Short term intravenous Edaravone (30mg) with Conventional care	Muscle strength, gait speed	+
Long term intravenous Edaravone (30mg) with Conventional care	Short term intravenous Edaravone (30mg) with Conventional care	Motor recovery	−

Stimulants



Adopted from: https://www.verywellmind.com/is-ritalin-addictive-21911

Stimulants are drugs that increase cortical excitability in the central nervous system (CNS), often by blocking reuptake and increasing the synaptic concentration and transmission of dopamine, serotonin, and noradrenaline throughout the brain. The neurobehavioral gains ascribed to CNS stimulants include enhanced arousal, mental processing speed, and/or motor processing speed (Herrold et al., 2014).

Two stimulants that are commonly used in rehabilitation include amphetamines and methylphenidates. Amphetamines are sympathomimetic agents that possess potent CNS stimulant effects by releasing monoamines from presynaptic neurons in the brain (Martinsson & Eksborg, 2004). They have been shown to improve motor recovery after brain injury in animal studies, and there is increasing evidence that they may provide symptomatic management for some deficits after brain injury in humans (Walker-Batson et al., 1995). Methylphenidates stimulate the CNS by increasing synaptic concentrations of norepinephrine and dopamine and are thought to modulate cerebral reorganization and improve motor function in stroke patients (Wang et al., 2014b).

A total of ten RCTs were found that evaluated stimulants for lower extremity motor rehabilitation. Seven RCTs compared Amphetamines with Placebo (Goldstein et al. 2018; Gladstone et al. 2006; Martinsson & Wahlgren 2003a; Treig et al. 2003; Sonde et al. 2001; Walker-Batson 1995; Crisostomo et al. 1988). One RCT compared Amphetamine with Intensive Physiotherapy with Amphetamine with Conventional Physiotherapy (Martinsson et al. 2003b). One RCT compared Amphetamine vs Placebo with Levodopa vs Placebo (Sonde & Lokk 2007). One RCT compared Methylphenidate vs Placebo with Levodopa vs Placebo (Lokk et al. 2011).

The methodological details and results of all ten RCTs are presented in Table 43.

Table 43. RCTs Evaluating Stimulants for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Amphetamines vs Placebo		
Goldstein et al. (2018) RCT (8) Nstart=64 Nend=59 TPS=Acute A vs 0	E: Dextroamphetamine + conventional therapy C: Placebo + conventional therapy Duration: 60min/d, q4d (6 sessions total) conventional therapy & 10mg/d, q4d (6 doses total) Dextroamphetamine/sham	E vs C: Fugl-Meyer motor score (-) Modified Rankin Scale (-) National Institutes of Health Stroke Scale (-) Canadian Neurological Scale (-) Action Research Arm Test (-) Functional Independence Measure (-) 6-minute walk test (-) Mini-Mental State Examination (-) Beck Depression Inventory (-) Stroke Impact Scale (-)
Gladstone et al. (2006) RCT (7) Nstart=71 Nend=67 TPS=Acute A vs 0	E: D-Amphetamine sulfate (10mg/d) + Physiotherapy C: Placebo + Physiotherapy Duration: 2d/wk, for 5wks	E vs C: Fugl-Meyer Assessment (-) Upper Extremity (-) Lower Extremity (-) Clinical Outcome Variable Scale Ambulation Performance (-) Independent Ambulation with Environmental Barriers (-) Functional Independence Measure (-) Modified Rankin Scale (-) Chedoke-McMaster Disability Inventory (-) Arm and Hand Activity (-)
Martinsson & Wahlgren (2003a) RCT (8) Nstart=45 Nend=38 TPS=Acute A1 vs A2 vs A3 vs 0	E1: Dexamphetamine (2.5mg) E2: Dexamphetamine (5.0mg) E3: Dexamphetamine (10mg) C: Placebo Duration: 1capsule 2x/d, for 5d	E1/E2/E3 vs C: Scandinavian Stroke Scale (+exp) Lindmark Motor Assessment (+exp) Activity Index (+exp) 10-Meter Walk Test (-) heart rate (+exp) BP (+exp)
Treig et al. (2003) RCT (9) Nstart=24 Nend=24 TPS=Acute A vs 0	E: D-Amphetamine (10mg/d) + Physiotherapy C: Placebo + Physiotherapy Duration: Every fourth day (10d total) for 36d Medication/placebo, 45min/d, 5d/wk, for 36d physiotherapy	E vs C: Rivermead Motor Assessment (-) Barthel Index (-)
Sonde et al. (2001) RCT (9) Nstart=40 Nend=40 TPS=Acute A vs 0	E: Amphetamine (10mg/d) + Physiotherapy + Regular training C: Placebo + Physiotherapy + Regular training Duration: 2d/wk, for 5wks Amphetamine/placebo, 30min/d, 5d/wk, for 5wks Physiotherapy	E vs C: Fugl-Meyer Assessment (-) Barthel Index (-)

Walker-Batson (1995) RCT (6) Nstart=10 Nend=10 TPS=Acute A vs 0	E: Dextroamphetamine (10mg/d) + physical therapy C: Placebo + physical therapy Duration: Every 4d for 10 sessions	E vs C: Fugl-Meyer Assessment (+exp)
Crisostomo et al. (1988) RCT (8) Nstart=8 Nend=8 TPS=Acute A vs 0	E: Amphetamine (10mg) + physiotherapy C: Placebo + physiotherapy Duration: Single dose injection & single 45min physiotherapy session	E vs C: Fugl-Meyer Assessment Upper Extremity (+exp) Lower Extremity (+exp)
Amphetamine with Intensive Physiotherapy vs Amphetamine with Conventional Physiotherapy		
Martinsson et al. (2003b) RCT (7) Nstart=30 Nend=28 TPS=Acute A + B vs A	E: Dexamphetamine (10mg, 2x/d) + Intensive physiotherapy C: Dexamphetamine (10mg, 2x/d) + Conventional physiotherapy Duration: 30-45min, 2x/d, for 5d Intensive physiotherapy & 15min/d, for 5d Standard physiotherapy	E vs C: Lindmark Motor Assessment Chart (-) Activity Index (-) National Institute of Health Stroke Scale (-)
Amphetamine vs Levodopa vs Placebo		
Sonde & Lokk (2007) RCT (7) Nstart=30 Nend=25 TPS=Acute A + B vs A vs B vs 0 Also in Table 44 (Dopamine Agonists)	E1: Amphetamine (10mg/d) + Levodopa (50mg/d) E2: Amphetamine (20mg/d) + Levodopa placebo E3: Amphetamine placebo + Levodopa (100mg/d) C: Amphetamine placebo + Levodopa placebo Duration: 5d/wk for 2wks	E1/E2/E3 vs C: Fugl-Meyer Assessment (-) Barthel Index (-)
Methylphenidate vs Levodopa vs Placebo		
Lokk et al. (2011) RCT (8) Nstart=100 Nend=78 TPS=Subacute A vs B vs A + B vs 0 Also in Table 44 (Dopamine Agonists)	E1: Methylphenidate (20mg/d) + conventional physiotherapy E2: Levodopa (125mg/d) + conventional physiotherapy E3: Methylphenidate + Levodopa + conventional physiotherapy C: Placebo + conventional physiotherapy Duration: 10mg, 2doses/d, 5d/wk, for 3wks (15 total sessions) & 45min/d, 5d/wk, for 3wks physiotherapy	E1 vs E2 vs E3 vs C: Barthel index (No stats) Fugl-Meyer Motor assessment (-) National Institute of Stroke Scale (No stats)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Amphetamines may not have a difference in efficacy when compared to Placebo for improving motor recovery.	7	Goldstein et al. 2018; Gladstone et al. 2006; Martinsson & Wahlgren 2003a; Treig et al. 2003; Sonde et al. 2001; Walker-Batson 1995; Crisostomo et al. 1988
1b	Amphetamine with Intensive Physiotherapy may not have a difference in efficacy when compared to Amphetamine with Conventional Physiotherapy for improving motor recovery.	1	Martinsson et al. 2003b
1b	Amphetamine vs Placebo may not have a difference in efficacy when compared to Levodopa or Placebo for improving motor recovery.	1	Sonde & Lokk 2007
1b	Methylphenidate vs Placebo may not have a difference in efficacy when compared to Levodopa or Placebo for improving motor recovery.	1	Lokk et al. 2011

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may produce greater improvements in aerobic measures than Placebo.	1	Martinsson & Wahlgren 2003a

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Amphetamines may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	4	Goldstein et al. 2018; Gladstone et al. 2006; Treig et al. 2003; Sonde et al. 2001
1b	Amphetamine vs Placebo may not have a difference in efficacy when compared to Levodopa or Placebo for improving activities of daily living.	1	Sonde & Lokk 2007
1b	Methylphenidate vs Placebo may not have a difference in efficacy when compared to Levodopa or Placebo for improving activities of daily living.	1	Lokk et al. 2011

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving gait speed.	1	Martinsson & Wahlgren 2003a

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving gait endurance.	1	Goldstein et al. 2018

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving functional mobility.	1	Gladstone et al. 2006

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving quality of life.	1	Goldstein et al. 2018

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving mood.	1	Goldstein et al. 2018

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Amphetamines may not have a difference in efficacy when compared to Placebo for improving cognition.	1	Goldstein et al. 2018

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Amphetamines may not have a difference in efficacy when compared to Placebo for improving upper extremity function.	3	Goldstein et al. 2018; Gladstone et al. 2006; Crisostomo et al. 1988

Key Points

- Amphetamines may be beneficial for improving aerobic measures, but not motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, and quality of life, after stroke when compared to Placebo.
- Amphetamine with Intensive Physiotherapy may not be beneficial for improving motor recovery after stroke when compared to Amphetamine with Conventional Physiotherapy.
- Amphetamine vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levodopa or Placebo.
- Methylphenidate vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levodopa or Placebo.

Summary of Key Points: Stimulants

Intervention	Control(s)	Function domain(s)	Effect
Amphetamines	Placebo	Aerobic measures	+
Amphetamines	Placebo	Motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, quality of life	–

Amphetamine with Intensive Physiotherapy	Amphetamine with Conventional Physiotherapy	Motor recovery	–
Amphetamine vs Placebo	Levodopa vs Placebo	Motor recovery, activities of daily living	–
Methylphenidate vs Placebo	Levodopa vs Placebo	Motor recovery, activities of daily living	–

Dopamine Agonists



Adopted from: https://medium.com/parkinsons-uk/how-do-levodopa-medications-work-ac6a6e58e143

Dopamine agonists are effective at controlling motor symptoms in patients with Parkinson's disease, with Levodopa being the current gold standard treatment (Antonini, 2007). While levodopa is possibly the most potent of the Parkinsonian drugs, its prolonged use can cause a variety of side effects, thus dopamine agonists are also commonly used in therapy (Kulisevsky & Pagonabarraga, 2010). Dopamine agonists have shown the ability to delay the initiation of levodopa therapy and have even been shown to modify the course of certain motor complications associated with levodopa use, such as dyskinesia (Kulisevsky & Pagonabarraga, 2010). Ropinirole is one such dopamine agonist used in therapy.

A total of six RCTs were found that evaluated dopamine agonists for lower extremity motor rehabilitation. Three RCTs compared Levadopa or No Medication with Placebo or No Medication (Ford et al. 2019; Acler et al. 2009; Scheidtmann et al. 2001). Two RCTs evaluated Levodopa with Stimulants (Lokk et al. 2011; Sonde & Lokk 2007). One RCT compared Ropinirole with Placebo (Cramer et al. 2009).

In addition, two RCTs in which dopamine agonists formed part of a combined or comparative intervention are cross-referenced at the end of Table 44; their primary listings appear in other tables.

The methodological details and results of all six RCTs are presented in Table 44.

Table 44. RCTs Evaluating Dopamine Agonists for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**

Levadopa vs Placebo or No Medication		
Ford et al. (2019) RCT (9) Nstart=593 Nend=532 TPS=Acute A vs 0	E: Co-careldopa (Sinemet) + conventional rehabilitation C: Placebo + conventional rehabilitation Duration: 62.5mg/d, for the first 2 days, then 125mg/d, 6wks - 45–60 min before physical therapy	E vs C: 10-meter Walk test (-) Rivermead Mobility Index (-) Nottingham extended activities daily living (-) Barthel index (-) ABILHAND (-) Modified Rankin scale (-) Montreal Cognitive assessment (-) General Health Questionnaire-12 (-) Fatigue assessment scale (-) Caregiver burden scale (+exp)
Acler et al. (2009) RCT crossover (5) Nstart=12 Nend=10 TPS=Chronic A vs 0	E: L-DOPA 100mg/d C: Placebo Duration: 1/d, 7d/wk, for 5wks	E vs C: Rivermead Motor Assessment (-) Nine Hole Peg Test Affected hand (+exp) Unaffected hand (-) 10-Meter walking test (+exp) Beck Depression Inventory (-) Resting Motor Threshold (-) MEP Amplitude (-) Cortical Silent Period (-)
Scheidtmann et al. (2001) RCT (7) Nstart=53 Nend=47 TPS=Subacute A vs 0	E: Levodopa (100mg, 1x) b + PT C: Placebo + PT Duration: 100mg/d, for 3wks levodopa + PT; 60min/d, 5d/wk, for 3wks PT only	E vs C: Rivermead Motor Assessment (+exp)
Levodopa with Stimulants		
Lokk et al. (2011) RCT (8) Nstart=100 Nend=78 TPS=Subacute A vs B vs A + B vs 0	E1: Methylphenidate (20mg/d) + conventional physiotherapy E2: Levadopa (125mg/d) + conventional physiotherapy E3: Methylphenidate + Levadopa + conventional physiotherapy C: Placebo + conventional physiotherapy Duration: 10mg, 2 doses/d, 5d/wk, for 3wks (15 total sessions) & 45min/d, 5d/wk, for 3wks physiotherapy	E1 vs E2 vs E3 vs C: Barthel index (No stats) Fugl-Meyer Motor assessment (-) National Institute of Stroke Scale (No stats)
Sonde & Lokk (2007) RCT (7) Nstart=30 Nend=25 TPS=Acute A + B vs A vs B vs 0	E1: Levodopa (50mg/d) + Amphetamine (10mg/d) E2: Levodopa (100mg/d) + Amphetamine placebo E3: Levodopa placebo + Amphetamine (20mg/d) C: Amphetamine placebo + Levodopa placebo Duration: 5d/wk for 2wks	E1/E2/E3 vs C: Fugl-Meyer Assessment (-) Barthel Index (-)
Ropinirole vs Placebo		
Cramer et al. (2009) RCT (6) Nstart=33	E: Ropinirole (4mg/d) + physical therapy C: Placebo + physical therapy	E vs C: Fugl-Meyer Assessment UE (-)

Nend=33 TPS=Chronic A vs 0	Duration: 7d/wk for 9wks medication therapy & 90min/d, 2d/wk, 4wks (after week 5) physical therapy	LE (-) 50-ft timed walk test (-) 6 minute walk test(-) Stroke Impact Scale-16(-) Barthel Index (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may produce greater improvements in motor recovery than Placebo or No Medication.	1	Scheidtmann et al. 2001
2	L-DOPA 100mg/d may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Acler et al. 2009
1b	Methylphenidate (20mg/d) with conventional physiotherapy may not have a difference in efficacy when compared to Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy for improving motor recovery.	1	Lokk et al. 2011
1b	Amphetamine (10mg/d) with Levodopa (50mg/d) may not have a difference in efficacy when compared to Amphetamine placebo with Levodopa placebo for improving motor recovery.	1	Sonde & Lokk 2007
1b	Ropinirole may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Cramer et al. 2009

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	L-DOPA 100mg/d may not have a difference in efficacy when compared to Placebo for improving neurophysiological measures.	1	Acler et al. 2009

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may not have a difference in efficacy when compared to Placebo or No Medication for improving activities of daily living.	1	Ford et al. 2019
1b	Methylphenidate (20mg/d) with conventional physiotherapy may not have a difference in efficacy when compared to Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy for improving activities of daily living.	1	Lokk et al. 2011
1b	Amphetamine (10mg/d) with Levodopa (50mg/d) may not have a difference in efficacy when compared to Amphetamine placebo with Levodopa placebo for improving activities of daily living.	1	Sonde & Lokk 2007

1b	Ropinirole may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Cramer et al. 2009

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may not have a difference in efficacy when compared to Placebo or No Medication for improving gait speed.	1	Ford et al. 2019
2	L-DOPA 100mg/d may produce greater improvements in gait speed than Placebo.	1	Acler et al. 2009
1b	Ropinirole may not have a difference in efficacy when compared to Placebo for improving gait speed.	1	Cramer et al. 2009

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Ropinirole may not have a difference in efficacy when compared to Placebo for improving gait endurance.	1	Cramer et al. 2009

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Levadopa or No Medication when compared to Placebo or No Medication for improving functional mobility.	1	Ford et al. 2019

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Levadopa or No Medication when compared to Placebo or No Medication for improving quality of life.	1	Ford et al. 2019
1b	Ropinirole may not have a difference in efficacy when compared to Placebo for improving quality of life.	1	Cramer et al. 2009

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	L-DOPA 100mg/d may not have a difference in efficacy when compared to Placebo for improving mood.	1	Acler et al. 2009

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may not have a difference in efficacy when compared to Placebo or No Medication for improving fatigue and sleep.	1	Ford et al. 2019

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may not have a difference in efficacy when compared to Placebo or No Medication for improving cognition.	1	Ford et al. 2019

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Levadopa or No Medication may not have a difference in efficacy when compared to Placebo or No Medication for improving upper extremity function.	1	Ford et al. 2019
2	There is conflicting evidence about the effect of L-DOPA 100mg/d when compared to Placebo for improving upper extremity function.	1	Acler et al. 2009

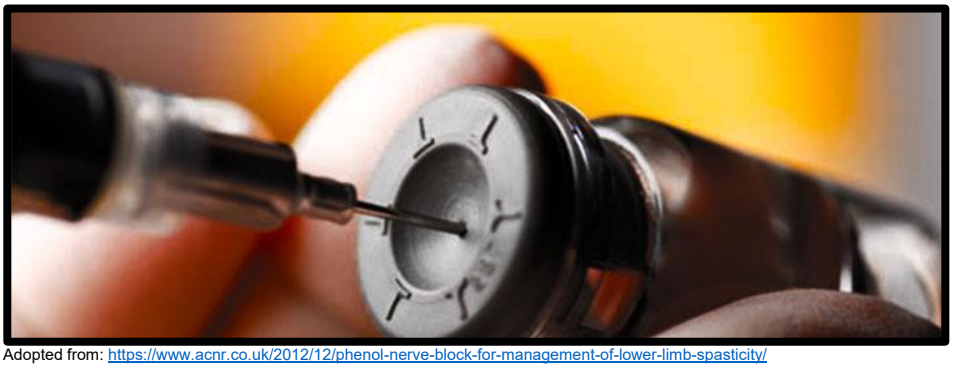
Key Points

- Levadopa or No Medication may be beneficial for improving motor recovery, but not activities of daily living and gait speed, after stroke when compared to Placebo or No Medication; the literature is mixed regarding functional mobility and quality of life.
- L-DOPA 100mg/d may be beneficial for improving gait speed, but not motor recovery and neurophysiological measures, after stroke when compared to Placebo.
- Methylphenidate (20mg/d) with conventional physiotherapy may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy.
- Amphetamine (10mg/d) with Levodopa (50mg/d) may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Amphetamine placebo with Levodopa placebo.
- Ropinirole may not be beneficial for improving motor recovery, activities of daily living, gait speed, gait endurance, and quality of life after stroke when compared to Placebo.

Summary of Key Points: Dopamine Agonists

Intervention	Control(s)	Function domain(s)	Effect
Levadopa or No Medication	Placebo or No Medication	Motor recovery	+
Levadopa or No Medication	Placebo or No Medication	Activities of daily living, gait speed	–
Levadopa or No Medication	Placebo or No Medication	Functional mobility, quality of life	=
Methylphenidate (20mg/d) with conventional physiotherapy	Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy	Motor recovery, activities of daily living	–
Amphetamine (10mg/d) with Levodopa (50mg/d)	Amphetamine placebo with Levodopa placebo	Motor recovery, activities of daily living	–
Ropinirole	Placebo	Motor recovery, activities of daily living, gait speed, gait endurance, quality of life	–
L-DOPA 100mg/d	Placebo	Motor recovery, neurophysiological measures	–
L-DOPA 100mg/d	Placebo	Gait speed	+

Nerve Block Agents



Adopted from: https://www.acnr.co.uk/2012/12/phenol-nerve-block-for-management-of-lower-limb-spasticity/

Nerve blocks are a locally acting treatment for spasticity that have the advantage of reducing harmful spasticity in one area, while preserving useful spasticity in another area (Kirazli et al. 1998). Motor nerve blocks can be used to evaluate the potential role of muscle overactivity in abnormal movements. Depending on the pharmacological agent used, the temporary effect of a nerve block reverses within 1–12 h (Gross et al., 2014). Phenol is a commonly used nerve block agent that denatures protein and causes generalized neurolysis that affects both motor and sensory nerve fibers, thus reducing muscle tone by reducing abnormal neural signals. Phenol is effective in spasticity of large proximal leg muscles or as a nerve block in spastic foot drop (Fu et al., 2013). Radiofrequency thermocoagulation is another nerve block agent in which nerve fibres are blocked via thermal damage (Shen et al., 2017).

A total of four RCTs were found that evaluated nerve block agents for lower extremity motor rehabilitation. One RCT compared Botulinum Toxin with Phenol (Kirazli et al. 1998). One RCT compared Nerve block with Phenol with Ethyl Alcohol (Kocabas et al. 2010). One RCT evaluated Nerve Block with AFO Device (Beckerman et al. 1996a). One RCT compared Curare Medications with Homeopathic Medications (Pramanick et al. 2020).

The methodological details and results of all four RCTs are presented in Table 45.

Table 45. RCTs Evaluating Nerve Block Agents for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Botulinum Toxin vs Phenol		
Kirazli et al. (1998) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B Also in Table 46 (Botulinum Toxin)	E1: Botulinum Toxin A (400 U) E2: Tibial nerve blockade (Phenol) Duration: One session	E1 vs E2: Active ROM (No stats) Passive ROM (No stats) Brace Wear Scale (-) Ashworth Scale (+exp1) 25 feet walk test (+exp) Global Assessment of Spasticity Scale (+exp1) Clonus duration (by EMG) (+exp)
Nerve block with Phenol vs Ethyl Alcohol		
Kocabas et al. (2010) RCT (5) Nstart=20 Nend=20 TPS=Chronic A vs B	E1: 50% Ethyl alcohol injection (5mL) E2: 5% Phenol injection (5mL) Duration: single treatment	E1 vs E2: Modified Ashworth Scale (-) Passive Range of Motion (-) Ankle clonus (-) Medical Research Council ankle strength (-)

Nerve Block with AFO Device		
Beckerman et al. (1996a) RCT (7) Nstart=60 Nend=58 TPS=Chronic A + B vs B vs A vs 0 Also in Table 13 (Orthotic Devices)	E1: Tibial nerve block through thermocoagulation + AFO E2: Sham thermocoagulation + AFO E3: Thermocoagulation + Sham AFO E4: Sham thermocoagulation + Sham AFO Duration: 45-60min/1session thermocoagulation	E1/E3 vs E2/E4: Modified Ashworth Scale (-) Ankle Clonus Score (+exp1, +exp3) Achilles tendon reflex (+exp1, +exp3) Fugl-Meyer Assessment (-) Spasticity (+exp1, +exp3) Sickness Impact Profile (-) Walking Speed (-)
Curare vs Homeopathic Medications		
Pramanick et al. (2020) RCT (6) Nstart=50 Nend=45 TPS=Chronic A vs B	E: Curare 30CH + Conventional therapy C: Individualized homeopathic medicines + Conventional therapy Duration: Each dose=4 globules of medicine. Individualized dosage for each person.	E vs C: Oxford Muscle scale-strength grading (-) Stroke Impact scale Physical Problems (-) Memory And Thinking (-) Mood And Emotion (-) Communication And Understanding (-) Usual Activities (-) Mobility (-) Ability To Use Affected Hand (-) Stroke Affected Ability to Participate in Social Activities (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving motor recovery.	1	Beckerman et al. 1996a

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	50% Ethyl alcohol injection (5mL) may not have a difference in efficacy when compared to 5% Phenol injection (5mL) for improving muscle strength.	1	Kocabas et al. 2010
1b	Curare Medications may not have a difference in efficacy when compared to Homeopathic Medications for improving muscle strength.	1	Pramanick et al. 2020

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A (400 U) may produce greater improvements in spasticity than Tibial nerve blockade (Phenol).	1	Kirazli et al. 1998
2	50% Ethyl alcohol injection (5mL) may not have a difference in efficacy when compared to 5% Phenol injection (5mL) for improving spasticity.	1	Kocabas et al. 2010
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving spasticity.	1	Beckerman et al. 1996a

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A (400 U) may not have a difference in efficacy when compared to Tibial nerve blockade (Phenol) for improving range of motion.	1	Kirazli et al. 1998
2	50% Ethyl alcohol injection (5mL) may not have a difference in efficacy when compared to 5% Phenol injection (5mL) for improving range of motion.	1	Kocabas et al. 2010

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**

2. Activities

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving gait speed.	1	Beckerman et al. 1996a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tibial nerve block through thermocoagulation with ankle-foot orthosis may not have a difference in efficacy when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis for improving quality of life.	1	Beckerman et al. 1996a
1b	Curare Medications may not have a difference in efficacy when compared to Homeopathic Medications for improving quality of life.	1	Pramanick et al. 2020

Key Points

- Botulinum Toxin A (400 U) may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Tibial nerve blockade (Phenol).

- 50% Ethyl alcohol injection (5mL) may not be beneficial for improving muscle strength, spasticity, and range of motion after stroke when compared to 5% Phenol injection (5mL).
- Tibial nerve block through thermocoagulation with ankle-foot orthosis may not be beneficial for improving motor recovery, spasticity, gait speed, and quality of life after stroke when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis.
- Curare Medications may not be beneficial for improving muscle strength and quality of life after stroke when compared to Homeopathic Medications.

Summary of Key Points: Nerve Block Agents

Intervention	Control(s)	Function domain(s)	Effect
Botulinum Toxin A (400 U)	Tibial nerve blockade (Phenol)	Spasticity	+
Botulinum Toxin A (400 U)	Tibial nerve blockade (Phenol)	Range of motion	–
50% Ethyl alcohol injection (5mL)	5% Phenol injection (5mL)	Muscle strength, spasticity, range of motion	–
Tibial nerve block through thermocoagulation with ankle-foot orthosis	Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis	Motor recovery, spasticity, gait speed, quality of life	–
Curare Medications	Homeopathic Medications	Muscle strength, quality of life	–

Botulinum Toxin



Adopted from: https://www.pointperformance.com/managing-pain-with-botox/

Botulinum toxin is a pharmacological agent, administered through injections, which reduces muscle tone and overactivity in spastic muscles. It exerts a therapeutic effect by presynaptically blocking the release of acetylcholine at the neuromuscular junction. The benefits of botulinum toxin injections are generally dose-dependent and last approximately 2 to 4 months before nerve resprouting reverses the functional blockade (Brashear et al., 2002; Francisco et al., 2002; Pandyan et al., 2002; Simpson et al., 1996; Smith et al., 2000). One of the advantages of

botulinum toxin is that it reduces spasticity only in the injected muscles as opposed to other systemic treatments, which can have more widespread antispastic effects (Pandyan et al., 2002). Unlike chemodenervation and neurolytic procedures like phenol or alcohol, botulinum toxin is not associated with skin sensory loss, dysesthesia, or other side effects like fatigue and weakness (Pandyan et al., 2002; Suputtitada & Suwanwela, 2005). The most widely used type of botulinum toxin is botulinum toxin A, which has two further variations known as abobotulinum toxin A and onabotulinum toxin A. Both types share the same pharmacology and are used for similar purposes, however they differ with respect to their unit potency and nontoxin protein content, making their pharmacodynamic properties unique (Nestor & Ablon, 2011). Dynamic EMG studies can be helpful in determining which muscles should be injected (Bell & Williams, 2003).

A total of 46 RCTs were found that evaluated botulinum toxin for lower extremity motor rehabilitation. Twelve RCTs compared Botulinum Toxin A with Placebo (Tenniglo et al. 2023; Masakado et al. 2021; Kerzoncuf et al. 2020; Patel et al. 2020; Esquenazi et al. 2019; Prazeres et al. 2018; Wein et al. 2018; Tao et al. 2015; Fietzek et al. 2014; Ward et al. 2014; Kaji et al. 2010; Burbaud et al. 1996). Two RCTs evaluated Botulinum Toxin A with Ankle-foot Orthosis (Ding et al. 2015; Farina et al. 2008). Three RCTs evaluated Botulinum Toxin A with Casting or Taping (Carda et al. 2011; Karadag-Saygi et al. 2010; Reiter et al. 1998). Two RCTs evaluated Botulinum Toxin A with Electrical Stimulation (Baricich et al. 2019; Lannin et al. 2018). Three RCTs evaluated Botulinum Toxin A with FES (Ding et al. 2017; Baricich et al. 2008; Johnson et al. 2004). Two RCTs evaluated Botulinum Toxin A with TENS (Picelli et al. 2014; Bayram et al. 2006). One RCT compared Botox with Neurotomy (Bollens et al. 2013). One RCT compared Botox with Phenol (Kirazli et al. 1998). Two RCTs evaluated Location of Injection (Im et al. 2014; Childers et al. 1996). Six RCTs evaluated Dosage of Injection (Gracies et al. 2017; Li et al. 2017; Pimentel et al. 2014; Dunne et al. 2012; Mancini et al. 2005; Pittock et al. 2003). Two RCTs evaluated Method of Injection Guidance (Turna et al. 2020; Picelli et al. 2012b). One RCT evaluated Botulinum Toxin with Task-Oriented Rehabilitation (Roche et al. 2015). Three RCTs compared Botox Combined with Robotics with Botox and Conventional Therapy (Cotinat et al. 2024; Erbil et al. 2018; Picelli et al. 2016). One RCT compared Botulinum Toxin A + EMG Biofeedback Treatment + Conventional Care with Botulinum Toxin A + Conventional Care (Chen et al. 2015b). One RCT compared Forward Treadmill Training with Botulinum Toxin with Backward Treadmill Training with Botulinum Toxin (Munari et al. 2020). One RCT compared Botulinum Toxin A with Conventional Therapy (Yu et al. 2023).

In addition, two RCTs in which botulinum toxin formed part of a combined or comparative intervention are cross-referenced at the end of Table 46; their primary listings appear in other tables.

The methodological details and results of all 46 RCTs are presented in Table 46.

Table 46. RCTs Evaluating Botulinum Toxin for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Botulinum Toxin A vs Placebo		
Tenniglo et al. (2023) RCT crossover (8) Nstart=26 Nend=25 TPS=Chronic A vs 0	E: Botox injection C: Placebo injection Duration: single active injection, 5 month washout between next injection(active or placebo)	E vs C: peak torque Peak knee flexion(+exp) Peak hip flexion(-) Knee flexion angular velocity at toe off(-) ROM Knee ROM(+exp) Hip ROM(-) Gait speed(-) 6MWT(+exp) 10MWT(-) RER(-) TUG(-) Rivermead MI(+exp) MI(-)

		MRC(-) Stiff knee gait VAS(-) stiff knee gait BORG(-) FAC(+exp) SIS(+exp)
Masakado et al. (2021) RCT (9) Nstart=208 Nend=194 TPS=Chronic A vs 0	E: Incobotulinumtoxin A (400U) injection in the pes equinus muscles C: Placebo Duration: 1 injection, 12wk observation	E vs C: Modified Ashworth Scale (+exp) 10-Meter Walking Test (-)
Kerzoncuf et al. (2020) RCT (6) Nstart=49 Nend=40 TPS=Chronic A vs 0	E: E: Botulinum Toxin A injection (<300U) + conventional therapy C: Placebo injection + conventional therapy Duration: Single injection botox up to 300U	E vs C: Final countdown number reached (-) Countdown mistakes (-) Modified Ashworth Score Gastrocnemius (+exp) Gastrocnemii (-) Soleus (+exp) Tibialis posterior (-) Range of motion - Tibiotarsal joint knee extended (-) Sway Area Eyes Open (-) Dual Task (+exp) Eyes Closed (-) Weight-bearing performances (-) Walking speed (-) Functional Independence Measure (-) Functional Ambulation Category (-)
Patel et al. (2020) RCT (8) Nstart=468 Nend=450 TPS=Chronic A vs 0	E: Onabotulinumtoxin A 300U-400U C: Placebo Duration: 1 injection session	E vs C: Modified Ashworth Scale (+exp) Clinical Global Impression of Change (+exp) Goal Attainment Scale (-) 10-Metre Walk Test (-)
Esquenazi et al. (2019) RCT (8) Nstart=468 Nend=450 TPS=Chronic A vs 0	E: Onabotuliniumtoxin A (300 U) C: Placebo Duration: 6wks	E vs C: Modified Ashworth Scale (+exp) Global Impression of Change assessed by physician (+exp) Goal Attainment Scale (+exp)
Prazeres et al. (2018) RCT (8) Nstart=40 Nend=37 TPS=Chronic A vs 0	E: Botulinum Toxin A injection + conventional therapy C: Placebo injection + conventional therapy Duration: 30min/d, 2d/wk, for 9mo conventional therapy; 1 dose botox injection at baseline, 3mo, and 6mo	E vs C: Fugl-Meyer Upper limb (-) Coordination (+con) Upper limb speed (+con) Timed Up-and-Go (-) 6-Minute walk test (-) Modified Ashworth Elbow (+exp) Wrist (+exp)
Wein et al. (2018) RCT (7)	E: Onabotulinumtoxin A (300U) C: Placebo	E vs C: Modified Ashworth scale (+exp)

Nstart=468 Nend=450 TPS=Chronic A vs 0	Duration: 12-week intervals, 3 treatment cycles	Clinical global impression of change-physician (+exp) Goal Attainment scale (+exp) pain scale (-) 10m Walk test (-) Modified Tardieu scale ankle (-) toe (-) Adverse events (No stats)
Tao et al. (2015) RCT (5) Nstart=23 Nend=23 TPS=Acute A vs 0	E: Botulinum toxin A (200U) C: Placebo Duration: Assessment 8wks post-injection	E vs C: Modified Ashworth Scale (+exp) Fugl-Meyer Assessment (+exp) Modified Barthel Index (+exp) 6-Minute Walk Test (+exp) Gait speed (+exp) Step length (+exp) Cadence (+exp)
Fietzek et al. (2014) RCT (8) Nstart=52 Nend=52 TPS=Subacute A vs 0	E: Botulinum toxin A (230U, 460U) C: Placebo Duration: Single session of injection, repeated at 12wks	E vs C: Modified Ashworth Scale (+exp)
Ward et al. (2014) RCT (8) Nstart=274 Nend=253 TPS=Chronic A vs 0	E: Onabotulinum toxin A + standard care C: Placebo + standard care Duration: Single injection with possible second injection at 12-24wks, total double-blind study duration 22-34wks	E vs C: Goal Attainment Scaling Principal active functional goal achievement (-) Secondary functional goal achievement (-) Secondary active functional goal achievement (-) Secondary passive goal achievement (-)
Kaji et al. (2010) RCT (9) Nstart=120 Nend=113 TPS=Chronic A vs 0	E: Botulinum toxin A (300U) C: Placebo Duration: Single treatment of 300U	E vs C: Modified Ashworth Scale (+exp) Physician Gait Rating scale (-) Clinical global impression (+exp) 10-Meter walk test (-)
Burbaud et al. (1996) RCT crossover (8) Nstart=23 Nend=23 TPS=Chronic A vs 0	E: Botulinum toxin (200U) injection under EMG guidance C: Placebo Duration: Single injection	E vs C: Modified Ashworth Scale (+exp) Fugl-Meyer Assessment (+exp) Gait speed (-) Active Ankle Dorsiflexion (+exp)
Botulinum Toxin A with Ankle-foot Orthosis		
Ding et al. (2015) RCT (4) Nstart=103 Nend=83 TPS=Acute A + B vs A vs 0 Also in Table 13 (Orthotic Devices)	E1: Botulinum toxin A under ultrasound guidance + ankle foot orthosis (AFO) + Conventional rehabilitation E2: Botulinum toxin A + Conventional rehabilitation C: Conventional rehabilitation Duration: 6mo follow-up	E1 vs E2 vs C: After 1mo E1 vs E2/C Clinic Spasticity Influx (-) Berg Balance Scale (-) Fugl-Meyer Assessment (-) Functional Independence Measure (-) After 3 and 6mo E1 vs E2/C Clinic Spasticity Influx (+exp1)

		Berg Balance Scale (+exp1) Fugl-Meyer Assessment (+exp1) Functional Independence Measure (+exp1)
Farina et al. (2008) RCT (5) Nstart=13 Nend=13 TPS=Chronic A + B vs A Also in Table 13 (Orthotic Devices)	E: Botulinum toxin A (190- 320U) + AFO C: Botulinum toxin A (190- 320U) Duration: 4mo	E vs C: Modified Ashworth Scale (+exp) 10-Metre Walk Test (-) Baropodometric footprint changes (+exp) Baropodometric changes in time of full load (+exp)
Botulinum Toxin A with Casting or Taping		
Carda et al. (2011) RCT (7) Nstart=69 Nend=67 TPS=Chronic A + B + C vs A + D + C vs A + C Also in Table 12 (Stretching or Mobilization Exercises); Table 13 (Orthotic Devices)	E1: Botulinum toxin A (100U) + Serial casting + stretching and gait training E2: Botulinum toxin A (100U) + Taping + stretching and gait training E3: Botulinum toxin A (100U) + stretching and gait training Duration: 1wk of serial casting, or 5d of taping, or 30 min, 2sessions/d, 1wk of stretching, then 30min gait training + 20 min stretching, 1session/d, 1wk.	E1 vs E2: Modified Ashworth Scale (+exp1) 6min walking test (-) 10-meter walk test (-) Functional Ambulation category (-) Strength of ankle dorsal flexors (-) Passive range of motion- ankle (+exp1)
Karadag-Saygi et al. (2010) RCT (7) Nstart=20 Nend=20 TPS=Chronic A + B + C vs A + C Also in Table 13 (Orthotic Devices)	E: Botulinum toxin A (75- 100U) + Kinesio Taping + home exercises C: Botulinum toxin A (75- 100U) + Sham taping + home exercises Duration: 20min, 2sessions/d, 7d/wk, for 4wks rehabilitation	E vs C: Modified ashworth score (-) Passive ankle dorsiflexion (-) Step length 10-m walk Velocity (-)
Reiter et al. (1998) RCT (5) Nstart=18 Nend=18 TPS=Chronic A + B vs C Also in Table 13 (Orthotic Devices)	E: Botulinum toxin A (100U) injection into tibialis posterior + ankle-foot adhesive taping C: EMG-guided Botulinum toxin A (190-320U) injection into several calf muscles Duration: Single injection session & 1d/wk, for 3wks ankle-foot taping	E vs C: Ankle passive ROM Dorsiflexion (+exp) Eversion (-) Ankle Rest Position Foot extension (-) Foot inversion (-) Modified Ashworth scale (-) 10-Meter walk test (-) Step length (-)
Botulinum Toxin A with Electrical Stimulation		
Baricich et al. (2019) RCT (7) Nstart=30 Nend=30 TPS=Chronic A1 + B vs A2 + B Also in Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Botox Injections (50U- 120U) + NMES of Antagonist and Injected Agonist Muscles C: Botox Injections (50U- 120U) + NMES of Injected Agonist Muscles Duration: Physiotherapy 60min/d, 5d/wk, 2wks - Electrical Stimulation 60min, 1 session for agonist, 5 for antagonist	E vs C: 10-Meter Walk Test (-) Modified Ashworth Scale (-) Passive Range of Motion (-) Medical Research Council (-) 2-Minute Walk Test (-)
Lannin et al. (2018) RCT (8) Nstart=37 Nend=34 TPS=Chronic	E: Single dose of botulinum toxin-A (500U) + Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) C1: Single dose of botulinum toxin-A (500U)	E vs C1 vs C2: Goal Attainment Scale (-) 6-min Walk Test (-) Box and Block Test (-) Tardieu Scale (-)

A + B vs A vs B Also in Table 5 (Task-Specific Training)	C2: Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) Duration: 1 dose botulinum toxin-A & 60min/d, 2d/wk, for 8wks rehabilitation program	
Botulinum Toxin A with FES		
Ding et al. (2017) RCT (6) Nstart=80 Nend=80 TPS=Subacute A1 vs A2	E: Botulinum toxin A injection with spasmodic muscle therapeutic instrument C: Botulinum toxin A injection Duration: 12wk follow-up	E vs C: Fugl-Meyer Assessment (+exp) Modified Ashworth Scale (+exp) Modified Barthel Index (+exp) Walking Speed (+exp) Step Size (+exp)
Baricich et al. (2008) RCT (6) Nstart=23 Nend=23 TPS=Chronic A + B vs A + C vs A + D Also in Table 12 (Stretching or Mobilization Exercises); Table 13 (Orthotic Devices); Table 28 (Functional Electrical Stimulation)	E1: Botulinum toxin A (500U) + FES E2: Botulinum toxin A (500U) + Taping E3: Botulinum toxin A (500U) + Stretching Duration: 30min/session, 2sessions/d, 5d FES & 5d taping & 30min/session, 2sessions/d for 7d stretching	E1 vs E2 vs E3: Modified Ashworth Scale (-) Passive Range of Motion (-) Motor Action Potential (-) Max Dorsiflexion Angle in Stance Phase (-)
Johnson et al. (2004) RCT (6) Nstart=21 Nend=18 TPS=Chronic A + B vs 0 Also in Table 28 (Functional Electrical Stimulation)	E: Botulinum toxin type A injection + FES + Conventional physiotherapy C: Conventional physiotherapy Duration: 1 injection (400U) each into gastrocnemius and tibialis posterior, 1/d, 7d/wk, for 12wks FES, 30-45min/d, 2-3d/wk, for 12wks PT	E vs C: Walking Speed (+exp) Physiological Cost Index (+exp) Modified Ashworth Scale (-) Rivermead Motor Assessment (-) SF-36 (-)
Botulinum Toxin A with TENS		
Picelli et al. (2014) RCT (6) Nstart=30 Nend=30 TPS=Chronic A + B vs C + B vs D + B Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS)); Table 35 (Extracorporeal Shockwave Therapy and Therapeutic Ultrasound)	E1: Therapeutic ultrasound + Home exercises & conventional therapy E2: TENS + Home exercises & conventional therapy E3: Botulinum toxin A (200U) + Home exercises & conventional therapy Duration: 10min/d, 5d/wk for 2wks - Ultrasound, 15min/d, 5d/wk for 2wks - TENS, 1 injection session - Botulinum toxin A, 40min/d, 5d/wk for 2wks - Bobath training	E1 vs E2: Modified Ashworth Scale (-) Ankle passive range of motion (-) E1 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3) E2 vs E3: Modified Ashworth Scale (+exp3) Ankle passive range of motion (+exp3)
Bayram et al. (2006) RCT (5) Nstart=12 Nend=11 TPS=Chronic A + B vs A Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: Low-dose Botulinum toxin (100U) + TENS C: High-dose Botulinum toxin (400U) + Sham electrical stimulation Duration: 30min, 6sessions/d, for 3d TENS	E1 vs C: Modified Ashworth Scale (-) AROM-Ankle (-) PROM-Ankle (-) Global Assessment of Spasticity Scale (-) Clonus Score (-) Brace Wear Scale (-) 10-Metre Walk Test (-) Ankle Resting Position Angle (-)

Botox vs Neurotomy		
Bollens et al. (2013) RCT (7) Nstart=16 Nend=16 TPS=Chronic A vs B	E1: Botulinum toxin (200U) E2: Neurotomy Duration: 6mo	E1 vs E2: Ankle stiffness - L-path (+exp) Modified Ashworth Scale (+exp) Passive Range of Motion (-) 10-Meter Walk Test (-) Knee Kinematics (-) Ankle Kinematics (-) Tardieu Scale (+exp) ABILOCO (-) SATISPART-Stroke (-) 36-Item Short-Form Health Survey (-)
Botox vs Phenol		
Kirazli et al. (1998) RCT (8) Nstart=20 Nend=20 TPS=Chronic A vs B	E1: Botulinum toxin A (400U) E2: Phenol Duration: 12wks	E1 vs E2: Active ROM (No stats) Passive ROM (No stats) Brace Wear Scale (-) Ashworth Scale (+exp1) 25 feet walk test (+exp) Global Assessment of Spasticity Scale (+exp1) Clonus duration (by EMG) (+exp)
Location of Injection		
Im et al. (2014) RCT (8) Nstart=40 Nend=38 TPS=Chronic A1 vs A2	E: Proximal gastrocnemius Botulinum toxin A injection 200U C: Distal gastrocnemius Botulinum toxin A injection 200U Duration: 1 200U injection, followed for 8wks	E vs C: Modified ashworth scale (-) R1, angle of catch following a fast velocity stretch (-) R2, passive range of movement following a slow velocity stretch (-) Functional Ambulatory Category Modified Tardieu Scale (-) Clonus scale (-) 10-meter walking test (s) (-) ABILOCO (-) Root mean square plantar flexion tibialis anterior (-) medial gastrocnemius (-) lateral gastrocnemius (-) Root mean square dorsiflexion tibialis anterior (-) medial gastrocnemius (-) lateral gastrocnemius (-)
Childers et al. (1996) RCT (9) Nstart=17 Nend=15 TPS=Chronic A vs B	E1: Botulinum toxin A (100U) in mid belly of the gastrocnemius + placebo injected in distal of popliteal fossa E2: Botulinum toxin A (100U) at distal to the popliteal fossa + placebo injected in mid belly Duration: 1 injection and follow-up at 4wks	E1 vs E2: Fugl-Meyer Assessment (No stats) Ashworth scale (No stats) 50-ft timed walk test timed walk (No stats) Ankle Range of Motion (No stats)
Dosage of Injection		
Gracies et al. (2017)	E1: Single injection of abobotulinum toxin A (1000U)	E1/E2 vs C:

RCT (7) Nstart=388 Nend=366 TPS=Chronic A1 vs A2 vs 0	E2: Single injection of abobotulinum toxin A (1500U) C: Placebo Duration: Outcomes at 4wks post-injection	Modified Ashworth Scale (+exp2) Physician global assessment (-)
Li et al. (2017) RCT (6) Nstart=104 Nend=89 TPS=Not reported A vs B1 vs C vs B2	E1: Low-dose/low- concentration Botulinum toxin A (BTX-A) E2: Low-dose/high- concentration BTX-A E3: High-dose/low- concentration BTX-A E4: High-dose/high- concentration BTX-A Duration: One session, Low dose (200U), High dose (400U), Low concentration (50U/mL), High concentration (100U/mL)	E1 vs E2 vs E3 vs E4: After 1wk E4 vs E1 vs E2 vs E3 Modified Ashworth Scale (-) 10-Meter Walk Test (-) Holden Grading (-) Visual Analogue Scale for Walking Function (-) Timed Up and Go Test (-) After 12wk E4 vs E1 vs E2 vs E3 Modified Ashworth Scale (+exp4) 10-Meter Walk Test (+exp4) Holden Grading (+exp4) Visual Analogue Scale for Walking Function (-) Timed Up and Go Test (+exp4)
Pimentel et al. (2014) RCT (6) Nstart=26 Nend=21 TPS=Chronic A1 vs A2	E1: Botulinum toxin A + Conventional Therapy (300U) E2: Botulinum toxin A + Conventional Therapy (100U) Duration: 40min/d, 4-5d/wk, for 12wks	E1 vs E2: Modified Ashworth Scale (+exp1) 10-Metre Walk Test (-) Modified Functional Independence Measure (-)
Dunne et al. (2012) RCT (9) Nstart=85 Nend=70 TPS=Chronic A1 vs A2 vs 0 vs 0	E1: OnabotulinumtoxinA (200U) E2: OnabotulinumtoxinA (300U) C1: Placebo (10 ml normal saline) C2: Placebo (15 ml normal saline) Duration: single session, follow-up injection sessions after 12wk if required	E1 vs E2: Ashworth scale (-) Active ankle dorsiflexion motion (-) Pain-VAS (-) Physicians rating hypertonia scale (-) Gait quality (-) Reduced leg spasm (-) E1+E2 vs C1+C2 at 12 wks: Ashworth scale (-) Active ankle dorsiflexion motion (+exp) Pain-VAS (+exp) Physicians rating hypertonia scale (+exp) Gait quality (+exp) Reduced leg spasm (+exp)
Mancini et al. (2005) RCT (7) Nstart=45 Nend=45 TPS=Chronic A1 vs A2 vs A3	E1: Botulinum toxin A (167U) E2: Botulinum toxin A (322U) E3: Botulinum toxin A (540U) Duration: 4wks	E1 vs E2: Modified Ashworth Scale (+exp2) 10m Gait Velocity (+exp2) Visual Analogue Scale Gait (+exp2) Visual Analogue Scale Pain (-) E1 vs E3: Modified Ashworth Scale (+exp3) 10m Gait Velocity (+exp3) Visual Analogue Scale Gait (-) Visual Analogue Scale Pain (-) E2 vs E3: Modified Ashworth Scale (-) 10m Gait Velocity (+exp3)

		Visual Analogue Scale Gait (-) Visual Analogue Scale Pain (-)
Pittock et al. (2003) RCT (6) Nstart=234 Nend=21 TPS=Chronic A1 vs A2 vs A3 vs 0	E1: Botulinum toxin type A (500U) E2: Botulinum toxin type A (1000U) E3: Botulinum toxin type A (1500U) C: Placebo Duration: 1 session	E1/E2/E3 vs C: Modified Ashworth Scale (+exp1, +exp2, +exp3) 2-Minute Walk Test (-) Stepping Rate (-) Step Length (-) Rivermead Motor Assessment Leg (-) Trunk (-) Range of Motion Active (-) Passive (-) Subjective Pain Assessment – LE (-) Adverse Events (-) Decrease Requirement for Walking Aid (+exp2, +exp3)
Method of Injection Guidance		
Turna et al. (2020) RCT (4) Nstart=40 Nend=40 TPS=Chronic A1 vs A2	E1: Ultrasonography guided Botulinum toxin A (1000U) E2: Electrical stimulation guided Botulinum toxin A (1000U) Duration: One injection session	E1 vs E2: Modified Ashworth Scale (-) 10m Walk test (-) Brunnstrom recovery stages (-) Barthel index (-)
Picelli et al. (2012b) RCT (6) Nstart=49 Nend=47 TPS=Chronic A1 vs A2 vs A3	E1: Botulinum toxin A (200U) by ultrasonography E2: Botulinum toxin A (200U) by electrical stimulation E3: Botulinum toxin A (200U) by palpation Duration: 1 injection (200U)	E1 vs E2: Modified ashworth scale (-) Ankle passive range of motion (-) Tardieu spasticity grade (-) Tardieu spasticity angle (-) E1 vs E3: Modified ashworth scale (-) Ankle passive range of motion (+exp3) Tardieu spasticity grade (-) Tardieu spasticity angle (-) E2 vs E3: Modified ashworth scale (+exp3) Ankle passive range of motion (+exp3) Tardieu spasticity grade (-) Tardieu spasticity angle (-)
Botulinum Toxin with Task-Oriented Rehabilitation		
Roche et al. (2015) RCT (4) Nstart=35 Nend=35 TPS=Chronic A + B vs A Also in Table 24 (Home-Based and Caregiver-Mediated Exercise Programs)	E: Botulinum Toxin A Injection + Home-based task-oriented rehabilitation + Usual physiotherapy C: Botulinum Toxin A Injection Duration: 1 injection session – Botulinum toxin A, 30min/d, 7d/wk for 4wks – At-home task-oriented rehabilitation	E vs C: Medical research counsel scale (-) Modified Ashworth Scale (-) ABILOCO (-) 10m Walk test (+exp) Timed Up and Go (-) 6min Walk test Modified (+exp) With obstacles (+exp) Without obstacles (-) Stairs test

		Ascending (-) Descending (-)
Botox Combined with Robotics vs Botox and Conventional Therapy		
Cotinat et al. (2024) RCT crossover (7) Nstart=33 Nend=29 TPS=Chronic A + B vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Robotic Gait Training (Lokomat robotic exoskeleton) + Botulinum toxin injection C: Botulinum toxin injection + Conventional physiotherapy Duration: 45min/d, 5d/wk, 2wks	E vs C: 6mWT (+exp) 10MWT (+exp) TUG (-) BBS (-) MAS (-)
Erbil et al. (2018) RCT (5) Nstart=48 Nend=43 TPS=Chronic A + B vs C + D vs A vs D Also in Table 27 (Electromechanical and Robotic Devices)	E: Botulinum toxin A (BoNTA) + Robot assisted Gait Training (RoboGait) + Conventional Physiotherapy C: Botulinum toxin A (BoNTA) + Conventional Physiotherapy Duration: E: 30min Robot-assissted training + 60min physical therapy 1session/d, 5d/wk, for 3wks C: 90min physical therapy 1session/d, 5d/wk, for 3wks	E vs C: Timed up-and-go (+exp) Berg Balance Scale (+exp) Rivermead Visual Gait Assessment (+exp) Modified Ashworth Scale (-) Tardieu Scale (-) Passive range of motion (-)
Picelli et al. (2016) RCT (8) Nstart=22 Nend=22 TPS=Chronic A vs B Also in Table 27 (Electromechanical and Robotic Devices)	E: Botox (250U) With Robot- Assisted Gait Therapy C: Botox Alone Duration: 1 injection - AbobotulinumtoxinA injection, 30min/d, for 5d - Robot-assisted Gait training	E vs C: Modified Ashworth scale (-) Tardieu scale Spasticity Grade (-) Spasticity Angle (-) 6-Minute Walk Test (+exp)
Botulinum Toxin A + EMG Biofeedback Treatment + Conventional Care vs Botulinum Toxin A + Conventional Care		
Chen et al. (2015b) RCT (4) Nstart=36 Nend=36 TPS=Subacute A + B vs A Also in Table 15 (Biofeedback)	E: Botulinum Toxin A injection (under ultrasound guidance) + EMG biofeedback treatment + conventional care C: Botulinum Toxin A injection (under ultrasound guidance) + conventional care Duration: 20min/d, 5d/wk, for 6wks biofeedback & single session botulinum toxin-A nerve block	E vs C: Modified Ashworth Scale (No stats) Step Length (No stats) Walking Speed (No stats)
Forward vs Backward Treadmill Training with Botulinum Toxin		
Munari et al. (2020) RCT (8) Nstart=18 Nend=18 TPS=Chronic A + B vs B Also in Table 9 (Treadmill Training)	E: Backward treadmill training + botulinum toxin type A therapy C: Standard forward treadmill training + botulinum toxin type A therapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: 10-meter walking test (+exp1) Modified Ashworth scale (-) Gait analysis Step length (-) Stride length (-) Cadence (-) Stabilometric assessment length CoP eyes open (+exp1) sway area eyes open (+exp1) length CoP eyes closed (+exp1) sway area eyes closed (+exp1)

Botulinum Toxin A vs Conventional Therapy		
Yu et al. (2023) RCT (3) Nstart=46 Nend=43 TPS=Subacute A vs 0	E: BoNT-A Injection + Routine rehabilitation C: Routine rehabilitation Duration: 1x injection; rehab: 60min/d, 5d/wk, 12wks	E vs C: FMA-LE (+exp) TUG (+exp) stride length (+exp) 10MWT (+exp) pressure forefoot (+exp) rearfoot (-) mAS (no stat)
Additional Comparisons from the Source Dataset		
Cinone et al. (2019) RCT (6) Nstart=25 Nend=25 TPS=Chronic A + B vs X	E: Botulinum Toxin A (50-100U) + Isokinetic training C: Botulinum Toxin A (50-100U) Duration: Single time injection BTA & 50min/session, 5x/wk for 4wks	E vs C: Modified Ashworth scale (No stats) Motricity index (No stats) Modified Tardieu Scale (No stats) 6min Walk Test (No stats) 10m Walk test (No stats) Cadence (No stats) Step length (No stats) Single support phase (No stats)
McAllister et al. (2019) RCT (6) Nstart=127 Nend=127 TPS=Chronic A1 vs A2	E1: Received co-injection of abobotulinumtoxinA (aboBoNT-A) in both the upper and lower limbs during treatment cycle 3 and 4 E2: Received injection of aboBoNT-A in the lower limb only at treatment cycle 3 and 4 C: 1000-1500 U total botulinum toxin lower limb + upper limb injection Duration: Injection(s) at treatment cycle 3 and 4 with minimum 12wks between	E vs C: 10m walk test (-)
Johnson et al. (2002) RCT (4) Nstart=21 Nend=18 TPS=Subacute A + B vs X	E: botulinum neurotoxin Type A + functional electrical stimulation + conventional physiotherapy C: Conventional physiotherapy Duration: 600U Botox 1 time (200 U of Dysport and the tibialis posterior with 400 U) 1 time FES duration not specified, after botox 1/d, 2-3d/wk, 12 wks physiotherapy	E vs C: 10m Walking speed (No stats) Physiological cost index (No stats)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Munari et al. (2020) RCT (8) Nstart=18 Nend=18 TPS=Chronic A + B vs B Primary listing: Table 9 (Treadmill Training)	E: Backward treadmill training + botulinum toxin type A therapy C: Standard forward treadmill training + botulinum toxin type A therapy Duration: 40min/d, 3d/wk, for 4wks	E vs C: 10-meter walking test (+exp1) Modified Ashworth scale (-) Step length (-) Stride length (-) Cadence (-) Stabilometric assessment Length CoP eyes open (+exp1) Sway area eyes open (+exp1) Length CoP eyes closed (+exp1) Sway area eyes closed (+exp1)
Kirazli et al. (1998) RCT (8)	E1: Botulinum Toxin A (400 U) E2: Tibial nerve blockade (Phenol)	E1 vs E2: Active ROM (No stats)

Nstart=20 Nend=20 TPS=Chronic A vs B Primary listing: Table 45 (Nerve Block Agents)	Duration: One session	Passive ROM (No stats) Brace Wear Scale (-) Ashworth Scale (+exp1) 25 feet walk test (+exp) Global Assessment of Spasticity Scale (+exp1) Clonus duration (by EMG) (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Botulinum Toxin A when compared to Placebo for improving motor recovery.	3	Prazeres et al. 2018; Tao et al. 2015; Burbaud et al. 1996
2	There is conflicting evidence about the effect of Botulinum Toxin A with Ankle-foot Orthosis when compared to Conventional rehabilitation for improving motor recovery.	1	Ding et al. 2015
1a	There is conflicting evidence about the effect of Botulinum Toxin A with functional electrical stimulation when compared to Botulinum toxin A injection for improving motor recovery.	2	Ding et al. 2017; Johnson et al. 2004
1b	Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not have a difference in efficacy when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly for improving motor recovery.	1	Childers et al. 1996
1b	Dosage of Injection may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Pittock et al. 2003
2	Ultrasonography guided Botulinum toxin A (1000U) may not have a difference in efficacy when compared to Electrical stimulation guided Botulinum toxin A (1000U) for improving motor recovery.	1	Turna et al. 2020
2	Botulinum Toxin A may produce greater improvements in motor recovery than Conventional Therapy.	1	Yu et al. 2023

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Botulinum Toxin A may produce greater improvements in biomechanical gait measures than Placebo.	1	Tao et al. 2015
2	Botulinum toxin A (190-320U) with ankle-foot orthosis may produce greater improvements in biomechanical gait measures than Botulinum toxin A (190-320U).	1	Farina et al. 2008
2	Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not have a difference in efficacy when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles for improving biomechanical gait measures.	1	Reiter et al. 1998

1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving biomechanical gait measures.	1	Baricich et al. 2008
1b	Botulinum toxin (200U) may not have a difference in efficacy when compared to Neurotomy for improving biomechanical gait measures.	1	Bollens et al. 2013
1b	Dosage of Injection may not have a difference in efficacy when compared to Placebo for improving biomechanical gait measures.	1	Pittock et al. 2003
2	Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care may not have a difference in efficacy when compared to Botulinum Toxin A with Conventional Care for improving biomechanical gait measures.	1	Chen et al. 2015b
1b	Forward Treadmill Training with Botulinum Toxin may not have a difference in efficacy when compared to Backward Treadmill Training with Botulinum Toxin for improving biomechanical gait measures.	1	Munari et al. 2020
2	Botulinum Toxin A may produce greater improvements in biomechanical gait measures than Conventional Therapy.	1	Yu et al. 2023
1b	Botulinum Toxin A (50-100U) + Isokinetic training may not have a difference in efficacy when compared to Botulinum Toxin A (50-100U) for improving biomechanical gait measures.	1	Cinone et al. 2019
1b	Backward treadmill training with botulinum toxin type A therapy may not have a difference in efficacy when compared to forward treadmill training with botulinum toxin type A therapy for improving biomechanical gait measures.	1	Munari et al. 2020

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving biomechanical balance measures.	1	Kerzoncuf et al. 2020
1b	Forward Treadmill Training with Botulinum Toxin may produce greater improvements in biomechanical balance measures than Backward Treadmill Training with Botulinum Toxin.	1	Munari et al. 2020
1b	Backward treadmill training with botulinum toxin type A therapy may produce greater improvements in biomechanical balance measures than forward treadmill training with botulinum toxin type A therapy.	1	Munari et al. 2020

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving muscle strength.	1	Tenniglo et al. 2023
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving muscle strength.	1	Carda et al. 2011
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving muscle strength.	1	Baricich et al. 2019

1b	Botulinum Toxin A (50-100U) + Isokinetic training may not have a difference in efficacy when compared to Botulinum Toxin A (50-100U) for improving muscle strength.	1	Cinone et al. 2019

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may produce greater improvements in spasticity than Placebo.	9	Masakado et al. 2021; Kerzoncuf et al. 2020; Patel et al. 2020; Esquenazi et al. 2019; Wein et al. 2018; Tao et al. 2015; Fietzek et al. 2014; Kaji et al. 2010; Burbaud et al. 1996
2	There is conflicting evidence about the effect of Botulinum Toxin A with Ankle-foot Orthosis when compared to Conventional rehabilitation for improving spasticity.	1	Ding et al. 2015
2	Botulinum toxin A (190-320U) with ankle-foot orthosis may produce greater improvements in spasticity than Botulinum toxin A (190-320U).	1	Farina et al. 2008
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in spasticity than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
1b	Botulinum Toxin A with Casting or Taping may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving spasticity.	1	Karadag-Saygi et al. 2010
2	Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not have a difference in efficacy when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles for improving spasticity.	1	Reiter et al. 1998
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving spasticity.	1	Baricich et al. 2019
1b	Botulinum Toxin A with Electrical Stimulation may not have a difference in efficacy when compared to Botox Injections (50U-120U) with neuromuscular electrical stimulation of Injected Agonist Muscles for improving spasticity.	1	Lannin et al. 2018
1a	There is conflicting evidence about the effect of Botulinum Toxin A with functional electrical stimulation when compared to Botulinum toxin A injection for improving spasticity.	2	Ding et al. 2017; Johnson et al. 2004
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving spasticity.	1	Baricich et al. 2008
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving spasticity.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity	1	Picelli et al. 2014

	when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.		
2	Botulinum Toxin A with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving spasticity.	1	Bayram et al. 2006
1b	Botulinum toxin (200U) may produce greater improvements in spasticity than Neurotomy.	1	Bollens et al. 2013
1b	Botulinum Toxin A (400 U) may produce greater improvements in spasticity than Phenol.	1	Kirazli et al. 1998
1b	Location of Injection may not have a difference in efficacy when compared to Distal gastrocnemius Botulinum toxin A injection 200U for improving spasticity.	1	Im et al. 2014
1b	Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not have a difference in efficacy when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly for improving spasticity.	1	Childers et al. 1996
1b	There is conflicting evidence about the effect of Dosage of Injection when compared to Placebo for improving spasticity.	1	Gracies et al. 2017
1b	There is conflicting evidence about the effect of Low-dose/low-concentration Botulinum toxin A when compared to Low-dose/high-concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A for improving spasticity.	1	Li et al. 2017
1b	Botulinum toxin A with Conventional Therapy (300U) may produce greater improvements in spasticity than Botulinum toxin A with Conventional Therapy (100U).	1	Pimentel et al. 2014
1b	OnabotulinumtoxinA (200U) may not have a difference in efficacy when compared to OnabotulinumtoxinA (300U) for improving spasticity.	1	Dunne et al. 2012
1b	Botulinum toxin A (167U) may result in lesser improvements in spasticity when compared to Botulinum toxin A (322U).	1	Mancini et al. 2005
1b	Botulinum toxin A (167U) may result in lesser improvements in spasticity when compared to Botulinum toxin A (540U).	1	Mancini et al. 2005
1b	Botulinum toxin A (322U) may not have a difference in efficacy when compared to Botulinum toxin A (540U) for improving spasticity.	1	Mancini et al. 2005
2	Ultrasonography guided Botulinum toxin A (1000U) may not have a difference in efficacy when compared to Electrical stimulation guided Botulinum toxin A (1000U) for improving spasticity.	1	Turna et al. 2020
1b	Botulinum toxin A (200U) by ultrasonography may not have a difference in efficacy when compared to Botulinum toxin A (200U) by electrical stimulation for improving spasticity.	1	Picelli et al. 2012b
1b	Botulinum toxin A (200U) by ultrasonography may not have a difference in efficacy when compared to Botulinum toxin A (200U) by palpation for improving spasticity.	1	Picelli et al. 2012b
1b	Botulinum toxin A (200U) by electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (200U) by palpation for improving spasticity.	1	Picelli et al. 2012b
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving spasticity.	1	Roche et al. 2015

1a	Botox Combined with Robotics may not have a difference in efficacy when compared to Botox and Conventional Therapy for improving spasticity.	3	Cotinat et al. 2024; Erbil et al. 2018; Picelli et al. 2016
2	Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care may not have a difference in efficacy when compared to Botulinum Toxin A with Conventional Care for improving spasticity.	1	Chen et al. 2015b
1b	Forward Treadmill Training with Botulinum Toxin may not have a difference in efficacy when compared to Backward Treadmill Training with Botulinum Toxin for improving spasticity.	1	Munari et al. 2020
1b	Botulinum Toxin A (50-100U) + Isokinetic training may not have a difference in efficacy when compared to Botulinum Toxin A (50-100U) for improving spasticity.	1	Cinone et al. 2019
1b	Backward treadmill training with botulinum toxin type A therapy may not have a difference in efficacy when compared to forward treadmill training with botulinum toxin type A therapy for improving spasticity.	1	Munari et al. 2020

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Botulinum Toxin A when compared to Placebo for improving range of motion.	3	Tenniglo et al. 2023; Kerzoncuf et al. 2020; Burbaud et al. 1996
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may produce greater improvements in range of motion than Botulinum toxin A (100U) with Taping and stretching and gait training.	1	Carda et al. 2011
1b	Botulinum Toxin A with Casting or Taping may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving range of motion.	1	Karadag-Saygi et al. 2010
2	Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not have a difference in efficacy when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles for improving range of motion.	1	Reiter et al. 1998
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving range of motion.	1	Baricich et al. 2019
1b	Botulinum toxin A (500U) with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching for improving range of motion.	1	Baricich et al. 2008
1b	Therapeutic ultrasound with Home exercises & conventional therapy may not have a difference in efficacy when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy for improving range of motion.	1	Picelli et al. 2014
1b	Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014
1b	Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.	1	Picelli et al. 2014

2	Botulinum Toxin A with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving range of motion.	1	Bayram et al. 2006
1b	Botulinum toxin (200U) may not have a difference in efficacy when compared to Neurotomy for improving range of motion.	1	Bollens et al. 2013
1b	Botulinum Toxin A (400 U) may not have a difference in efficacy when compared to Phenol for improving range of motion.	1	Kirazli et al. 1998
1b	Location of Injection may not have a difference in efficacy when compared to Distal gastrocnemius Botulinum toxin A injection 200U for improving range of motion.	1	Im et al. 2014
1b	Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not have a difference in efficacy when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly for improving range of motion.	1	Childers et al. 1996
1b	There is conflicting evidence about the effect of OnabotulinumtoxinA (200U) when compared to OnabotulinumtoxinA (300U) for improving range of motion.	1	Dunne et al. 2012
1b	Dosage of Injection may not have a difference in efficacy when compared to Placebo for improving range of motion.	1	Pittock et al. 2003
1b	Botulinum toxin A (200U) by ultrasonography may not have a difference in efficacy when compared to Botulinum toxin A (200U) by electrical stimulation for improving range of motion.	1	Picelli et al. 2012b
1b	Botulinum toxin A (200U) by ultrasonography may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.	1	Picelli et al. 2012b
1b	Botulinum toxin A (200U) by electrical stimulation may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.	1	Picelli et al. 2012b
2	Botox Combined with Robotics may not have a difference in efficacy when compared to Botox and Conventional Therapy for improving range of motion.	1	Erbil et al. 2018

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving aerobic measures.	1	Tenniglo et al. 2023
1b	Botulinum Toxin A with functional electrical stimulation may produce greater improvements in aerobic measures than Botulinum toxin A injection.	1	Johnson et al. 2004
2	Botulinum neurotoxin Type A with functional electrical stimulation and conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving aerobic measures.	1	Johnson et al. 2002

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving pain.	1	Wein et al. 2018
1b	There is conflicting evidence about the effect of OnabotulinumtoxinA (200U) when compared to OnabotulinumtoxinA (300U) for improving pain.	1	Dunne et al. 2012
1b	Botulinum toxin A (167U) may not have a difference in efficacy when compared to Botulinum toxin A (322U) for improving pain.	1	Mancini et al. 2005
1b	Botulinum toxin A (167U) may not have a difference in efficacy when compared to Botulinum toxin A (540U) for improving pain.	1	Mancini et al. 2005
1b	Botulinum toxin A (322U) may not have a difference in efficacy when compared to Botulinum toxin A (540U) for improving pain.	1	Mancini et al. 2005
1b	Dosage of Injection may not have a difference in efficacy when compared to Placebo for improving pain.	1	Pittock et al. 2003

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	6	Kerzoncuf et al. 2020; Patel et al. 2020; Esquenazi et al. 2019; Wein et al. 2018; Tao et al. 2015; Ward et al. 2014
2	There is conflicting evidence about the effect of Botulinum Toxin A with Ankle-foot Orthosis when compared to Conventional rehabilitation for improving activities of daily living.	1	Ding et al. 2015
1b	Botulinum Toxin A with Electrical Stimulation may not have a difference in efficacy when compared to Botox Injections (50U-120U) with neuromuscular electrical stimulation of Injected Agonist Muscles for improving activities of daily living.	1	Lannin et al. 2018
1b	Botulinum Toxin A with functional electrical stimulation may produce greater improvements in activities of daily living than Botulinum toxin A injection.	1	Ding et al. 2017
1b	Botulinum toxin A with Conventional Therapy (300U) may not have a difference in efficacy when compared to Botulinum toxin A with Conventional Therapy (100U) for improving activities of daily living.	1	Pimentel et al. 2014
2	Ultrasonography guided Botulinum toxin A (1000U) may not have a difference in efficacy when compared to Electrical stimulation guided Botulinum toxin A (1000U) for improving activities of daily living.	1	Turna et al. 2020

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving gait speed.	8	Tenniglo et al. 2023; Masakado et al. 2021; Kerzoncuf et al. 2020; Patel et al. 2020; Wein et al. 2018; Tao et al. 2015; Kaji et al. 2010; Burbaud et al. 1996
2	Botulinum toxin A (190-320U) with ankle-foot orthosis may not have a difference in efficacy when compared to Botulinum toxin A (190-320U) for improving gait speed.	1	Farina et al. 2008

1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait speed.	1	Carda et al. 2011
1b	Botulinum Toxin A with Casting or Taping may not have a difference in efficacy when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises for improving gait speed.	1	Karadag-Saygi et al. 2010
2	Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not have a difference in efficacy when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles for improving gait speed.	1	Reiter et al. 1998
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving gait speed.	1	Baricich et al. 2019
1a	Botulinum Toxin A with functional electrical stimulation may produce greater improvements in gait speed than Botulinum toxin A injection.	2	Ding et al. 2017; Johnson et al. 2004
2	Botulinum Toxin A with transcutaneous electrical nerve stimulation may not have a difference in efficacy when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation for improving gait speed.	1	Bayram et al. 2006
1b	Botulinum toxin (200U) may not have a difference in efficacy when compared to Neurotomy for improving gait speed.	1	Bollens et al. 2013
1b	Location of Injection may not have a difference in efficacy when compared to Distal gastrocnemius Botulinum toxin A injection 200U for improving gait speed.	1	Im et al. 2014
1b	Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not have a difference in efficacy when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly for improving gait speed.	1	Childers et al. 1996
1b	Low-dose/low- concentration Botulinum toxin A may not have a difference in efficacy when compared to Low-dose/high-concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A for improving gait speed.	1	Li et al. 2017
1b	Botulinum toxin A with Conventional Therapy (300U) may not have a difference in efficacy when compared to Botulinum toxin A with Conventional Therapy (100U) for improving gait speed.	1	Pimentel et al. 2014
1b	Botulinum toxin A (167U) may result in lesser improvements in gait speed when compared to Botulinum toxin A (322U).	1	Mancini et al. 2005
1b	There is conflicting evidence about the effect of Botulinum toxin A (167U) when compared to Botulinum toxin A (540U) for improving gait speed.	1	Mancini et al. 2005
1b	There is conflicting evidence about the effect of Botulinum toxin A (322U) when compared to Botulinum toxin A (540U) for improving gait speed.	1	Mancini et al. 2005
2	Ultrasonography guided Botulinum toxin A (1000U) may not have a difference in efficacy when compared to Electrical stimulation guided Botulinum toxin A (1000U) for improving gait speed.	1	Turna et al. 2020
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may produce greater improvements in gait speed than Botulinum Toxin A Injection.	1	Roche et al. 2015

1b	Botox Combined with Robotics may produce greater improvements in gait speed than Botox and Conventional Therapy.	1	Cotinat et al. 2024
2	Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care may not have a difference in efficacy when compared to Botulinum Toxin A with Conventional Care for improving gait speed.	1	Chen et al. 2015b
1b	Forward Treadmill Training with Botulinum Toxin may produce greater improvements in gait speed than Backward Treadmill Training with Botulinum Toxin.	1	Munari et al. 2020
2	Botulinum Toxin A may produce greater improvements in gait speed than Conventional Therapy.	1	Yu et al. 2023
1b	Botulinum Toxin A (50-100U) + Isokinetic training may not have a difference in efficacy when compared to Botulinum Toxin A (50-100U) for improving gait speed.	1	Cinone et al. 2019
1b	Received co-injection of abobotulinumtoxinA (aboBoNT-A) in both the upper and lower limbs during treatment cycle 3 and 4 may not have a difference in efficacy when compared to 1000-1500 U total botulinum toxin lower limb with upper limb injection for improving gait speed.	1	McAllister et al. 2019
2	Botulinum neurotoxin Type A with functional electrical stimulation and conventional physiotherapy may not have a difference in efficacy when compared to Conventional physiotherapy for improving gait speed.	1	Johnson et al. 2002
1b	Backward treadmill training with botulinum toxin type A therapy may produce greater improvements in gait speed than forward treadmill training with botulinum toxin type A therapy.	1	Munari et al. 2020

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may produce greater improvements in gait endurance than Placebo.	3	Tenniglo et al. 2023; Prazeres et al. 2018; Tao et al. 2015
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving gait endurance.	1	Carda et al. 2011
1b	Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not have a difference in efficacy when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles for improving gait endurance.	1	Baricich et al. 2019
1b	Botulinum Toxin A with Electrical Stimulation may not have a difference in efficacy when compared to Botox Injections (50U-120U) with neuromuscular electrical stimulation of Injected Agonist Muscles for improving gait endurance.	1	Lannin et al. 2018
1b	Dosage of Injection may not have a difference in efficacy when compared to Placebo for improving gait endurance.	1	Pittock et al. 2003
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving gait endurance.	1	Roche et al. 2015
1a	Botox Combined with Robotics may produce greater improvements in gait endurance than Botox and Conventional Therapy.	2	Cotinat et al. 2024; Picelli et al. 2016

1b	Botulinum Toxin A (50-100U) + Isokinetic training may not have a difference in efficacy when compared to Botulinum Toxin A (50-100U) for improving gait endurance.	1	Cinone et al. 2019

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may not have a difference in efficacy when compared to Placebo for improving functional mobility.	4	Tenniglo et al. 2023; Kerzoncuf et al. 2020; Prazeres et al. 2018; Kaji et al. 2010
1b	Botulinum toxin A (100U) with Serial casting and stretching and gait training may not have a difference in efficacy when compared to Botulinum toxin A (100U) with Taping and stretching and gait training for improving functional mobility.	1	Carda et al. 2011
1b	Botulinum toxin (200U) may not have a difference in efficacy when compared to Neurotomy for improving functional mobility.	1	Bollens et al. 2013
1b	Location of Injection may not have a difference in efficacy when compared to Distal gastrocnemius Botulinum toxin A injection 200U for improving functional mobility.	1	Im et al. 2014
1b	There is conflicting evidence about the effect of Low-dose/low-concentration Botulinum toxin A when compared to Low-dose/high-concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A for improving functional mobility.	1	Li et al. 2017
1b	There is conflicting evidence about the effect of OnabotulinumtoxinA (200U) when compared to OnabotulinumtoxinA (300U) for improving functional mobility.	1	Dunne et al. 2012
2	Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may not have a difference in efficacy when compared to Botulinum Toxin A Injection for improving functional mobility.	1	Roche et al. 2015
1b	Botox Combined with Robotics may produce greater improvements in functional mobility than Botox and Conventional Therapy.	2	Cotinat et al. 2024; Erbil et al. 2018
2	Botulinum Toxin A may produce greater improvements in functional mobility than Conventional Therapy.	1	Yu et al. 2023

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	There is conflicting evidence about the effect of Botulinum Toxin A with Ankle-foot Orthosis when compared to Conventional rehabilitation for improving balance.	1	Ding et al. 2015
1b	There is conflicting evidence about the effect of Botox Combined with Robotics when compared to Botox and Conventional Therapy for improving balance.	2	Cotinat et al. 2024; Erbil et al. 2018

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Botulinum Toxin A may produce greater improvements in quality of life than Placebo.	3	Tenniglo et al. 2023; Patel et al. 2020; Wein et al. 2018

1b	Botulinum Toxin A with functional electrical stimulation may not have a difference in efficacy when compared to Botulinum toxin A injection for improving quality of life.	1	Johnson et al. 2004

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Botulinum Toxin A may produce greater improvements in upper extremity function than Placebo.	1	Prazeres et al. 2018
1b	Botulinum Toxin A with Electrical Stimulation may not have a difference in efficacy when compared to Botox Injections (50U-120U) with neuromuscular electrical stimulation of Injected Agonist Muscles for improving upper extremity function.	1	Lannin et al. 2018

Key Points

- Botulinum Toxin A may be beneficial for improving biomechanical gait measures, spasticity, gait endurance, and quality of life, but not biomechanical balance measures, muscle strength, aerobic measures, pain, activities of daily living, gait speed, and functional mobility, after stroke when compared to Placebo; the literature is mixed regarding motor recovery and range of motion.
- The literature is mixed regarding the effect of Botulinum Toxin A with Ankle-foot Orthosis on motor recovery, spasticity, activities of daily living, and balance after stroke when compared to Conventional rehabilitation.
- Botulinum toxin A (190-320U) with ankle-foot orthosis may be beneficial for improving biomechanical gait measures and spasticity, but not gait speed, after stroke when compared to Botulinum toxin A (190-320U).
- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.
- Botulinum Toxin A with Casting or Taping may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises.
- Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, and gait speed after stroke when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles.
- Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not be beneficial for improving muscle strength, spasticity, range of motion, gait speed, and gait endurance after stroke when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles.
- Botulinum Toxin A with Electrical Stimulation may not be beneficial for improving spasticity, activities of daily living, and gait endurance after stroke when compared to Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Injected Agonist Muscles.
- Botulinum Toxin A with functional electrical stimulation may be beneficial for improving activities of daily living, gait speed, and aerobic measures, but not quality of life, after stroke when compared to Botulinum toxin A injection; the literature is mixed regarding motor recovery and spasticity.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.

- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Botulinum Toxin A with transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation.
- Botulinum toxin (200U) may be beneficial for improving spasticity, but not biomechanical gait measures, range of motion, gait speed, and functional mobility, after stroke when compared to Neurotomy.
- Botulinum Toxin A (400 U) may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Phenol.
- Location of Injection may not be beneficial for improving spasticity, range of motion, gait speed, and functional mobility after stroke when compared to Distal gastrocnemius Botulinum toxin A injection 200U.
- Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not be beneficial for improving motor recovery, spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly.
- Dosage of Injection may not be beneficial for improving motor recovery, biomechanical gait measures, range of motion, pain, and gait endurance after stroke when compared to Placebo; the literature is mixed regarding spasticity.
- Low-dose/low- concentration Botulinum toxin A may not be beneficial for improving gait speed after stroke when compared to Low-dose/high- concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A; the literature is mixed regarding spasticity and functional mobility.
- Botulinum toxin A with Conventional Therapy (300U) may be beneficial for improving spasticity, but not activities of daily living and gait speed, after stroke when compared to Botulinum toxin A with Conventional Therapy (100U).
- OnabotulinumtoxinA (200U) may not be beneficial for improving spasticity after stroke when compared to OnabotulinumtoxinA (300U); the literature is mixed regarding range of motion, pain, and functional mobility.
- Botulinum toxin A (167U) may not be beneficial for improving pain after stroke when compared to Botulinum toxin A (322U); Botulinum toxin A (167U) may result in lesser improvements in spasticity and gait speed when compared to Botulinum toxin A (322U).
- Botulinum toxin A (167U) may not be beneficial for improving pain after stroke when compared to Botulinum toxin A (540U); Botulinum toxin A (167U) may result in lesser improvements in spasticity when compared to Botulinum toxin A (540U); the literature is mixed regarding gait speed.
- Botulinum toxin A (322U) may not be beneficial for improving spasticity and pain after stroke when compared to Botulinum toxin A (540U); the literature is mixed regarding gait speed.
- Ultrasonography guided Botulinum toxin A (1000U) may not be beneficial for improving motor recovery, spasticity, activities of daily living, and gait speed after stroke when compared to Electrical stimulation guided Botulinum toxin A (1000U).
- Botulinum toxin A (200U) by ultrasonography may not be beneficial for improving spasticity and range of motion after stroke when compared to Botulinum toxin A (200U) by electrical stimulation.
- Botulinum toxin A (200U) by ultrasonography may not be beneficial for improving spasticity after stroke when compared to Botulinum toxin A (200U) by palpation; Botulinum toxin A (200U) by ultrasonography may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.

- Botulinum toxin A (200U) by electrical stimulation may not be beneficial for improving spasticity after stroke when compared to Botulinum toxin A (200U) by palpation; Botulinum toxin A (200U) by electrical stimulation may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.
- Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may be beneficial for improving gait speed, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Botulinum Toxin A Injection.
- Botox Combined with Robotics may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity and range of motion, after stroke when compared to Botox and Conventional Therapy; the literature is mixed regarding balance.
- Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care may not be beneficial for improving biomechanical gait measures, spasticity, and gait speed after stroke when compared to Botulinum Toxin A with Conventional Care.
- Forward Treadmill Training with Botulinum Toxin may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to Backward Treadmill Training with Botulinum Toxin.
- Botulinum Toxin A may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Conventional Therapy.
- Botulinum Toxin A (50-100U) + Isokinetic training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and gait endurance after stroke when compared to Botulinum Toxin A (50-100U).
- Received co-injection of abobotulinumtoxinA (aboBoNT-A) in both the upper and lower limbs during treatment cycle 3 and 4 may not be beneficial for improving gait speed after stroke when compared to 1000-1500 U total botulinum toxin lower limb with upper limb injection.
- Botulinum neurotoxin Type A with functional electrical stimulation and conventional physiotherapy may not be beneficial for improving aerobic measures and gait speed after stroke when compared to Conventional physiotherapy.
- Backward treadmill training with botulinum toxin type A therapy may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to forward treadmill training with botulinum toxin type A therapy.

Summary of Key Points: Botulinum Toxin

Intervention	Control(s)	Function domain(s)	Effect
Botulinum Toxin A	Placebo	Biomechanical gait measures, spasticity, gait endurance, quality of life	+
Botulinum Toxin A	Placebo	Biomechanical balance measures, muscle strength, aerobic measures, pain, activities of daily living, gait speed, functional mobility	–
Botulinum Toxin A	Placebo	Motor recovery, range of motion	=
Botulinum Toxin A with Ankle-foot Orthosis	Conventional rehabilitation	Motor recovery, spasticity, activities of daily living, balance	=
Botulinum toxin A (190-320U) with ankle-foot orthosis	Botulinum toxin A (190-320U)	Biomechanical gait measures, spasticity	+
Botulinum toxin A (190-320U) with ankle-foot orthosis	Botulinum toxin A (190-320U)	Gait speed	–
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Spasticity, range of motion	+

Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training	Muscle strength, gait speed, gait endurance, functional mobility	–
Botulinum Toxin A with Casting or Taping	Botulinum toxin A (75- 100U) with Sham taping and home exercises	Spasticity, range of motion, gait speed	–
Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping	electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles	Biomechanical gait measures, spasticity, range of motion, gait speed	–
Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles	Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles	Muscle strength, spasticity, range of motion, gait speed, gait endurance	–
Botulinum Toxin A with Electrical Stimulation	Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Injected Agonist Muscles	Spasticity, activities of daily living, gait endurance	–
Botulinum Toxin A with functional electrical stimulation	Botulinum toxin A injection	Activities of daily living, gait speed, aerobic measures	+
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching	Biomechanical gait measures, spasticity, range of motion	–
Botulinum Toxin A with functional electrical stimulation	Botulinum toxin A injection	Aerobic measures, gait speed	+
Botulinum Toxin A with functional electrical stimulation	Botulinum toxin A injection	Quality of life	–
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Spasticity, range of motion	–
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy	Spasticity, range of motion	–
Botulinum Toxin A with transcutaneous electrical nerve stimulation	High-dose Botulinum toxin (400U) with Sham electrical stimulation	Spasticity, range of motion, gait speed	–
Botulinum toxin (200U)	Neurotomy	Spasticity	+
Botulinum toxin (200U)	Neurotomy	Biomechanical gait measures, range of motion, gait speed, functional mobility	–
Botulinum Toxin A (400 U)	Phenol	Spasticity	+
Botulinum Toxin A (400 U)	Phenol	Range of motion	–
Location of Injection	Distal gastrocnemius Botulinum toxin A injection 200U	Spasticity, range of motion, gait speed, functional mobility	–
Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa	Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly	Motor recovery, spasticity, range of motion, gait speed	–
Dosage of Injection	Placebo	Spasticity	=
Low-dose/low- concentration Botulinum toxin A	Low-dose/high- concentration botulinum toxin A or High-dose/low- concentration	Gait speed	–

	botulinum toxin A or High-dose/high- concentration botulinum toxin A		
Low-dose/low- concentration Botulinum toxin A	Low-dose/high- concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A	Spasticity, functional mobility	=
Botulinum toxin A with Conventional Therapy (300U)	Botulinum toxin A with Conventional Therapy (100U)	Spasticity	+
Botulinum toxin A with Conventional Therapy (300U)	Botulinum toxin A with Conventional Therapy (100U)	Activities of daily living, gait speed	–
OnabotulinumtoxinA (200U)	OnabotulinumtoxinA (300U)	Spasticity	–
OnabotulinumtoxinA (200U)	OnabotulinumtoxinA (300U)	Range of motion, pain, functional mobility	=
Botulinum toxin A (167U)	Botulinum toxin A (322U)	Spasticity, pain, gait speed	–
Botulinum toxin A (167U)	Botulinum toxin A (322U)	Spasticity, gait speed	–
Botulinum toxin A (167U)	Botulinum toxin A (540U)	Spasticity, pain	–
Botulinum toxin A (167U)	Botulinum toxin A (540U)	Spasticity	–
Botulinum toxin A (167U)	Botulinum toxin A (540U)	Gait speed	=
Botulinum toxin A (322U)	Botulinum toxin A (540U)	Spasticity, pain	–
Botulinum toxin A (322U)	Botulinum toxin A (540U)	Gait speed	=
Dosage of Injection	Placebo	Motor recovery, biomechanical gait measures, range of motion, pain, gait endurance	–
Ultrasonography guided Botulinum toxin A (1000U)	Electrical stimulation guided Botulinum toxin A (1000U)	Motor recovery, spasticity, activities of daily living, gait speed	–
Botulinum toxin A (200U) by ultrasonography	Botulinum toxin A (200U) by electrical stimulation	Spasticity, range of motion	–
Botulinum toxin A (200U) by ultrasonography	Botulinum toxin A (200U) by palpation	Spasticity, range of motion	–
Botulinum toxin A (200U) by ultrasonography	Botulinum toxin A (200U) by palpation	Range of motion	–
Botulinum toxin A (200U) by electrical stimulation	Botulinum toxin A (200U) by palpation	Spasticity, range of motion	–
Botulinum toxin A (200U) by electrical stimulation	Botulinum toxin A (200U) by palpation	Range of motion	–
Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection	Gait speed	+
Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection	Spasticity, gait endurance, functional mobility	–

Botox Combined with Robotics	Botox and Conventional Therapy	Gait speed, gait endurance, functional mobility	+
Botox Combined with Robotics	Botox and Conventional Therapy	Spasticity, range of motion	–
Botox Combined with Robotics	Botox and Conventional Therapy	Balance	=
Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care	Botulinum Toxin A with Conventional Care	Biomechanical gait measures, spasticity, gait speed	–
Forward Treadmill Training with Botulinum Toxin	Backward Treadmill Training with Botulinum Toxin	Biomechanical balance measures, gait speed	+
Forward Treadmill Training with Botulinum Toxin	Backward Treadmill Training with Botulinum Toxin	Biomechanical gait measures, spasticity	–
Botulinum Toxin A	Conventional Therapy	Motor recovery, biomechanical gait measures, gait speed, functional mobility	+
Botulinum Toxin A (50-100U) + Isokinetic training	Botulinum Toxin A (50-100U)	Biomechanical gait measures, muscle strength, spasticity, gait speed, gait endurance	–
Received co-injection of abobotulinumtoxinA (aboBoNT-A) in both the upper and lower limbs during treatment cycle 3 and 4	1000-1500 U total botulinum toxin lower limb with upper limb injection	Gait speed	–
Botulinum neurotoxin Type A with functional electrical stimulation and conventional physiotherapy	Conventional physiotherapy	Aerobic measures, gait speed	–
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy	Biomechanical balance measures, gait speed	+
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy	Biomechanical gait measures, spasticity	–
Botulinum Toxin A with functional electrical stimulation	Botulinum toxin A injection	Motor recovery, spasticity	=

Antispastic Drugs



Adopted from: https://www.indiamart.com/proddetail/baclofen-ip-20249295097.html

Antispastic drugs are used for spastic hypertonia of cerebral origin, usually in oral form, and often include baclofen and tizanidine. These non-selective agents mimic the effects of neurotransmitters in the central nervous system. Tolperisone is a centrally acting muscle relaxant that decreases the frequency and amplitude of action potentials in the membrane. Tizanidine and dantrolene are other oral medications used for management of spasticity. When oral medicines are not adequate, injections of intrathecal baclofen may also be used (Rushton et al., 2002).

A total of nine RCTs were found that evaluated antispastic drugs for lower extremity motor rehabilitation. One RCT compared Tolperisone with Placebo (Stamenova et al. 2005). Three RCTs compared Intrathecal Baclofen with Placebo (Creamer et al. 2018; Meythaler et al. 2001a; Meythaler et al. 1999). One RCT compared Dantrolene with Placebo (Ketel & Kolb 1984). One RCT compared Tizanidine with Baclofen (Medici et al. 1989). Two RCTs compared Tizanidine with Placebo (Maupas et al. 2004; Meythaler et al. 2001b). One RCT compared Magnesium Sulphate Iontophoresis with Stretching (Hassan et al. 2022).

The methodological details and results of all nine RCTs are presented in Table 47.

Table 47. RCTs Evaluating Antispastic Drugs for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Tolperisone vs Placebo		
Stamenova et al. (2005) RCT (7) Nstart=120 Nend=97 TPS=Chronic A vs 0	E: Tolperisone hydrochloride (50mg tablets) C: Placebo Duration: 2 tablets/session, 3sessions/d - starting dose (working up to total dosage of 300-900mg/d), for 4wks	E vs C: Ashworth Scale (+exp) 2min Walk Test (+exp) Modified Barthel Index (+exp) Safety Physical Exam and Vital Signs (-) Laboratory Screening (-) ECG Test (-) Adverse Events (-)

Intrathecal Baclofen vs Placebo		
Creamer et al. (2018) RCT (6) Nstart=60 Nend=48 TPS=Chronic A vs 0	E: Intrathecal Baclofen Pump + Conventional Physical Therapy C: Conventional Medical Management (including oral antispastic) + Conventional PT Duration: 21-25d run-in- phase & 6mo active trial phase.	E vs C: Ashworth Scale (+exp) Functional Independence Measure (-) Motor function (-) Cognition (-)
Meythaler et al. (2001a) RCT crossover (6) Nstart=22 Nend=13 TPS=Chronic A vs 0	E: Intrathecal baclofen (50µg) C: Placebo Duration: 50µg intrathecal baclofen daily for 1yr	E vs C: Modified Ashworth Scale (+exp) Penn Spasm Frequency Scale (+exp) Reflex Scale (+exp)
Meythaler et al. (1999) RCT crossover (7) Nstart=6 Nend=6 TPS=Chronic A vs B	E: Continuously intrathecally administered bolus injuection of 50µg Baclofen C: Continuously intrathetcally administered bolus injection of normal saline. Duration: 3mth	E vs C: Modified Ashworth Scale (+exp)
Dantrolene vs Placebo		
Ketel & Kolb (1984) RCT (4) Nstart=18 Nend=14 TPS=Chronic A vs 0	E: Dantrolene C: Placebo Duration: 25mg of Dantrolene, 2-3doses/d, for 6wks	E vs C: Clonus (+exp) Resistance to passive movement scale (+exp) Trunk muscle strength (+exp) Lower extremity muscle strength (+exp) Tendon reflex (+exp)
Tizanidine vs Baclofen		
Medici et al. (1989) RCT (6) Nstart=30 Nend=25 TPS=Chronic A vs B	E1: Tizanidine (8mg, titrated up to max 20mg) E2: Baclofen (20mg, titrated up to max 50mg) Duration: Continued at optimal dose for 30wks maintenance phase	E1 vs E2: Ashworth Scale (-) Muscle Spasms (-) Clonus (-) Muscle Strength (-) Functional Assessment Pedersen Scale (-) Physician's Global Assessment of Clinical Changes (-) Global Assessment of Antispastic Efficacy (-)
Tizanidine vs Placebo		
Maupas et al. (2004) RCT crossover (6) Nstart=14 Nend=14 TPS=Subacute A vs 0	E: Tizanidine (150µg/kg) C: Placebo Duration: Single dose – 10d washout	E vs C: Hmax/Mmax (-) H Reflex (+exp) Modified Ashworth Score (+exp)
Meythaler et al. (2001b) RCT crossover (6) Nstart=17 Nend=15 TPS=Chronic A vs 0	E: Tizanidine (12- 36mg/d) C: Placebo Duration: 12-36mg/d, 7d/wk, for 6wks – 1wk washout	E vs C: Ashworth Scale Lower Extremity (+exp) Upper Extremity (+exp) Penn Spasm Frequency Scale (-) Tendon Reflex Scale (-)

		Range of Motion (-) Functional Independence Measure – Motor Scale (-) Craig Handicap Assessment and Reporting Technique (-) Adverse Events (-)
Magnesium Sulphate Iontophoresis vs Stretching		
Hassan et al. (2022) RCT (7) Nstart=50 Nend=50 TPS=Chronic A vs B	E: MgSO4 iontophoresis C: Stretching excercises Duration: 2d/wk, for 4wks	E vs C: EMG During Rest (+exp) During Activity (+exp) Step Length (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Intrathecal Baclofen may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Creamer et al. 2018

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Magnesium Sulphate Iontophoresis may produce greater improvements in biomechanical gait measures than Stretching.	1	Hassan et al. 2022

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Dantrolene may produce greater improvements in muscle strength than Placebo.	1	Ketel & Kolb 1984
1b	Tizanidine (8mg, titrated up to max 20mg) may not have a difference in efficacy when compared to Baclofen (20mg, titrated up to max 50mg) for improving muscle strength.	1	Medici et al. 1989

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tolperisone may produce greater improvements in spasticity than Placebo.	1	Stamenova et al. 2005
1a	Intrathecal Baclofen may produce greater improvements in spasticity than Placebo.	3	Creamer et al. 2018; Meythaler et al. 2001a; Meythaler et al. 1999
2	Dantrolene may produce greater improvements in spasticity than Placebo.	1	Ketel & Kolb 1984

1b	Tizanidine (8mg, titrated up to max 20mg) may not have a difference in efficacy when compared to Baclofen (20mg, titrated up to max 50mg) for improving spasticity.	1	Medici et al. 1989
1a	There is conflicting evidence about the effect of Tizanidine when compared to Placebo for improving spasticity.	2	Maupas et al. 2004; Meythaler et al. 2001b

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tizanidine may not have a difference in efficacy when compared to Placebo for improving range of motion.	1	Meythaler et al. 2001b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Tizanidine when compared to Placebo for improving neurophysiological measures.	1	Maupas et al. 2004
1b	Magnesium Sulphate Iontophoresis may produce greater improvements in neurophysiological measures than Stretching.	1	Hassan et al. 2022

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tolperisone may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Stamenova et al. 2005
1b	Intrathecal Baclofen may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Creamer et al. 2018
1b	Tizanidine may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Meythaler et al. 2001b

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tolperisone may produce greater improvements in gait endurance than Placebo.	1	Stamenova et al. 2005

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Tizanidine may produce greater improvements in upper extremity function than Placebo.	1	Meythaler et al. 2001b

Key Points

- Tolperisone may be beneficial for improving spasticity and gait endurance, but not activities of daily living, after stroke when compared to Placebo.
- Intrathecal Baclofen may be beneficial for improving spasticity, but not motor recovery and activities of daily living, after stroke when compared to Placebo.

- Dantrolene may be beneficial for improving muscle strength and spasticity after stroke when compared to Placebo.
- Tizanidine (8mg, titrated up to max 20mg) may not be beneficial for improving muscle strength and spasticity after stroke when compared to Baclofen (20mg, titrated up to max 50mg).
- Tizanidine may not be beneficial for improving range of motion and activities of daily living after stroke when compared to Placebo; the literature is mixed regarding spasticity and neurophysiological measures.
- Magnesium Sulphate Iontophoresis may be beneficial for improving biomechanical gait measures and neurophysiological measures after stroke when compared to Stretching.

Summary of Key Points: Antispastic Drugs

Intervention	Control(s)	Function domain(s)	Effect
Tolperisone	Placebo	Spasticity, gait endurance	+
Tolperisone	Placebo	Activities of daily living	−
Intrathecal Baclofen	Placebo	Spasticity	+
Intrathecal Baclofen	Placebo	Motor recovery, activities of daily living	−
Dantrolene	Placebo	Muscle strength, spasticity	+
Tizanidine (8mg, titrated up to max 20mg)	Baclofen (20mg, titrated up to max 50mg)	Muscle strength, spasticity	−
Tizanidine	Placebo	Range of motion, activities of daily living	−
Tizanidine	Placebo	Spasticity, neurophysiological measures	=
Magnesium Sulphate Iontophoresis	Stretching	Biomechanical gait measures, neurophysiological measures	+

Cerebrolysin



Adopted from: http://www.gerovitalshop.eu/it/home/18-cerebrolysin-5ml.html

Cerebrolysin is a medication that is a mixture of distinct swine brain-derived peptides that have shown similar pharmacodynamic properties with endogenous neurotrophic factors (Plosker & Gauthier, 2009). It has shown neuroprotective effects both in vitro and in neurodegenerative animal models (Plosker & Gauthier, 2009). In humans, there has been some conflicting evidence, but some studies suggest it could help with cognitive rehabilitation in a number of neurological conditions (Ladurner et al., 2005; Zhang et al., 2015). These peptides could act on the molecular level to also help improve motor outcomes in the lower extremity (Chang et al. 2016).

A total of one RCTs were found that evaluated cerebrolysin for lower extremity motor rehabilitation. One RCT evaluated taping interventions (Chang et al. 2016).

The methodological details and results of all one RCTs are presented in Table 48.

Table 48. RCTs Evaluating Cerebrolysin for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Chang et al. (2016) RCT (7) Nstart=70 Nend=66 TPS=Acute A vs 0	E: Cerebrolysin (30ml) + standard rehabilitation C: Placebo (100mL) + standard rehabilitation Duration: 1dose/d, 21d injection & 3hr, 5d/wk, for 3wks standard rehabilitation	E vs C: Fugl-Meyer Assessment (-) Functional neuroimaging (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05
no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Taping may not have a difference in efficacy when compared to no taping, sham taping, or conventional therapy for improving motor recovery.	1	Chang et al. 2016

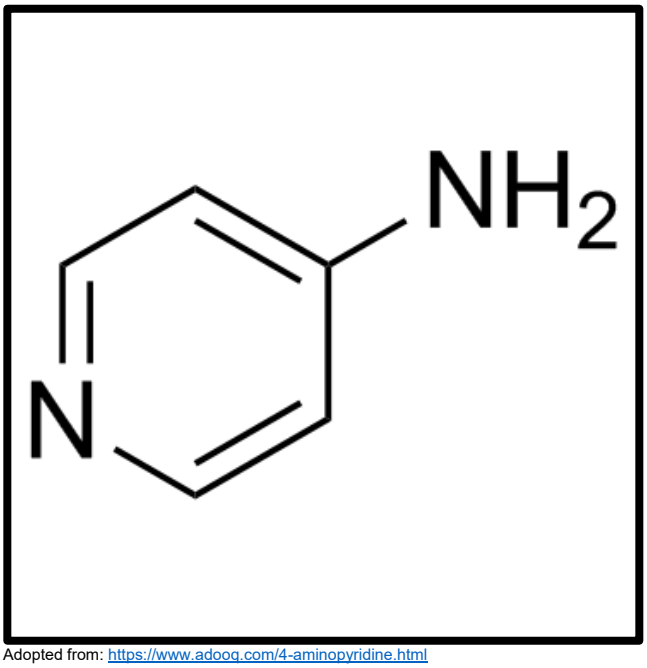
Key Points

- Taping may not be beneficial for improving motor recovery after stroke when compared to no taping, sham taping, or conventional therapy.

Summary of Key Points: Cerebrolysin

Intervention	Control(s)	Function domain(s)	Effect
Taping	no taping, sham taping, or conventional therapy	Motor recovery	–

4-Aminopyridine



Adopted from: https://www.adooq.com/4-aminopyridine.html

4-aminopyridine (fampridine, dalfampridine) is an organic pyridine that blocks the opening of intercellular potassium channels, ultimately prolonging neuronal repolarization (Simpson et al. 2015). This can increase neuron excitability and conduction strength, particularly in unmyelinated fibers. In mammalian motor neurons, it greatly potentiates the transmitter release at the unmyelinated neuromuscular junction (Sherratt et al., 1980). Although often used for the treatment of multiple sclerosis, its ability to improve neuromuscular signaling could prove effaceable for lower limb rehabilitation in stroke survivors as well.

A total of two RCTs were found that evaluated 4-Aminopyridine for lower extremity motor rehabilitation. Two RCTs compared Dalfampridine with Placebo (Page et al. 2020; Simpson et al. 2015).

The methodological details and results of all two RCTs are presented in Table 49.

Table 49. RCTs Evaluating 4-Aminopyridine for Lower Extremity Motor Rehabilitation

Authors (Year) Study Design (PEDro Score) Sample Size start/end Time post stroke category Study design	Interventions Duration: Session length, frequency per week for total number of weeks	Outcome Measures Result (direction of effect)
Dalfampridine vs Placebo		
Page et al. (2020) RCT (6) Nstart=377 Nend=368 TPS=Chronic A1 vs A2 vs 0	E1: Dalfampridine-extended release (10mg) E2: Dalfampridine-extended release (7.5mg) C: Placebo Duration: 2doses/d for 12wks	E1/E2 vs C: 2min Walk test (-) Walk-12 test (+exp1) Timed Up and Go (-) Adverse events (-)
Simpson et al. (2015) RCT crossover (7) Nstart=83 Nend=70 TPS=Chronic A vs 0	E: Dalfampridine (4- Aminopyridine) (10mg, 2doses/d) C: Placebo Duration: 2wk, 1 week washout	E vs C: Adverse Events (No stats) Treatment-emergent Adverse Events (No stats) Serious adverse events (No stats) The 25 foot walk test (+exp) Functional Independence Measure (-) Fugl-Meyer Assessment (-) Grip and Pinch Test (-) Box and Block Test (-) Subject Global Impression (-) Clinician Global Impression (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dalfampridine may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Simpson et al. 2015

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dalfampridine may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Simpson et al. 2015

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Dalfampridine when compared to Placebo for improving gait endurance.	1	Page et al. 2020

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dalfampridine may not have a difference in efficacy when compared to Placebo for improving functional mobility.	1	Page et al. 2020

Other Associated Outcome Measures

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dalfampridine may not have a difference in efficacy when compared to Placebo for improving upper extremity function.	1	Simpson et al. 2015

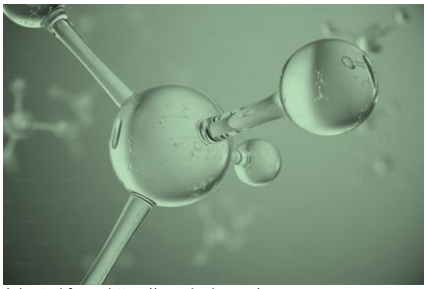
Key Points

- Dalfampridine may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Placebo; the literature is mixed regarding gait endurance.

Summary of Key Points: 4-Aminopyridine

Intervention	Control(s)	Function domain(s)	Effect
Dalfampridine	Placebo	Motor recovery, activities of daily living, functional mobility	–
Dalfampridine	Placebo	Gait endurance	=

Biologics and Targeted Molecular Therapies



Adopted from: https://unsplash.com/

Biologics and targeted molecular therapies may be effective for promoting motor recovery post stroke. Biologics are defined as drugs which are derived from living organisms or from their cells (Health Canada, 2019). Common examples of biologics include antibodies and insulin. In this chapter, targeted agents refer to compounds that act on specific biological pathways related to neural repair and recovery. There are many pathways for promoting recovery including mitochondrial, neurotrophic and oxygen regulation (Mocchetti, 2005; Russo et al., 2018). Overall, these agents aim to reduce neuronal damage and promote neuroplasticity.

There are no approved biologics for promoting stroke motor recovery (Lin et al., 2018). Despite this paucity of approved clinically approved agents, there remains investigations into the application of biological and targeted therapies.

A total of seven RCTs were found that evaluated biologics and targeted molecular therapies for lower extremity motor rehabilitation. One RCT compared Granulocyte-colony Stimulating Factor with Placebo (England et al. 2012). One RCT compared Ganglioside GM1 with Placebo (SASS investigators 1994). One RCT compared Cutamesine with Placebo (Urfer et al. 2014). Three RCTs compared Mesenchymal Stem Cell Injection with Placebo or Conventional Therapy (Lee et al. 2022a; Chung et al. 2021; Jaillard et al. 2020). One RCT compared Neuronal Cell with Conventional Therapy (Kondziolka et al. 2005).

The methodological details and results of all seven RCTs are presented in Table 50.

Table 50. RCTs Evaluating Biologics and Targeted Molecular Therapies for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Granulocyte-colony Stimulating Factor vs Placebo		
England et al. (2012) RCT (8) Nstart=60 Nend=53 TPS=Acute A vs 0	E: Granulocyte-colony Stimulating factor (GSF) C: Placebo Duration: 1/d for 5d	E vs C: National Institute of Health Stroke Severity (-) Grip Strength (-) Modified Rankin score (-) Nottingham extended ADL (-) Barthel index (-) Mini-Mental state examination (-) Zung Depression score (-) Serious adverse events (-) CD34/white blood cell count (+exp)
Ganglioside GM1 vs Placebo		
SASS investigators (1994) RCT (6) Nstart=275 Nend=217 TPS=Acute A vs 0	E: Ganglioside GM1 + Conventional care C: Placebo + Conventional care Duration: 100 mg IM/d, for 28d	E vs C: Toronto Stroke Scale Total (-) Motor (+exp) Barthel Index (-) Fugl Meyer Assessment Scale (-) Neuropsychological battery (-)
Cutamesine vs Placebo		
Urfer et al. (2014) RCT (9) Nstart=60 Nend=57 TPS=Acute A1 vs A2 vs 0	E1: Cutamesine (1mg) E2: Cutamesine (3mg) C: Placebo Duration: 1x/d for 28d	E1 vs C: Safety (No stats) NIH Stroke Scale (-) 10m Walk test (-) Modified Rankin scale (-) Barthel index (-) Geriatric Depression scale (-) E2 vs C: Safety (No stats) NIH Stroke Scale (+exp2) 10m Walk test (-) Modified Rankin scale (-) Barthel index (-) Geriatric Depression scale (-)

Mesenchymal Stem Cell Injection vs Placebo or Conventional Therapy		
Lee et al. (2022a) RCT (5) Nstart=60 Nend=54 TPS=Acute A vs 0	E: Mesenchymal stem cells + Conventional care C: Conventional care Duration: One injection of stem cells & rehabilitation during inpatient period	E vs C: Fugl-Meyer assessment (no stats) Lower limb (no stats) Upper limb (no stats) fMRI (no stats)
Chung et al. (2021) RCT (7) Nstart=60 Nend=54 TPS=Acute A vs B	E: One Intravenous Mesenchymal Stem cell injection + conventional management and rehabilitation C: Conventional management and rehabilitation Duration: One session bone marrow collection, 2-4wks cell culture, then one session MSC injection & mean of 30d rehabilitation	E vs C: Modified Rankin score (No stats) Motricity index (No stats) Fugl-Meyer assessment (No stats) Functional Ambulatory category (No stats) modified Barthel Index (No stats)
Jaillard et al. (2020) RCT (8) Nstart=31 Nend=31 TPS=Subacute A vs 0	E: Mesenchymal stem cells IV injection + conventional physical therapy C: Conventional physical therapy Duration: 5d/wk, 3-6mo conventional therapy & 100-300 million MSCs single injection	E vs C: National institute of stroke scale (No stats) Barthel index (No stats) Modified rankin score (No stats) Motor Fugl-Meyer Score (No stats) FMRI-M14a (No stats) FMRI-M14p (No stats)
Neuronal Cell vs Conventional Therapy		
Kondziolka et al. (2005) RCT (7) Nstart=18 Nend=18 TPS=Chronic A1 vs A2 vs 0	E1: 5million implanted human neuronal cells + Conventional rehabilitation E2: 10million implanted human neuronal cells + Conventional rehabilitation C: Conventional rehabilitation Duration: Not Reported	E1/E2 vs C: European Stroke Scale (-) National Institutes of Health Stroke Scale (-) Stroke Impact Scale (-) Fugl-Meyer Assessment (-) E1 vs E2: National Institutes of Health Stroke Scale (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Ganglioside GM1 may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	SASS investigators 1994
1b	There is conflicting evidence about the effect of Cutamesine when compared to Placebo for improving motor recovery.	1	Urfer et al. 2014

1a	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving motor recovery.	3	Lee et al. 2022a; Chung et al. 2021; Jaillard et al. 2020
1b	Neuronal Cell may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	1	Kondziolka et al. 2005
1b	5million implanted human neuronal cells with Conventional rehabilitation may not have a difference in efficacy when compared to 10million implanted human neuronal cells with Conventional rehabilitation for improving motor recovery.	1	Kondziolka et al. 2005

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving muscle strength.	1	Chung et al. 2021

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving neurophysiological measures.	2	Lee et al. 2022a; Jaillard et al. 2020

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Granulocyte-colony Stimulating Factor may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	England et al. 2012
1b	Ganglioside GM1 may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	SASS investigators 1994
1b	Cutamesine may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Urfer et al. 2014
1a	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving activities of daily living.	2	Chung et al. 2021; Jaillard et al. 2020

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Cutamesine may not have a difference in efficacy when compared to Placebo for improving gait speed.	1	Urfer et al. 2014

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving functional mobility.	1	Chung et al. 2021

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Neuronal Cell may not have a difference in efficacy when compared to Conventional Therapy for improving quality of life.	1	Kondziolka et al. 2005

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Granulocyte-colony Stimulating Factor when compared to Placebo for improving mood.	1	England et al. 2012

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Granulocyte-colony Stimulating Factor may not have a difference in efficacy when compared to Placebo for improving cognition.	1	England et al. 2012

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Granulocyte-colony Stimulating Factor may not have a difference in efficacy when compared to Placebo for improving upper extremity function.	1	England et al. 2012
2	Mesenchymal Stem Cell Injection may not have a difference in efficacy when compared to Placebo or Conventional Therapy for improving upper extremity function.	1	Lee et al. 2022a

Key Points

- Granulocyte-colony Stimulating Factor may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- Ganglioside GM1 may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Cutamesine may not be beneficial for improving activities of daily living and gait speed after stroke when compared to Placebo; the literature is mixed regarding motor recovery.
- Mesenchymal Stem Cell Injection may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, and functional mobility after stroke when compared to Placebo or Conventional Therapy.
- Neuronal Cell may not be beneficial for improving motor recovery and quality of life after stroke when compared to Conventional Therapy.
- 5million implanted human neuronal cells with Conventional rehabilitation may not be beneficial for improving motor recovery after stroke when compared to 10million implanted human neuronal cells with Conventional rehabilitation.

Summary of Key Points: Biologics and Targeted Molecular Therapies

Intervention	Control(s)	Function domain(s)	Effect
Granulocyte-colony Stimulating Factor	Placebo	Activities of daily living	–

Ganglioside GM1	Placebo	Motor recovery, activities of daily living	–
Cutamesine	Placebo	Activities of daily living, gait speed	–
Cutamesine	Placebo	Motor recovery	=
Mesenchymal Stem Cell Injection	Placebo or Conventional Therapy	Motor recovery, muscle strength, neurophysiological measures, activities of daily living, functional mobility	–
Neuronal Cell	Conventional Therapy	Motor recovery, quality of life	–
5million implanted human neuronal cells with Conventional rehabilitation	10million implanted human neuronal cells with Conventional rehabilitation	Motor recovery	–

Anabolic Steroids



Adopted from: https://unsplash.com/

Anabolic steroids refer to molecular compounds derived from testosterone (Kuhn, 2002). These compounds promote anabolic effects including protein synthesis and muscle growth with negligible androgenizing effects (Mottram & George, 2000). Cerebrovascular accidents lead to reduced muscle function through decreased neural stimulation and activation impairment. To address this, anabolic steroids have been proposed as a possible addition to resistance training to counteract the significant loss in muscle mass and power in stroke survivors which can be as low as 60% of predicted in the lower limb (Patten et al., 2004; Shimodozono et al., 2010).

A total of one RCTs were found that evaluated anabolic steroids for lower extremity motor rehabilitation. One RCT evaluated taping interventions (Okamoto et al. 2011).

The methodological details and results of all one RCTs are presented in Table 51.

Table 51. RCTs Evaluating Anabolic Steroids for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Okamoto et al. (2011) RCT (7) Nstart=26	E: Metenolone enanthate (Anabolic steroid) injection (100mg) + Usual therapy C: Usual therapy	E vs C: Cross Sectional Area (+exp) Affected (+exp)

Nend=26 TPS=Subacute A vs 0	Duration: 1d/wk for 6wks - Steroid injection, 80- 120min/d for 6wks - Usual therapy	Unaffected (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Taping may produce greater improvements in muscle strength than no taping, sham taping, or conventional therapy.	1	Okamoto et al. 2011

Key Points

- Taping may be beneficial for improving muscle strength after stroke when compared to no taping, sham taping, or conventional therapy.

Summary of Key Points: Anabolic Steroids

Intervention	Control(s)	Function domain(s)	Effect
Taping	no taping, sham taping, or conventional therapy	Muscle strength	+

Supplements and Vitamins



Adopted from: https://unsplash.com/

Nutrition, in addition to physical and cognitive focussed rehabilitation is critical in optimizing post- stroke recovery. Stroke survivors are at increased risk of developing dietary-related illnesses including sarcopenia and osteoporosis. Moreover, poor nutrition status may hinder gains in both physical and cognitive rehabilitation. Emerging evidence demonstrates that dietary supplements can be associated with better effectiveness of post-stroke rehabilitation as well as brain recovery (Zielińska-Nowak et al., 2021). Likewise, accumulating evidence points towards the effectiveness of vitamin supplementation on improving post-stroke motor recovery (Utkan Karasu & Kaymak Karataş, 2021). Common vitamins studied in post-stroke rehabilitation include Vitamin B, C and D (Lasoń et al., 2022).

A total of eight RCTs were found that evaluated supplements and vitamins for lower extremity motor rehabilitation. One RCT compared Dietary Protein Supplement with Cycle Ergometer with Carbohydrate Supplement with Cycle Ergometer (Cheng et al. 2020). Three RCTs evaluated Leucine-enriched Amino Acid Supplementation (Nakagawa et al. 2024; Ikeda et al. 2020; Yoshimura et al. 2019). One RCT compared Soymilk Supplementation with Placebo (Liao et al. 2019). Three RCTs evaluated Vitamin and comprehensive Dietary Supplementation (Giovannini et al. 2024; Momosaki et al. 2019; Rabadi et al. 2008).

In addition, four RCTs in which supplements and vitamins formed part of a combined or comparative intervention are cross-referenced at the end of Table 52; their primary listings appear in other tables.

The methodological details and results of all eight RCTs are presented in Table 52.

Table 52. RCTs Evaluating Supplements and Vitamins for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Dietary Protein Supplement with Cycle Ergometer vs Carbohydrate Supplement with Cycle Ergometer		
Cheng et al. (2020) RCT (8) Nstart=20 Nend=18 TPS=Chronic A + B vs C + B Also in Table 8 (Cycle Ergometer Training)	E: Protein supplement + Cycle ergometer exercise C: Carbohydrate supplement + Cycle ergometer exercise Duration: 40min, 3d/wk, for 8wks exercise & 40gr supplement, 3d/wk, for 8wks	E vs C: Cardiopulmonary exercise test(+exp) Timed up-and-go (+exp) 6-minute walking test(+exp) Berg Balance Scale(+exp) Fugl-Meyer Assessment Lower Extremity (+exp) Body composition changes Body mass (+exp) Fat mass (+exp) Lean mass (+exp)
Leucine-enriched Amino Acid Supplementation		
Nakagawa et al. (2024) RCT (6) Nstart=60 Nend=60 TPS=Not reported A + B vs B Also in Table 21 (Strength and Resistance Training)	E: 120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) + resistance exercise training program C: Resistance training exercise program Duration: minimum 3d/wk, 12 wks (instructed to consume nutritional supplement within 1h of completing resistance exercise)	E vs C: 10mWT comfortable speed (-) maximum speed (-) 2min walking distance (-) 30s chair test (-) leg extensor torque paretic side (-) non-paretic side (-) FIM (-) motor (-) cognitive (-) blood pressure (-) serum levels/nutritional markers (-) BMI (-)
Ikeda et al. (2020) RCT (7) Nstart=46 Nend=40 TPS=Not reported A vs B	E: Leucine-enriched Amino acid supplement at breakfast before exercise C: Leucine-enriched Amino acid supplement on afternoon after exercise Duration: 2 dose/d supplement & 40 min/d exercise, 7d/wk, for 8wks	E vs C: Grip strength (-) Berg Balance scale (+exp) Timed Up-and-Go test (-) Functional independence measure (-) Leg press strength (+exp) Body fat mass (+exp)

		Skeletal muscle mass (-)
Yoshimura et al. (2019) RCT (6) Nstart=49 Nend=44 TPS=Acute A + B vs B Also in Table 21 (Strength and Resistance Training)	E: Leucine enriched amino acid + resistant training C: resistant training Duration: 1 session/d leucine, vitamin, carbohydrate supplement, & ≤3 hr/d rehabilitation, for 8wks	E vs C: Functional independence measure Motor (+exp) Cognitive (-) Skeletal muscle mass index (+exp) Handgrip strength (+exp) Mini Nutritional Assessment-Short Form (-) Protein Intake (-) Energy intake (-) Serum albumin (-)
Soymilk Supplementation vs Placebo		
Liao et al. (2019) RCT (7) Nstart=23 Nend=22 TPS=Chronic A vs 0	E: Soymilk + Conventional Rehabilitation C: Placebo + Conventional Rehabilitation Duration: 120min/d, 3d/wk, for 8wks conventional rehabilitation, 500ml (1 dose)/d, 3d/wk, for 8wks placebo/soymilk	E vs C: Hand Grip Strength (+exp) 8-feet walking speed (+exp) walking performance per unit lean mass (+exp) Lean Mass (-) 6-minute walk test (+exp) Short Physical Performance Battery (-) Sit-to-stand task time (No stats)
Vitamin and comprehensive Dietary Supplementation		
Giovannini et al. (2024) Feasibility/pilot RCT (7) Nstart=24 Nend=24 TPS=Subacute A vs B	E: Nutritional supplement with SiderAL Med (food for special medical purposes) + regular meds (meds required for their clinical condition) and rehabilitation treatment C: regular meds (meds required for their clinical condition) + intensive rehabilitation treatment Duration: Sideral Med: 1 satchet daily intake for 8 wks; Rehab Treatment: 2h/d, 6d/wk, 4wks	E vs C: Modified Fatigue Impact Scale (+exp) Physical (+exp) Cognitive (+exp) Psychosocial (-) Motricity Index (-) BBS (+exp) Short Physical Performance Battery (+exp) Ambulation index (+exp) FAC (+exp) Walking Handicap scale (+exp) TUG (+exp) 10 Meter walk test (-) 6 minute walk test (+exp) Symbol Digit Modalities Test (+exp) Trial Making Test (+exp) Stroop Colour Word Test Time (+exp) Errors (-) EQ-5D (+exp) EQ-5D VAS (+exp) modified barthel index (-) DEXA (-) Bone Mineral Content (-) Mass (+exp) Fat (-) Lean (+exp) Percent of Fat (+exp)
Momosaki et al. (2019) RCT (8)	E: Vitamin D2 supplementation (2000IU/day)	E vs C: Barthel Index (-)

Nstart=100 Nend=100 TPS=Subacute A vs 0	C: Placebo Duration: 5pills/d, 7d/wk, for 8wks (2000IU/day)	Brunnstrom stage improved Arm (-) Hand (-) Leg (-) Hand grip strength Right (-) Left (-) Calf circumference Right (-) Left (-)
Rabadi et al. (2008) RCT (8) Nstart=116 Nend=102 TPS=Acute A1 vs A2	E: Intensive Nutritional Supplement Intervention (120 ml, 240 calories, 11g protein, 90mg Vitamin C) C: Standard Nutritional Supplement intervention (120 ml, 127 calories, 5g protein) Standard Nutritional Supplement intervention (120 ml, 127 calories, 5g protein) Duration: Every 8 hours, given 72 hours after intake, till discharge	E vs C: Functional independence measure (+exp) Motor (+exp) Cognitive (-) 2-Minute Walk test (+exp) 6-Minute Walk test (+exp) Length of stay (-) Discharge disposition (-) Weight gain (-) Rates of healing pressure sores (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Zhao et al. (2024) RCT (7) Nstart=54 Nend=48 TPS=Acute A1 vs A2 vs 0 Primary listing: Table 37 (Repetitive Transcranial Magnetic Stimulation (rTMS))	E1: Primary motor area rTMS E2: Supplementary motor area rTMS C: Sham rTMS Duration: 20 mins/d, 5 ds/wk, 4 wks	E1 vs C: FMA-UE (+exp1) FMA-LE (+exp1) Berg balance scale (+exp1) amplitude of low frequency fluctuation right marginal gyrus (+exp1) E1 vs E2: FMA-UE (-) FMA-LE (-) Berg balance scale (+exp2) amplitude of low frequency fluctuation left precuneus (+exp1) left superior marginal gyrus (+exp2) Middle frontal gyrus (+exp) regional homogeneity cingulate gyrus (+exp1) left parietal lobe (+exp2) angular gyrus (+exp2) Functional connection (+exp2) E2 vs C: FMA-UE (+exp2) FMA-LE (+exp2) Berg balance scale (+exp2) amplitude of low frequency fluctuation right middle temporal gyrus
Xia et al. (2022) Feasibility/pilot RCT (4) Nstart=31 Nend=31 TPS=Subacute A vs B1 vs B2	E1: iTBS unilateral cerebellar area (CB Single group), E2: iTBS Cerebellar primary motor cortex area (CB-M1 group), E3: iTBS Cerebellar Supplementary Motor Area (CB-SMA group) Duration: CB-M1/CB-SMA = 2 iTBS session; CB-Single group = 1 iTBS session	E1 vs E2 vs E3: Eyes open condition COPs (-) COPa (+exp2) ML-COPd (-) AP-COPd (+exp3) ML-COPs (-)

Primary listing: Table 38 (Theta Burst Stimulation (TBS))		AP-COPs (+exp2/3) ML-COPa (-) AP-COPa (+exp2) L-COPda (-) S-COPda (-) L-COPdv (-) S-COPdv (+exp2) COParea (-) summary balance score (-) Eyes closed condition COPs (-) COPa (-) ML-COPd (-) AP-COPd (-) ML-COPs (-) AP-COPs (-) ML-COPa (-) AP-COPa (-) L-COPda (-) S-COPda (-) L-COPdv (-) S-COPdv (-) COParea (-) summary balance score (-)
Pinzon et al. (2020) RCT (6) Nstart=60 Nend=54 TPS=Acute A vs 0 Primary listing: Table 41 (Secondary Prevention Medications)	E: DLBS1033 supplement (Lumbrokinase) + Standard therapy C: Standard therapy Duration: 3doses/d - DLBS1033 until discharge	E vs C: Modified rankin scale (+exp) National institute of health stroke scale (+exp) Barthel index (+exp) physiological and lab tests (No stats)
Yoshimura et al. (2019) RCT (6) Nstart=49 Nend=44 TPS=Acute A + B vs B Primary listing: Table 21 (Strength and Resistance Training)	E: Leucine enriched amino acid + resistant training C: resistant training Duration: 1 session/d leucine, vitamin, carbohydrate supplement, & ≤3 hr/d rehabilitation, for 8wks	E vs C: Functional independence measure motor (+exp) cognitive (-) Skeletal muscle mass index (+exp) Handgrip strength (+exp) Mini Nutritional Assessment-Short Form (-) Protein Intake (-) Energy intake (-) Serum albumin (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in motor recovery than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Vitamin and comprehensive Dietary Supplementation may not have a difference in efficacy when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving motor recovery.	1	Momosaki et al. 2019
1b	Primary motor area repetitive transcranial magnetic stimulation may produce greater improvements in motor recovery than Sham repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	Primary motor area repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Supplementary motor area repetitive transcranial magnetic stimulation for improving motor recovery.	1	Zhao et al. 2024
1b	Primary motor area rTMS or Supplementary motor area rTMS may produce greater improvements in motor recovery than Sham rTMS.	1	Zhao et al. 2024
1b	DLBS1033 supplement (Lumbrokinase) with therapy may produce greater improvements in motor recovery than therapy.	1	Pinzon et al. 2020

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Leucine-enriched Amino Acid Supplementation when compared to Resistance training exercise program for improving muscle strength.	2	Nakagawa et al. 2024; Ikeda et al. 2020
1b	Leucine enriched amino acid with resistant training may produce greater improvements in muscle strength than Resistant training.	1	Yoshimura et al. 2019
1b	Vitamin and comprehensive Dietary Supplementation may not have a difference in efficacy when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving muscle strength.	1	Giovannini et al. 2024

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in neurophysiological measures than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving neurophysiological measures.	1	Nakagawa et al. 2024
1b	Leucine enriched amino acid with resistant training may not have a difference in efficacy when compared to Resistant training for improving neurophysiological measures.	1	Yoshimura et al. 2019
1b	Primary motor area repetitive transcranial magnetic stimulation may produce greater improvements in neurophysiological measures than Sham repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures when	1	Zhao et al. 2024

	compared to Supplementary motor area repetitive transcranial magnetic stimulation.		

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in aerobic measures than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving aerobic measures.	1	Nakagawa et al. 2024

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving activities of daily living.	2	Nakagawa et al. 2024; Ikeda et al. 2020
1b	There is conflicting evidence about the effect of Leucine enriched amino acid with resistant training when compared to Resistant training for improving activities of daily living.	1	Yoshimura et al. 2019
1a	There is conflicting evidence about the effect of Vitamin and comprehensive Dietary Supplementation when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving activities of daily living.	3	Giovannini et al. 2024; Momosaki et al. 2019; Rabadi et al. 2008
1b	DLBS1033 supplement (Lumbrokinase) with therapy may produce greater improvements in activities of daily living than therapy.	1	Pinzon et al. 2020

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving gait speed.	1	Nakagawa et al. 2024
1b	Soymilk Supplementation may produce greater improvements in gait speed than Placebo.	1	Liao et al. 2019
1b	Vitamin and comprehensive Dietary Supplementation may not have a difference in efficacy when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving gait speed.	1	Giovannini et al. 2024

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in gait endurance than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving gait endurance.	1	Nakagawa et al. 2024
1b	Soymilk Supplementation may produce greater improvements in gait endurance than Placebo.	1	Liao et al. 2019

1a	There is conflicting evidence about the effect of Vitamin and comprehensive Dietary Supplementation when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving gait endurance.	2	Giovannini et al. 2024; Rabadi et al. 2008

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in functional mobility than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving functional mobility.	1	Ikeda et al. 2020
1b	Soymilk Supplementation may not have a difference in efficacy when compared to Placebo for improving functional mobility.	1	Liao et al. 2019
1b	Vitamin and comprehensive Dietary Supplementation may produce greater improvements in functional mobility than regular meds (meds required for their clinical condition) with intensive rehabilitation treatment.	1	Giovannini et al. 2024

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Dietary Protein Supplement with Cycle Ergometer may produce greater improvements in balance than Carbohydrate Supplement with Cycle Ergometer.	1	Cheng et al. 2020
1b	Leucine-enriched Amino Acid Supplementation may produce greater improvements in balance than Resistance training exercise program.	1	Ikeda et al. 2020
1b	Vitamin and comprehensive Dietary Supplementation may produce greater improvements in balance than regular meds (meds required for their clinical condition) with intensive rehabilitation treatment.	1	Giovannini et al. 2024
1b	Primary motor area repetitive transcranial magnetic stimulation may produce greater improvements in balance than Sham repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	Primary motor area rTMS or Supplementary motor area rTMS may produce greater improvements in balance than Sham rTMS.	1	Zhao et al. 2024
2	Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not have a difference in efficacy when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group) for improving balance.	1	Xia et al. 2022

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Vitamin and comprehensive Dietary Supplementation may produce greater improvements in quality of life than regular meds (meds	1	Giovannini et al. 2024

	required for their clinical condition) with intensive rehabilitation treatment.		

Other Associated Outcome Measures

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Vitamin and comprehensive Dietary Supplementation may produce greater improvements in fatigue and sleep than regular meds (meds required for their clinical condition) with intensive rehabilitation treatment.	1	Giovannini et al. 2024

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Vitamin and comprehensive Dietary Supplementation when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving cognition.	1	Giovannini et al. 2024

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Leucine-enriched Amino Acid Supplementation may not have a difference in efficacy when compared to Resistance training exercise program for improving upper extremity function.	1	Ikeda et al. 2020
1b	Leucine enriched amino acid with resistant training may not have a difference in efficacy when compared to Resistant training for improving upper extremity function.	1	Yoshimura et al. 2019
1b	Soymilk Supplementation may produce greater improvements in upper extremity function than Placebo.	1	Liao et al. 2019
1b	Vitamin and comprehensive Dietary Supplementation may not have a difference in efficacy when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment for improving upper extremity function.	1	Momosaki et al. 2019
1b	Primary motor area repetitive transcranial magnetic stimulation may produce greater improvements in upper extremity function than Sham repetitive transcranial magnetic stimulation.	1	Zhao et al. 2024
1b	Primary motor area repetitive transcranial magnetic stimulation may not have a difference in efficacy when compared to Supplementary motor area repetitive transcranial magnetic stimulation for improving upper extremity function.	1	Zhao et al. 2024
1b	Primary motor area rTMS or Supplementary motor area rTMS may produce greater improvements in upper extremity function than Sham rTMS.	1	Zhao et al. 2024

Key Points

- Dietary Protein Supplement with Cycle Ergometer may be beneficial for improving motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Carbohydrate Supplement with Cycle Ergometer.
- Leucine-enriched Amino Acid Supplementation may be beneficial for improving balance, but not neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, and

functional mobility, after stroke when compared to Resistance training exercise program; the literature is mixed regarding muscle strength.

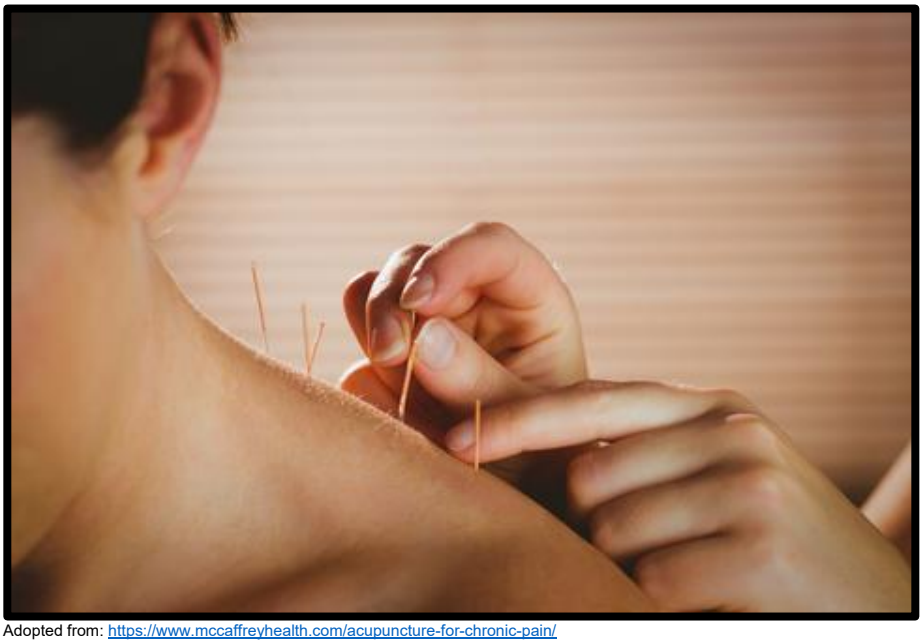
- Primary motor area rTMS or Supplementary motor area rTMS may be beneficial for improving motor recovery and balance after stroke when compared to Sham rTMS.
- Soymilk Supplementation may be beneficial for improving gait speed and gait endurance, but not functional mobility, after stroke when compared to Placebo.
- Vitamin and comprehensive Dietary Supplementation may be beneficial for improving functional mobility, balance, and quality of life, but not muscle strength, gait speed, and motor recovery, after stroke when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment; the literature is mixed regarding gait endurance and activities of daily living.
- Primary motor area repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, neurophysiological measures, and balance after stroke when compared to Sham repetitive transcranial magnetic stimulation.
- Primary motor area repetitive transcranial magnetic stimulation may not be beneficial for improving motor recovery after stroke when compared to Supplementary motor area repetitive transcranial magnetic stimulation; Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures and balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.
- Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not be beneficial for improving balance after stroke when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group).
- DLBS1033 supplement (Lumbrokinase) with therapy may be beneficial for improving motor recovery and activities of daily living after stroke when compared to therapy.
- Leucine enriched amino acid with resistant training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistant training; the literature is mixed regarding activities of daily living.

Summary of Key Points: Supplements and Vitamins

Intervention	Control(s)	Function domain(s)	Effect
Dietary Protein Supplement with Cycle Ergometer	Carbohydrate Supplement with Cycle Ergometer	Motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, balance	+
Leucine-enriched Amino Acid Supplementation	Resistance training exercise program	Neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility	−
Leucine-enriched Amino Acid Supplementation	Resistance training exercise program	Balance	+
Leucine-enriched Amino Acid Supplementation	Resistance training exercise program	Activities of daily living, functional mobility	−
Soymilk Supplementation	Placebo	Gait speed, gait endurance	+
Soymilk Supplementation	Placebo	Functional mobility	−
Vitamin and comprehensive Dietary Supplementation	regular meds (meds required for their clinical condition) with intensive rehabilitation treatment	Functional mobility, balance, quality of life	+
Vitamin and comprehensive Dietary Supplementation	regular meds (meds required for their clinical condition) with intensive rehabilitation treatment	Muscle strength, gait speed, motor recovery	−

Vitamin and comprehensive Dietary Supplementation	regular meds (meds required for their clinical condition) with intensive rehabilitation treatment	Motor recovery	−
Primary motor area repetitive transcranial magnetic stimulation	Sham repetitive transcranial magnetic stimulation	Motor recovery, neurophysiological measures, balance	+
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation	Motor recovery	−
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation	Neurophysiological measures, balance	−
Intermittent theta burst stimulation unilateral cerebellar area (CB Single group)	intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group)	Balance	−
DLBS1033 supplement (Lumbrokinase) with therapy	therapy	Motor recovery, activities of daily living	+
Primary motor area rTMS or Supplementary motor area rTMS	Sham rTMS	Motor recovery, balance	+
Leucine enriched amino acid with resistant training	Resistant training	Muscle strength	+
Leucine enriched amino acid with resistant training	Resistant training	Neurophysiological measures	−
Leucine enriched amino acid with resistant training	Resistant training	Activities of daily living	=
Leucine-enriched Amino Acid Supplementation	Resistance training exercise program	Muscle strength	=
Vitamin and comprehensive Dietary Supplementation	regular meds (meds required for their clinical condition) with intensive rehabilitation treatment	Gait endurance, activities of daily living	=

Acupuncture and Massage



Adopted from: https://www.mccaffreyhealth.com/acupuncture-for-chronic-pain/

The use of acupuncture has recently gained attention as an adjunct to stroke rehabilitation in Western countries even though acupuncture has been a primary treatment method in China for about 2000 years (Baldry, 2005). In China, acupuncture is an acceptable, time-efficient, simple, safe and economical form of treatment used to ameliorate motor, sensation, verbal communication and further neurological functions in post-stroke patients (Wu et al., 2002). According to Rabinstein and Shulman (2003), “Acupuncture is a therapy that involves stimulation of defined anatomic locations on the skin by a variety of techniques, the most common being stimulation with metallic needles that are manipulated either manually or that serve as electrodes conducting electrical currents”. There is a range of possible acupuncture mechanisms that may contribute to the health benefits experienced by stroke patients (Park et al., 2006). For example, acupuncture may stimulate the release of neurotransmitters (Han & Terenius, 1982) and have an effect on the deep structure of the brain (Wu et al., 2002). Lo et al. (2005) established acupuncture, when applied for at least 10 minutes, led to long-lasting changes in cortical excitability and plasticity even after the needle stimulus was removed. With respect to stroke rehabilitation, the benefit of acupuncture has been evaluated most frequently for pain relief and recovery from hemiparesis.

Also, meridian acupressure is a Chinese medicine treatment that involves placing needles on twelve strategic points of the body. These points are known as meridians and placing needles here helps to alleviate the blockage of energy (otherwise known as qi).

A total of 51 RCTs were found that evaluated acupuncture and massage for lower extremity motor rehabilitation. Fifteen RCTs compared Acupuncture Therapy with Conventional Therapy (Hong et al. 2024; Wang et al. 2020a; Wang et al. 2019a; Sanchez-Mila et al. 2018; Na et al. 2018; Chen et al. 2016; Liu et al. 2016a; Bai et al. 2013; Gao et al. 2012; Zhuang et al. 2012; Mao et al. 2008; Park et al. 2005; Alexander et al. 2004; Sze et al. 2002; Johansson et al. 1993). Five RCTs compared Acupuncture with Sham (Chen et al. 2024b; Wang et al. 2023; Ghannadi et al. 2020; Li et al. 2014; Fink et al. 2004). One RCT compared Acupuncture Treatment with No Treatment (Salom-Moreno et al. 2014). One RCT compared Channel Palpation Guided Acupuncture with Traditional Acupuncture (Luo et al. 2018). One RCT compared Scalp Acupuncture and Robot Assisted Training with Basic Treatment (Zhang et al. 2021c). Seven RCTs compared Scalp Acupuncture with Conventional Therapy or Other Modalities (Xie et al. 2022; Wang et al. 2020a; Xiong et al. 2020; Liu et al. 2018; Wang et al. 2018; Zhu et al. 2013; Hegyi et al. 2012). One RCT compared Auricular Intradermal Acupuncture with Conventional Therapy (Miao et al. 2020). Two RCTs compared Acupuncture with Manipulation with Acupuncture (Liu et al. 2009; Zhao et al. 2009). One RCT compared Eye Acupuncture with Body Acupuncture (Lou et al. 2020). Six RCTs evaluated Multifaceted Alternative Medicine Approaches (Sun et al. 2024b; Cui et al. 2023; Shen et al. 2020; Shao et al. 2019; Zhang et al. 2017; Wei et al. 2016). Eight RCTs evaluated Massage and other integrated rehabilitation techniques (Ye et al. 2022; Zhang et al. 2022; Zheng et al. 2021; Chen et al. 2019a; Holt et al. 2019; Yang et al. 2017; Thanakiatpinyo et al. 2014; Zhang et al. 2013). Two RCTs compared Dry Needling with Conventional Rehabilitation

with Conventional Rehabilitation Alone (Kucuktepe et al. 2023; Sanchez Mila et al. 2022). One RCT compared Acupuncture with Robot-Assisted Gait Training with Acupuncture Alone (Hu et al. 2024).

In addition, fourteen RCTs in which acupuncture and massage formed part of a combined or comparative intervention are cross-referenced at the end of Table 53; their primary listings appear in other tables.

The methodological details and results of all 51 RCTs are presented in Table 53.

Table 53. RCTs Evaluating Acupuncture and Massage for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Acupuncture vs Conventional Therapy		
Hong et al. (2024) RCT (5) Nstart=60 Nend=60 TPS=Acute A + B vs B Also in Table 21 (Strength and Resistance Training)	E: Acupuncture + trunk strengthening training + conventional rehab C: Conventional rehab + trunk strengthening training Duration: E: 75min/d (30 min acupuncture + 45 min rehab), 6d/wk, 8 wks; C: 45min/d, 6d/wk for 8wks	E vs C: holden walking scale (+exp) Berg Balance Scale (+exp) 10mWT step length (+exp) step width (+exp) gait speed (+exp)
Wang et al. (2020d) RCT (8) Nstart=134 Nend=124 TPS=Subacute A vs 0	E: Acupuncture + Conventional therapy C: Conventional therapy Duration: 45min/d, 6d/wk, for 4wks Conventional treatment & 6d/wk, for 4wks Acupuncture	E v C: Barthel Index (-) Fugl-Meyer (+exp) Upper limb (-) Lower limb (+exp) Gait analysis (not whole population) Velocity (+exp) Step length (+exp) Cadence (+exp) Step width (+exp) Range of motion Hip (+exp) Knee (+exp) Ankle (-) Peak circumduction (+exp) Peak hip hiking (+exp)
Wang et al. (2019a) RCT (8) Nstart=59 Nend=59 TPS=Subacute A vs 0	E: Acupuncture + conventional therapy C: Conventional therapy Duration: 45min/d, 6d/wk, for 4wks conventional therapy ~20min/d, 6d/wk, for 4wks acupuncture	E vs C: Modified Ashworth Scale (+exp) short intracortical inhibition (+exp) Hmax/Mmax ratio (+exp) Fugl-Meyer Assessment (+exp) Barthel Index (-) motor evoked potential (+exp) surface integrated electromyogram (+exp)
Sanchez-Mila et al. (2018) RCT (7) Nstart=26 Nend=26 TPS=Not reported A + B vs A	E: Bobath + dry needling C: Bobath Duration: 60min/1session	E vs C: Modified modified ashworth scale (+exp) Fugl-meyer scale Motor (-) Balance (+exp) Sensory (+exp)

Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)		Range of motion (+exp) Joint pain (-) Computerised dynamic posturography using SMART Equitest System MVL non-affected forward (+exp) EPE non-affected (+exp) MXE backward (+exp) MXE affected/non-affected (+exp) DCL backward (+exp) DCL affected backward (+exp)
Na et al. (2018) RCT (6) Nstart=76 Nend=76 TPS=Acute A + B vs 0 Also in Table 55 (Traditional Herbal Medicines)	E: Chinese Traditional therapy (Bath in Chinese herbal medicine + Acupuncture with massage) + Conventional care C: Conventional care Duration: 1session/d, 7d/wk for 4wks - Chinese Traditional therapy (30min/d Traditional bath therapy + 30min/d Acupuncture and Massage); 40min/d for 4wks conventional care	E vs C: Fugl-Meyer assessment (+exp) Modified Barthel index (+exp) Neurological impairments (+exp) Efficacy of treatment (+exp)
Chen et al. (2016) RCT (8) Nstart=250 Nend=241 TPS=Acute A vs 0	E: Acupuncture + conventional therapy C: Conventional therapy Duration: 120min/d, 6d/wk, for 3wks conventional rehabilitation & 30min/d, 6d/wk, for 3wks acupuncture	E vs C: National Institute of Health Stroke Scale (-) Fugl-Meyer Assessment (-) Mini mental state examination (-) Montreal Cognitive Assessment (-)
Liu et al. (2016a) RCT (6) Nstart=38 Nend=31 TPS=Acute A vs 0	E: Acupuncture + conventional therapy C: Conventional therapy Duration: 1session/d, for 2wks (10-14 acupuncture sessions total)	E vs C: National Institutes of Health Stroke Scale (-) Fugl–Meyer assessment (-) functional independence measure (-) modified Rankin Scale (No stats) Barthel Index (No stats)
Bai et al. (2013) RCT (7) Nstart=120 Nend=120 TPS=Subacute A1 vs 0 vs A2	E1: Acupuncture E2: Physiotherapy E3: Acupuncture + PhysiotherapyNI Duration: 30min/d, 6d/wk acupuncture & 45min/d, 6d/wk, for 4wks physiotherapy	E1 vs E2 vs E3: Fugl-Meyer Assessment: (-) Modified Barthel Index (-)
Gao et al. (2012) RCT (5) Nstart=106 Nend=106 TPS=Acute A vs B vs C	E1: Contra-lateral Needling (acupuncture on unaffected limbs) E2: Traditional acupuncture C: Convenional Care Duration: 45min/d, 30d	E1 vs E2: Neurological Deficits Score (+exp1) Modified Barthel Index (+exp1) Fugl-Meyer Assessment (+exp1) E1/E2 vs C: Neurological Deficits Score (+exp1, +exp2) Modified Barthel Index (+exp1, +exp2) Fugl-Meyer Assessment (+exp1, +exp2)
Zhuang et al. (2012) RCT (7) Nstart=295 Nend=274 TPS=Subacute A1 vs A2 vs B	E1: Acupuncture E2: Acupuncture + Physiotherapy C: Physiotherapy based on Bobath approach Duration: 30min/d, 6d/wk, for 4wks acupuncture, 105min/d, 6d/wk, for 4wks PT/OT	E1 V E2 V C: ; Fugl-Meyer Assessment (-) Barthel index (-) Neurologic defect scale (-)

Mao et al. (2008) RCT (5) Nstart=60 Nend=60 TPS=Acute A + B vs 0	E: Acupuncture combined with modern therapy C: Conventional therapy Duration: 30min/d , 5d/wk, acupuncture, 1h/d, 5d/wk, Conventional therapy	E vs C: Fugl-Meyer assessment (No stats) Modified Barthel index (No stats)
Park et al. (2005) RCT (8) Nstart=116 Nend=98 TPS=Acute A vs 0	E: Acupuncture + Conventional rehabilitation C: Sham acupuncture + Conventional rehabilitation Duration: 20min/d, 9-12d/2wks Acupuncture/Sham	E vs C: Motricity Index (-) Barthel Index (-) National Institute of Health Stroke Scale (-) EQ-5D (-) EQ-VAS (-) Nottingham Extended ADL Score (-) Ashworth Spasticity Scale (-) 10-Metre Walk Test (-) 9-Hole Peg Test (-) Bedside Swallow Screening Test (+con)
Alexander et al. (2004) RCT (6) Nstart=32 Nend=29 TPS=Subacute A vs 0	E: Acupuncture + conventional therapy C: Conventional therapy Duration: 30min/d, 7d/wk for 2wk	E vs C: Fugl-Meyer Assessment (-) Lower Extremity (+exp) Functional Independence Measure (-) Tub/Shower Transfer Mobility (+exp)
Sze et al. (2002) RCT (8) Nstart=106 Nend=92 TPS=Acute A vs 0	E: Acupuncture + Standard treatment C: Standard treatment Duration: 95min/d, 2-3-5d/wk, 10wks standard treatment & 30min/d, 2-3-5d/wk, 10wks Acupuncture	E vs C: Fugl-Meyer Assessment (-) Barthel Index (-) Functional Independence Measure (-)
Johansson et al. (1993) RCT (5) Nstart=78 Nend=70 TPS=Acute A vs 0	E: Acupuncture + conventional rehabilitation C: Conventional rehabilitation Duration: 30min/d, 2d/wk, for 10wks	E vs C: Balance (no stat) Motor function (+exp) Mobility (+exp) Barthel Index (+exp) Nottingham Health Profile Energy (+exp) Mobility (+exp) Emotion (+exp) Social Isolation (+exp) Pain (-) Sleep (-)
Acupuncture vs Sham		
Chen et al. (2024b) RCT (8) Nstart=54 Nend=46 TPS=Acute A1 vs A2	E: Acupuncture (Hand-Foot standard acupoints) C: Non-Acupoint Acupuncture Duration: 32min (1min x 12 needles + 20min retention)/d, 10d	E vs C: FMA (+exp) UE (+exp) LE (+exp) Voxel-mirrored homotopic connectivity cerebellum 8 (+exp)
Wang et al. (2023) RCT (6) Nstart=53	E: Shou zu shi er zhen acupuncture C: Sham acupuncture + conventional Duration: 30m/d, 5d/wk, 2wks	E vs C: NIHSS(-) FMA(-)

Nend=40 TPS=Acute A vs 0		fMRI temporal properties(-)
Ghannadi et al. (2020) RCT (9) Nstart=24 Nend=24 TPS=Chronic A vs 0	E: Dry needling in gastrocnemius C: Sham needling Duration: 3 sessions/wk, for 1wk (48 hrs between sessions)	E vs C: Modified Ashworth Scale (+exp) Timed Up-and-Go (+exp) Single Leg Stance (+exp) 10-Metre Walk Test (+exp) Barthel Index (+exp) Active Range of Motion (-) Passive Range of Motion (+exp) Muscle Architecture (+exp)
Li et al. (2014) RCT (8) Nstart=263 Nend=238 TPS=Acute A vs 0	E: Acupuncture ("Wang's Jiaji" acupoints) C: Sham acupuncture Duration: 30min/d, 5d/wk, for 4wks	E vs C: Modified Ashworth scale (+exp) Fugl-Meyer assessment (+exp) Modified Barthel index (+exp) National Institute of Health Stroke Scale (-) Stroke specialized Quality of Life (+exp) Modified Rankin scale (+exp)
Fink et al. (2004) RCT (6) Nstart=25 Nend=25 TPS=Chronic A vs 0	E: Verum acupuncture C: Placebo acupuncture Duration: 30min/d, 2d/wk for 4wks	E vs C: Modified Ashworth Scale (-) Hmax/Mmax Ratio (+exp) Clinical Global Impressions (+con) 2-Minute Walk Test (-) Rivermead Motor Assessment (-) Step Length (-) Cadence (-) Goniometry (-) Pain VAS (-) Nottingham Health Profile (-) Everyday Life Questionnaire (-) Von Zerssen Depression Scale (-)
Acupuncture vs No Treatment		
Salom-Moreno et al. (2014) RCT (7) Nstart=34 Nend=34 TPS=Chronic A vs 0	E: Deep dry needling C: No treatment Duration: Single session	E vs C: Modified Ashworth scale (+exp) Pressure Pain Sensitivity (+exp) Baropodometric Scores of Forefoot Support surface (unaffected/affected) (+exp) Force distribution (unaffected/affected) (-) Percentage of load (unaffected) (+exp) Percentage of load (affected) (-) Baropodometric Scores of Rearfoot Support surface (affected) (+exp) Support surface (unaffected) (-) Force distribution (unaffected/affected) (-) Percentage of load (unaffected/affected) (-) Mean Pressure (unaffected/affected) (+exp) Maximum Pressure (unaffected/affected) (-)

Channel Palpation Guided Acupuncture vs Traditional Acupuncture		
Luo et al. (2018) RCT (8) Nstart=143 Nend=136 TPS=Subacute A vs B	E: Channel palpation guided Acupuncture C: Traditional acupuncture Duration: 30min/d, 5d/wk, for 6wks	E vs C: Fugl-Meyer assessment Motor function (-) Balance (-) Stroke Specific Quality of Life (-) NIH Stroke Scale (-)
Scalp Acupuncture and Robot Assisted Training vs Basic Treatment		
Zhang et al. (2021c) RCT (6) Nstart=231 Nend=212 TPS=Subacute A + B vs A + C + D vs A Also in Table 27 (Electromechanical and Robotic Devices)	E1: Interactive Dynamic Scalp Acupuncture + lower-limb robot training (SA & LLRT simultaneously) + Basic Treatment E2: Scalp Acupuncture + lower- limb robot training (LLRT + SA separately) + Basic Treatment C: Scalp Acupuncture + Basic Treatment Duration: 30min/d, 6d/wk, for 8wks Interactive Dynamic Acupuncture & 30min/d, 6d/wk, for 8wks traditional acupuncture & 30min, 2sessions/d, 6d/wk, for 8wks combination therapy	E1/E2 v C: Fugl-Meyer Lower Extremity (+exp1) Berg balance scale (+exp1) 6-minute walk test (+exp1) Modified Barthel index (+exp1) Stride frequency (+exp1, +exp2) Step length (-) Step width (-) Affected side foot angle (-) Passive range of motion affected side Hip(+exp1) Knee (+exp1) Ankle (+exp1) E1 v E2: Fugl-Meyer Lower Extremity (+exp1) Berg balance scale (+exp1) 6-minute walk test (+exp1) Modified barthel index (+exp1) Stride frequency (+exp1) Step length (-) Step width (-) Affected side foot angle (+exp2) Passive range of motion affected side Hip(+exp1) Knee (+exp1) Ankle (+exp1)
Scalp Acupuncture vs Conventional Therapy or Other Modalities		
Xie et al. (2022) RCT (9) Nstart=97 Nend=90 TPS=Subacute A vs B	E: Body Acupuncture + Conventional Therapy C: Head Acupuncture + Conventional Therapy Duration: E: 8 hrs/d, 5x/wk, for 2wks; C: 30 min/d, 5x/wk, for 2wks	E vs C: MBI (+exp) MMT UL (+exp) LL (+exp) FMA UL (+exp) LL (+exp) Hand (-) Clinical Efficacy (+exp)
Wang et al. (2020a) RCT (7) Nstart=120 Nend=115 TPS=Acute A vs 0	E: Scalp acupuncture + Standard care C: Standard care Duration: 30min/d, 6d/wk, for 14d	E vs C: Fugl-Meyer assessment (+exp) National Institute of Health Stroke Scale (+exp) Barthel Index (+exp) Manual Muscle Test (+exp)

Xiong et al. (2020) RCT (7) Nstart=72 Nend=70 TPS=Subacute A + B vs B	E: Standard rehabilitation + scalp acupuncture + cognitive training C: Standard rehabilitation + Sham scalp acupuncture + cognitive training Duration: 30min/d cognitive training & 3-4hrs/d acupuncture, 6d/wk, for 8wks & 90min/d standard rehabilitation	E vs C: Mini Mental State Examination (-) Loewenstein Occupational Therapy Cognition Assessment (+exp) Fugl-Meyer assessment (+exp) Modified Activity of Daily Living Scale (+exp) Serum levels of BDNF and NGF (+exp)
Liu et al. (2018) RCT (7) Nstart=74 Nend=74 TPS=Acute A + B vs C1 vs B vs C2	E: Electro-scalp acupuncture (ESA) + Body acupuncture C: Body acupuncture Duration: E: 30min/d, for 28ds with 1d rest every 7d for each method C: 30min/d, for 28ds with 1d rest every 7d	E vs C: NIH Stroke Scale (+exp) Fugl-Meyer Assessment Upper Extremity (+exp) Lower Extremity (-) Modified Barthel Index (+exp)
Wang et al. (2018) RCT (6) Nstart=20 Nend=15 TPS=Subacute A1 vs A2	E: Rehabilitation training + Scalp- cluster acupuncture with electrical stimulation C: Rehabilitation training + Scalp- cluster acupuncture Duration: 360min/d, 5d/wk, 4wks acupuncture & 30-45min/d, 5d/wk Rehabilitation training	E vs C: Fugl-Meyer assessment (+exp) Modified Barthel Index (+exp) Neurological deficit scale (-)
Zhu et al. (2013) RCT (8) Nstart=188 Nend=181 TPS=Acute A vs 0	E: body and scalp acupuncture + conventional rehabilitation C: conventional rehabilitation Duration: 240min/d, 5d/wk, 12wks conventional rehabilitation & 30min/d, 2-5d/wk, 12wks Acupuncture	E vs C: Fugl-Meyer Upper Limb (-) Lower Limb (-) Barthel Index (-)
Hegyi et al. (2012) RCT (5) Nstart=50 Nend=50 TPS=Acute A vs B vs 0 vs C	E: Yamamoto new scalp acupuncture + conventional therapy C: Conventional therapy Duration: E: Acupuncture 1d/mo, 2y + Standard rehabilitation: 3d/wk, 2y C: Standard rehabilitation: 3d/wk, 2y	E vs C: Barthel Index (+exp) Rivermead Scale Index (+exp) Visual Analogue Scale for general and physical status (+exp)
Auricular Intradermal Acupuncture vs Conventional Therapy		
Miao et al. (2020) RCT (6) Nstart=42 Nend=41 TPS=Acute A vs 0	E: Auricular intradermal acupuncture + routine acupuncture + conventional treatment C: Routine acupuncture + conventional treatment Duration: 60min/d, 6d/wk, for 1wk conventional training & 30min/d, 6d/wk, for 1wk routine acupuncture & 240min/d, 6d/wk, for 1wk auricular intradermal acupuncture	E vs C: Fugl-Meyer motor assessment Lower extremity (+exp) Upper extremity (+exp) Flexor synergy movement of upper extremity (+exp) Flexor synergy movement of lower extremity (+exp) Extensor synergy movement of upper extremity (-) Extensor synergy movement of lower extremity (+exp)
Acupuncture with Manipulation vs Acupuncture		
Liu et al. (2009) RCT (7) Nstart=30 Nend=30	E: Acupuncture + Needle twisting C: Acupuncture Duration: 20min	E vs C: Displacement of centre of gravity Open eye (+exp) Closed eye (+exp)

TPS=Subacute A + B vs A		Time from sitting to standing position(-) 6 meters walking time(-) Muscle strength of hip flexor Paralyzed side (+exp) Non-paralyzed side (-) Muscle strength of knee extensor Paralyzed side (+exp) Non-paralyzed side (+exp)
Zhao et al. (2009) RCT (6) Nstart=131 Nend=120 TPS=Chronic A + B vs A	E1: Acupuncture + Stimulating surface projection E2: Acupuncture Duration: 20min/d, 7d/wk, for 4wks	E1 vs E2: Joint Muscle Tone Wrist (+exp1) Elbow (+exp1) Knee (+exp1) Ankle (+exp1) Fugl-Meyer (+exp1) Upper extremity (+exp1) Lower extremity (+exp1) Barthel index (+exp1) EMG Upper extremity F-wave amplitude mean (+exp1) F-wave amplitude max (+exp1) F/M ratio (+exp1) EMG Lower extremity F-wave amplitude mean (+exp1) F-wave amplitude max (+exp1) F/M ratio (+exp1)
Eye Acupuncture vs Body Acupuncture		
Lou et al. (2020) RCT (4) Nstart=32 Nend=32 TPS=Subacute A vs B	E: Eye acupuncture + Routine rehabilitation C: Body acupuncture + Duration: Routine rehabilitation 80min/d, 5d/wk, for 4wks & Acupuncture treatment 30min/d, 5d/wk, for 4wks	E vs C: Step length (+exp) Step pace (+exp) Step frequency (-) Joint angle (Ankle & knee) (+exp) Centre of gravity lateral displacement (+exp) Peak pressure values 1st phalange AS (+exp) 1st phalange HS (-) Anterior foot (+exp) Midfoot (-) Heel AS (-) Heel HS (+exp) Total plantar impulse of the healthy side Heel (+exp) Midfoot (-) Anterior foot (-) 1st Phalange (-)
Multifaceted Alternative Medicine Approaches		
Sun et al. (2024b) RCT (6) Nstart=100 Nend=100 TPS=Not reported	E: Vibrational and Heated Stone-Needle Therapy + Meridian Dredging Exercise C: Meridian Dredging Exercise Duration: E: 35-45 mins/d (15 mins of VHS + 20-30 mins of MDE), 3ds/wk, 4wks; Control: 20-30mins/d, 3ds/wk, 4wks	E vs C: MAS (+exp) FMA-UE (-) FMA-LE (+exp) Activity of daily living scale (-)

A + B vs B Also in Table 31 (Muscle Vibration)		Stroke-specific quality of life scale (-)
Cui et al. (2023) RCT (5) Nstart=43 Nend=43 TPS=Subacute A vs B	E: Taking the Waist as the Axis Therapy (WAT) + Conventional therapy C: Trunk Selective Acitivity Therapy (TSAT) + Conventional therapy Duration: 30min int + 20min conventional/d, 5d/wk, 3wks	E vs C: TIS (+exp) FMA (+exp) UE (+exp) LE (+exp) BBS (-) MBI (-) Change of Intra-abdominal pressure (+exp) static balance test sitting-open eye (-) sitting-closed eye (-) standing-open eye (-) standing-closed eye (-) lung function indexes MIP (-) MEP (-) FVC (-) FEV1 (-) PEF (-) MMEF (-)
Shen et al. (2020) RCT (4) Nstart=35 Nend=35 TPS=Acute A vs B	E: Needle-pricking arch of foot, then Acupuncture therapy on upper limb + conventional therapy C: Acupuncture on lower and upper limbs + conventional therapy Duration: 30min/d, 6d/wk, for 1wk acupuncture & 30min/d, 6d/wk, for 1wk needle pricking	E vs C: Brunnstrom Recovery stage (+exp) Fugl-Meyer Assessment-lower limb (+exp) Reflex activity (-) Flexor activity (+exp) Extensor activity (+exp) Voluntary movement with little to no synergy (+exp) Out of synergy activity (-) Normal reflex activity (-) Coordination speed (+exp) Active range of motion-lower limb Ankle extension (+exp) Ankle flexion (+exp) Hip extension (+exp) Hip flexion (+exp) Modified Ashworth scale-lower limb Ankle extension (-) Ankle flexion (-) Hip extension (-) Hip flexion (+exp) Manual Muscle test-lower limb Hip flexion (+exp) Hip extension (+exp) Knee extension (+exp) Knee flexion (+exp) Ankle extension (+exp) Ankle flexion (+exp)
Shao et al. (2019) RCT (5) Nstart=57	E: Fuzhengbutu acupuncture + moxibustion therapy + rehabilitation treatment	E vs C: Berg balance scale (+exp) Persistent walking time (+exp)

Nend=57 TPS=Subacute A + B vs 0	C: Rehabilitation treatment Duration: E: 30min acupuncture + 30 min rehabilitation/d, 5d/wk, for 4wks; C: 30min/d, 2sessions/d, 5d/wk, for 4wks rehabilitation training	Pause time (-)
Zhang et al. (2017) RCT (8) Nstart=240 Nend=233 TPS=Acute A + B vs A vs B vs C Also in Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E1: Neuronavigation-assisted aspiration + electroacupuncture E2: Neuronavigation-assisted aspiration E3: Electroacupuncture C: Conservative therapy Duration: 30min/session, 2sessions/d, for 8wks	E1 vs E2: Fugl-Meyer Assessment (-) Modified Ashworth Scale (+exp1) Barthel Index (+exp1) E1 vs E3: Fugl-Meyer Assessment (-) Modified Ashworth Scale (+exp1) Barthel Index (+exp1) E1 vs C: Fugl-Meyer Assessment (+exp1) Modified Ashworth Scale (+exp1) Barthel Index (+exp1) E2 vs E3: Fugl-Meyer Assessment (-) Modified Ashworth Scale (-) Barthel Index (-) E2 vs C: Fugl-Meyer Assessment (+exp2) Modified Ashworth Scale (+exp2) Barthel Index (-) E3 vs C: Fugl-Meyer Assessment (+exp3) Modified Ashworth Scale (+exp2) Barthel Index (-)
Wei et al. (2016) RCT (5) Nstart=84 Nend=84 TPS=Subacute A vs 0	E: Moxibustion with Conventional Rehabilitation C: Conventional Rehabilitation Duration: 45min/d, 5d/wk for 4wks – conventional rehabilitation & 23- 30min/d, 5d/wk for 4wks Moxibustion therapy	E vs C: Brunnstrom Recovery Stages Upper Limb (-) Lower Limb (-) Hand (+exp) Modified Ashworth Scale (+exp) Clinical Spasticity Index (+exp) Fugl-Meyer Assessment-motor (+exp) Barthel Index (+exp) Patient Reported Outcome Scale (+exp)
Massage and other integrated rehabilitation techniques		
Ye et al. (2022) RCT (8) Nstart=48 Nend=41 TPS=Chronic A + B vs B Also in Table 12 (Stretching or Mobilization Exercises)	E: Baduanjin exercise training + Health education program C: Health education program Duration: 40min/d, 1d/mo, for 24wks Health education program & 40min/d, 3d/wk, for 24wks Baduanjin exercise training	E vs C: Fugl-Meyer Assessment (+exp) Berg Balance Scale (+exp) Manual Muscle Tests Biceps brachii (-) Triceps brachii (+exp) Quadriceps femoris (+exp) Hamstring tendon (+exp) Modified Ashworth Scale (-) % Stance (-) % Swing (-) % Double stance (-) % Single limb support (-)

		Step length (+exp) Stride length (-) Walking speed (+exp) Cadence (+exp)
Zhang et al. (2022) Feasibility/pilot RCT (5) Nstart=160 Nend=160 TPS=Subacute A vs B	E: Liuzijue Qigong training (LQG) + Conventional Rehabilitation (CT) C: Conventional rehabilitation training + core stability training Duration: 45min/d, 5d/wk, for 2wks	E vs C: BBS(+exp) MPT(+exp) MBI(+exp) FMA(-) Diagphram Thickness During Quiet Breath (-) During Deep Breath (-) Diagphram Thickness Fraction (-) Diagphram Mobility During Quiet Breath (+exp) During Deep Breath (+exp) Static Open Eye Standing Balance Test COP trajectory in the stand (+exp) COP area in the stand (+exp) Static Closed Standing Balance Test COP trajectory in the stand (-) COP area in the stand (-) Static Open Eye Sitting Balance Test COP trajectory in the seat (+exp) COP area in the seat (+exp) Static Closed Eye Sitting Balance Test COP trajectory in the seat (-) COP area in the seat (-)
Zheng et al. (2021) RCT (8) Nstart=60 Nend=60 TPS=Acute A vs B	E: Conventional rehabilitation training with Liuzijue Qigong C: Respiratory relaxation training + conventional training Duration: 45min/d, 5d/wk, for 3wks	E vs C: Trunk Impairment Scale Static sitting balance (+exp) Dynamic sitting balance (+exp) Coordination of trunk movement (+exp) Maximum expiratory pressure (+exp) Maximum inspiratory pressure (+exp) Forced expiratory volume in the first second (-) Forced vital capacity (-) Peak expiratory flow (-) Maximum expiratory mid-flow (-) Diaphragmatic movement (-) Change of intra-abdominal pressure (+exp) Berg Balance Scale (-) Modified Barthel Index (+exp)
Chen et al. (2019a) RCT (5) Nstart=72 Nend=68 TPS=Subacute A vs 0	E: Mind-body interactive exercise program (Chan-Chuang qigong) + standard care C: standard care Duration: 15min/d, 10d n	E vs C: muscle strength manually (No stats) Heart rate variability (No stats) visual analog scale (No stats) Hospital Anxiety and Depression Scale Anxiety (No stats) Depression (No stats) SF-12 mental (+exp)

		physical (+exp)
Holt et al. (2019) RCT crossover (7) Nstart=12 Nend=12 TPS=Chronic A vs 0	E: Chiropractic intervention C: Placebo chiropractic intervention Duration: Single session –1wk washout	E vs C: Absolute maximum force of contraction (+exp) V-wave/Mmax ratio (+exp) H-reflex parameter (-)
Yang et al. (2017) RCT (9) Nstart=90 Nend=79 TPS=Subacute A vs 0	E: Chinese massage therapy (Tui Na) + conventional rehabilitation C: Placebo-Tai Na + conventional rehabilitation Duration: 20-25min/limb, 1session/d, 5d/wk, for 4wks massage therapy (Tui Na) & 80min/d, 5d/wk, for 4wks conventional rehabilitation	E vs C: Modified Ashworth Scale Elbow Flexors (+exp) Wrist Flexors (+exp) Knee Flexors (+exp) Knee Extensors (+exp) Other Six Muscle Groups (-) Fugl-Meyer Assessment (-) Modified Barthel Index (-)
Thanakiatpinyo et al. (2014) RCT (8) Nstart=50 Nend=45 TPS=Chronic A vs 0	E: Traditional Thai massage C: Conventional PT Duration: 60min/d, 2d/wk, for 6wks	E vs C: Modified Ashworth Scale (-) Barthel Index (-) Hospital Anxiety and Depression Scale (-) Pictorial Quality of Life score (-)
Zhang et al. (2013) RCT (5) Nstart=69 Nend=61 TPS=Acute A + B vs 0	E: Integrated Rehabilitation Techniques of Traditional Chinese Medicine (acupuncture + massage) C: Conventional rehabilitation (Bobath neurodevelopmental treatment) Duration: E: 30min/d acupuncture + 30min/d massage, 7d/wk, for 3wks, C: 60min/d, 7d/wk, for 3wks	E vs C: Fugl-Meyer Assessment Upper limb (-) Lower limb (+exp) National Institutes of Health Stroke Scale (+exp) Barthel Index (-) Modified Rankin Scale (-)
Dry Needling with Conventional Rehabilitation vs Conventional Rehabilitation Alone		
Kucuktepe et al. (2023) RCT (8) Nstart=42 Nend=42 TPS=Chronic A + B vs B Also in Table 1 (Neurodevelopmental Techniques and Motor Relearning)	E: Dry needling + Neurodevelopmental therapy C: Neurodevelopmental therapy Duration: 50-55min (45min NDT + 5-10min dry needling)/d, 3d/wk, 4wks	E vs C: MAS gastrocnemius (+exp) quadriceps femoris (-) flexor carpi radialis (-) biceps brachii (-) AROM knee flexion (+exp) ankle dorsiflexion (+exp) elbow extension (+exp) wrist extension (+exp) PROM knee flexion (+exp) ankle dorsiflexion (+exp) elbow extension (+exp) wrist extension (-) NHPT (+exp) 10MWT (+exp) FAB (+exp)
Sanchez Mila et al. (2022) RCT (5)	E: Dry needling + custom neurorehab C: Custom Neurorehab	E vs C: MMAS(+exp)

Nstart=24 Nend=20 TPS=Chronic A + B vs B	Duration: 60min neurorehabilitation therapy, single session	TUG(no stat)
Acupuncture with Robot-Assisted Gait Training vs Acupuncture Alone		
Hu et al. (2024) RCT (5) Nstart=56 Nend=56 TPS=Subacute A + B vs A Also in Table 27 (Electromechanical and Robotic Devices)	E: Acupuncture + Gait rehab robot training (AiWalker-I) + Conventional rehab C: Acupuncture + Conventional rehab Duration: 75min (25min acu + 20min robotic gait + 30min CT)/d, 5d/wk, 4wks	E vs C: FAC (+exp) FAC effectiveness rate (+exp) TUG (+exp) Wisconsin Gait Scale (+exp) step length (+exp) step speed (+exp) step frequency (+exp) step width (+exp)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Wang et al. (2024e) RCT (5) Nstart=54 Nend=48 TPS=Subacute A1 + B vs A2 + B Primary listing: Table 26 (Virtual Reality)	E: VR-assisted gait adaptation training + acupuncture + conventional physical therapy C: Overground gait adaptation training + acupuncture + conventional physical therapy Duration: 80min (30min gait + 30min PT + 20min acu)/d, 5d/wk, 5wks	E vs C: Walking speed (+exp) Obstacle avoidance ability (+exp) TUG (+exp) Postural stability eye-opening COP speed (+exp) eye-closing COP speed (-) tandem COP speed (-) single-leg COP speed (-) BI (-)
Xu et al. (2024) RCT (8) Nstart=35 Nend=35 TPS=Chronic A vs 0 Primary listing: Table 31 (Muscle Vibration)	E: Whole-body vibration + conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) C: Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) Duration: E: 230min/d, 6d/wk, 4wks; C: 200min/d, 6d/wk, 4 wks	E vs C: BBS(-) Functional Reach Test (-) Romberg's test of balance length (-) area(-) Ankle joint dorsiflexion-plantar flexion (DP)(+exp) Ankle joint inversion-eversion (+exp)
Lee et al. (2023b) RCT (6) Nstart=69 Nend=69 TPS=Chronic A + B vs A vs 0 Primary listing: Table 12 (Stretching or Mobilization Exercises)	E1: Joint mobilization + acupuncture E2: Joint mobilization C: Conventional rehab Duration: 60min/d(30min conventional, 30min acupuncture), 2d/wk, 12wks	E1 vs E2: Pain-VAS(-) SPADI(+exp1) WOMAC(-) AROM Shoulder flexion(-) Shoulder abduction(-) Shoulder adduction(-) knee flexion(-) 10MWT(-) FGA(-) MFT(+exp1) ADL(-) IADL(+exp1)

		CES-D(-) BDI(-) E1 vs C: Pain-VAS(-) SPADI(+exp1) WOMAC(+exp1) AROM Shoulder flexion(-) Shoulder abduction(-) Shoulder adduction(-) knee flexion(+exp1) 10MWT(-) FGA(-) MFT(+exp1) ADL(+exp1) IADL(+exp1) CES-D(+exp1) BDI(+exp1) E2 vs C: Pain-VAS(-) SPADI(+exp2) WOMAC(-) AROM Shoulder flexion(-) Shoulder abduction(-) Shoulder adduction(-) knee flexion(+exp2) 10MWT(-) FGA(-) MFT(+exp2) ADL(+exp2) IADL(-) CES-D(+exp2) BDI(+exp2)
Kim et al. (2022c) RCT (8) Nstart=35 Nend=33 TPS=Subacute A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E: Electroacupuncture + Conventional therapy C: Conventional Therapy Duration: E: 30min/d, 5d/wk, 4 wks C: 120 min/d, 5d/wk, 4wks	E vs C: FMA-LE(-) K-MBI (-) FAC (-) Diffusion Tensor Tractography Fiber Number Affected (-) Fiber Ratio (-) Fractional Anistropy affected (+exp) Fractional Anistropy ratio (+exp) Axial Diffusivity affected (+exp) Axial Diffusivity ratio (+exp)
Tollar et al. (2021) RCT (7) Nstart=680 Nend=641 TPS=Acute A1 + B vs A2 + B vs C vs B vs D + E Primary listing: Table 26 (Virtual Reality)	E1: one session daily high intensity Videogame exercises + medical massage E2: two sessions daily high intensity Videogame exercises + medical massage C: standard physical therapy + medical massage Duration: E1: 60min/d, 5d/wk, 5wks exergaming + 20min/d, 5d/wk, 5wks massage	E1/E2 vs C: modified Rankin Scale (exp1)(exp2) Barthel index (exp1)(exp2) EQ5-VAS (exp2) EQ5-Sum (-) Berg balance scale (exp2) 6-minute walk test (exp2) Beck Depression Inventory (-)

	E2: 120min/d, 5d/wk, 5wks exergaming + 40min/d, 5d/wk, 5wks massage C: 60min/d standard care + 20min/d massage	Mini Mental State Examination (-) center of pressure path (wide/narrow stance & open/closed eye) (+exp2) resting HR (exp1)(exp2) resting SBP/DBP (exp1)(exp2) Peak HR (+con) rate of perceived exertion (+con) E1 vs E2: modified Rankin Scale (-) Barthel index (exp2) EQ5-VAS (exp2) EQ5-Sum (-) Berg balance scale (exp2) 6-minute walk test (exp2) Beck Depression Inventory (-) Mini Mental State Examination (-) center of pressure path (wide/narrow stance & open/closed eye) (+exp2) resting HR (No stats) resting SBP/DBP (No stats) Peak HR (-) rate of perceived exertion (-)
Cai et al. (2021) RCT (7) Nstart=30 Nend=25 TPS=Subacute A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E: Electroacupuncture, usual care C: Usual care Duration: 20-30min/session, 3 sessions/wk, for 4wks	E vs C: Modified Ashworth Scale (-) Fugl-Meyer Assessment (-) Barthel Index (-)
Ahmed et al. (2015) RCT (5) Nstart=40 Nend=40 TPS=Chronic A vs B Primary listing: Table 55 (Traditional Herbal Medicines)	E: Unani Medicine (Herbal and Massage) C: Western Medicine (Piracetam 800mg) Duration: 1dose/d, for 4wks medications & 15min/d, for 2wks massage	E vs C: Stroke Rehabilitation Assessment of Movement (+exp)
Suh et al. (2014a) RCT (6) Nstart=42 Nend=42 TPS=Chronic A + B vs B Primary listing: Table 29 (Neuromuscular Electrical Stimulation (NMES))	E: Interferential current therapy (ICT) stimulation of gastrocnemius + air-pump massage + standard rehabilitation C: Placebo-ICT + air-pump massage + standard rehabilitation Duration: 60min/session, 1 session ICT & 30min/session, 1 session standard rehabilitation	E vs C: Modified Ashworth Scale (+exp) Functional Reach Test (+exp) Berg Balance Scale (+exp) Timed Up and Go (+exp) 10-meter walk test (+exp)
Tan et al. (2013) RCT (7) Nstart=63 Nend=61 TPS=Acute	E: Electroacupuncture + Conventional medication C: Conventional medication Duration: 20min/d, 6d/wk, for 2wks	E vs C: Fugl Meyer Assessment (+exp) National Institutes of Health Stroke Scale (+exp)

A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)		Triple stimulation technique amplitude ratio (+exp)
Hopwood et al. (2008) RCT (8) Nstart=105 Nend=92 TPS=Acute A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E: Electroacupuncture C: Sham TENS Duration: 30min/d, 3d/wk for 4wks	E vs C: Motricity Index (-) Barthel Index (-) Nottingham Health Profile: -Pain (-); -Energy level (+exp); -Emotional Reaction (-); -Sleep (-); -Social isolation (-); -Physical Activity (-)
Hsieh et al. (2007) RCT (8) Nstart=63 Nend=54 TPS=Acute A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E: Electroacupuncture + conventional therapy C: Conventional therapy Duration: 20min/d, 2d/wk for 4wks	E vs C: Fugl-Meyer Assessment (+exp) Lower extremity (-) UE Motor Shoulder elbow (-) Wrist (+exp) Hand (+exp) UE Coordination and speed (-) Functional independence measure (-)
Johansson et al. (2001) RCT (8) Nstart=150 Nend=138 TPS=Acute A vs B vs C Primary listing: Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS))	E1: Electroacupuncture E2: High-intensity, low- frequency TENS (2Hz) C: Low-intensity, high- frequency electrostimulation (80Hz) Duration: 30min/d, 2d/wk for 10wks	E1 vs E2 vs C: Rivermead Mobility Index (-) 10-Metre Walk Test (-) Nine Hole Peg Test (-) Barthel Index (-) Nottingham Health Profile (-)
Wong et al. (1999) RCT (4) Nstart=118 Nend=118 TPS=Acute A vs 0 Primary listing: Table 54 (Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation)	E: Electrical Acupuncture + Conventional Therapy C: Conventional therapy Duration: 30min/d, 5d/wk, for 2wks Electrical Acupuncture, 120min/d, 7d/wk Conventional Therapy	E vs C: Brunnstrom Stage Upper Limb (+exp) Lower Limb (+exp) Functional independence measure (+exp) self-care (+exp) Sphincter (-) Transfer (-) Locomotion (+exp) Communication (-) Social interaction (-) cognition (+exp)
Si et al. (1998) RCT (5) Nstart=42 Nend=42 TPS=Acute A + B vs B Primary listing: Table 54 (Electroacupuncture and	E: Electroacupuncture + Heparin, low molecular dextran, nimodipine C: Heparin, low molecular dextran, nimodipine Duration: 30min/d, for 5d electroacupuncture	E vs C: Chinese Stroke Scale (+exp) Level of consciousness (-) Extraocular movements (-) Facial palsy (-) Speech (-) Motor shoulder (+exp) Motor hand (+exp)

Transcutaneous Electrical Acupoint Stimulation)		Motor leg (+exp) Capacity walking (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Acupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving motor recovery.	11	Wang et al. 2020d; Wang et al. 2019a; Sanchez-Mila et al. 2018; Na et al. 2018; Chen et al. 2016; Liu et al. 2016a; Zhuang et al. 2012; Mao et al. 2008; Park et al. 2005; Alexander et al. 2004; Sze et al. 2002
1b	Acupuncture may not have a difference in efficacy when compared to Physiotherapy or Acupuncture with PhysiotherapyNI for improving motor recovery.	1	Bai et al. 2013
2	Contra-lateral Needling (acupuncture on unaffected limbs) may produce greater improvements in motor recovery than Traditional acupuncture.	1	Gao et al. 2012
2	Traditional acupuncture may produce greater improvements in motor recovery than Convenional Care.	1	Gao et al. 2012
1a	Acupuncture may produce greater improvements in motor recovery than Sham.	4	Chen et al. 2024b; Wang et al. 2023; Li et al. 2014; Fink et al. 2004
1b	Channel Palpation Guided Acupuncture may not have a difference in efficacy when compared to Traditional Acupuncture for improving motor recovery.	1	Luo et al. 2018
1b	Scalp Acupuncture and Robot Assisted Training may produce greater improvements in motor recovery than Basic Treatment.	1	Zhang et al. 2021c
1a	Scalp Acupuncture may produce greater improvements in motor recovery than Conventional Therapy or Other Modalities.	6	Xie et al. 2022; Wang et al. 2020a; Xiong et al. 2020; Liu et al. 2018; Wang et al. 2018; Zhu et al. 2013
1b	Auricular Intradermal Acupuncture may produce greater improvements in motor recovery than Conventional Therapy.	1	Miao et al. 2020
1b	Acupuncture with Manipulation may produce greater improvements in motor recovery than Acupuncture.	1	Zhao et al. 2009
1a	There is conflicting evidence about the effect of Multifaceted Alternative Medicine Approaches when compared to Meridian Dredging Exercise for improving motor recovery.	5	Sun et al. 2024b; Cui et al. 2023; Shen et al. 2020; Zhang et al. 2017; Wei et al. 2016
1b	Neuronavigation-assisted aspiration with electroacupuncture may not have a difference in efficacy when compared to Neuronavigation-assisted aspiration for improving motor recovery.	1	Zhang et al. 2017

1b	Neuronavigation-assisted aspiration with electroacupuncture may not have a difference in efficacy when compared to Electroacupuncture for improving motor recovery.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration may produce greater improvements in motor recovery than Electroacupuncture.	1	Zhang et al. 2017
1b	Electroacupuncture may produce greater improvements in motor recovery than Conservative therapy.	1	Zhang et al. 2017
1a	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving motor recovery.	4	Ye et al. 2022; Zhang et al. 2022; Yang et al. 2017; Zhang et al. 2013
1a	There is conflicting evidence about the effect of Electroacupuncture with Conventional therapy when compared to Conventional Therapy for improving motor recovery.	2	Kim et al. 2022c; Hsieh et al. 2007
1b	Electroacupuncture, usual care may not have a difference in efficacy when compared to Usual care for improving motor recovery.	1	Cai et al. 2021
1b	Electroacupuncture with Conventional medication may produce greater improvements in motor recovery than Conventional medication.	1	Tan et al. 2013
2	Electrical Acupuncture with Conventional Therapy may produce greater improvements in motor recovery than Conventional therapy.	1	Wong et al. 1999
2	Electroacupuncture with Heparin, low molecular dextran, nimodipine may not have a difference in efficacy when compared to Heparin, low molecular dextran, nimodipine for improving motor recovery.	1	Si et al. 1998

BIOMECHANICAL GAIT MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may produce greater improvements in biomechanical gait measures than Conventional Therapy.	2	Hong et al. 2024; Wang et al. 2020d
1b	Acupuncture may not have a difference in efficacy when compared to Sham for improving biomechanical gait measures.	1	Fink et al. 2004
1b	Scalp Acupuncture and Robot Assisted Training may produce greater improvements in biomechanical gait measures than Basic Treatment.	1	Zhang et al. 2021c
2	Eye Acupuncture may produce greater improvements in biomechanical gait measures than Body Acupuncture.	1	Lou et al. 2020
1b	Massage and other integrated rehabilitation techniques may not have a difference in efficacy when compared to Health education program for improving biomechanical gait measures.	1	Ye et al. 2022
2	Acupuncture with Robot-Assisted Gait Training may produce greater improvements in biomechanical gait measures than Acupuncture Alone.	1	Hu et al. 2024

BIOMECHANICAL BALANCE MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may produce greater improvements in biomechanical balance measures than Conventional Therapy.	1	Sanchez-Mila et al. 2018
2	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving biomechanical balance measures.	1	Zhang et al. 2022
2	Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may not have a difference in efficacy	1	Wang et al. 2024e

	when compared to Overground gait adaptation training with acupuncture and conventional physical therapy for improving biomechanical balance measures.		
1b	There is conflicting evidence about the effect of One session daily high intensity Videogame exercises with medical massage when compared to physical therapy with medical massage or 60min/d care and 20min/d massage for improving biomechanical balance measures.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving biomechanical balance measures.	1	Tollar et al. 2021

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving muscle strength.	1	Park et al. 2005
1b	Scalp Acupuncture may produce greater improvements in muscle strength than Conventional Therapy or Other Modalities.	1	Wang et al. 2020a
1b	Acupuncture with Manipulation may produce greater improvements in muscle strength than Acupuncture.	1	Liu et al. 2009
2	Multifaceted Alternative Medicine Approaches may produce greater improvements in muscle strength than Meridian Dredging Exercise.	1	Shen et al. 2020
1b	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving muscle strength.	2	Ye et al. 2022; Chen et al. 2019a
1b	Electroacupuncture may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation for improving muscle strength.	1	Hopwood et al. 2008

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Acupuncture Therapy may produce greater improvements in spasticity than Conventional Therapy.	3	Wang et al. 2019a; Sanchez-Mila et al. 2018; Park et al. 2005
1a	Acupuncture may produce greater improvements in spasticity than Sham.	3	Ghannadi et al. 2020; Li et al. 2014; Fink et al. 2004
1b	Acupuncture Treatment may produce greater improvements in spasticity than No Treatment.	1	Salom-Moreno et al. 2014
1b	Acupuncture with Manipulation may produce greater improvements in spasticity than Acupuncture.	1	Zhao et al. 2009
1a	There is conflicting evidence about the effect of Multifaceted Alternative Medicine Approaches when compared to Meridian Dredging Exercise for improving spasticity.	4	Sun et al. 2024b; Shen et al. 2020; Zhang et al. 2017; Wei et al. 2016
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in spasticity than Neuronavigation-assisted aspiration.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in spasticity than Electroacupuncture.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration may produce greater improvements in spasticity than Electroacupuncture.	1	Zhang et al. 2017

1b	Electroacupuncture may not have a difference in efficacy when compared to Conservative therapy for improving spasticity.	1	Zhang et al. 2017
1a	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving spasticity.	3	Ye et al. 2022; Yang et al. 2017; Thanakiatpinyo et al. 2014
1b	Dry Needling with Conventional Rehabilitation may produce greater improvements in spasticity than Conventional Rehabilitation Alone.	2	Kucuktepe et al. 2023; Sanchez Mila et al. 2022
1b	Electroacupuncture, usual care may not have a difference in efficacy when compared to Usual care for improving spasticity.	1	Cai et al. 2021
1b	Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may produce greater improvements in spasticity than Placebo-ICT with air-pump massage and rehabilitation.	1	Suh et al. 2014a

RANGE OF MOTION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture may produce greater improvements in range of motion than Sham.	1	Ghannadi et al. 2020
2	Multifaceted Alternative Medicine Approaches may produce greater improvements in range of motion than Meridian Dredging Exercise.	1	Shen et al. 2020
1b	Dry Needling with Conventional Rehabilitation may produce greater improvements in range of motion than Conventional Rehabilitation Alone.	1	Kucuktepe et al. 2023
1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may produce greater improvements in range of motion than Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).	1	Xu et al. 2024
1b	There is conflicting evidence about the effect of Joint mobilization with acupuncture when compared to Conventional rehab for improving range of motion.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may produce greater improvements in range of motion than Joint mobilization.	1	Lee et al. 2023b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may produce greater improvements in neurophysiological measures than Conventional Therapy.	1	Wang et al. 2019a
1a	There is conflicting evidence about the effect of Acupuncture when compared to Sham for improving neurophysiological measures.	2	Wang et al. 2023; Fink et al. 2004
1b	Scalp Acupuncture may produce greater improvements in neurophysiological measures than Conventional Therapy or Other Modalities.	1	Xiong et al. 2020
1b	Acupuncture with Manipulation may produce greater improvements in neurophysiological measures than Acupuncture.	1	Zhao et al. 2009
2	Multifaceted Alternative Medicine Approaches may not have a difference in efficacy when compared to Meridian Dredging Exercise for improving neurophysiological measures.	1	Cui et al. 2023

1b	Chiropractic intervention may not have a difference in efficacy when compared to Placebo chiropractic intervention for improving neurophysiological measures.	1	Holt et al. 2019
1b	Electroacupuncture with Conventional medication may produce greater improvements in neurophysiological measures than Conventional medication.	1	Tan et al. 2013

AEROBIC MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Multifaceted Alternative Medicine Approaches may not have a difference in efficacy when compared to Meridian Dredging Exercise for improving aerobic measures.	1	Cui et al. 2023
1b	Massage and other integrated rehabilitation techniques may not have a difference in efficacy when compared to Health education program for improving aerobic measures.	2	Zheng et al. 2021; Chen et al. 2019a
1b	One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to physical therapy with medical massage or 60min/d care and 20min/d massage.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving aerobic measures.	1	Tollar et al. 2021

PAIN			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture may not have a difference in efficacy when compared to Sham for improving pain.	1	Fink et al. 2004
1b	There is conflicting evidence about the effect of Acupuncture Treatment when compared to No Treatment for improving pain.	1	Salom-Moreno et al. 2014
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Conventional rehab for improving pain.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving pain.	1	Lee et al. 2023b

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Acupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	10	Wang et al. 2020d; Wang et al. 2019a; Na et al. 2018; Liu et al. 2016a; Zhuang et al. 2012; Mao et al. 2008; Park et al. 2005; Alexander et al. 2004; Sze et al. 2002; Johansson et al. 1993
1b	Acupuncture may not have a difference in efficacy when compared to Physiotherapy or Acupuncture with PhysiotherapyNI for improving activities of daily living.	1	Bai et al. 2013
2	Contra-lateral Needling (acupuncture on unaffected limbs) may produce greater improvements in activities of daily living than Traditional acupuncture.	1	Gao et al. 2012

2	Traditional acupuncture may produce greater improvements in activities of daily living than Convenional Care.	1	Gao et al. 2012
1a	Acupuncture may produce greater improvements in activities of daily living than Sham.	2	Ghannadi et al. 2020; Li et al. 2014
1b	Scalp Acupuncture and Robot Assisted Training may produce greater improvements in activities of daily living than Basic Treatment.	1	Zhang et al. 2021c
1a	Scalp Acupuncture may produce greater improvements in activities of daily living than Conventional Therapy or Other Modalities.	7	Xie et al. 2022; Wang et al. 2020a; Xiong et al. 2020; Liu et al. 2018; Wang et al. 2018; Zhu et al. 2013; Hegyi et al. 2012
1b	Acupuncture with Manipulation may produce greater improvements in activities of daily living than Acupuncture.	1	Zhao et al. 2009
1b	There is conflicting evidence about the effect of Multifaceted Alternative Medicine Approaches when compared to Meridian Dredging Exercise for improving activities of daily living.	3	Cui et al. 2023; Zhang et al. 2017; Wei et al. 2016
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in activities of daily living than Neuronavigation-assisted aspiration.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in activities of daily living than Electroacupuncture.	1	Zhang et al. 2017
1b	There is conflicting evidence about the effect of Neuronavigation-assisted aspiration when compared to Electroacupuncture for improving activities of daily living.	1	Zhang et al. 2017
1b	Electroacupuncture may not have a difference in efficacy when compared to Conservative therapy for improving activities of daily living.	1	Zhang et al. 2017
1a	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving activities of daily living.	5	Zhang et al. 2022; Zheng et al. 2021; Yang et al. 2017; Thanakiatpinyo et al. 2014; Zhang et al. 2013
2	Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may not have a difference in efficacy when compared to Overground gait adaptation training with acupuncture and conventional physical therapy for improving activities of daily living.	1	Wang et al. 2024e
1b	Joint mobilization with acupuncture may produce greater improvements in activities of daily living than Joint mobilization.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may produce greater improvements in activities of daily living than Conventional rehab.	1	Lee et al. 2023b
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving activities of daily living.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may produce greater improvements in activities of daily living than Standard physical therapy with medical massage.	1	Tollar et al. 2021
1b	Two sessions daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to Standard physical therapy with medical massage for improving activities of daily living.	1	Tollar et al. 2021
1b	Electroacupuncture, usual care may not have a difference in efficacy when compared to Usual care for improving activities of daily living.	1	Cai et al. 2021

1b	Electroacupuncture may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation for improving activities of daily living.	1	Hopwood et al. 2008
1b	Electroacupuncture with Conventional therapy may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	1	Hsieh et al. 2007
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving activities of daily living.	1	Johansson et al. 2001
2	There is conflicting evidence about the effect of Electrical Acupuncture with Conventional Therapy when compared to Conventional therapy for improving activities of daily living.	1	Wong et al. 1999

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Acupuncture Therapy may produce greater improvements in gait speed than Conventional Therapy.	3	Hong et al. 2024; Wang et al. 2020d; Park et al. 2005
1b	Acupuncture may produce greater improvements in gait speed than Sham.	1	Ghannadi et al. 2020
2	Multifaceted Alternative Medicine Approaches may produce greater improvements in gait speed than Meridian Dredging Exercise.	1	Shen et al. 2020
1b	Massage and other integrated rehabilitation techniques may produce greater improvements in gait speed than Health education program.	1	Ye et al. 2022
1b	Dry Needling with Conventional Rehabilitation may produce greater improvements in gait speed than Conventional Rehabilitation Alone.	1	Kucuktepe et al. 2023
2	Acupuncture with Robot-Assisted Gait Training may produce greater improvements in gait speed than Acupuncture Alone.	1	Hu et al. 2024
2	Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may produce greater improvements in gait speed than Overground gait adaptation training with acupuncture and conventional physical therapy.	1	Wang et al. 2024e
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Conventional rehab for improving gait speed.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving gait speed.	1	Lee et al. 2023b
1b	Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may produce greater improvements in gait speed than Placebo-ICT with air-pump massage and rehabilitation.	1	Suh et al. 2014a
1b	Electroacupuncture with Conventional therapy may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	1	Hsieh et al. 2007
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving gait speed.	1	Johansson et al. 2001

GAIT ENDURANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture may not have a difference in efficacy when compared to Sham for improving gait endurance.	1	Fink et al. 2004
1b	Scalp Acupuncture and Robot Assisted Training may produce greater improvements in gait endurance than Basic Treatment.	1	Zhang et al. 2021c

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may produce greater improvements in functional mobility than Conventional Therapy.	2	Hong et al. 2024; Alexander et al. 2004
1b	Acupuncture may produce greater improvements in functional mobility than Sham.	1	Ghannadi et al. 2020
2	Massage and other integrated rehabilitation techniques may produce greater improvements in functional mobility than Health education program.	1	Zhang et al. 2022
2	Acupuncture with Robot-Assisted Gait Training may produce greater improvements in functional mobility than Acupuncture Alone.	1	Hu et al. 2024
2	Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may produce greater improvements in functional mobility than Overground gait adaptation training with acupuncture and conventional physical therapy.	1	Wang et al. 2024e
1b	Electroacupuncture with Conventional therapy may produce greater improvements in functional mobility than Conventional Therapy.	1	Kim et al. 2022c
2	Unani Medicine (Herbal and Massage) may produce greater improvements in functional mobility than Western Medicine (Piracetam 800mg).	1	Ahmed et al. 2015
1b	Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may produce greater improvements in functional mobility than Placebo-ICT with air-pump massage and rehabilitation.	1	Suh et al. 2014a
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving functional mobility.	1	Johansson et al. 2001

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Acupuncture Therapy may produce greater improvements in balance than Conventional Therapy.	2	Hong et al. 2024; Johansson et al. 1993
1b	Acupuncture may produce greater improvements in balance than Sham.	1	Ghannadi et al. 2020
1b	Scalp Acupuncture and Robot Assisted Training may produce greater improvements in balance than Basic Treatment.	1	Zhang et al. 2021c
2	There is conflicting evidence about the effect of Multifaceted Alternative Medicine Approaches when compared to Meridian Dredging Exercise for improving balance.	2	Cui et al. 2023; Shao et al. 2019
1a	Massage and other integrated rehabilitation techniques may produce greater improvements in balance than Health education program.	3	Ye et al. 2022; Zhang et al. 2022; Zheng et al. 2021
1b	Dry Needling with Conventional Rehabilitation may produce greater improvements in balance than Conventional Rehabilitation Alone.	1	Kucuktepe et al. 2023

1b	Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may not have a difference in efficacy when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) for improving balance.	1	Xu et al. 2024
1b	Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may produce greater improvements in balance than Placebo-ICT with air-pump massage and rehabilitation.	1	Suh et al. 2014a

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	There is conflicting evidence about the effect of Acupuncture Therapy when compared to Conventional Therapy for improving quality of life.	2	Park et al. 2005; Johansson et al. 1993
1a	Acupuncture may not have a difference in efficacy when compared to Sham for improving quality of life.	2	Li et al. 2014; Fink et al. 2004
1b	Channel Palpation Guided Acupuncture may not have a difference in efficacy when compared to Traditional Acupuncture for improving quality of life.	1	Luo et al. 2018
2	Scalp Acupuncture may produce greater improvements in quality of life than Conventional Therapy or Other Modalities.	1	Hegyi et al. 2012
1b	Multifaceted Alternative Medicine Approaches may not have a difference in efficacy when compared to Meridian Dredging Exercise for improving quality of life.	1	Sun et al. 2024b
1b	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving quality of life.	2	Chen et al. 2019a; Thanakiatpinyo et al. 2014
1b	Electroacupuncture may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation for improving quality of life.	1	Hopwood et al. 2008
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving quality of life.	1	Johansson et al. 2001

Other Associated Outcome Measures

MOOD			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture may not have a difference in efficacy when compared to Sham for improving mood.	1	Fink et al. 2004
1b	Massage and other integrated rehabilitation techniques may not have a difference in efficacy when compared to Health education program for improving mood.	2	Chen et al. 2019a; Thanakiatpinyo et al. 2014
1b	Joint mobilization with acupuncture may produce greater improvements in mood than Joint mobilization.	1	Lee et al. 2023b

1b	Joint mobilization with acupuncture may produce greater improvements in mood than Conventional rehab.	1	Lee et al. 2023b
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to physical therapy with medical massage or 60min/d care and 20min/d massage for improving mood.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving mood.	1	Tollar et al. 2021

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture may not have a difference in efficacy when compared to Sham transcutaneous electrical nerve stimulation for improving fatigue and sleep.	1	Hopwood et al. 2008

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Acupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving cognition.	1	Chen et al. 2016
1b	There is conflicting evidence about the effect of Scalp Acupuncture when compared to Conventional Therapy or Other Modalities for improving cognition.	1	Xiong et al. 2020
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to physical therapy with medical massage or 60min/d care and 20min/d massage for improving cognition.	1	Tollar et al. 2021
1b	One session daily high intensity Videogame exercises with medical massage may not have a difference in efficacy when compared to two sessions daily high intensity Videogame exercises with medical massage for improving cognition.	1	Tollar et al. 2021

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Acupuncture Therapy when compared to Conventional Therapy for improving upper extremity function.	2	Wang et al. 2020d; Park et al. 2005
1a	Scalp Acupuncture may not have a difference in efficacy when compared to Conventional Therapy or Other Modalities for improving upper extremity function.	3	Xie et al. 2022; Liu et al. 2018; Zhu et al. 2013
1b	Auricular Intradermal Acupuncture may produce greater improvements in upper extremity function than Conventional Therapy.	1	Miao et al. 2020
1b	Acupuncture with Manipulation may produce greater improvements in upper extremity function than Acupuncture.	1	Zhao et al. 2009
1b	There is conflicting evidence about the effect of Multifaceted Alternative Medicine Approaches when compared to Meridian Dredging Exercise for improving upper extremity function.	2	Sun et al. 2024b; Wei et al. 2016
1a	There is conflicting evidence about the effect of Massage and other integrated rehabilitation techniques when compared to Health education program for improving upper extremity function.	3	Ye et al. 2022; Yang et al. 2017; Zhang et al. 2013

1b	Dry Needling with Conventional Rehabilitation may produce greater improvements in upper extremity function than Conventional Rehabilitation Alone.	1	Kucuktepe et al. 2023
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Conventional rehab for improving upper extremity function.	1	Lee et al. 2023b
1b	Joint mobilization with acupuncture may not have a difference in efficacy when compared to Joint mobilization for improving upper extremity function.	1	Lee et al. 2023b
1b	Electroacupuncture with Conventional therapy may produce greater improvements in upper extremity function than Conventional Therapy.	1	Hsieh et al. 2007
2	Electrical Acupuncture with Conventional Therapy may produce greater improvements in upper extremity function than Conventional therapy.	1	Wong et al. 1999
2	Electroacupuncture with Heparin, low molecular dextran, nimodipine may produce greater improvements in upper extremity function than Heparin, low molecular dextran, nimodipine.	1	Si et al. 1998

Key Points

- Acupuncture Therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, spasticity, neurophysiological measures, gait speed, functional mobility, and balance, but not motor recovery, muscle strength, and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding quality of life.
- Acupuncture may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Physiotherapy or Acupuncture with PhysiotherapyNI.
- Contra-lateral Needling (acupuncture on unaffected limbs) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Traditional acupuncture.
- Acupuncture may be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, gait speed, functional mobility, and balance, but not biomechanical gait measures, pain, gait endurance, and quality of life, after stroke when compared to Sham; the literature is mixed regarding neurophysiological measures.
- Acupuncture Treatment may be beneficial for improving spasticity after stroke when compared to No Treatment; the literature is mixed regarding pain.
- Channel Palpation Guided Acupuncture may not be beneficial for improving motor recovery and quality of life after stroke when compared to Traditional Acupuncture.
- Scalp Acupuncture and Robot Assisted Training may be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait endurance, and balance after stroke when compared to Basic Treatment.
- Scalp Acupuncture may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, and quality of life after stroke when compared to Conventional Therapy or Other Modalities.
- Auricular Intradermal Acupuncture may be beneficial for improving motor recovery after stroke when compared to Conventional Therapy.
- Acupuncture with Manipulation may be beneficial for improving muscle strength, motor recovery, spasticity, neurophysiological measures, and activities of daily living after stroke when compared to Acupuncture.
- Eye Acupuncture may be beneficial for improving biomechanical gait measures after stroke when compared to Body Acupuncture.
- Multifaceted Alternative Medicine Approaches may be beneficial for improving muscle strength, range of motion, and gait speed, but not quality of life, neurophysiological measures, and aerobic measures, after stroke when compared to Meridian Dredging Exercise; the literature is mixed regarding spasticity, motor recovery, balance, and activities of daily living.

- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Neuronavigation-assisted aspiration.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Electroacupuncture.
- Neuronavigation-assisted aspiration may be beneficial for improving motor recovery and spasticity after stroke when compared to Electroacupuncture; the literature is mixed regarding activities of daily living.
- Electroacupuncture may be beneficial for improving motor recovery, but not spasticity and activities of daily living, after stroke when compared to Conservative therapy.
- Massage and other integrated rehabilitation techniques may be beneficial for improving gait speed, balance, and functional mobility, but not biomechanical gait measures and aerobic measures, after stroke when compared to Health education program; the literature is mixed regarding motor recovery, muscle strength, spasticity, activities of daily living, biomechanical balance measures, and quality of life.
- Chiropractic intervention may not be beneficial for improving neurophysiological measures after stroke when compared to Placebo chiropractic intervention.
- Dry Needling with Conventional Rehabilitation may be beneficial for improving spasticity, range of motion, gait speed, and balance after stroke when compared to Conventional Rehabilitation Alone.
- Acupuncture with Robot-Assisted Gait Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Acupuncture Alone.
- Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may be beneficial for improving gait speed and functional mobility, but not biomechanical balance measures and activities of daily living, after stroke when compared to Overground gait adaptation training with acupuncture and conventional physical therapy.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).
- Joint mobilization with acupuncture may be beneficial for improving activities of daily living, but not pain and gait speed, after stroke when compared to Conventional rehab; the literature is mixed regarding range of motion.
- Joint mobilization with acupuncture may be beneficial for improving range of motion and activities of daily living, but not pain and gait speed, after stroke when compared to Joint mobilization.
- Electroacupuncture with Conventional therapy may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery.
- One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to physical therapy with medical massage or 60min/d care and 20min/d massage; the literature is mixed regarding biomechanical balance measures.
- One session daily high intensity Videogame exercises with medical massage may not be beneficial for improving biomechanical balance measures, aerobic measures, and activities of daily living after stroke when compared to two sessions daily high intensity Videogame exercises with medical massage.
- Electroacupuncture, usual care may not be beneficial for improving motor recovery, spasticity, and activities of daily living after stroke when compared to Usual care.
- Unani Medicine (Herbal and Massage) may be beneficial for improving functional mobility after stroke when compared to Western Medicine (Piracetam 800mg).
- Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may be beneficial for improving spasticity, gait speed, functional mobility, and balance after stroke when compared to Placebo-ICT with air-pump massage and rehabilitation.
- Electroacupuncture with Conventional medication may be beneficial for improving motor recovery and neurophysiological measures after stroke when compared to Conventional medication.

- Electroacupuncture may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Sham transcutaneous electrical nerve stimulation.
- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high- frequency electrostimulation (80Hz).
- Electrical Acupuncture with Conventional Therapy may be beneficial for improving motor recovery after stroke when compared to Conventional therapy; the literature is mixed regarding activities of daily living.
- Electroacupuncture with Heparin, low molecular dextran, nimodipine may not be beneficial for improving motor recovery after stroke when compared to Heparin, low molecular dextran, nimodipine.
- One session daily high intensity Videogame exercises with medical massage may be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Two sessions daily high intensity Videogame exercises with medical massage may not be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Traditional acupuncture may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Convenional Care.

Summary of Key Points: Acupuncture and Massage

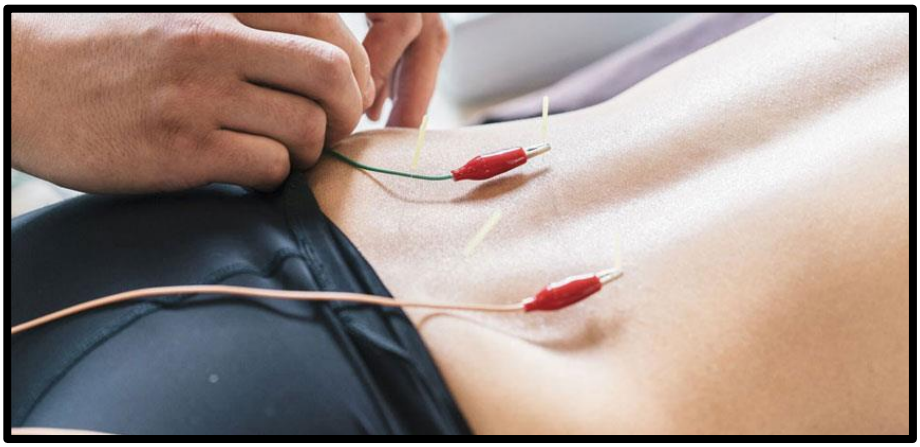
Intervention	Control(s)	Function domain(s)	Effect
Acupuncture Therapy	Conventional Therapy	Biomechanical gait measures, biomechanical balance measures, spasticity, neurophysiological measures, gait speed, functional mobility, balance	+
Acupuncture Therapy	Conventional Therapy	Motor recovery, muscle strength, activities of daily living	–
Acupuncture Therapy	Conventional Therapy	Quality of life	=
Acupuncture	Physiotherapy or Acupuncture with PhysiotherapyNI	Motor recovery, activities of daily living	–
Contra-lateral Needling (acupuncture on unaffected limbs)	Traditional acupuncture	Motor recovery, activities of daily living	+
Acupuncture	Sham	Motor recovery, spasticity, range of motion, activities of daily living, gait speed, functional mobility, balance	+
Acupuncture	Sham	Biomechanical gait measures, pain, gait endurance, quality of life	–
Acupuncture	Sham	Neurophysiological measures	=
Acupuncture Treatment	No Treatment	Spasticity	+
Acupuncture Treatment	No Treatment	Pain	=
Channel Palpation Guided Acupuncture	Traditional Acupuncture	Motor recovery, quality of life	–
Scalp Acupuncture and Robot Assisted Training	Basic Treatment	Motor recovery, biomechanical gait measures, activities of daily living, gait endurance, balance	+
Scalp Acupuncture	Conventional Therapy or Other Modalities	Motor recovery, muscle strength, neurophysiological measures, activities of daily living, quality of life	+

Auricular Intradermal Acupuncture	Conventional Therapy	Motor recovery	+
Acupuncture with Manipulation	Acupuncture	Muscle strength, motor recovery, spasticity, neurophysiological measures, activities of daily living	+
Acupuncture with Manipulation	Acupuncture	Motor recovery, spasticity, neurophysiological measures, activities of daily living	+
Eye Acupuncture	Body Acupuncture	Biomechanical gait measures	+
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Muscle strength, range of motion, gait speed	+
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Quality of life, neurophysiological measures, aerobic measures	−
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Motor recovery, spasticity, balance, activities of daily living	=
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Neurophysiological measures, aerobic measures	−
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Activities of daily living	=
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration	Spasticity, activities of daily living	+
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration	Motor recovery	−
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture	Spasticity, activities of daily living	+
Neuronavigation-assisted aspiration	Electroacupuncture	Motor recovery, spasticity	+
Electroacupuncture	Conservative therapy	Motor recovery	+
Electroacupuncture	Conservative therapy	Spasticity, activities of daily living	−
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise	Motor recovery	=
Massage and other integrated rehabilitation techniques	Health education program	Gait speed, balance, functional mobility	+
Massage and other integrated rehabilitation techniques	Health education program	Biomechanical gait measures, aerobic measures	−
Massage and other integrated rehabilitation techniques	Health education program	Functional mobility, balance	+
Massage and other integrated rehabilitation techniques	Health education program	Biomechanical balance measures, motor recovery, muscle strength, spasticity, activities of daily living, quality of life	=
Massage and other integrated rehabilitation techniques	Health education program	Balance	+
Massage and other integrated rehabilitation techniques	Health education program	Aerobic measures	−
Chiropractic intervention	Placebo chiropractic intervention	Neurophysiological measures	−

Dry Needling with Conventional Rehabilitation	Conventional Rehabilitation Alone	Spasticity, range of motion, gait speed, balance	+
Acupuncture with Robot-Assisted Gait Training	Acupuncture Alone	Biomechanical gait measures, gait speed, functional mobility	+
Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy	Overground gait adaptation training with acupuncture and conventional physical therapy	Gait speed, functional mobility	+
Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy	Overground gait adaptation training with acupuncture and conventional physical therapy	Biomechanical balance measures, activities of daily living	–
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Range of motion	+
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Balance	–
Joint mobilization with acupuncture	Conventional rehab	Pain, gait speed	–
Joint mobilization with acupuncture	Joint mobilization	Range of motion, activities of daily living	+
Joint mobilization with acupuncture	Joint mobilization	Pain, gait speed	–
Joint mobilization with acupuncture	Conventional rehab	Activities of daily living	+
Electroacupuncture with Conventional therapy	Conventional Therapy	Functional mobility	+
Electroacupuncture with Conventional therapy	Conventional Therapy	Activities of daily living, gait speed	–
One session daily high intensity Videogame exercises with medical massage	physical therapy with medical massage or 60min/d care and 20min/d massage	Aerobic measures	–
One session daily high intensity Videogame exercises with medical massage	physical therapy with medical massage or 60min/d care and 20min/d massage	Biomechanical balance measures	=
One session daily high intensity Videogame exercises with medical massage	two sessions daily high intensity Videogame exercises with medical massage	Biomechanical balance measures, aerobic measures, activities of daily living	–
Electroacupuncture, usual care	Usual care	Motor recovery, spasticity, activities of daily living	–
Unani Medicine (Herbal and Massage)	Western Medicine (Piracetam 800mg)	Functional mobility	+
Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation	Placebo-ICT with air-pump massage and rehabilitation	Spasticity, gait speed, functional mobility, balance	+
Electroacupuncture with Conventional medication	Conventional medication	Motor recovery, neurophysiological measures	+

Electroacupuncture	Sham transcutaneous electrical nerve stimulation	Muscle strength, activities of daily living, quality of life	–
Electroacupuncture with Conventional therapy	Conventional Therapy	Motor recovery	=
Electroacupuncture	Low-intensity, high- frequency electrostimulation (80Hz)	Activities of daily living, gait speed, functional mobility, quality of life	–
Electrical Acupuncture with Conventional Therapy	Conventional therapy	Motor recovery	+
Electrical Acupuncture with Conventional Therapy	Conventional therapy	Activities of daily living	=
Electroacupuncture with Heparin, low molecular dextran, nimodipine	Heparin, low molecular dextran, nimodipine	Motor recovery	–
One session daily high intensity Videogame exercises with medical massage	Standard physical therapy with medical massage	Activities of daily living	+
Two sessions daily high intensity Videogame exercises with medical massage	Standard physical therapy with medical massage	Activities of daily living	–
Traditional acupuncture	Convenional Care	Motor recovery, activities of daily living	+
Neuronavigation-assisted aspiration	Electroacupuncture	Activities of daily living	=
Joint mobilization with acupuncture	Conventional rehab	Range of motion	=
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture	Motor recovery	–

Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation



Adopted from: https://www.promotionhealthcare.com/electroacupuncture-treatment-pain-injuries/

Electroacupuncture is a variant of acupuncture techniques practiced in traditional Chinese medicine, the difference being that a minute electrical current of similar intensity to that of a bioelectric current produced endogenously in the body is applied to the needles used (Wang et al., 2014a). The needle is often placed on meridian points throughout the body (Wang et al., 2014a). Similarly, transcutaneous electrical acupoint stimulation (TEAS) stimulates meridian points believed to be associated with a medical condition with electrical impulses given through needles. The two techniques have very similar mechanisms of action and their influence on afferent stimulation to the body.

A total of eight RCTs were found that evaluated electroacupuncture and transcutaneous electrical acupoint stimulation for lower extremity motor rehabilitation. Five RCTs compared Electroacupuncture Therapy with

Conventional Therapy (Kim et al. 2022c; Cai et al. 2021; Tan et al. 2013; Hsieh et al. 2007; Wong et al. 1999). One RCT compared Electroacupuncture or TEAS with Sham (Hopwood et al. 2008). One RCT compared Electroacupuncture and Low Frequency TENS with High and Low Frequency TENS (Johansson et al. 2001). One RCT compared Electroacupuncture with Heparin with Heparin (Si et al. 1998).

In addition, one RCT in which electroacupuncture and transcutaneous electrical acupoint stimulation formed part of a combined or comparative intervention are cross-referenced at the end of Table 54; their primary listings appear in other tables.

The methodological details and results of all eight RCTs are presented in Table 54.

Table 54. RCTs Evaluating Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
Electroacupuncture vs Conventional Therapy		
Kim et al. (2022c) RCT (8) Nstart=35 Nend=33 TPS=Subacute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture + Conventional therapy C: Conventional Therapy Duration: E: 30min/d, 5d/wk, 4 wks C: 120 min/d, 5d/wk, 4wks	E vs C: FMA-LE(-) K-MBI (-) FAC (-) Diffusion Tensor Tractography Fiber Number Affected (-) Fiber Ratio (-) Fractional Anistropy affected (+exp) Fractional Anistropy ratio (+exp) Axial Diffusivity affected (+exp) Axial Diffusivity ratio (+exp)
Cai et al. (2021) RCT (7) Nstart=30 Nend=25 TPS=Subacute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture, usual care C: Usual care Duration: 20-30min/session, 3 sessions/wk, for 4wks	E vs C: Modified Ashworth Scale (-) Fugl-Meyer Assessment (-) Barthel Index (-)
Tan et al. (2013) RCT (7) Nstart=63 Nend=61 TPS=Acute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture + Conventional medication C: Conventional medication Duration: 20min/d, 6d/wk, for 2wks	E vs C: Fugl Meyer Assessment (+exp) National Institutes of Health Stroke Scale (+exp) Triple stimulation technique amplitude ratio (+exp)
Hsieh et al. (2007) RCT (8) Nstart=63 Nend=54 TPS=Acute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture + conventional therapy C: Conventional therapy Duration: 20min/d, 2d/wk for 4wks	E vs C: Fugl-Meyer Assessment (+exp) Lower extremity (-) UE Motor Shoulder elbow (-) Wrist (+exp) Hand (+exp) UE Coordination and speed (-) Functional independence measure (-)

Wong et al. (1999) RCT (4) Nstart=118 Nend=118 TPS=Acute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electrical Acupuncture + Conventional Therapy C: Conventional therapy Duration: 30min/d, 5d/wk, for 2wks Electrical Acupuncture, 120min/d, 7d/wk Conventional Therapy	E vs C: Brunnstrom Stage Upper Limb (+exp) Lower Limb (+exp) Functional independence measure (+exp) self-care (+exp) Sphincter (-) Transfer (-) Locomotion (+exp) Communication (-) Social interaction (-) cognition (+exp)
Electroacupuncture or TEAS vs Sham		
Hopwood et al. (2008) RCT (8) Nstart=105 Nend=92 TPS=Acute A vs 0 Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture C: Sham TENS Duration: 30min/d, 3d/wk for 4wks	E vs C: Motricity Index (-) Barthel Index (-) Nottingham Health Profile: -Pain (-); -Energy level (+exp); -Emotional Reaction (-); -Sleep (-); -Social isolation (-); -Physical Activity (-)
Electroacupuncture vs High and Low Frequency TENS		
Johansson et al. (2001) RCT (8) Nstart=150 Nend=138 TPS=Acute A vs B vs C Also in Table 30 (Transcutaneous Electrical Nerve Stimulation (TENS)); Table 53 (Acupuncture and Massage)	E1: Electroacupuncture E2: High-intensity, low-frequency TENS (80Hz) C: Low-intensity, high-frequency TENS (2Hz) electrostimulation Duration: 30min/d, 2d/wk for 10wks	E1 vs E2 vs C: Rivermead Mobility Index (-) 10-Metre Walk Test (-) Nine Hole Peg Test (-) Barthel Index (-) Nottingham Health Profile (-)
Electroacupuncture with Heparin vs Heparin		
Si et al. (1998) RCT (5) Nstart=42 Nend=42 TPS=Acute A + B vs B Also in Table 53 (Acupuncture and Massage)	E: Electroacupuncture + Heparin, low molecular dextran, nimodipine C: Heparin, low molecular dextran, nimodipine Duration: 30min/d, for 5d electroacupuncture	E vs C: Chinese Stroke Scale (+exp) Level of consciousness (-) Extraocular movements (-) Facial palsy (-) Speech (-) Motor shoulder (+exp) Motor hand (+exp) Motor leg (+exp) Capacity walking (-)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Zhang et al. (2017) RCT (8) Nstart=240 Nend=233 TPS=Acute A + B vs A vs B vs C Primary listing: Table 53 (Acupuncture and Massage)	E1: Neuronavigation-assisted aspiration + electroacupuncture E2: Neuronavigation-assisted aspiration E3: Electroacupuncture C: Conservative therapy Duration: 30min/session, 2sessions/d, for 8wks	E1 vs E2: Fugl-Meyer Assessment (-) Modified Ashworth Scale (+exp1) Barthel Index (+exp1) E1 vs E3: Fugl-Meyer Assessment (-) Modified Ashworth Scale (+exp1) Barthel Index (+exp1)

		E1 vs C: Fugl-Meyer Assessment (+exp1) Modified Ashworth Scale (+exp1) Barthel Index (+exp1) E2 vs E3: Fugl-Meyer Assessment (-) Modified Ashworth Scale (-) Barthel Index (-) E2 vs C: Fugl-Meyer Assessment (+exp2) Modified Ashworth Scale (+exp2) Barthel Index (-) E3 vs C: Fugl-Meyer Assessment (+exp3) Modified Ashworth Scale (+exp2) Barthel Index (-)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed "Feasibility/pilot" in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	There is conflicting evidence about the effect of Electroacupuncture Therapy when compared to Conventional Therapy for improving motor recovery.	5	Kim et al. 2022c; Cai et al. 2021; Tan et al. 2013; Hsieh et al. 2007; Wong et al. 1999
2	Electroacupuncture with Heparin may not have a difference in efficacy when compared to Heparin for improving motor recovery.	1	Si et al. 1998
1b	Neuronavigation-assisted aspiration with electroacupuncture may not have a difference in efficacy when compared to Neuronavigation-assisted aspiration for improving motor recovery.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may not have a difference in efficacy when compared to Electroacupuncture for improving motor recovery.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in motor recovery than Conservative therapy.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration may not have a difference in efficacy when compared to Electroacupuncture for improving motor recovery.	1	Zhang et al. 2017

MUSCLE STRENGTH			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture or transcutaneous electrical acupoint stimulation may not have a difference in efficacy when compared to Sham for improving muscle strength.	1	Hopwood et al. 2008

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving spasticity.	1	Cai et al. 2021
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in spasticity than Neuronavigation-assisted aspiration.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in spasticity than Electroacupuncture.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in spasticity than Conservative therapy.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration may not have a difference in efficacy when compared to Electroacupuncture for improving spasticity.	1	Zhang et al. 2017

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture Therapy may produce greater improvements in neurophysiological measures than Conventional Therapy.	1	Tan et al. 2013

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1a	Electroacupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving activities of daily living.	3	Cai et al. 2021; Hsieh et al. 2007; Wong et al. 1999
1b	Electroacupuncture or transcutaneous electrical acupoint stimulation may not have a difference in efficacy when compared to Sham for improving activities of daily living.	1	Hopwood et al. 2008
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving activities of daily living.	1	Johansson et al. 2001
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in activities of daily living than Neuronavigation-assisted aspiration.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration with electroacupuncture may produce greater improvements in activities of daily living than Electroacupuncture.	1	Zhang et al. 2017
1b	There is conflicting evidence about the effect of Neuronavigation-assisted aspiration with electroacupuncture when compared to Conservative therapy for improving activities of daily living.	1	Zhang et al. 2017
1b	Neuronavigation-assisted aspiration may not have a difference in efficacy when compared to Electroacupuncture for improving activities of daily living.	1	Zhang et al. 2017

GAIT SPEED			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture Therapy may not have a difference in efficacy when compared to Conventional Therapy for improving gait speed.	1	Hsieh et al. 2007
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving gait speed.	1	Johansson et al. 2001

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture Therapy may produce greater improvements in functional mobility than Conventional Therapy.	1	Kim et al. 2022c
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving functional mobility.	1	Johansson et al. 2001

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture or transcutaneous electrical acupoint stimulation may not have a difference in efficacy when compared to Sham for improving quality of life.	1	Hopwood et al. 2008
1b	Electroacupuncture may not have a difference in efficacy when compared to Low-intensity, high- frequency electrostimulation (80Hz) for improving quality of life.	1	Johansson et al. 2001

Other Associated Outcome Measures

FATIGUE AND SLEEP			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture or transcutaneous electrical acupoint stimulation may not have a difference in efficacy when compared to Sham for improving fatigue and sleep.	1	Hopwood et al. 2008

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Electroacupuncture Therapy may produce greater improvements in upper extremity function than Conventional Therapy.	2	Hsieh et al. 2007; Wong et al. 1999
2	Electroacupuncture with Heparin may produce greater improvements in upper extremity function than Heparin.	1	Si et al. 1998

Key Points

- Electroacupuncture Therapy may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, activities of daily living, and gait speed, after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery.
- Electroacupuncture or transcutaneous electrical acupoint stimulation may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Sham.

- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high- frequency electrostimulation (80Hz).
- Electroacupuncture with Heparin may not be beneficial for improving motor recovery after stroke when compared to Heparin.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Neuronavigation-assisted aspiration.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Electroacupuncture.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving motor recovery and spasticity after stroke when compared to Conservative therapy; the literature is mixed regarding activities of daily living.
- Neuronavigation-assisted aspiration may not be beneficial for improving motor recovery, spasticity, and activities of daily living after stroke when compared to Electroacupuncture.

Summary of Key Points: Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation

Intervention	Control(s)	Function domain(s)	Effect
Electroacupuncture Therapy	Conventional Therapy	Neurophysiological measures, functional mobility	+
Electroacupuncture Therapy	Conventional Therapy	Spasticity, activities of daily living, gait speed	–
Electroacupuncture Therapy	Conventional Therapy	Motor recovery	=
Electroacupuncture or transcutaneous electrical acupoint stimulation	Sham	Muscle strength, activities of daily living, quality of life	–
Electroacupuncture	Low-intensity, high- frequency electrostimulation (80Hz)	Activities of daily living, gait speed, functional mobility, quality of life	–
Electroacupuncture with Heparin	Heparin	Motor recovery	–
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration	Spasticity, activities of daily living	+
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration	Motor recovery	–
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture	Spasticity, activities of daily living	+
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture	Motor recovery	–
Neuronavigation-assisted aspiration with electroacupuncture	Conservative therapy	Motor recovery, spasticity	+
Neuronavigation-assisted aspiration	Electroacupuncture	Motor recovery, spasticity, activities of daily living	–
Neuronavigation-assisted aspiration with electroacupuncture	Conservative therapy	Activities of daily living	=

Traditional Herbal Medicines



Adopted from: https://drmeelainling.com/herbs-diet/

Traditional Chinese, Japanese and Indian herbal medicine are complementary and alternative forms of medicine that have been utilized as a healthcare system in Asian countries for hundreds of years and are widely used for stroke treatment today (Han et al., 2017; Tsai et al., 2017). Different herbal medicines have various beneficial properties such as anti-inflammatory, increasing cerebral blood flow velocity, inhibiting platelet aggregation, increasing tissue tolerance to hypoxia, etc. (Han et al., 2017). Chinese and Japanese herbal medicines commonly used for stroke rehabilitation generally consist of a mixture of different plant and animal extracts with these varying properties (Han et al., 2017).

A total of eight RCTs were found that evaluated traditional herbal medicines for lower extremity motor rehabilitation. One RCT compared NeuroAid with Placebo (Kong et al. 2009). Five RCTs compared Other Herbal Medications with Placebo or No Medication (Ling et al. 2022; Tang et al. 2021; Ahmed et al. 2015; Zhu et al. 2014; Goto et al. 2011). One RCT compared Other Herbal Medications with Conventional Therapy (Wang et al. 2020b). One RCT compared Other Herbal Medications with Fluoxetine vs Placebo (Gong et al. 2020).

In addition, one RCT in which traditional herbal medicines formed part of a combined or comparative intervention are cross-referenced at the end of Table 55; their primary listings appear in other tables.

The methodological details and results of all eight RCTs are presented in Table 55.

Table 55. RCTs Evaluating Traditional Herbal Medicines for Lower Extremity Motor Rehabilitation

Authors (Year) **Study Design (PEDro Score)** **Sample Size start/end** **Time post stroke category** **Study design**	**Interventions** **Duration: Session length, frequency per week for total number of weeks**	**Outcome Measures** **Result (direction of effect)**
NeuroAid vs Placebo		
Kong et al. (2009) RCT (7) Nstart=40 Nend=33 TPS=Acute A vs 0	E: NeuroAid (Amount Not Specified) C: Placebo (Amount Not Specified) Duration: 4 capsules, 3x/d, for 4wks	E vs C: Fugl-Meyer Assessment (-) Functional Independence Measure (-) NIH Stroke Scale (-)

Other Herbal Medications vs Placebo or No Medication		
Ling et al. (2022) RCT (8) Nstart=120 Nend=117 TPS=Subacute A vs 0	E: Ruyi Zhenbao Pills C: Placebo Ruyi Zhenbao Pills Duration: 2g, 2 times a day, 4 weeks	E vs C: FMA motion (+exp) sensory (-) Berg balance scale (+exp) Modified barthel index (-) Special Scale of the Quality of Life (-) Visual analogue scale (-)
Tang et al. (2021) RCT (9) Nstart=622 Nend=529 TPS=Acute A vs B vs 0	E1: Qizhitongluo (500mg capsules) taken at breakfast and dinner + Placebo taken after lunch E2: Naoxintong (400mg capsules) taken after each meal C: Placebo capsule Duration: Qizhitongluo: 4,-500mg capsules, 2x/d + 4 placebo capsules 1x/d, for 12wks Naoxintong: 4,- 400mg capsules 3doses/d, for 12wks Placebo: 4 placebo capsules 3x/d, for 12wks	E1 vs C: Fugl-Meyer Assessment Lower Limb (+exp1) Fugl-Meyer Assessment Upper Limb (+exp1) Aphasia Quotient (+exp1) Barthel Index (+exp1) TCM syndrome score (+exp1) Plasma glucose (-) Serum lipid level (-) Coagulation (-) E1 vs E2: Fugl-Meyer Assessment Lower Limb (+exp) Fugl-Meyer Assessment Upper Limb (+exp1) Aphasia Quotient (+exp1) Barthel Index (-) TCM syndrome score (+exp1) Plasma glucose (-) Serum lipid level (-) Coagulation (-) E2 vs C: Fugl-Meyer Assessment Lower Limb (-) Fugl-Meyer Assessment Upper Limb (-) Aphasia Quotient (-) Barthel Index (-) TCM syndrome score (-) Plasma glucose (-) Serum lipid level (-) Coagulation (-)
Ahmed et al. (2015) RCT (5) Nstart=40 Nend=40 TPS=Chronic A vs B Also in Table 53 (Acupuncture and Massage)	E: Unani Medicine (Herbal and Massage) C: Western Medicine (Piracetam 800mg) Duration: 1dose/d, for 4wks medications & 15min/d, for 2wks massage	E vs C: Stroke Rehabilitation Assessment of Movement (+exp)
Zhu et al. (2014) RCT (5) Nstart=60 Nend=60 TPS=Acute	E: Shaoyao Gancao (10mL) + Physiotherapy C: No medication + Physiotherapy Duration: 10mL of Shaoyoo Gancoo (3doses/d) for 4wks & 30min/d, 6d/wk, for 4wks physiotherapy	E vs C: Modified Ashworth Scale (+exp) Composite Spasticity Scale (+exp) Fugl-Meyer Assessment (+exp) Barthel Index (+exp)

A vs B		Integrated electromyography of all muscles (+exp)
Goto et al. (2011) RCT (6) Nstart=31 Nend=30 TPS=Chronic A vs B	E: Tokishakuyakusan (2.5g) C: No medication Duration: 2.5g of Tokishakuyakusan (3x/d) for 1yr	E vs C: Stroke Impairment Assessment Scale (+exp) Functional Independence Measure (+exp)
Other Herbal Medications vs Conventional Therapy		
Wang et al. (2020b) RCT (6) Nstart=444 Nend=403 TPS=Subacute A vs 0	E: Tibetan medicated bathing therapy + conventional rehabilitation C: Conventional rehabilitation Duration: 150min/d, 5d/wk, 4wks conventional rehabilitation & 60min/d, 5d/wk, 4wks Tibetan medicated bathing	E vs C: Modified Ashworth Scale Elbow flexors (+exp) Wrist flexors (+exp) Finger flexors (-) Knee extensors (-) Ankle plantar flexors (+exp) Fugl-Meyer Assessment (+exp) Upper limb(+exp) Lower limb (-) Modified Barthel Index (+exp)
Other Herbal Medications vs Fluoxetine vs Placebo		
Gong et al. (2020) RCT (7) Nstart=254 Nend=222 TPS=Acute A1 vs B vs A2 vs 0 Also in Table 40 (Antidepressants)	E1: Shu-Gan-Jie-Yu capsule, 720 mg E2: Fluoxetine, 20 mg PO daily E3: Shu-Gan-Jie-Yu (2160 mg daily) C: Placebo Duration: E1: 720 mg, 3/d, 7d/wk, 12wks (2160 mg daily) Shu-Gan- Jie-Yu; E2: 20mg 1/d, 7d/wk, for 12wks fluoxetine; E3: 720 mg, 3/d, 7d/wk, for 12wks (2160 mg daily) Shu-Gan-Jie-Yu + 20mg 1/d, 7d/wk, for 12wks fluoxetine	E1/E2/E3 vs C: Modified Rankin Scale (+exp1, +exp2, +exp3) Fugl-Meyer Motor (+exp1, +exp2, +exp3)
Cross-Referenced RCTs: Combined or Comparative Interventions		
Na et al. (2018) RCT (6) Nstart=76 Nend=76 TPS=Acute A + B vs 0 Primary listing: Table 53 (Acupuncture and Massage)	E: Chinese Traditional therapy (Bath in Chinese herbal medicine + Acupuncture with massage) + Conventional care C: Conventional care Duration: 1session/d, 7d/wk for 4wks - Chinese Traditional therapy (30min/d Traditional bath therapy + 30min/d Acupuncture and Massage); 40min/d for 4wks conventional care	E vs C: Fugl-Meyer assessment (+exp) Modified Barthel index (+exp) Neurological impairments (+exp) Efficacy of treatment (+exp)

Abbreviations and table notes: C=control group; D=days; E=experimental group; H=hours; Min=minutes; RCT=randomized controlled trial; Feasibility/pilot RCT=study typed “Feasibility/pilot” in the source workbook; TPS=time post stroke category (Acute: less than 30 days, Subacute: more than 1 month but less than 6 months, Chronic: over 6 months); Wk=weeks.

+exp indicates a statistically significant between groups difference at α=0.05 in favour of the experimental group

+exp1/+exp2/+exp3 indicates a statistically significant between groups difference at α=0.05 in favour of the first, second or third experimental group

+con indicates a statistically significant between groups difference at α=0.05 in favour of the control group

- indicates no statistically significant between groups differences at α=0.05

no stats / no between-group stat indicates the study did not report a between groups comparison for that outcome

1. Body Functions and Structures

MOTOR RECOVERY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	NeuroAid may not have a difference in efficacy when compared to Placebo for improving motor recovery.	1	Kong et al. 2009
1a	Other Herbal Medications may produce greater improvements in motor recovery than Placebo or No Medication.	4	Ling et al. 2022; Tang et al. 2021; Zhu et al. 2014; Goto et al. 2011
1b	Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch may produce greater improvements in motor recovery than Naoxintong (400mg capsules) taken after each meal.	1	Tang et al. 2021
1b	Other Herbal Medications may produce greater improvements in motor recovery than Conventional Therapy.	1	Wang et al. 2020b
1b	Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care may produce greater improvements in motor recovery than Conventional care.	1	Na et al. 2018
1b	Shu-Gan-Jie-Yu capsule (720 mg) or Fluoxetine (20 mg) or Shu-Gan-Jie-Yu (2160 mg daily) may produce greater improvements in motor recovery than Placebo.	1	Gong et al. 2020

SPASTICITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Other Herbal Medications may produce greater improvements in spasticity than Placebo or No Medication.	1	Zhu et al. 2014
1b	There is conflicting evidence about the effect of Other Herbal Medications when compared to Conventional Therapy for improving spasticity.	1	Wang et al. 2020b

NEUROPHYSIOLOGICAL MEASURES			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Other Herbal Medications may not have a difference in efficacy when compared to Placebo or No Medication for improving neurophysiological measures.	1	Tang et al. 2021
1b	Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch may not have a difference in efficacy when compared to Naoxintong (400mg capsules) taken after each meal for improving neurophysiological measures.	1	Tang et al. 2021

2. Activities

ACTIVITIES OF DAILY LIVING			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	NeuroAid may not have a difference in efficacy when compared to Placebo for improving activities of daily living.	1	Kong et al. 2009
1a	Other Herbal Medications may produce greater improvements in activities of daily living than Placebo or No Medication.	4	Ling et al. 2022; Tang et al. 2021; Zhu et al. 2014; Goto et al. 2011
1b	There is conflicting evidence about the effect of Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after	1	Tang et al. 2021

	lunch when compared to Naoxintong (400mg capsules) taken after each meal for improving activities of daily living.		
1b	Other Herbal Medications may produce greater improvements in activities of daily living than Conventional Therapy.	1	Wang et al. 2020b
1b	Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care may produce greater improvements in activities of daily living than Conventional care.	1	Na et al. 2018
1b	Shu-Gan-Jie-Yu capsule (720 mg) or Fluoxetine (20 mg) or Shu-Gan-Jie-Yu (2160 mg daily) may produce greater improvements in activities of daily living than Placebo.	1	Gong et al. 2020

FUNCTIONAL MOBILITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
2	Other Herbal Medications may produce greater improvements in functional mobility than Placebo or No Medication.	1	Ahmed et al. 2015

BALANCE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Other Herbal Medications may produce greater improvements in balance than Placebo or No Medication.	1	Ling et al. 2022

3. Participation

QUALITY OF LIFE			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Other Herbal Medications may not have a difference in efficacy when compared to Placebo or No Medication for improving quality of life.	1	Ling et al. 2022

Other Associated Outcome Measures

COGNITION			
LoE	**Conclusion Statement**	**RCTs**	**References**

UPPER EXTREMITY			
LoE	**Conclusion Statement**	**RCTs**	**References**
1b	Other Herbal Medications may produce greater improvements in upper extremity function than Conventional Therapy.	1	Wang et al. 2020b

Key Points

- NeuroAid may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Other Herbal Medications may be beneficial for improving motor recovery, spasticity, activities of daily living, functional mobility, and balance, but not neurophysiological measures and quality of life, after stroke when compared to Placebo or No Medication.
- Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch may be beneficial for improving motor recovery, but not neurophysiological measures, after stroke when

compared to Naoxintong (400mg capsules) taken after each meal; the literature is mixed regarding activities of daily living.

- Other Herbal Medications may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy; the literature is mixed regarding spasticity.
- Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional care.
- Fluoxetine (20 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu (2160 mg daily) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu capsule (720 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.

Summary of Key Points: Traditional Herbal Medicines

Intervention	Control(s)	Function domain(s)	Effect
NeuroAid	Placebo	Motor recovery, activities of daily living	–
Other Herbal Medications	Placebo or No Medication	Motor recovery, spasticity, activities of daily living, functional mobility, balance	+
Other Herbal Medications	Placebo or No Medication	Neurophysiological measures, quality of life	–
Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch	Naoxintong (400mg capsules) taken after each meal	Motor recovery	+
Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch	Naoxintong (400mg capsules) taken after each meal	Neurophysiological measures	–
Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch	Naoxintong (400mg capsules) taken after each meal	Activities of daily living	=
Other Herbal Medications	Conventional Therapy	Motor recovery, activities of daily living	+
Other Herbal Medications	Conventional Therapy	Spasticity	=
Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care	Conventional care	Motor recovery, activities of daily living	+
Fluoxetine (20 mg)	Placebo	Motor recovery, activities of daily living	+
Shu-Gan-Jie-Yu (2160 mg daily)	Placebo	Motor recovery, activities of daily living	+
Shu-Gan-Jie-Yu capsule (720 mg)	Placebo	Motor recovery, activities of daily living	+

Appendix A: Key Points

This appendix compiles the Key Points from all 55 intervention categories (Tables 1–55).

A.1 Neurodevelopmental Techniques and Motor Relearning (Table 1)

Key Points

- Bobath Concept Approach may be beneficial for improving spasticity, activities of daily living, balance, and quality of life, but not motor recovery and biomechanical gait measures, after stroke when compared to Conventional Therapies; the literature is mixed regarding gait speed and functional mobility.
- Early Bobath Approaches may be beneficial for improving functional mobility and balance after stroke when compared to Late Bobath Approaches.
- Bobath Concept Approach with Task-Specific Training may be beneficial for improving gait speed, but not biomechanical balance measures, activities of daily living, gait endurance, and balance, after stroke when compared to Task-Specific Training.
- Motor Relearning Programmes may be beneficial for improving biomechanical balance measures, activities of daily living, and balance, but not functional mobility, after stroke when compared to Conventional Therapy or Sham.
- Motor relearning with lower limb force-feedback may be beneficial for improving gait speed and gait endurance, but not motor recovery and functional mobility, after stroke when compared to Motor relearning with upper limb force-feedback.
- Motor Relearning may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, activities of daily living, gait endurance, functional mobility, and quality of life after stroke when compared to Bobath Concept Approach.
- Neurodevelopmental Bobath Concept Approach may be beneficial for improving biomechanical gait measures after stroke when compared to proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).
- Bobath Concept Approach Combined with Other Therapies may be beneficial for improving range of motion and balance, but not functional mobility, after stroke when compared to Bobath or Conventional Therapy.
- Bobath Concept Approach may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Task-Specific Training.
- Functional (adaptive) movement approach may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to functional approach for lower limb dressing.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to Balance exercises with neurodevelopmental treatment.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to gaze stabilization exercises with neurodevelopmental treatment.
- Cervical mobilization with Bobath neurodevelopmental therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Sham spinal mobilization with Bobath neurodevelopmental therapy.
- Sustained natural apophyseal glides with neurodevelopmental techniques may not be beneficial for improving biomechanical balance measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Maitland mobilization with neurodevelopmental techniques.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent

pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).

- Sensory training with Trunk-centred Bobath exercise may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk-centred Bobath exercise.
- Motor Relearning Program with Obstacle walking may be beneficial for improving spasticity and functional mobility after stroke when compared to Motor Relearning Program.
- Whole body vibration with Neurodevelopmental treatment may be beneficial for improving gait endurance, but not neurophysiological measures and aerobic measures, after stroke when compared to Neurodevelopmental treatment.
- Repetitive transcranial magnetic stimulation with Motor relearning procedure may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not functional mobility, after stroke when compared to Motor relearning procedure with Conventional rehabilitation.
- Dry needling with Neurodevelopmental therapy may be beneficial for improving range of motion, gait speed, and balance after stroke when compared to Neurodevelopmental therapy; the literature is mixed regarding spasticity.
- Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may be beneficial for improving muscle strength, gait speed, functional mobility, and balance after stroke when compared to Talocrural joint only mobilization with neurodevelopmental techniques.
- Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment may not be beneficial for improving aerobic measures, gait endurance, and functional mobility after stroke when compared to Neurodevelopmental Bobath Treatment; the literature is mixed regarding balance.
- Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy may not be beneficial for improving neurophysiological measures, gait speed, and functional mobility after stroke when compared to Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy.
- Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy may be beneficial for improving spasticity, range of motion, gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Bobath Therapy.
- Segmental mid-thoracic mobilization with neurodevelopmental therapy may be beneficial for improving quality of life, but not biomechanical balance measures and aerobic measures, after stroke when compared to Foam roller exercises with neurodevelopmental therapy.
- Modified constraint-induced movement therapy with Neurodevelopmental therapy may be beneficial for improving muscle strength, but not quality of life, after stroke when compared to neurodevelopmental therapy.
- Bobath with dry needling may be beneficial for improving motor recovery, biomechanical balance measures, and spasticity after stroke when compared to Bobath.
- Action observation of community ambulation with Functional training based on neurodevelopmental techniques may be beneficial for improving gait speed, functional mobility, and falls and fear of falling, but not biomechanical gait measures, after stroke when compared to Landscape observation with Functional training based on neurodevelopmental techniques.
- Gait training with Rhythmic auditory stimulation and conventional therapy (bobath) may be beneficial for improving biomechanical balance measures, but not biomechanical gait measures and gait speed, after stroke when compared to Gait training with conventional therapy (bobath).
- Cyclic neuromuscular electrical stimulation with Bobath may be beneficial for improving muscle strength, spasticity, and range of motion, but not neurophysiological measures, after stroke when compared to Bobath Approach.
- Body weight supported Treadmill with Bobath physiotherapy may be beneficial for improving gait speed and gait endurance, but not motor recovery and functional mobility, after stroke when compared to Bobath physiotherapy.
- Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy may not be beneficial for improving gait speed after stroke when compared to Conventional gait therapy with Neurodevelopmental therapy; the literature is mixed regarding biomechanical gait measures.

- Motor relearning with electromyography biofeedback may not be beneficial for improving range of motion, neurophysiological measures, and gait speed after stroke when compared to Motor relearning.

A.2 Sit-to-Stand Training (Table 2)

Key Points

- Sit-to-Stand Training may be beneficial for improving muscle strength, but not biomechanical balance measures, spasticity, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding activities of daily living.
- Sit-to-Stand Training (with Swiss ball) may be beneficial for improving motor recovery and biomechanical balance measures, but not functional mobility, after stroke when compared to Sit-to-stand Training (with stool).
- Unstable Sit-to-Stand Support Surface may be beneficial for improving biomechanical gait measures, but not gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Stable Sit-to-Stand Support Surface.
- Sit-to-stand Training with Asymmetrical Foot Position may be beneficial for improving functional mobility and balance after stroke when compared to Sit-to-stand Training with Symmetrical Foot Position.
- Continuous Auditory Feedback During Sit-to-Stand Training may be beneficial for improving motor recovery, biomechanical balance measures, and functional mobility, but not activities of daily living, after stroke when compared to No Feedback During Sit-to- stand Training.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit to Stand Training with physiotherapy.
- Sit-to-Stand training with Visual Feedback may not be beneficial for improving functional mobility after stroke when compared to Sit-to-stand Training with physiotherapy; the literature is mixed regarding biomechanical balance measures.
- Modified Sit-to-Stand Training may be beneficial for improving functional mobility and balance after stroke when compared to Conventional Therapy.
- Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Conventional rehabilitation.
- Sit-to-Stand training combined with transcutaneous electrical nerve stimulation may be beneficial for improving biomechanical balance measures and spasticity, but not muscle strength, after stroke when compared to Sit-to-Stand Training.
- Intensive Sit-to-Stand Training may be beneficial for improving functional mobility, but not activities of daily living, after stroke when compared to Regular Sit-to-Stand Training; the literature is mixed regarding muscle strength.
- Lateral Weight Transference Exercises in Sitting and Standing may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Care.

A.3 Wheelchair Use (Table 3)

Key Points

- The literature is mixed regarding the effect of Neater Uni-Wheelchair Attachment on activities of daily living after stroke when compared to Wheelchair.
- Encouraging Self-Propulsion may not be beneficial for improving spasticity, activities of daily living, and gait speed after stroke when compared to Discouraging Self-Propulsion.

A.4 Trunk Training (Table 4)

Key Points

- Trunk Training may be beneficial for improving motor recovery, biomechanical balance measures, gait speed, functional mobility, and balance, but not biomechanical gait measures, muscle strength, range of motion, activities of daily living, gait endurance, and quality of life, after stroke when compared to Conventional Therapy.
- Trunk stabilization exercise using weights with general physiotherapy may be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Trunk stabilization without weights with general physiotherapy.
- Trunk Training with Physio Equipment may be beneficial for improving biomechanical balance measures and gait endurance, but not biomechanical gait measures and gait speed, after stroke when compared to Trunk stabilization exercises with conventional physical exercise; the literature is mixed regarding functional mobility and balance.
- Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not balance, after stroke when compared to Trunk stabilization exercise with Pelvic compression belt on non- paretic side and comprehensive rehabilitation therapy.
- Segmental mid-thoracic mobilization with neurodevelopmental therapy may be beneficial for improving quality of life, but not biomechanical balance measures and aerobic measures, after stroke when compared to Foam roller exercises with neurodevelopmental therapy.
- Trunk Training with Tilted Platforms may be beneficial for improving sensory and proprioceptive function, activities of daily living, and balance, but not motor recovery, after stroke when compared to Trunk Training with Horizontal Platforms.
- Trunk Exercise with Unstable Surface may be beneficial for improving biomechanical balance measures, muscle strength, gait speed, gait endurance, balance, and falls and fear of falling, but not motor recovery, sensory and proprioceptive function, and functional mobility, after stroke when compared to Trunk Exercise with Stable Surface or conventional therapy.
- Core stability training on stable surface may not be beneficial for improving biomechanical balance measures, muscle strength, balance, and falls and fear of falling after stroke when compared to Core stability training on unstable surface.
- Stable trunk training with plinth may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and quality of life after stroke when compared to Unstable trunk training with Swiss ball.
- Trunk Training Combined with Robotics may be beneficial for improving motor recovery, biomechanical balance measures, muscle strength, and balance after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical gait measures and functional mobility.
- Trunk Training Combined with Dual-Task Training may be beneficial for improving gait speed, functional mobility, balance, and quality of life after stroke when compared to Trunk Training.
- Trunk Training may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Cognitive Training.
- Dynamic Neuromuscular Stabilization may be beneficial for improving range of motion and functional mobility, but not biomechanical gait measures, balance, and falls and fear of falling, after stroke when compared to Conventional Core Exercises; the literature is mixed regarding muscle strength.
- Trunk Training with Visual or Auditory Feedback may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, balance, and falls and fear of falling, but not spasticity and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding muscle strength.
- Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation.

- Different Trunk Muscle Activation Exercises Compared to Each other may be beneficial for improving balance after stroke when compared to Bobath based trunk training with Conventional therapy; the literature is mixed regarding neurophysiological measures.
- Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program may not be beneficial for improving gait speed, balance, and functional mobility after stroke when compared to Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program.
- Trunk Training with Delayed may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Real-Time Visual Feedback.
- Kneeling Training may be beneficial for improving balance, but not motor recovery, biomechanical gait measures, and range of motion, after stroke when compared to Treadmill Training.
- Bobath with Core stability training may be beneficial for improving balance after stroke when compared to Conventional physical therapy.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.
- Core muscle training with Functional electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance after stroke when compared to Core muscle training; the literature is mixed regarding functional mobility.
- Sensory training with Trunk-centred Bobath exercise may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk-centred Bobath exercise.
- Space Balance 3D system for active trunk training with conventional physical and occupational therapy may be beneficial for improving muscle strength and balance after stroke when compared to General trunk training with Conventional physical and occupational physiotherapy.
- Trunk rehabilitation with Kinesio taping may not be beneficial for improving biomechanical balance measures after stroke when compared to Trunk rehabilitation with Placebo taping.
- Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may be beneficial for improving balance, but not biomechanical gait measures, after stroke when compared to Trunk stabilization exercises; the literature is mixed regarding muscle strength.
- Smartphone visual feedback for trunk control training with Conventional care may be beneficial for improving functional mobility and balance after stroke when compared to Conventional care.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living after stroke when compared to Core Training; the literature is mixed regarding balance.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living and balance after stroke when compared to Trunk neuromuscular electrical stimulation.
- Core stability exercises with real time feedback and conventional physical therapy may be beneficial for improving gait speed and functional mobility, but not biomechanical gait measures, after stroke when compared to Core stability exercises with conventional physical therapy.
- Core stability training on stable surface may be beneficial for improving biomechanical balance measures, muscle strength, balance, and falls and fear of falling after stroke when compared to Individualized physiotherapy.
- Stable trunk training with plinth may be beneficial for improving activities of daily living, gait speed, balance, and quality of life after stroke when compared to Standard physiotherapy.
- Unstable trunk training with Swiss ball may be beneficial for improving activities of daily living, gait speed, balance, and quality of life after stroke when compared to Standard physiotherapy.
- Trunk stabilization exercise with Pelvic compression belt on paretic side with comprehensive rehabilitation therapy may not be beneficial for improving balance after stroke when compared to Trunk stabilization exercise with Pelvic compression belt on non- paretic side with comprehensive rehabilitation therapy.
- Aquatic therapy (Halliwick, Watsu, and Trunk Training) may not be beneficial for improving gait speed after stroke when compared to Trunk control exercises; Aquatic therapy (Halliwick, Watsu, and Trunk

Training) may result in lesser improvements in biomechanical gait measures when compared to Trunk control exercises.

A.5 Task-Specific Training (Table 5)

Key Points

- Task-Specific Training may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not motor recovery and balance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical balance measures, activities of daily living, and functional mobility.
- Task oriented training with altered sensory input may be beneficial for improving balance, but not biomechanical balance measures, after stroke when compared to Conventional physical therapy; the literature is mixed regarding falls and fear of falling and functional mobility.
- Task Oriented sitting Reach Training may be beneficial for improving biomechanical gait measures and balance, but not gait speed, after stroke when compared to Sham Training.
- Task Specific Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Task-Oriented Training may not be beneficial for improving functional mobility and balance after stroke when compared to Speed Dependent Treadmill Training.
- Task Oriented Resistance Training may be beneficial for improving biomechanical gait measures, muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to No Treatment.
- Task Oriented Gait Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not activities of daily living and balance, after stroke when compared to Conventional Training.
- Task oriented circuit gait training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Strength training of lower extremities.
- Task Specific Circuit Training may not be beneficial for improving motor recovery, muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional/Sham.
- Lower extremity task- specific rehabilitation may be beneficial for improving gait speed, but not balance, after stroke when compared to Upper extremity task- specific rehabilitation.
- Task Oriented Leg Training may not be beneficial for improving activities of daily living and gait endurance after stroke when compared to Body Weight Support Training; the literature is mixed regarding functional mobility.
- Activity Repetition Training may be beneficial for improving functional mobility and balance after stroke when compared to Task Oriented Training.
- Early supported discharge to Day unit focussed on task- oriented training may not be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Traditional treatment.
- Task Specific Training Combined with Other Therapies may be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, gait endurance, functional mobility, and balance, but not biomechanical gait measures and muscle strength, after stroke when compared to Task Specific Therapy; the literature is mixed regarding biomechanical balance measures and gait speed.
- Task-oriented training with Abdominal drawing-in maneuver may be beneficial for improving biomechanical balance measures, activities of daily living, and balance after stroke when compared to Task-oriented training.
- Task-specific training with cognitive sensorimotor exercise may be beneficial for improving sensory and proprioceptive function, but not spasticity and gait speed, after stroke when compared to Task-specific training with conventional physical therapy.
- Lower body may be beneficial for improving gait endurance and functional mobility after stroke when compared to Upper Body Task Specific Training; the literature is mixed regarding gait speed.

- High Intensity Task-Specific Training may be beneficial for improving gait speed and gait endurance, but not balance, after stroke when compared to Low Intensity Training or Conventional Therapy.
- Task Oriented Training with Tilt Table may be beneficial for improving motor recovery, range of motion, and activities of daily living after stroke when compared to Tilt Table Alone.
- Tilt table one-leg standing training with Conventional rehabilitation may not be beneficial for improving gait speed after stroke when compared to Tilt table progressive task- oriented training with Conventional rehabilitation; the literature is mixed regarding biomechanical gait measures; Tilt table one-leg standing training with Conventional rehabilitation may result in lesser improvements in muscle strength when compared to Tilt table progressive task- oriented training with Conventional rehabilitation.
- Task-Specific Circuit Training may not be beneficial for improving gait speed and functional mobility after stroke when compared to Group Activities; the literature is mixed regarding gait endurance.
- Task-specific training may be beneficial for improving spasticity, functional mobility, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Group Task-Oriented Circuit Training may not be beneficial for improving muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Conventional Training.
- Task-related Training combined with transcutaneous electrical nerve stimulation may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No treatment.
- TENS with Task-related training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity, after stroke when compared to TENS; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed and functional mobility, but not muscle strength, spasticity, and gait endurance, after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No active treatment.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed, but not muscle strength and spasticity, after stroke when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Task-Specific Training with Bobath Concept Approach may be beneficial for improving gait speed, but not biomechanical balance measures, activities of daily living, gait endurance, and balance, after stroke when compared to Task-Specific Training.
- Task-Specific Training may be beneficial for improving balance after stroke when compared to Trunk Training.
- Task-oriented approach training + Conventional PT may be beneficial for improving spasticity and activities of daily living after stroke when compared to Task-oriented training only.
- Manual therapy with task oriented training and home exercise program may be beneficial for improving functional mobility and balance, but not gait speed, after stroke when compared to conventional rehab; the literature is mixed regarding range of motion and quality of life.
- Manual therapy with task oriented training and home exercise program may be beneficial for improving range of motion, functional mobility, balance, and quality of life, but not gait speed, after stroke when compared to task oriented training with home exercise program.
- Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care may not be beneficial for improving muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Usual Care.

- Dual transcranial direct current stimulation with Task-specific training may not be beneficial for improving motor recovery, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sham transcranial direct current stimulation with Task specific training.
- Bihemispheric transcranial direct current stimulation with task oriented training may be beneficial for improving motor recovery, but not activities of daily living, after stroke when compared to Sham transcranial direct current stimulation with task oriented therapy.
- Visual scanning exercises with task specific activities may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Placebo eye exercises with task specific activities(not sham).
- Constraint-induced movement therapy with task specific training may be beneficial for improving spasticity and aerobic measures, but not motor recovery, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to modified constraint-induced movement therapy with task specific training.
- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Russian electrical stimulation with Task-oriented exercises; the literature is mixed regarding range of motion.
- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Conventional care with task- oriented approach or 40 min conventional care 5d/wk, for 6wks; the literature is mixed regarding range of motion.
- Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting) may not be beneficial for improving spasticity, activities of daily living, and gait endurance after stroke when compared to Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting).
- Task-specific training with Mental practice (Motor Imagery) may be beneficial for improving muscle strength and gait speed after stroke when compared to Task-specific training.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving muscle strength and balance after stroke when compared to No active treatment (health education).
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving balance, but not muscle strength, after stroke when compared to Sham transcutaneous electrical nerve stimulation with Task- related training.
- Transcranial direct current stimulation with Task-related training may be beneficial for improving gait speed after stroke when compared to Task-related training; the literature is mixed regarding biomechanical gait measures.
- Gait training with postural control visual feedback on monitor with task specific exercises may be beneficial for improving biomechanical gait measures after stroke when compared to Gait training with physiotherapy.
- Task-specific training with Mental practice E2 Task-specific training and Cognitive training may be beneficial for improving biomechanical balance measures, but not motor recovery, gait speed, and functional mobility, after stroke when compared to No training.
- Task oriented circuit gait training may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Strength training of lower extremities may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Lower extremity task- specific rehabilitation may be beneficial for improving gait speed after stroke when compared to Immobilization of paretic LE and UE using inflatable pressure splint.
- Upper extremity task- specific rehabilitation may not be beneficial for improving gait speed after stroke when compared to Immobilization of paretic LE and UE using inflatable pressure splint.
- Task-oriented training with Abdominal drawing-in maneuver may be beneficial for improving activities of daily living and balance after stroke when compared to Conventional physical therapy.
- Task-oriented training may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Conventional physical therapy.
- TENS with Task-related training may be beneficial for improving gait speed after stroke when compared to No treatment.

A.6 Constraint-Induced Movement Therapy (CIMT) (Table 6)

Key Points

- Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation may be beneficial for improving motor recovery, muscle strength, and balance, but not biomechanical gait measures, gait speed, gait endurance, and quality of life, after stroke when compared to Neurodevelopmental Therapy or Conventional Rehabilitation; the literature is mixed regarding functional mobility.
- Modified constraint-induced movement therapy Use Therapy may be beneficial for improving motor recovery and quality of life, but not gait speed, functional mobility, and balance, after stroke when compared to Forced Use Therapy.
- Constraint-induced movement therapy with task specific training may be beneficial for improving spasticity and aerobic measures, but not motor recovery, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to modified constraint-induced movement therapy with task specific training.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to Traditional physical therapy.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to General game-based training with Traditional physical therapy.
- Constraint-induced movement therapy With Immobilization may be beneficial for improving gait speed and functional mobility, but not balance, after stroke when compared to Without Immobilization.
- Healbot no pelvic mode may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Conventional gait training with treadmill.
- Constraint induced movement training on treadmill with home exercises may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Treadmill training.

A.7 Non-Technological Overground Walking and Gait Training (Table 7)

Key Points

- Overground Walking may be beneficial for improving functional mobility and balance, but not biomechanical gait measures, range of motion, gait speed, gait endurance, and quality of life, after stroke when compared to Treadmill Training.
- Treadmill-based with augmented reality may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking with physical obstacles.
- High Intensity Overground Walking may be beneficial for improving motor recovery and gait endurance, but not muscle strength, aerobic measures, and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding quality of life.
- Community-based gait training may be beneficial for improving gait speed, functional mobility, and quality of life, but not activities of daily living and gait endurance, after stroke when compared to conventional training; the literature is mixed regarding falls and fear of falling.
- Bent Knee (Prowling) Gait Training may be beneficial for improving functional mobility after stroke when compared to Conventional Therapy; the literature is mixed regarding range of motion.
- Backward or Sideway Walking Training may be beneficial for improving gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, but not motor recovery, biomechanical gait measures, biomechanical balance measures, and muscle strength, after stroke when compared to Standing Practice or Conventional Therapy; the literature is mixed regarding activities of daily living.

- Lateral Walking Training with Conventional physical therapy may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Backward Walking Training with Conventional physical therapy.
- 15cm Stair Height Training with Comprehensive rehabilitation may be beneficial for improving neurophysiological measures, but not functional mobility and balance, after stroke when compared to 10cm Stair Height Training with Comprehensive rehabilitation.
- Stair or Ramp Training may be beneficial for improving biomechanical balance measures and balance, but not biomechanical gait measures and functional mobility, after stroke when compared to Flat Surface Gait Training; the literature is mixed regarding muscle strength.
- Gait Training with Motor Imagery may be beneficial for improving gait speed and functional mobility after stroke when compared to Conventional Gait Training.
- Gait Training or Overground Walking with Feedback may be beneficial for improving biomechanical gait measures and functional mobility, but not gait speed and gait endurance, after stroke when compared to Without Feedback.
- Gait Training with Postural Assistance Support may be beneficial for improving gait speed and functional mobility, but not motor recovery, activities of daily living, and balance, after stroke when compared to Gait Training with Conventional Support.
- Gait training with Insoles may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and gait endurance, after stroke when compared to Gait training with Conventional Shoes.
- Accurate Adaptability Walking may be beneficial for improving motor recovery, but not gait speed, functional mobility, balance, and falls and fear of falling, after stroke when compared to Steady State Walking.
- Implicit Motor Learning with Walking may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Explicit Motor Learning with Walking.
- Curved Gait Training may be beneficial for improving functional mobility, but not biomechanical gait measures, neurophysiological measures, and gait speed, after stroke when compared to Straight Gait Training.
- Outward curved gait training may not be beneficial for improving biomechanical gait measures, neurophysiological measures, gait speed, and functional mobility after stroke when compared to Inward curved gait training.
- Gait Training on Sand may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Gait Training on Firm Surface.
- Step activity monitoring behavioural intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention.
- High-intensity Walking intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to Step activity monitoring behavioural intervention.
- High-intensity Walking intervention may not be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to High-intensity Walking intervention with Step activity monitoring behavioural intervention.
- Conventional gait training therapy + Conductive (Petho) methods education may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional gait training.
- Robot-assisted overground gait training may be beneficial for improving motor recovery, activities of daily living, functional mobility, and balance after stroke when compared to Conventional rehab.
- Overground gait training with Rhythmic auditory stimulation may not be beneficial for improving motor recovery, activities of daily living, gait endurance, and balance after stroke when compared to Overground gait training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Inclined treadmill training with overground walking may be beneficial for improving biomechanical gait measures, but not muscle strength, spasticity, and gait speed, after stroke when compared to Regular

treadmill training with overground walking; the literature is mixed regarding range of motion and functional mobility.

- Backward walking observational training & Conventional therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and falls and fear of falling after stroke when compared to Landscape observational training (sham) & Conventional therapy.
- Action observation of backward walking may be beneficial for improving functional mobility after stroke when compared to Landscape video with Backward walking training.
- Gait training program (treadmill + overground walking) wearing a hip-assist robot may be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, gait speed, and falls and fear of falling, but not balance, after stroke when compared to Gait training (treadmill training + over ground walking).
- Error Augmentation treadmill training with Overground walking may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional treadmill training with Overground walking.
- Overground walking with body weight supported may not be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait speed, and gait endurance after stroke when compared to Treadmill training with body weight supported.
- Overground walking training with i-Walker robotic assistive device may be beneficial for improving gait speed, gait endurance, and functional mobility, but not motor recovery, spasticity, and activities of daily living, after stroke when compared to Conventional overground walking training.
- Overground gait training may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Treadmill gait training.
- Long-term Treadmill and Overground Walking may be beneficial for improving gait speed, gait endurance, and quality of life, but not activities of daily living, functional mobility, and falls and fear of falling, after stroke when compared to No Intervention; the literature is mixed regarding biomechanical gait measures.
- Long-term Treadmill and Overground Walking may be beneficial for improving gait endurance, but not biomechanical gait measures, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Short-term Treadmill and Overground Walking; the literature is mixed regarding functional mobility and quality of life.
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Treadmill training with Rehabilitation program may be beneficial for improving gait speed and gait endurance after stroke when compared to Overground gait training with Rehabilitation program; the literature is mixed regarding biomechanical gait measures.
- Intensive locomotor training (body weight supported treadmill with overground walking) may be beneficial for improving gait speed, but not aerobic measures, functional mobility, and balance, after stroke when compared to No training.
- Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program may be beneficial for improving gait endurance and quality of life, but not muscle strength, spasticity, and functional mobility, after stroke when compared to Overground Walking program.
- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional physiotherapy.
- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Overground gait training.
- Treadmill training with overground gait training may be beneficial for improving gait speed and gait endurance, but not quality of life, after stroke when compared to Placebo program of low- intensity home exercise program with Telerehabilitation; the literature is mixed regarding biomechanical gait measures.
- Overground gait training using E-Go device with Standard Physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Overground walking training with Standard Physiotherapy.

A.8 Cycle Ergometer Training (Table 8)

Key Points

- Cycle Ergometer Training may be beneficial for improving motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, and balance, but not spasticity, aerobic measures, and activities of daily living, after stroke when compared to Conventional Therapy.
- Cycle Ergometer Training may be beneficial for improving functional mobility and balance, but not motor recovery, muscle strength, and quality of life, after stroke when compared to Sham or No Treatment; the literature is mixed regarding aerobic measures, gait speed, and gait endurance.
- Cycle Ergometer may be beneficial for improving aerobic measures and functional mobility, but not motor recovery and balance, after stroke when compared to Stretching.
- In-Bed Cycling may not be beneficial for improving activities of daily living and gait endurance after stroke when compared to Usual Care.
- Active Cycling with Education and Coaching may not be beneficial for improving muscle strength, aerobic measures, gait speed, and functional mobility after stroke when compared to Active Cycling with Education or Passive Mobilization.
- Cycle Ergometer and Treadmill Training may not be beneficial for improving aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Conventional Therapy.
- Cycle Ergometer Training may be beneficial for improving gait speed, but not biomechanical gait measures, after stroke when compared to Overground Walking; Cycle Ergometer Training may result in lesser improvements in range of motion when compared to Overground Walking.
- Aerobic training (Ergometer bicycle training) may be beneficial for improving biomechanical balance measures, but not gait speed, after stroke when compared to Aerobic training (sliding machine).
- Sham progressive resistance training with Cycling may be beneficial for improving gait endurance after stroke when compared to Sham progressive resistance training with Sham cycling.
- Progressive Resistance Training and Cycling may be beneficial for improving muscle strength and gait endurance, but not quality of life, after stroke when compared to Sham Progressive Resistance Training and Cycling; the literature is mixed regarding aerobic measures, gait speed, and functional mobility.
- Interlimb Coupling Training may be beneficial for improving motor recovery and functional mobility, but not activities of daily living, after stroke when compared to Conventional Therapy.
- Cycle Ergometry with virtual reality may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Cycle Ergometry.
- Electromyography-triggered Pedalling Training may be beneficial for improving motor recovery, biomechanical gait measures, and gait speed after stroke when compared to Pedalling Training; the literature is mixed regarding neurophysiological measures.
- Aerobic cycling exercise training may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Computerized cognitive training or Aerobic exercise with computerized cognitive training.
- Therapist-supervised in home Cycle ergometer with 30min pedaling may not be beneficial for improving neurophysiological measures after stroke when compared to No treatment.
- Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise.
- Circuit walking, balance, cycling and strength training (CBCS) may be beneficial for improving motor recovery, gait endurance, balance, and quality of life, but not gait speed, after stroke when compared to Sociocultural intervention (board games, cultural discourse and drama).
- Brain-computer interface- controlled pedaling training may be beneficial for improving motor recovery after stroke when compared to Sham brain-computer interface-controlled pedaling training.
- ExoAtlet exoskeleton exercises with rehabilitation may be beneficial for improving muscle strength, activities of daily living, gait speed, and functional mobility, but not spasticity, after stroke when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation; the literature is mixed regarding balance.

- Leg cycling with functional electrical stimulation with interval patterns timing may be beneficial for improving spasticity and range of motion, but not gait speed and balance, after stroke when compared to Leg cycling with functional electrical stimulation with linear patterns timing; the literature is mixed regarding functional mobility.
- High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not gait speed and gait endurance, after stroke when compared to Sham repetitive transcranial magnetic stimulation during cycling.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Protein supplement with Cycle ergometer exercise may be beneficial for improving motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Carbohydrate supplement with Cycle ergometer exercise.
- Aerobic training on cycle ergometer may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and balance after stroke when compared to Sham training of upper extremities.
- Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may be beneficial for improving motor recovery, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Conventional Care.
- Cycling with functional electrical stimulation and conventional care may not be beneficial for improving muscle strength, spasticity, and activities of daily living after stroke when compared to Conventional care.
- Active cycling with functional electrical stimulation may be beneficial for improving aerobic measures, but not biomechanical gait measures, activities of daily living, gait speed, and gait endurance, after stroke when compared to Physiotherapy.
- Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may be beneficial for improving functional mobility, but not muscle strength and spasticity, after stroke when compared to Active Leg Cycling; Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb) may result in lesser improvements in gait speed when compared to Active Leg Cycling.
- Conventional Rehabilitation with Cycling training and biofeedback may be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Conventional Rehabilitation (CR).
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Functional electrical stimulation with cycling may not be beneficial for improving biomechanical balance measures, spasticity, and gait speed after stroke when compared to Cycling.
- Cycling induced by functional electrical stimulation with Conventional Rehabilitation may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Cycling placebo functional electrical stimulation with Conventional Rehabilitation.
- Cycling with functional electrical stimulation may be beneficial for improving motor recovery and gait speed, but not aerobic measures, gait endurance, and functional mobility, after stroke when compared to Cycling with Sham functional electrical stimulation; the literature is mixed regarding muscle strength and balance.
- Aerobic cycling with progressive resistance training (PRT) may not be beneficial for improving aerobic measures, gait speed, gait endurance, and quality of life after stroke when compared to Sham cycling with Sham PRT.
- Functional electrical stimulation with Cycling Ergometer and Conventional Care may not be beneficial for improving motor recovery, gait speed, and balance after stroke when compared to Conventional Care; the literature is mixed regarding muscle strength.
- Body weight supported treadmill with upper extremity ergometry training may be beneficial for improving gait speed, but not muscle strength and gait endurance, after stroke when compared to Resistive leg cycling with upper extremity ergometry training.

- Body weight supported treadmill with upper extremity ergometry training may not be beneficial for improving muscle strength, gait speed, and gait endurance after stroke when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise.

A.9 Treadmill Training (Table 9)

Key Points

- Treadmill Training may be beneficial for improving aerobic measures and gait endurance, but not biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Treadmill Training may not be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Overground Training.
- Treadmill training with Rehabilitation program may be beneficial for improving gait speed and gait endurance after stroke when compared to Overground gait training with Rehabilitation program; the literature is mixed regarding biomechanical gait measures.
- Body weight supported Treadmill Training may be beneficial for improving motor recovery, gait speed, and falls and fear of falling, but not biomechanical gait measures, muscle strength, aerobic measures, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding neurophysiological measures and gait endurance.
- Body weight supported treadmill training may not be beneficial for improving gait speed after stroke when compared to body weight supported treadmill training with Conventional care; Body weight supported treadmill training may result in lesser improvements in functional mobility, balance, and falls and fear of falling when compared to body weight supported treadmill training with Conventional care.
- Body weight supported Treadmill Training may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Overground Walking.
- Body weight supported Treadmill Training may be beneficial for improving biomechanical gait measures, neurophysiological measures, and functional mobility, but not motor recovery and gait endurance, after stroke when compared to Treadmill Training; the literature is mixed regarding gait speed and balance.
- Body weight supported Treadmill Training with Mobility Skills may not be beneficial for improving gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to body weight supported Treadmill Training.
- Body weight supported treadmill with upper extremity ergometry training may be beneficial for improving gait speed, but not muscle strength and gait endurance, after stroke when compared to Resistive leg cycling with upper extremity ergometry training.
- Body weight supported treadmill with upper extremity ergometry training may not be beneficial for improving muscle strength, gait speed, and gait endurance after stroke when compared to body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise.
- Body weight supported Treadmill Training with Facilitation Technique may not be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, and gait speed after stroke when compared to body weight supported Training with Mechanical Assistance.
- Body weight supported Treadmill Training for Different Durations may not be beneficial for improving motor recovery, gait speed, gait endurance, balance, falls and fear of falling, and quality of life after stroke when compared to Home Exercise.
- Treadmill Training with Nordic Poles may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not gait speed, after stroke when compared to Treadmill Training.
- Treadmill Training with Load may not be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, activities of daily living, gait

speed, and falls and fear of falling after stroke when compared to Treadmill Training without Load or Conventional Therapy; the literature is mixed regarding functional mobility.

- Treadmill Training with Incline may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, spasticity, activities of daily living, functional mobility, and balance after stroke when compared to Treadmill Training with Decline or Level Treadmill Training; Treadmill Training with Incline may result in lesser improvements in gait endurance when compared to Treadmill Training with Decline or Level Treadmill Training; the literature is mixed regarding range of motion and gait speed.
- Treadmill Training with Increased Speed may be beneficial for improving biomechanical gait measures, gait speed, and gait endurance, but not balance, after stroke when compared to Treadmill Training with Increased Incline.
- Constraint Induced Movement with Home Exercise may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Treadmill Training.
- Treadmill Training with Foot Drop Stimulator may be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Foot Drop Stimulator.
- Perturbation Treadmill Training may be beneficial for improving balance, but not muscle strength, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Treadmill Training.
- Turning Treadmill Training may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Treadmill Training.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training.
- Treadmill Training with Proprioceptive Neuromuscular Facilitation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Body weight supported Treadmill Training may not be beneficial for improving biomechanical gait measures, range of motion, activities of daily living, and gait speed after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Treadmill Training with Obstacles may be beneficial for improving gait endurance and balance, but not gait speed, functional mobility, and falls and fear of falling, after stroke when compared to Treadmill Training.
- Treadmill Training on Unstable Surface may be beneficial for improving gait endurance and functional mobility, but not gait speed, after stroke when compared to Treadmill Training.
- Treadmill Training with Handrails may be beneficial for improving biomechanical gait measures after stroke when compared to Treadmill Training.
- Treadmill Training with Horizontal Force may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding balance.
- Treadmill-based C-Mill (using gait-dependent augmented reality) may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking therapy (walking-adaptability exercises with physical obstacles).
- Treadmill Training with virtual reality may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Other Training.
- Treadmill Training with Smartphone Application may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Treadmill Training.
- Treadmill Training with Visual Deprivation may be beneficial for improving gait speed, but not gait endurance and functional mobility, after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical gait measures.
- Backward Treadmill Training may be beneficial for improving biomechanical balance measures and functional mobility, but not motor recovery, biomechanical gait measures, spasticity, gait speed, balance, and falls and fear of falling, after stroke when compared to Treadmill or Conventional Rehabilitation; the literature is mixed regarding aerobic measures and gait endurance.

- Body weight supported, backward and forward treadmill training may not be beneficial for improving biomechanical gait measures after stroke when compared to body weight supported, forward treadmill training or body weight supported, backward treadmill training.
- Backward treadmill with partial body weight supported may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and balance, after stroke when compared to Forward treadmill with partial body weight supported treadmill.
- Treadmill Training with Overground Training may be beneficial for improving gait speed and gait endurance, but not biomechanical gait measures, aerobic measures, activities of daily living, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Home Exercise/ no treatment.
- Long-term Treadmill and Overground Walking may be beneficial for improving gait endurance, functional mobility, and quality of life, but not biomechanical gait measures, activities of daily living, and gait speed, after stroke when compared to Short-term Treadmill and Overground Walking.
- High Intensity Treadmill Training may be beneficial for improving biomechanical gait measures, but not aerobic measures, gait speed, gait endurance, functional mobility, and quality of life, after stroke when compared to Low Intensity Treadmill Training.
- Fast Speed Treadmill Training with functional electrical stimulation may be beneficial for improving gait speed, but not gait endurance, after stroke when compared to Self-selected or Fast Speed Treadmill Training.
- Speed Dependent Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not balance, after stroke when compared to Other Treadmill Training.
- Body weight supported treadmill training (fast speed) may result in lesser improvements in gait speed when compared to body weight supported treadmill training (slow speed) or body weight supported treadmill training (variable speed).
- Speed-dependent Treadmill Training may not be beneficial for improving functional mobility and balance after stroke when compared to Task-oriented Training.
- Error Augmentation Treadmill Training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Treadmill Training.
- Treadmill Training may be beneficial for improving aerobic measures and balance, but not neurophysiological measures, gait speed, and functional mobility, after stroke when compared to Stretching; the literature is mixed regarding gait endurance.
- Treadmill Training with Orthotic Devices may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding balance.
- Electromechanical gait trainer therapy with Conventional rehabilitation may be beneficial for improving functional mobility, but not motor recovery, spasticity, and gait speed, after stroke when compared to Body weight-supported treadmill training with Conventional rehabilitation.
- Treadmill Training with Action Observation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Circular treadmill training with ambulation training may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Regular treadmill training+ ambulation training.
- Overground gait training + visual cue feedback may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Standard physiotherapy.
- Treadmill walking training + conventional PT may not be beneficial for improving gait speed and gait endurance after stroke when compared to conventional PT.
- Augmented reality treadmill-based gait adaptation training may be beneficial for improving functional mobility and balance after stroke when compared to Treadmill training with overground walking; the literature is mixed regarding gait speed.
- Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training may be beneficial for improving gait speed and functional mobility after stroke when compared to Custom

physiotherapy program with Treadmill gait training; the literature is mixed regarding biomechanical gait measures.

- Treadmill training with HEALBOT exoskeleton may be beneficial for improving neurophysiological measures and functional mobility, but not balance, after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Functional electrical stimulation with treadmill training may be beneficial for improving gait endurance and functional mobility, but not gait speed, after stroke when compared to Treadmill training.
- Anodal transcranial direct current stimulation with Treadmill training may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Sham transcranial direct current stimulation with Treadmill training.
- Bilateral transcranial direct current stimulation and Treadmill may not be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, gait speed, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Treadmill.
- Bilateral transcranial direct current stimulation and Treadmill may be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, and gait speed, but not functional mobility, after stroke when compared to Cathodal transcranial direct current stimulation and Treadmill.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Underwater Treadmill gait training with conventional rehabilitation may not be beneficial for improving biomechanical gait measures after stroke when compared to Overground gait training with conventional rehabilitation; the literature is mixed regarding gait speed.
- Functional electrical stimulation with treadmill gait training may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Sham Functional electrical stimulation with treadmill gait training.
- Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training.
- Body weight supported treadmill training (BWST) with conventional rehabilitation may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Overground gait training with conventional rehabilitation.
- Dual-task gait training with treadmill may be beneficial for improving gait speed, but not biomechanical gait measures, functional mobility, and falls and fear of falling, after stroke when compared to Single-task gait training with treadmill.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Treadmill training using insole on less affected side may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training.
- Gait training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and quality of life, after stroke when compared to Gait training with treadmill; the literature is mixed regarding gait endurance.
- High frequency repetitive transcranial magnetic stimulation with Treadmill Training may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Sham repetitive transcranial magnetic stimulation with Treadmill Training.
- Cerebellar transcranial direct current stimulation with split-belt treadmill training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Sham cerebellar transcranial direct current stimulation with split-belt treadmill training.
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to AMT priming only (Ankle motor tracking with

Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).

- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may be beneficial for improving quality of life, but not motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- Backward treadmill training with botulinum toxin type A therapy may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to forward treadmill training with botulinum toxin type A therapy.
- High-Intensity Interval Training – Treadmill may be beneficial for improving neurophysiological measures after stroke when compared to Moderate-intensity Continuous Exercise - Treadmill; the literature is mixed regarding gait speed.
- Dual-task (virtual reality-based UL training while walking on treadmill) may be beneficial for improving gait speed, balance, and falls and fear of falling, but not functional mobility, after stroke when compared to Single task treadmill walking.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training with Sham.
- Gait training program (treadmill + overground walking) wearing a hip-assist robot may be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, gait speed, and falls and fear of falling, but not balance, after stroke when compared to Gait training (treadmill training + over ground walking).
- Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training may not be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional Physical therapy.
- High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training may be beneficial for improving motor recovery and gait speed, but not neurophysiological measures, after stroke when compared to Sham repetitive transcranial magnetic stimulation with Treadmill Training.
- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait endurance and functional mobility after stroke when compared to Sham taping with treadmill training.
- Body weight support treadmill training with visual biofeedback may be beneficial for improving gait endurance, but not biomechanical gait measures and functional mobility, after stroke when compared to Body weight support treadmill training; the literature is mixed regarding gait speed.
- Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy may not be beneficial for improving motor recovery, aerobic measures, activities of daily living, balance, and quality of life after stroke when compared to Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy; the literature is mixed regarding muscle strength.
- Aquatic-based treadmill aerobic training with conventional care may be beneficial for improving aerobic measures, but not activities of daily living and gait endurance, after stroke when compared to Land-based aerobic exercises on cycle ergometer with conventional care.
- Rhythmic auditory stimulation with treadmill training and conventional physical therapy may be beneficial for improving gait endurance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Treadmill training with conventional physical therapy; the literature is mixed regarding gait speed.
- Rhythmic auditory stimulation with treadmill training and conventional physical therapy may not be beneficial for improving biomechanical balance measures and gait endurance after stroke when compared to Neurodevelopmental treatment with conventional physical therapy; the literature is mixed regarding biomechanical gait measures and gait speed.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.

- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery, gait speed, and muscle strength, but not activities of daily living, after stroke when compared to Conventional physical therapy with treadmill training.
- Body weight supported treadmill training with anodal transcranial direct current stimulation may be beneficial for improving gait speed, but not motor recovery and balance, after stroke when compared to Body weight supported treadmill training with sham transcranial direct current stimulation; the literature is mixed regarding functional mobility.
- Whole body vibration with Treadmill training may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Exercises on platform without vibration with Treadmill training.
- High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc) may be beneficial for improving gait speed and quality of life, but not functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional physical therapy care; the literature is mixed regarding biomechanical gait measures and gait endurance.
- Treadmill training with visual biofeedback and physiotherapy exercises may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to Treadmill training with physiotherapy exercises.
- Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises may not be beneficial for improving biomechanical balance measures, functional mobility, and balance after stroke when compared to Treadmill training without biofeedback with Conventional individual exercises.
- Aquatic therapy (physical therapy exercises) with aquatic treadmill may be beneficial for improving activities of daily living and functional mobility, but not spasticity and neurophysiological measures, after stroke when compared to Conventional physical therapy exercise with land-based treadmill; the literature is mixed regarding muscle strength and range of motion.
- Treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Treadmill training with Rhythmic auditory feedback may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training.
- Virtual reality treadmill training-based community ambulation may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Community ambulation training.
- Virtual reality treadmill training-based community ambulation may be beneficial for improving functional mobility and falls and fear of falling, but not biomechanical gait measures, gait speed, and gait endurance, after stroke when compared to Conventional rehabilitation.
- Treadmill training with Virtual reality and Ankle robotics may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed after stroke when compared to Seated training with Virtual reality and Ankle robotics.
- Task-oriented treadmill training with conventional therapy may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training with conventional therapy.
- Partial body-weight support treadmill training with Visual biofeedback may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to Partial body-weight support treadmill training.
- Treadmill training with visual biofeedback and basic physiotherapy may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill training with basic physiotherapy.
- Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation may be beneficial for improving gait speed, but not functional mobility, after stroke when compared to Single task training on Treadmill walking with Conventional rehabilitation.

- Treadmill training with Rhythmic auditory stimulation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Overground training with Rhythmic auditory stimulation; the literature is mixed regarding biomechanical gait measures.
- Treadmill training with Virtual reality may be beneficial for improving biomechanical balance measures after stroke when compared to Conventional rehabilitation.
- Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior may be beneficial for improving gait speed, but not gait endurance and balance, after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures and muscle strength.
- Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy may be beneficial for improving gait speed, functional mobility, and balance, but not muscle strength, after stroke when compared to Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy.
- Overground gait training with ankle mass may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Overground gait training without mass or Treadmill gait training without mass.
- Body Weight-Supported Treadmill Training with functional electrical stimulation may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Body Weight Supported Treadmill Training.
- Underwater treadmill walking may be beneficial for improving biomechanical gait measures and neurophysiological measures, but not functional mobility, after stroke when compared to Overground treadmill walking.
- Treadmill training with Virtual reality may be beneficial for improving gait speed after stroke when compared to Treadmill training; the literature is mixed regarding functional mobility and falls and fear of falling.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Treadmill with conventional physical therapy.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving balance after stroke when compared to Conventional therapy; the literature is mixed regarding gait speed, gait endurance, and functional mobility.
- Aerobic training (treadmill and cycle ergometer) may not be beneficial for improving aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Conventional rehabilitation.
- Treadmill training with Virtual reality and Conventional rehabilitation may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, and functional mobility after stroke when compared to Treadmill training with Conventional rehabilitation.
- Aerobic training (cycle ergometer, treadmill, balance) may be beneficial for improving aerobic measures and activities of daily living after stroke when compared to Conventional rehabilitation.
- Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional physiotherapy.
- Treadmill training with Virtual reality may not be beneficial for improving motor recovery, biomechanical gait measures, gait endurance, and functional mobility after stroke when compared to Stepping over real objects on 10m walkway.
- Treadmill training and overground gait training may be beneficial for improving gait speed and gait endurance, but not quality of life, after stroke when compared to Placebo program of low- intensity home exercise program with Telerehabilitation; the literature is mixed regarding biomechanical gait measures.
- Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy may be beneficial for improving functional mobility, but not motor recovery and gait speed, after stroke when compared to Baseline conventional therapy with Treadmill training with partial body weight supported.
- Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care may not be beneficial for improving activities of daily living, gait speed, and

balance after stroke when compared to Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks.

- BWS treadmill training with Conventional care may be beneficial for improving gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional training.
- Forward treadmill with partial BWS treadmill may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and balance, after stroke when compared to Conventional rehabilitation.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Inclined treadmill training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Inclined treadmill training.
- Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- Treadmill training with BWS via overhead harness may not be beneficial for improving functional mobility after stroke when compared to Overground gait training.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.

A.10 Physiotherapy and Exercise Programs (Table 10)

Key Points

- Body Weight Shift Technique may be beneficial for improving biomechanical balance measures, gait speed, and balance, but not motor recovery, after stroke when compared to Conventional Therapy.
- Neurorestoration Protocol Physiotherapy may be beneficial for improving activities of daily living and balance, but not neurophysiological measures, after stroke when compared to Conventional Physiotherapy.
- Leisure-time Physical Activity may not be beneficial for improving activities of daily living, gait endurance, and functional mobility after stroke when compared to Nonleisure-time Physical Activity.
- Self-regulation Rehabilitation may not be beneficial for improving motor recovery after stroke when compared to Conventional Therapy; the literature is mixed regarding activities of daily living.
- Range of Motion exercise program by themselves may not be beneficial for improving range of motion, pain, and activities of daily living after stroke when compared to Range of Motion exercise program with physical help.

- Agility Exercise may be beneficial for improving biomechanical gait measures, but not neurophysiological measures, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Stretching.
- Physio equipment may be beneficial for improving balance, but not aerobic measures, after stroke when compared to Conventional Therapy.
- Early Rehabilitation Programs may be beneficial for improving motor recovery, but not functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke; the literature is mixed regarding activities of daily living.
- Early Conventional therapy (after 24-48 hours) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Late Conventional therapy (72-96 hours post stroke).
- Physical Therapy may be beneficial for improving spasticity, activities of daily living, and balance, but not motor recovery, gait speed, and functional mobility, after stroke when compared to No Treatment.
- Occupational Therapy may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to No Treatment.
- Custom Exercise Programs may be beneficial for improving sensory and proprioceptive function, but not motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Aerobic and Resistance Training may not be beneficial for improving range of motion, neurophysiological measures, aerobic measures, gait endurance, and functional mobility after stroke when compared to Aerobic Training.
- Aerobic and Resistance Training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and balance, after stroke when compared to Conventional Care.
- Closed Chain Exercise may be beneficial for improving neurophysiological measures, but not motor recovery, biomechanical gait measures, range of motion, functional mobility, and balance, after stroke when compared to Open Chain Exercise or Rehabilitation; the literature is mixed regarding gait speed.
- Sling Exercise Therapy may be beneficial for improving biomechanical gait measures, pain, gait speed, functional mobility, and balance after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery and activities of daily living.
- Muscle energy technique with conventional therapy may result in lesser improvements in motor recovery, pain, activities of daily living, functional mobility, balance, and quality of life when compared to Neurac with conventional therapy or Muscle energy technique, Neurac and conventional therapy.
- Aerobic Exercise with Cognitive Training may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Nonaerobic Exercise with Unstructured Mental Activities or Sham; the literature is mixed regarding gait endurance.
- Virtual Reality Exercise Program may not be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Customized Physiotherapy or Conventional Physiotherapy.
- High-intensity Functional Exercise Program may be beneficial for improving falls and fear of falling, but not activities of daily living and balance, after stroke when compared to Education.
- Repetitive weight bearing exercises repeated 40 times may be beneficial for improving biomechanical gait measures after stroke when compared to Repetitive weight bearing exercises repeated 20 times.
- Higher Intensity Training may be beneficial for improving motor recovery and neurophysiological measures, but not muscle strength, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Lower Intensity Training or Conventional Care; the literature is mixed regarding biomechanical gait measures.
- Low-to-Moderate Intensity Continuous Training may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Moderate Intensity Interval Training.
- Low-to-Moderate Intensity Continuous Training may not be beneficial for improving motor recovery after stroke when compared to Reduced-Exertion High-Intensity Interval Training; Low-to-Moderate Intensity Continuous Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.

- Increased Duration of Exercise may not be beneficial for improving motor recovery, muscle strength, spasticity, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional Care/Exercise.
- Community-based Physical Activity may be beneficial for improving range of motion, aerobic measures, and gait speed, but not activities of daily living, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to No Intervention; the literature is mixed regarding muscle strength.
- Community-based Exercise Program may be beneficial for improving motor recovery, but not muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, functional mobility, balance, and quality of life, after stroke when compared to Other Care; the literature is mixed regarding gait endurance.
- Community-based Exercise Program may be beneficial for improving activities of daily living and gait endurance, but not muscle strength, functional mobility, balance, and falls and fear of falling, after stroke when compared to Upper Extremity Exercise Program; the literature is mixed regarding aerobic measures and gait speed.
- Non-Paretic Side Training may be beneficial for improving activities of daily living after stroke when compared to Conventional Therapy; the literature is mixed regarding balance.
- Falls Prevention Program may not be beneficial for improving activities of daily living, functional mobility, and falls and fear of falling after stroke when compared to Usual Care.
- Skating Exercise may be beneficial for improving functional mobility, balance, and quality of life, but not aerobic measures, after stroke when compared to Treadmill Training.
- High-Intensity Training with Acute Intermittent Hypoxia may be beneficial for improving gait speed, but not aerobic measures, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to High-Intensity Training Alone; the literature is mixed regarding biomechanical gait measures.
- Aerobic Exercise with Task-Specific Training may be beneficial for improving aerobic measures and gait endurance after stroke when compared to Task-Specific Training Alone.
- Motivational Interviewing with Occupational Therapy may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to Occupational Therapy Alone; the literature is mixed regarding motor recovery.
- Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level) may not be beneficial for improving biomechanical balance measures and balance after stroke when compared to Conventional PT protocol.
- If-Then goal setting for exercise may not be beneficial for improving gait speed, functional mobility, and quality of life after stroke when compared to Goal setting.
- Cognitive therapy with graded activity training may be beneficial for improving gait endurance and quality of life, but not pain, after stroke when compared to Cognitive therapy.
- Team Care may not be beneficial for improving activities of daily living after stroke when compared to conventional care.
- Cross-training Physiotherapy may not be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Conventional Physiotherapy.
- Range of Motion exercise program by themselves may be beneficial for improving pain after stroke when compared to Usual care.
- Range of Motion exercise program with physical help may be beneficial for improving pain after stroke when compared to Usual care.
- Muscle energy technique with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Neurac with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Moderate Intensity Interval Training may not be beneficial for improving motor recovery after stroke when compared to Reduced-Exertion High-Intensity Interval Training; Moderate Intensity Interval Training may result in lesser improvements in activities of daily living when compared to Reduced-Exertion High-Intensity Interval Training.

- High-intensity forward stepping training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and falls and fear of falling, after stroke when compared to Low-intensity variable stepping training; the literature is mixed regarding biomechanical gait measures.
- High-intensity variable stepping training may be beneficial for improving gait speed and gait endurance, but not aerobic measures, functional mobility, and falls and fear of falling, after stroke when compared to Low-intensity variable stepping training; the literature is mixed regarding biomechanical gait measures.
- Muscle energy technique with Neurac with conventional therapy may be beneficial for improving pain after stroke when compared to Conventional therapy.
- Low-to-Moderate Intensity Continuous Training or Moderate Intensity Interval Training may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.
- Reduced-Exertion High-Intensity Interval Training may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.

A.11 Balance Training (Table 11)

Key Points

- Balance-Focused Exercise Programs may be beneficial for improving motor recovery, biomechanical balance measures, functional mobility, and balance, but not sensory and proprioceptive function and activities of daily living, after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding falls and fear of falling.
- Task Specific Balance Training may not be beneficial for improving biomechanical gait measures, activities of daily living, falls and fear of falling, and quality of life after stroke when compared to Upper Limb Exercise; the literature is mixed regarding functional mobility.
- Balance Training with Posture Changes may be beneficial for improving neurophysiological measures, but not activities of daily living, after stroke when compared to Balance Training; the literature is mixed regarding motor recovery and gait speed.
- Shoulder elevation posture change with balance training and Conventional training may be beneficial for improving motor recovery, neurophysiological measures, and gait speed, but not activities of daily living, after stroke when compared to Back posture change with balance training and Conventional training.
- Wobble Board Training may be beneficial for improving biomechanical balance measures, functional mobility, and balance after stroke when compared to Conventional Physiotherapy.
- Balance-Focused Exercise Programs may be beneficial for improving biomechanical balance measures, but not balance and falls and fear of falling, after stroke when compared to At-home Exercises.
- Balance Training Using SMART Balance Master may not be beneficial for improving motor recovery, biomechanical balance measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional Rehabilitation.
- Non-Supportive Balance Trainers with Feedback may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not muscle strength and falls and fear of falling, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding biomechanical balance measures and sensory and proprioceptive function.
- Balance Training with Visual Biofeedback may be beneficial for improving motor recovery and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, spasticity, activities of daily living, functional mobility, and balance, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding range of motion and gait speed.
- Balance training with self- controlled postural control visual biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Balance training with no control over postural control visual biofeedback.
- Standing Practice may be beneficial for improving biomechanical gait measures and functional mobility, but not motor recovery, activities of daily living, and balance, after stroke when compared to Conventional Therapy.

- Perturbation Balance Trainers with Feedback may be beneficial for improving muscle strength and balance, but not spasticity, activities of daily living, gait endurance, and functional mobility, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding motor recovery and gait speed.
- Perturbation Balance Trainers may be beneficial for improving muscle strength and quality of life, but not biomechanical gait measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional Therapy or Balance Training; the literature is mixed regarding motor recovery, spasticity, and sensory and proprioceptive function.
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures, but not balance, after stroke when compared to Visual Feedback Balance Training Group with Conventional Therapy.
- Balance Training with Visual Deprivation may be beneficial for improving biomechanical balance measures and activities of daily living, but not biomechanical gait measures, gait speed, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Balance Training with Visual Cues; the literature is mixed regarding balance.
- Visual cue deprivation with balance training and head control may be beneficial for improving balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Visual cue deprivation with Balance training.
- Balance Training with Kinesthetic Ability Training Device may be beneficial for improving motor recovery and biomechanical balance measures, but not activities of daily living, after stroke when compared to Conventional Rehabilitation.
- Balance Training with Full Rest Periods may not be beneficial for improving balance after stroke when compared to Balance Training with Short Rest Periods.
- Balance Training with Muscle Vibration may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding activities of daily living.
- Balance Training with Biofeedback may be beneficial for improving biomechanical balance measures, gait speed, and quality of life, but not motor recovery, activities of daily living, functional mobility, and balance, after stroke when compared to Balance Training.
- Vestibular Training may be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance, but not biomechanical gait measures, muscle strength, activities of daily living, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Gaze stabilization exercises with balance exercises and neurodevelopmental treatment may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility, but not balance and falls and fear of falling, after stroke when compared to gaze stabilization exercises with neurodevelopmental treatment.
- Robotic Balance Training may be beneficial for improving sensory and proprioceptive function and quality of life, but not motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, balance, and falls and fear of falling, after stroke when compared to Conventional Therapy.
- Trampoline Balance Training may be beneficial for improving balance, but not activities of daily living, gait endurance, and functional mobility, after stroke when compared to Stable Surface Balance Training.
- Ankle-Foot orthosis with Balance Training Shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Ankle-Foot Orthosis with Regular Shoes.
- Balance Training with transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures and balance after stroke when compared to Balance Training with Conventional Care.
- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures after stroke when compared to Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care; the literature is mixed regarding balance.

- Balance Training with Shoe Lift may be beneficial for improving biomechanical balance measures, but not balance and falls and fear of falling, after stroke when compared to Balance Training.
- Strength or Resistance Training with Balance Training may be beneficial for improving muscle strength, gait speed, gait endurance, and balance, but not motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy.
- Structured Balance Awareness may be beneficial for improving balance and falls and fear of falling after stroke when compared to Health Awareness Program.
- Balance Training with Fresnel Prism Glasses may be beneficial for improving gait speed, gait endurance, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Balance and Walking Training.
- Sensory Balance Training may be beneficial for improving gait endurance, but not biomechanical balance measures, gait speed, functional mobility, and balance, after stroke when compared to Robot-assisted Stair Climbing.
- Sitting Balance Training with Sensory Input may be beneficial for improving functional mobility, balance, and quality of life after stroke when compared to Sitting Balance.
- External focus on balance board task may be beneficial for improving biomechanical balance measures, but not functional mobility, after stroke when compared to Internal focus on balance board task.
- Balance Training may be beneficial for improving gait speed, but not motor recovery, after stroke when compared to No Training; the literature is mixed regarding biomechanical gait measures.
- Vestibular rehabilitation may not be beneficial for improving biomechanical balance measures, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Convectional treatment.
- Progressive Balance Training may be beneficial for improving balance after stroke when compared to Balance Training.
- Perturbation Balance Training may not be beneficial for improving biomechanical gait measures and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation; the literature is mixed regarding functional mobility.
- Class-Based Body Awareness Training may not be beneficial for improving sensory and proprioceptive function, gait speed, and quality of life after stroke when compared to Home-Based Body Awareness Training; the literature is mixed regarding motor recovery.
- Visual Scanning Training with Task-Specific Activities may be beneficial for improving balance, but not activities of daily living, after stroke when compared to Task-Specific Activities Alone.
- Vestibular Training may be beneficial for improving functional mobility and quality of life after stroke when compared to Virtual Reality Training.
- Vestibular rehabilitation therapy + Conventional physical therapy may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional care.
- Cognitive behaviour therapy + task-oriented balance training may be beneficial for improving activities of daily living, balance, and falls and fear of falling after stroke when compared to General health education + task-oriented balance training.
- Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation may be beneficial for improving activities of daily living and functional mobility, but not biomechanical balance measures and balance, after stroke when compared to Trunk stabilization and weight transfer exercises + Conventional rehabilitation.
- Vestibular rehabilitation + conventional PT may not be beneficial for improving functional mobility and balance after stroke when compared to conventional PT.
- Pro-Kin system with weight loss system (body-weight support) with balance training may be beneficial for improving functional mobility and balance after stroke when compared to Conventional balance training.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.

- Robot assisted gait training with Traditional balance training may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Traditonal balance training; the literature is mixed regarding motor recovery.
- Gait-slip perturbation with FES to paretic quadriceps muscle may be beneficial for improving biomechanical gait measures and falls and fear of falling after stroke when compared to Gait-slip perturbations.
- Treadmill gait and balance training with Traditional gait and balance training may not be beneficial for improving gait speed, functional mobility, and falls and fear of falling after stroke when compared to Traditional gait with balance training.
- Visual feedback with Unstable surface balance training may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Conventional physical therapy; the literature is mixed regarding range of motion.
- Visual feedback with Unstable surface balance training may be beneficial for improving gait speed and balance, but not biomechanical gait measures and functional mobility, after stroke when compared to Unstable surface balance training; the literature is mixed regarding range of motion.
- Virtual balance training (VBT) with Conservative training may not be beneficial for improving motor recovery, spasticity, activities of daily living, balance, and quality of life after stroke when compared to Conservative training (traditional rehab techniques).
- The literature is mixed regarding the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) on biomechanical balance measures after stroke when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may be beneficial for improving balance after stroke when compared to Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).
- Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy; the literature is mixed regarding functional mobility.
- Virtual reality balance training with Nintendo Wii with conventional physical therapy may be beneficial for improving activities of daily living, functional mobility, and balance, but not motor recovery, after stroke when compared to Conventional physical therapy.
- Perturbation treadmill training group may be beneficial for improving balance, but not muscle strength, activities of daily living, gait speed, and falls and fear of falling, after stroke when compared to Non-perturbation treadmill training group.
- Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation may be beneficial for improving neurophysiological measures, functional mobility, and balance after stroke when compared to Balance Training without functional electrical stimulation with General Rehabilitation.
- Trunk balance training on rocker board with conventional therapy may be beneficial for improving gait endurance and balance after stroke when compared to Trunk balance training on plain surface with conventional therapy.
- Modified PC Balance Training Gaming Platform may be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to PC gaming with Mouse; the literature is mixed regarding balance.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.

- Wii Fit-based balance exercise with conventional rehabilitation may be beneficial for improving biomechanical balance measures and balance, but not functional mobility, after stroke when compared to Conventional rehabilitation; the literature is mixed regarding activities of daily living.
- Progressive resistance with balance training and motivational session may not be beneficial for improving motor recovery, neurophysiological measures, and balance after stroke when compared to Usual activity; the literature is mixed regarding activities of daily living.
- Virtual reality balance training with treatment may not be beneficial for improving activities of daily living, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to treatment.
- Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- Tetrax biofeedback balance training with Conventional care may be beneficial for improving sensory and proprioceptive function after stroke when compared to Conventional care; the literature is mixed regarding biomechanical balance measures, muscle strength, and functional mobility.
- Dynamic balance training with Balance Trainer may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Static balance training with a conventional standing frame.
- Computer-generated interactive visual feedback balance training with Physical therapy may be beneficial for improving motor recovery and balance after stroke when compared to Mirror visual feedback balance training with Physical therapy.
- Balance training with cognitive training may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Balance training with balance board.
- Wii-based balance training may not be beneficial for improving activities of daily living, functional mobility, balance, and falls and fear of falling after stroke when compared to Progressive balance training.
- Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training may be beneficial for improving functional mobility and balance after stroke when compared to Contemporary Bobath Concept Approach.
- Ankle Foot Orthosis (Joint type) with Balance Training may not be beneficial for improving biomechanical balance measures after stroke when compared to No Orthotic with Balance Training; the literature is mixed regarding neurophysiological measures.
- Video Game-Based Balance Training with conventional physical therapy may be beneficial for improving activities of daily living and balance, but not gait speed and functional mobility, after stroke when compared to Conventional physical therapy with Balance Training.
- Wii Fit Plus video game (Balance training) may be beneficial for improving biomechanical balance measures, but not functional mobility, balance, and falls and fear of falling, after stroke when compared to Wii Sports video game (Upper limb training).
- Wii-based balance training may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, and activities of daily living after stroke when compared to Conventional rehabilitation; the literature is mixed regarding functional mobility and balance.
- Standing balance exercises with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Usual care.
- The literature is mixed regarding the effect of Balance training with cognitive training on biomechanical balance measures after stroke when compared to Balance training.
- Dual-task balance training may be beneficial for improving gait speed after stroke when compared to Single-task balance training; the literature is mixed regarding biomechanical balance measures.
- Wii-based balance training may be beneficial for improving functional mobility and balance, but not activities of daily living, after stroke when compared to Control group.
- Balance training with Balance Control Trainer may be beneficial for improving functional mobility and balance, but not muscle strength and activities of daily living, after stroke when compared to Conventional rehabilitation.

- 3D balance exercises (3D Thera-Balance) with visual feedback may be beneficial for improving balance, but not gait speed, after stroke when compared to Weight shifting exercises.
- Virtual reality-based balance training may be beneficial for improving functional mobility and balance, but not biomechanical gait measures and biomechanical balance measures, after stroke when compared to Conventional therapy; the literature is mixed regarding gait speed.
- Visual biofeedback providing posture information may be beneficial for improving biomechanical balance measures after stroke when compared to Standing without biofeedback.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Visual biofeedback providing posture information.

A.12 Stretching or Mobilization Exercises (Table 12)

Key Points

- Functional Stretching may be beneficial for improving gait speed, but not muscle strength, spasticity, range of motion, and neurophysiological measures, after stroke when compared to Conventional Therapy.
- Mobilization Therapy or Placebo may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living, functional mobility, balance, and quality of life, but not pain, after stroke when compared to Conventional Therapy or Placebo; the literature is mixed regarding spasticity, neurophysiological measures, and gait speed.
- Manual therapy with task oriented training and home exercise program may be beneficial for improving range of motion, but not gait speed, functional mobility, balance, and quality of life, after stroke when compared to task oriented training with home exercise program.
- Sustained natural apophyseal glides with neurodevelopmental techniques may not be beneficial for improving biomechanical balance measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Maitland mobilization with neurodevelopmental techniques.
- Joint mobilization with acupuncture may not be beneficial for improving range of motion, pain, activities of daily living, and gait speed after stroke when compared to Joint mobilization.
- Early and Intense Mobilization may not be beneficial for improving motor recovery, aerobic measures, activities of daily living, functional mobility, and balance after stroke when compared to Care.
- Joint mobilization may result in lesser improvements in biomechanical gait measures and gait speed when compared to Joint mobilization with active stretching; the literature is mixed regarding range of motion.
- Active Stretching may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Joint mobilization with active stretching; the literature is mixed regarding range of motion.
- Mobilization With Movement may be beneficial for improving biomechanical gait measures, balance, and falls and fear of falling after stroke when compared to Muscle Stretching; the literature is mixed regarding range of motion and gait speed.
- Self-ankle mobilization with rehabilitation may not be beneficial for improving activities of daily living after stroke when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation; Self-ankle mobilization with rehabilitation may result in lesser improvements in range of motion and gait speed when compared to Self-ankle mobilization with 10-degree inclined board with rehabilitation; the literature is mixed regarding biomechanical gait measures and balance.
- Dynamic Stretching (Tai Chi, Yoga, Pilates) may be beneficial for improving motor recovery, activities of daily living, and balance, but not muscle strength, range of motion, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional or No Therapy; the literature is mixed regarding biomechanical balance measures and gait speed.
- Daoyin with Conventional rehab may not be beneficial for improving motor recovery and balance after stroke when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab; the literature is mixed regarding activities of daily living.

- Dynamic Stretching may be beneficial for improving falls and fear of falling, but not muscle strength, functional mobility, balance, and quality of life, after stroke when compared to SilverSneaker exercises or Usual care.
- Tai Chi may not be beneficial for improving muscle strength, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to SilverSneakers exercises.
- Body Weight Supported Dynamic Stretching may be beneficial for improving motor recovery and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, gait speed, and balance, after stroke when compared to Conventional Therapy.
- Early Proprioceptive Neuromuscular Facilitation may not be beneficial for improving muscle strength, activities of daily living, and gait endurance after stroke when compared to late Proprioceptive Neuromuscular Facilitation.
- Baduanjin Training may be beneficial for improving functional mobility and balance, but not activities of daily living, falls and fear of falling, and quality of life, after stroke when compared to Conventional Exercise; the literature is mixed regarding biomechanical balance measures.
- Proprioceptive Neuromuscular Facilitation may be beneficial for improving balance, but not muscle strength, after stroke when compared to Conventional Therapy; the literature is mixed regarding range of motion.
- Proprioceptive Neuromuscular Facilitation with Custom Exercises may not be beneficial for improving muscle strength and activities of daily living after stroke when compared to Custom Exercises Alone.
- Proprioceptive Neuromuscular Facilitation with virtual reality may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to proprioceptive neuromuscular facilitation or virtual reality Alone.
- Proprioceptive Neuromuscular Facilitation with Electrical Stimulation may not be beneficial for improving functional mobility and balance after stroke when compared to proprioceptive neuromuscular facilitation Alone.
- Technology-Assisted Ankle Stretcher may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Stretching Board.
- Isotonic muscle stretch with weight bearing may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Healthy isotonic muscle stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch.
- Ankle Range of Motion Training may not be beneficial for improving muscle strength, spasticity, activities of daily living, gait endurance, functional mobility, balance, and quality of life after stroke when compared to No Treatment; the literature is mixed regarding gait speed.
- Stretching in a Supine Position may be beneficial for improving spasticity and neurophysiological measures after stroke when compared to Stretching in a Seated Position.
- Proprioceptive neuromuscular facilitation-Based Gait Training may be beneficial for improving balance, but not biomechanical gait measures, gait speed, and functional mobility, after stroke when compared to Conventional Gait Training.
- Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques may be beneficial for improving muscle strength, gait speed, functional mobility, and balance after stroke when compared to Talocrural joint only mobilization with neurodevelopmental techniques.
- Peripheral Nerve Mobilization with virtual reality-Based Gait Training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional Exercises.
- Chiropractic spinal adjustments + Physical Therapy may be beneficial for improving motor recovery, but not activities of daily living, functional mobility, and quality of life, after stroke when compared to Sham chiropractic + physical therapy.
- Tai Chi Yunshou may be beneficial for improving motor recovery, but not activities of daily living, functional mobility, and balance, after stroke when compared to Common Balance Rehabilitation Therapy; the literature is mixed regarding falls and fear of falling.
- Tai Chi Chuan exercises may not be beneficial for improving functional mobility, balance, and quality of life after stroke when compared to Conventional care physiotherapy.

- Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises may be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises.
- Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures, range of motion, and gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Convetional physiotherapy.
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.
- Baduanjin exercise training with Health education program may be beneficial for improving motor recovery, muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Health education program.
- Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China) may not be beneficial for improving motor recovery, muscle strength, spasticity, range of motion, activities of daily living, and balance after stroke when compared to Manual stretching by the appointed physiotherapist.
- Task-specific training may be beneficial for improving spasticity, functional mobility, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Sham taping with treadmill training.
- Robotic ankle stretching exercises may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional stretching board 2d/wk, for 3.5wks (7 sessions total).
- Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise) may be beneficial for improving gait speed, but not spasticity and activities of daily living, after stroke when compared to Sham Vibration with Exercise (Stretching and active ROM exercise).
- Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs may not be beneficial for improving spasticity, range of motion, pain, and gait speed after stroke when compared to stretching with Oral anti-spastic drugs.
- Neurodevelopmental Bobath Concept Approach may be beneficial for improving biomechanical gait measures after stroke when compared to proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation).
- Aquatic therapy (based on proprioceptive neuromuscular facilitation) may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Proprioceptive neuromuscular facilitation on the ground.
- Aquatic therapy (based on proprioceptive neuromuscular facilitation) may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Conventional therapy.
- Performance-based training with Anklebot stretching may be beneficial for improving gait speed, but not muscle strength, range of motion, activities of daily living, and balance, after stroke when compared to Manual stretching of ankle; the literature is mixed regarding biomechanical gait measures.
- Stretching exercise with wearing toe spreader may not be beneficial for improving biomechanical gait measures, spasticity, gait speed, and balance after stroke when compared to No Orthotic (conventional care).

- Robot assisted passive stretching and active movement training may be beneficial for improving biomechanical gait measures, muscle strength, spasticity, functional mobility, and balance, but not gait endurance, after stroke when compared to At-home passive ankle stretching; the literature is mixed regarding range of motion.
- Therapeutic ultrasound with passive stretching exercise may not be beneficial for improving motor recovery, spasticity, range of motion, and neurophysiological measures after stroke when compared to Passive stretching exercise.
- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.
- Task-specific training with Ankle joint mobilizations may be beneficial for improving range of motion, but not biomechanical gait measures, after stroke when compared to Task-specific training; the literature is mixed regarding biomechanical balance measures and functional mobility.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Lower Limb Robot with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Daoyin with Lower Limb Robot with Conventional rehab.
- Conventional exercises may not be beneficial for improving biomechanical balance measures after stroke when compared to No treatment.
- Tai Chi may be beneficial for improving falls and fear of falling, but not muscle strength, balance, and quality of life, after stroke when compared to Usual care.
- SilverSneakers exercises may not be beneficial for improving falls and fear of falling, muscle strength, balance, and quality of life after stroke when compared to Usual care.
- Ankle Kinesio taping may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.

A.13 Orthotic Devices (Table 13)

Key Points

- Anterior Kinesio Taping may be beneficial for improving balance, but not functional mobility, after stroke when compared to Posterior Kinesio Taping.
- Taping may be beneficial for improving muscle strength and neurophysiological measures, but not falls and fear of falling, activities of daily living, and spasticity, after stroke when compared to no taping, sham taping, or conventional therapy; the literature is mixed regarding biomechanical balance measures, gait speed, balance, biomechanical gait measures, range of motion, functional mobility, and gait endurance.
- Extensor Digitorum Longus Taping may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Tibialis Anterior Taping.
- Pelvic stability training with posterior and lateral taping may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Pelvic stability training with posterior taping only; the literature is mixed regarding biomechanical gait measures.
- Posterior pelvic tilt taping with functional movements (sitting-to- standing, indoor walking and stair walking training) may be beneficial for improving biomechanical gait measures, muscle strength, and gait speed after stroke when compared to Functional movements (sitting-to-standing with indoor walking and stair walking training).

- Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT) may be beneficial for improving gait endurance, functional mobility, and gait speed after stroke when compared to Sham taping with treadmill training.
- Walking with TheraTogs may be beneficial for improving neurophysiological measures, but not gait speed, after stroke when compared to Walking with cane at normal height.
- Walking with hip abductor taping may not be beneficial for improving gait speed after stroke when compared to Walking with cane at normal height; the literature is mixed regarding neurophysiological measures.
- Ankle Kinesio taping may result in lesser improvements in biomechanical gait measures, range of motion, and gait speed when compared to Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (proprioceptive neuromuscular facilitation-KT).
- Taping With Electrical Stimulation may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to Electrical Stimulation or Taping Alone or No Taping.
- New Body Orthosis may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No Orthosis.
- Shoe Insole Orthotics During Walking may be beneficial for improving functional mobility and balance, but not biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed, after stroke when compared to Overground Walking or Conventional Therapy or Sham.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.
- Weight-Shift Therapy Using Shoe Insert may be beneficial for improving biomechanical balance measures, but not motor recovery, biomechanical gait measures, gait speed, and balance, after stroke when compared to Conventional Treatment.
- Ankle-Foot Orthosis may be beneficial for improving motor recovery and functional mobility, but not biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, gait speed, gait endurance, and balance, after stroke when compared to No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis; the literature is mixed regarding neurophysiological measures and aerobic measures.
- Ankle-Foot Orthosis with Botulinum Toxin may be beneficial for improving biomechanical gait measures and spasticity, but not gait speed, after stroke when compared to Botulinum Toxin.
- Taping with Botulinum Toxin may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, and gait speed after stroke when compared to Botulinum Toxin.
- Early Ankle Foot Orthosis may be beneficial for improving activities of daily living and balance, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Late Ankle Foot Orthosis.
- High PFR DAFO may not be beneficial for improving biomechanical gait measures and biomechanical balance measures after stroke when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO); High PFR DAFO may result in lesser improvements in range of motion and gait speed when compared to Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO).
- Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may not be beneficial for improving biomechanical gait measures and biomechanical balance measures after stroke when compared to Medium PFR DAFO; Low PFR Dynamic Ankle-Foot Orthosis (DAFO) may result in lesser improvements in range of motion and gait speed when compared to Medium PFR DAFO.
- Carbon composite ankle-foot orthosis may not be beneficial for improving gait speed and functional mobility after stroke when compared to Posterior leaf spring ankle-foot orthosis.
- A Comparison of Orthoses may not be beneficial for improving biomechanical balance measures, muscle strength, spasticity, pain, activities of daily living, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Oil Damper ankle-foot orthosis with Gait training; the literature is mixed regarding biomechanical gait measures, range of motion, and gait speed.
- Ankle-foot orthosis-PlfS with shoe (SSh) may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to SSh only.
- AFO-plfR may be beneficial for improving biomechanical gait measures, but not range of motion, after stroke when compared to SSh only.

- AFO-PlfS with Standard shoe (SSh) may not be beneficial for improving biomechanical gait measures and range of motion after stroke when compared to AFO-plfR.
- The literature is mixed regarding the effect of Ankle-foot orthosis with mechanical plantar flexion stops (ankle-foot orthosis-PlfS) with Rocker shoe (RSh) on biomechanical gait measures after stroke when compared to ankle-foot orthosis-PlfS with shoe (SSh).
- Solid Ankle Foot Orthosis may not be beneficial for improving biomechanical gait measures after stroke when compared to Dynamic Ankle Foot Orthosis.
- Plastic ankle foot orthosis made with polypropylene may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric.
- Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis).
- 5-degree lateral wedge orthotic in both shoes may not be beneficial for improving muscle strength and gait speed after stroke when compared to 8.5-degree lateral wedge orthotic in both shoes.
- Anterior ankle foot orthosis may be beneficial for improving neurophysiological measures, but not range of motion, after stroke when compared to Posterior ankle foot orthosis; the literature is mixed regarding gait speed and biomechanical gait measures.
- Bivalve Cast may not be beneficial for improving spasticity, range of motion, and activities of daily living after stroke when compared to Pressure-Relieving Ankle-Foot Orthosis or Conventional Care.
- Toe Spreader may not be beneficial for improving biomechanical gait measures, spasticity, gait speed, and balance after stroke when compared to Conventional Care.
- Comparing Types of Canes may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, functional mobility, balance, gait endurance, and quality of life after stroke when compared to Ambulation therapy with cane with Conventional therapy.
- Single-point cane may be beneficial for improving aerobic measures, gait speed, and gait endurance after stroke when compared to Quad cane.
- Neuromuscular electrical stimulation Orthosis may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Ankle-Foot Orthosis; the literature is mixed regarding functional mobility.
- Ankle-Foot Orthosis with Balance Training Shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Ankle-Foot Orthosis with Regular Shoes.
- Nighttime splint wearing with Inpatient rehabilitation may not be beneficial for improving range of motion and functional mobility after stroke when compared to Standing on a tilt table with Inpatient rehabilitation.
- Arm Sling may be beneficial for improving balance, but not biomechanical gait measures, muscle strength, aerobic measures, pain, and gait speed, after stroke when compared to No Therapy; the literature is mixed regarding gait endurance.
- Wearable Devices may be beneficial for improving activities of daily living and balance, but not biomechanical gait measures, after stroke when compared to Conventional Care or No Therapy; the literature is mixed regarding gait speed.
- Oswestry standing frame treatment may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Usual treatment.
- Treadmill Training with Orthotic Devices may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and motor recovery after stroke when compared to Treadmill Training Alone; the literature is mixed regarding balance.
- Visual Biofeedback with Orthotic Devices may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Sham Feedback; the literature is mixed regarding gait speed.
- Regent Suit may be beneficial for improving neurophysiological measures, but not motor recovery, activities of daily living, and balance, after stroke when compared to Conventional Therapy.
- Knee immobilizer brace may result in lesser improvements in balance when compared to Knee immobilizer brace with Foot lifter orthosis.

- Knee immobilizer brace may not be beneficial for improving balance after stroke when compared to Knee immobilizer brace with Rigid taping.
- Knee immobilizer brace with Foot lifter orthosis may be beneficial for improving balance after stroke when compared to Knee immobilizer brace with Rigid taping.
- Knee Orthosis with Gait Training may be beneficial for improving biomechanical gait measures, but not gait speed, after stroke when compared to Gait Training Alone.
- Physical Therapy Wearing Insole (unaffected side) may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and falls and fear of falling after stroke when compared to Physical Therapy.
- Arm sling may be beneficial for improving aerobic measures and gait speed after stroke when compared to No Treatment.
- Wearing an Inhibitor Hand Splint during ambulation may not be beneficial for improving balance after stroke when compared to no treatment; the literature is mixed regarding functional mobility.
- Gait training (with insole on non-paretic foot) may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Gait training (without insole).
- Shoulder brace during treadmill training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to conventional treadmill training.
- Unstable board intervention (using AIREX Balance-pad) under non-paralyzed lower leg with Knee ankle foot orthosis (KAFO) on paralyzed leg and Usual physical therapy may be beneficial for improving biomechanical balance measures after stroke when compared to Usual Physical Therapy.
- Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to Conventional rehab.
- Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator.
- Ankle foot orthosis with gait training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility, but not aerobic measures, after stroke when compared to functional electrical stimulation with gait training.
- Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night may be beneficial for improving spasticity and range of motion, but not neurophysiological measures, after stroke when compared to Physical therapy with Ankle foot orthosis.
- Solid Ankle-foot orthosis, then Rocker shoes may be beneficial for improving aerobic measures and gait speed, but not functional mobility, after stroke when compared to Solid Ankle-foot orthosis, then Regular shoes.
- The literature is mixed regarding the effect of Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation on motor recovery, spasticity, activities of daily living, and balance after stroke when compared to Conventional rehabilitation.
- Gait training with robotic leg brace may not be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Group exercise without robotic leg brace.
- 6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis) may not be beneficial for improving aerobic measures, gait speed, and functional mobility after stroke when compared to Ankle Foot Orthosis only or 12wk ankle-foot orthosis.
- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.
- Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises.

- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Odstock Dropped-foot Stimulator (peroneal nerve functional electrical stimulation) may not be beneficial for improving functional mobility after stroke when compared to No Intervention.
- Tibial nerve block through thermocoagulation with ankle-foot orthosis may not be beneficial for improving motor recovery, spasticity, gait speed, and quality of life after stroke when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis.
- Ankle Kinesio taping may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Lower-leg KT using the concept of Proprioceptive neuromuscular facilitation Kinesio taping (PNF-KT) may be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to No Taping.
- Anterior Kinesio Taping may be beneficial for improving balance after stroke when compared to Standard physiotherapy.
- Posterior Kinesio Taping may be beneficial for improving balance after stroke when compared to Standard physiotherapy.
- Plastic ankle foot orthosis made with polypropylene may be beneficial for improving gait speed, but not biomechanical gait measures, after stroke when compared to Barefoot.
- Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric may not be beneficial for improving gait speed and biomechanical gait measures after stroke when compared to Barefoot.
- Using an off-the-shelf carbon ankle-foot orthosis (C- AFO) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No ankle-foot orthosis.
- Using a custom plastic ankle-foot orthosis (P-AFO) may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No ankle-foot orthosis.
- 5-degree lateral wedge orthotic in both shoes may not be beneficial for improving muscle strength and gait speed after stroke when compared to Overground walking with no wedge.
- Pressure-relieving Ankle- foot Orthosis with Physical Therapy may not be beneficial for improving spasticity, range of motion, and activities of daily living after stroke when compared to Physical Therapy.
- Customized unilateral ankle-foot orthosis may be beneficial for improving functional mobility after stroke when compared to No Intervention.
- 8.5-degree lateral wedge orthotic in both shoes may be beneficial for improving muscle strength, but not gait speed, after stroke when compared to Overground walking with no wedge.
- Walking with hip abductor taping may not be beneficial for improving neurophysiological measures after stroke when compared to Walking with TheraTogs.
- C-AFO ("off the shelf" composite AFO) or P-AFO (custom made plastic AFO) may be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, gait speed, and gait endurance after stroke when compared to No treatment (No AFO, shoes only).
- C-AFO ("off the shelf" composite AFO) may not be beneficial for improving biomechanical gait measures, range of motion, aerobic measures, gait speed, and gait endurance after stroke when compared to P-AFO (custom made plastic AFO).

A.14 Hippotherapy (Table 14)

Key Points

- Hippotherapy Therapy or No Treatment may be beneficial for improving neurophysiological measures, gait speed, gait endurance, and balance, but not functional mobility, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding biomechanical gait measures and activities of daily living.

- Hippotherapy Training Therapy may not be beneficial for improving motor recovery, biomechanical balance measures, muscle strength, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Trunk Training Therapy.
- Hippotherapy Training may be beneficial for improving biomechanical gait measures and gait speed, but not balance, after stroke when compared to Treadmill Training.
- Horse riding therapy may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility, but not gait endurance, after stroke when compared to Wait list control.
- Rhythm-and music based therapy may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Wait list control.

A.15 Biofeedback (Table 15)

Key Points

- Gait Training with Visual Feedback may be beneficial for improving biomechanical gait measures and activities of daily living, but not motor recovery, muscle strength, range of motion, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Gait Training or Conventional Therapy.
- Treadmill Training with Visual Biofeedback may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, activities of daily living, gait speed, and functional mobility after stroke when compared to Treadmill Training; the literature is mixed regarding gait endurance and balance.
- Gait Training with Activity Feedback may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and quality of life after stroke when compared to Gait Training or Conventional Therapy; the literature is mixed regarding functional mobility.
- Gait Training with Postural Control Visual Feedback may be beneficial for improving biomechanical gait measures, but not biomechanical balance measures, muscle strength, aerobic measures, functional mobility, balance, and quality of life, after stroke when compared to Gait Training or electromyography Biofeedback; the literature is mixed regarding gait speed.
- Trunk Training with Visual Biofeedback may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Conventional Therapy; the literature is mixed regarding muscle strength.
- Rehabilitation with electromyography biofeedback may be beneficial for improving neurophysiological measures, but not motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, sensory and proprioceptive function, activities of daily living, gait speed, and gait endurance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical balance measures and functional mobility.
- Constant-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy may not be beneficial for improving muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to Variable-force electromyography- biofeedback Tibalis anterior training with general Physiotherapy; the literature is mixed regarding biomechanical balance measures.
- Galvanic vestibular stimulation may not be beneficial for improving balance after stroke when compared to Lokomat gait training or Physiotherapy with visual feedback.
- The literature is mixed regarding the effect of Lokomat gait training on balance after stroke when compared to Physiotherapy with visual feedback.
- Balance Training with Computer-based Visual Feedback may be beneficial for improving motor recovery and balance after stroke when compared to Mirror Feedback.
- Cycling Training with Biofeedback may be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Conventional Rehabilitation.
- Overground Gait Training with Auditory Feedback may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed, but not gait endurance, functional mobility, and balance, after stroke when compared to Gait Training.

- Gait training with auditory feedback caused by active weight bearing on their paralyzed foot may be beneficial for improving biomechanical balance measures, gait speed, and functional mobility after stroke when compared to General gait training over the ground.
- Verbal Cues and Feedback During Walking may be beneficial for improving gait speed, but not biomechanical gait measures and neurophysiological measures, after stroke when compared to Tactile Cues and Feedback During Walking.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit-to-stand Training with physiotherapy.
- Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation may not be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Conventional rehabilitation.
- Balance Training with Biofeedback may be beneficial for improving biomechanical balance measures, range of motion, sensory and proprioceptive function, gait speed, functional mobility, and balance, but not biomechanical gait measures and activities of daily living, after stroke when compared to Balance Training or Conventional Therapy; the literature is mixed regarding motor recovery and muscle strength.
- Visual feedback with Unstable surface balance training may be beneficial for improving functional mobility and balance, but not biomechanical gait measures and gait speed, after stroke when compared to Unstable surface balance training; the literature is mixed regarding range of motion.
- Rehabilitation with Balance training and Visual biofeedback may not be beneficial for improving functional mobility and balance after stroke when compared to rehabilitation program with lateral wedge insole.
- Target or Reach Visual Feedback Training may be beneficial for improving biomechanical balance measures and neurophysiological measures, but not gait speed and balance, after stroke when compared to Conventional Rehabilitation.
- Strength Training with Visual Feedback may be beneficial for improving motor recovery and muscle strength, but not gait speed and balance, after stroke when compared to Physical Therapy; the literature is mixed regarding sensory and proprioceptive function.
- Perceptual Feedback may be beneficial for improving balance, but not biomechanical balance measures, after stroke when compared to Conventional Treatment.
- Robot-Assisted Gait Training with Biofeedback may be beneficial for improving neurophysiological measures, but not biomechanical gait measures, spasticity, pain, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to No Biofeedback or Conventional Biofeedback; the literature is mixed regarding motor recovery.
- Visual Biofeedback with Orthotic Devices may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Sham Feedback; the literature is mixed regarding gait speed.
- Neurofeedback may be beneficial for improving biomechanical gait measures, sensory and proprioceptive function, gait speed, and functional mobility after stroke when compared to Sham.
- Knowledge of Results (Real-time visual feedback) may not be beneficial for improving motor recovery, gait speed, balance, and falls and fear of falling after stroke when compared to Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues); the literature is mixed regarding biomechanical balance measures.
- Electromyography Biofeedback During Single Support Phase may be beneficial for improving activities of daily living, functional mobility, and balance after stroke when compared to Stance Phase.
- Weight support feedback cane (WSFC) gait training + conventional care may be beneficial for improving biomechanical gait measures and neurophysiological measures, but not gait speed, after stroke when compared to Regular cane gait training + conventional care.
- 100% performance feedback and scatter plot visual feedback may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to No performance feedback.
- Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation may not be beneficial for improving biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Conventional rehabilitation.

- EMG biofeedback from the affected-side soleus muscle (EMG) may not be beneficial for improving biomechanical gait measures, range of motion, and gait speed after stroke when compared to Physical therapy (PT).
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures, but not balance, after stroke when compared to Conventional Therapy.
- Visual Deprivation Group Balance Training Group with Conventional Therapy may be beneficial for improving biomechanical balance measures and functional mobility after stroke when compared to Visual Feedback Balance Training Group with Conventional Therapy.
- Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Standing without biofeedback.
- Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training) may be beneficial for improving balance after stroke when compared to Visual feedback via Mirror with Conventional treatment (static and dynamic balance training).
- Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy; the literature is mixed regarding functional mobility.
- Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D) may be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to General Postural Training.
- Neurofeedback facilitation with motor imagery may be beneficial for improving functional mobility and balance, but not motor recovery, activities of daily living, and gait speed, after stroke when compared to Sham neurofeedback with motor imagery.
- 3D balance training using visual feedback with Conventional therapy may be beneficial for improving biomechanical gait measures, gait speed, balance, and falls and fear of falling after stroke when compared to Conventional therapy.
- Posturographic platform biofeedback training may be beneficial for improving functional mobility and balance after stroke when compared to hospital treatment.
- Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit) may be beneficial for improving balance, but not biomechanical gait measures, after stroke when compared to Trunk stabilization exercises; the literature is mixed regarding muscle strength.
- Gaming Assisted Visual feedback for balance training with Conventional therapy may be beneficial for improving biomechanical gait measures after stroke when compared to Balance training exercises with Conventional therapy; the literature is mixed regarding biomechanical balance measures, range of motion, and balance.
- Wii Fit balance training may not be beneficial for improving balance after stroke when compared to Tetrax biofeedback balance training.
- Smartphone visual feedback for trunk control training with Conventional care may be beneficial for improving functional mobility and balance after stroke when compared to Conventional care.
- Balance training using Biodex stability system with visual biofeedback may not be beneficial for improving biomechanical balance measures and balance after stroke when compared to Balance training.
- Treadmill training with Rhythmic auditory feedback may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Treadmill training.
- Balance training with postural control visual biofeedback and conventional rehabilitation may be beneficial for improving functional mobility and balance, but not activities of daily living, after stroke when compared to Conventional rehabilitation.

- Space balance 3D training using visual feedback program with Conventional rehabilitation may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional rehabilitation.
- Stepper Exercise with Visual Feedback (with mirror) may be beneficial for improving gait speed, but not functional mobility, after stroke when compared to Stepper Exercise; the literature is mixed regarding muscle strength.
- Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care may not be beneficial for improving biomechanical gait measures, spasticity, and gait speed after stroke when compared to Botulinum Toxin A injection (under ultrasound guidance) with conventional care.
- Balance Platform Training with Audio-visual Feedback with Rehabilitation program may not be beneficial for improving biomechanical balance measures, activities of daily living, functional mobility, and balance after stroke when compared to Rehabilitation program with postural training with physiotherapy.
- Balance training with postural control visual biofeedback (SMART Balance master) may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional physical therapy with balance training.
- Balance training with postural control visual biofeedback may be beneficial for improving balance after stroke when compared to Conventional physiotherapy.
- Balance training with self- controlled postural control visual biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Balance training with no control over postural control visual biofeedback.
- Balance training with postural control visual biofeedback from unaffected side and physiotherapy may not be beneficial for improving motor recovery, spasticity, functional mobility, and balance after stroke when compared to Stand-up task with physiotherapy.
- 3D balance exercises (3D Thera-Balance) with visual feedback may be beneficial for improving balance, but not gait speed, after stroke when compared to Weight shifting exercises.
- Usual rehabilitation with Sit-to- Stand training and visual feedback may not be beneficial for improving functional mobility after stroke when compared to Usual rehabilitation with Arm task training; the literature is mixed regarding biomechanical balance measures.
- Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback) may be beneficial for improving biomechanical balance measures, but not motor recovery and activities of daily living, after stroke when compared to Conventional rehabilitation.
- Balance training with force platform biofeedback and Conventional rehabilitation may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Conventional rehabilitation.
- Force platform biofeedback balance training with Conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional rehabilitation.
- Balance training with postural control visual biofeedback (SMART Balance master) may not be beneficial for improving biomechanical balance measures, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Conventional rehabilitation.
- Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation may be beneficial for improving functional mobility and balance, but not muscle strength, spasticity, and activities of daily living, after stroke when compared to Conventional neurorehabilitation.
- Physical therapy with visual biofeedback (SMART Balance master forceplate) may not be beneficial for improving functional mobility and balance after stroke when compared to Physical therapy.
- Balance training with Visual feedback may not be beneficial for improving biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Balance training with Verbal and tactile cues.
- Visual feedback with Nottingham Balance Platform training and physical therapy may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, and balance after stroke when compared to Sham visual feedback with Nottingham Balance Platform training and physical therapy.

- Standing practice with Force platform biofeedback may be beneficial for improving biomechanical gait measures after stroke when compared to Standing training table.
- Continuous Auditory Feedback During Sit-to-Stand Training may be beneficial for improving motor recovery, biomechanical balance measures, and functional mobility, but not activities of daily living, after stroke when compared to No Feedback During Sit-to- stand Training.
- Gait training with functional electrical stimulation may be beneficial for improving range of motion after stroke when compared to care; the literature is mixed regarding biomechanical gait measures.
- Visual biofeedback providing posture information may be beneficial for improving biomechanical balance measures after stroke when compared to Standing without biofeedback.
- Pressure sensor-based vibrotactile biofeedback may be beneficial for improving biomechanical balance measures after stroke when compared to Visual biofeedback providing posture information.
- Constant-force EMG- biofeedback Tibalis anterior training with general Physiotherapy may be beneficial for improving muscle strength after stroke when compared to Upper extremity exercise with general Physiotherapy.
- Visual biofeedback training with Conventional rehabilitation may be beneficial for improving biomechanical balance measures after stroke when compared to Conventional rehabilitation.
- Variable-force EMG- biofeedback Tibalis anterior training with general Physiotherapy may be beneficial for improving muscle strength after stroke when compared to Upper extremity exercise with general Physiotherapy.

A.16 Dual-Task Training (Table 16)

Key Points

- Cognitive Dual Motor Task may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not motor recovery, gait endurance, and balance, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding gait speed and functional mobility.
- Dual Task may be beneficial for improving gait speed and balance, but not motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Single Task Training or Control.
- Dual Cognitive-Motor Task may be beneficial for improving functional mobility, but not motor recovery, biomechanical gait measures, activities of daily living, and balance, after stroke when compared to Balance Training; the literature is mixed regarding biomechanical balance measures and gait speed.
- Dual-Task and Resistance Exercise may not be beneficial for improving muscle strength, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Aerobic and Resistance Exercise.
- Dual-task training with variable priority instructional sets may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Dual-task training with fixed priority instructional sets.
- Motor dual task training with Conventional care may be beneficial for improving functional mobility, but not balance, after stroke when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care.
- Dual-Task Training may be beneficial for improving functional mobility and balance after stroke when compared to Vestibular Rehabilitation.
- Cognitive Task may not be beneficial for improving biomechanical gait measures and gait endurance after stroke when compared to Motor Task or No Task in Various Settings.
- Cognitive Therapeutic Exercise Combined with Goal-Directed Training may be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Goal-Directed Training Alone.
- Cognitive Training may be beneficial for improving biomechanical gait measures, but not gait speed, after stroke when compared to Conventional Therapy.

- Dual-Task Training with Motor Imagery may be beneficial for improving functional mobility and balance after stroke when compared to Dual-Task Training Alone.
- High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation may be beneficial for improving gait speed, functional mobility, balance, and quality of life after stroke when compared to Trunk training with conventional rehabilitation.
- Aquatic-based Dual-task Motor Training may be beneficial for improving biomechanical gait measures, biomechanical balance measures, and gait speed after stroke when compared to Land-based Dual-task Motor Training.
- Aquatic therapy (Dual-task training with upper extremity tasks) may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Neurodevelopmental techniques.

A.17 Mental Practice (Table 17)

Key Points

- Gait Training with Motor Imagery or Mental Practice may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to Gait Training.
- Task-Specific Training with Mental Practice may be beneficial for improving muscle strength and gait speed after stroke when compared to Task-Specific Training.
- Task-Specific Training with Mental Practice may be beneficial for improving biomechanical balance measures, gait endurance, and functional mobility, but not motor recovery, biomechanical gait measures, and gait speed, after stroke when compared to Conventional Training or No Treatment.
- Proprioception Training with Motor Imagery may be beneficial for improving biomechanical balance measures, sensory and proprioceptive function, and balance, but not functional mobility, after stroke when compared to Proprioception Training.
- Action Observation may not be beneficial for improving biomechanical gait measures, functional mobility, and balance after stroke when compared to Motor Imagery or Conventional Therapy; the literature is mixed regarding gait speed.
- Neurofeedback Facilitation with Motor Imagery may be beneficial for improving functional mobility, but not motor recovery, activities of daily living, and gait speed, after stroke when compared to Sham; the literature is mixed regarding balance.
- Mental Practice may be beneficial for improving gait speed, but not motor recovery and activities of daily living, after stroke when compared to Muscle Relaxation.
- Circuit Training with Mental Practice may be beneficial for improving functional mobility, but not biomechanical gait measures, muscle strength, gait speed, and gait endurance, after stroke when compared to Circuit Training with Education.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures and functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Visual Locomotor Training with Auditory Step Rhythm may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Mental Imagery may be beneficial for improving balance and quality of life, but not motor recovery, biomechanical gait measures, muscle strength, activities of daily living, functional mobility, and falls and

fear of falling, after stroke when compared to Conventional Training or Sham; the literature is mixed regarding gait speed.

- Body Awareness Therapy may not be beneficial for improving gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Continuing Usual Daily Activities.
- Motor dual task training with Conventional care may be beneficial for improving functional mobility, but not balance, after stroke when compared to Cognitive dual task training with Conventional care or Motor imagery and Conventional care.
- Cognitive Sensory Motor Training may be beneficial for improving biomechanical balance measures, muscle strength, gait speed, and balance after stroke when compared to Conventional Therapy.
- Mental Practice may not be beneficial for improving muscle strength, gait speed, functional mobility, and quality of life after stroke when compared to Cognitive Training.
- Motor Imagery with Virtual Reality may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to Virtual Reality Alone.
- Dual-task training with motor imagery may be beneficial for improving functional mobility and balance after stroke when compared to Dual-task training.
- Modified sit-to-stand training with mental practice with conventional therapy may be beneficial for improving functional mobility and balance after stroke when compared to Conventional Treatment.
- Task-oriented circuit class training with Motor imagery may be beneficial for improving gait endurance and functional mobility, but not biomechanical gait measures, after stroke when compared to rehabilitation (Bobath); the literature is mixed regarding gait speed.

A.18 Action Observation (Table 18)

Key Points

- Backward Walking Action Observation may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and falls and fear of falling after stroke when compared to Sham or Conventional therapy.
- Action Observation Physical Training may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and functional mobility after stroke when compared to Sham Action Observation Training.
- Functional Action Observation may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to General Action Observation.
- Action Observation Training with Gait Training may be beneficial for improving biomechanical balance measures, gait speed, and falls and fear of falling, but not biomechanical gait measures, functional mobility, and balance, after stroke when compared to Gait Training.
- Action Observation with Treadmill Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Treadmill Training.
- Action Observation with functional electrical stimulation and Gait Training may be beneficial for improving biomechanical balance measures and gait speed, but not neurophysiological measures and balance, after stroke when compared to Gait Training and functional electrical stimulation.
- Action observation training with Rhythmic auditory stimulation and physical therapy may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Action observation with physical therapy.

A.19 Mirror Therapy (Table 19)

Key Points

- Mirror Therapy may be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, range of motion, neurophysiological measures, activities of daily living,

gait endurance, functional mobility, and balance, but not muscle strength, spasticity, gait speed, and quality of life, after stroke when compared to Conventional Therapy or Sham Therapy.

- Treadmill Training Combined with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training.
- Mirror Therapy with Task Oriented Training may be beneficial for improving biomechanical balance measures, gait speed, and balance after stroke when compared to Task Oriented Training; the literature is mixed regarding muscle strength and functional mobility.
- Mirror therapy may not be beneficial for improving motor recovery, sensory and proprioceptive function, and gait speed after stroke when compared to Mirror therapy with Mesh glove (afferent stimulation); the literature is mixed regarding spasticity; Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Mesh glove (afferent stimulation).
- Mirror Therapy with Stimulation may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, and activities of daily living after stroke when compared to Mirror Therapy or Task Oriented Training; the literature is mixed regarding biomechanical gait measures, range of motion, and gait speed.
- Mirror Therapy combined with neuromuscular electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance, but not motor recovery, spasticity, range of motion, gait endurance, and functional mobility, after stroke when compared to Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy.
- Mirror Therapy combined with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, gait speed, balance, and falls and fear of falling after stroke when compared to Conventional Therapy.
- Mirror Therapy with repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, but not functional mobility and balance, after stroke when compared to Mirror Therapy with Sham Stimulation.
- Mirror Therapy with Virtual Reality may be beneficial for improving motor recovery and range of motion, but not spasticity and activities of daily living, after stroke when compared to Conventional therapy; the literature is mixed regarding balance.
- Mirror Therapy with Verbal Feedback may be beneficial for improving balance after stroke when compared to Mirror Therapy Alone.
- At home Mirror therapy + Usual care may not be beneficial for improving muscle strength, spasticity, sensory and proprioceptive function, functional mobility, and balance after stroke when compared to At home Lower limb exercises + Usual care.
- Treadmill Training with Mirror Therapy may not be beneficial for improving motor recovery, spasticity, gait speed, and gait endurance after stroke when compared to Treadmill Training with Sham.
- Home based Isometric Unilateral Strength Training with Mirror Therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home based Isometric Unilateral Strength Training.
- Electrical stimulation with mirror therapy may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Sham electrical stimulation with sham mirror therapy.
- Home rehabilitation, then Clinic rehabilitation may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice; the literature is mixed regarding quality of life.
- Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy may be beneficial for improving biomechanical balance measures, gait endurance, and functional mobility after stroke when compared to Sham repetitive transcranial magnetic stimulation with mirror therapy.
- Mirror therapy with Functional electrical stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional therapy.
- Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may be beneficial for improving muscle strength and balance, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Conventional therapy.

- Mirror therapy may not be beneficial for improving motor recovery, spasticity, sensory and proprioceptive function, and gait speed after stroke when compared to Mirror therapy with Sham mesh glove; Mirror therapy may result in lesser improvements in activities of daily living when compared to Mirror therapy with Sham mesh glove.
- Mirror therapy with Mesh glove (afferent stimulation) may not be beneficial for improving motor recovery, sensory and proprioceptive function, activities of daily living, and gait speed after stroke when compared to Mirror therapy with Sham mesh glove; the literature is mixed regarding spasticity.
- Mirror Therapy with Conventional care may result in lesser improvements in gait speed when compared to Task-oriented training with Conventional care; the literature is mixed regarding biomechanical gait measures.

A.20 Aquatic Therapy (Table 20)

Key Points

- Aquatic Therapy may be beneficial for improving motor recovery, neurophysiological measures, sensory and proprioceptive function, and activities of daily living, but not biomechanical balance measures, muscle strength, pain, gait speed, functional mobility, and balance, after stroke when compared to Conventional Therapy; the literature is mixed regarding biomechanical gait measures and gait endurance.
- Aquatic Therapy may be beneficial for improving aerobic measures and gait speed, but not balance, after stroke when compared to Land-Based Upper Extremity Exercises; the literature is mixed regarding muscle strength.
- Aquatic Treadmill Walking or Aerobic Therapy may not be beneficial for improving motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Overground or Treadmill Walking or Cycle Ergometer; the literature is mixed regarding muscle strength, range of motion, and neurophysiological measures.
- Aquatic Ai Chi Therapy with Dry Land Therapy may not be beneficial for improving pain after stroke when compared to Aquatic Ai Chi Therapy; the literature is mixed regarding biomechanical gait measures and functional mobility; Aquatic Ai Chi Therapy with Dry Land Therapy may result in lesser improvements in balance when compared to Aquatic Ai Chi Therapy.
- Dual-Task Aquatic Training may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, functional mobility, and balance after stroke when compared to Neurodevelopmental Techniques or Land-Based Dual Motor Task.
- Aquatic Therapy with Strength Training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Aquatic Therapy.
- Sequential Preparatory Approach Aquatic Therapy may be beneficial for improving spasticity, balance, and quality of life, but not activities of daily living and functional mobility, after stroke when compared to Aquatic Therapy.
- Anti gravity treadmill may be beneficial for improving aerobic measures and gait endurance, but not activities of daily living and balance, after stroke when compared to Conventional therapy.
- Land-based and aquatic trunk exercises with conventional physiotherapy may be beneficial for improving activities of daily living and balance after stroke when compared to Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy.
- Aquatic Ai Chi therapy with Dry land therapy may be beneficial for improving functional mobility and pain, but not balance, after stroke when compared to Training on dry land.
- Aquatic Ai Chi therapy may be beneficial for improving balance and pain, but not functional mobility, after stroke when compared to Training on dry land.
- Waterjet resistance aquatic treadmill training with conventional PT may be beneficial for improving biomechanical gait measures, gait speed, and balance after stroke when compared to Ankle weight aquatic treadmill training with conventional PT.

A.21 Strength and Resistance Training (Table 21)

Key Points

- Strength or Resistance Training may be beneficial for improving biomechanical gait measures, muscle strength, aerobic measures, gait speed, functional mobility, and balance, but not spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, and quality of life, after stroke when compared to Conventional Therapy or Educational Classes; the literature is mixed regarding motor recovery, biomechanical balance measures, and range of motion.
- Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy may be beneficial for improving activities of daily living and balance after stroke when compared to lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy.
- Task oriented circuit gait training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Strength training of lower extremities.
- Functional strength training - upper limb may not be beneficial for improving functional mobility after stroke when compared to Functional strength training - lower limb.
- Rehabilitation program with leg training may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with Arm training.
- Strength or Resistance Training may be beneficial for improving muscle strength, aerobic measures, and gait endurance, but not activities of daily living, gait speed, functional mobility, and quality of life, after stroke when compared to Stretching or Relaxation; the literature is mixed regarding balance.
- Aerobic and Resistance Training may be beneficial for improving spasticity, activities of daily living, gait speed, and quality of life, but not muscle strength, range of motion, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance, after stroke when compared to Conventional Therapy or Aerobic Training.
- Aerobic training may be beneficial for improving aerobic measures, but not gait speed, gait endurance, and quality of life, after stroke when compared to Progressive resistance training; Aerobic training may result in lesser improvements in muscle strength when compared to Progressive resistance training.
- Sham progressive resistance training with Cycling may be beneficial for improving gait endurance after stroke when compared to Sham progressive resistance training with Sham cycling.
- Strength and Resistance Training Modalities may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, quality of life, and motor recovery, but not functional mobility, after stroke when compared to Limb overloading resistance training; the literature is mixed regarding muscle strength.
- Eccentric resistance training with Gait training may result in lesser improvements in muscle strength and gait speed when compared to Concentric resistance training with Gait training.
- Strength and Resistance Training Intensity may not be beneficial for improving biomechanical gait measures, activities of daily living, gait speed, gait endurance, and functional mobility after stroke when compared to High intensity resistance training (HIRT).
- Low intensity walking and resistance training program may be beneficial for improving gait endurance and quality of life, but not muscle strength, gait speed, functional mobility, and balance, after stroke when compared to High intensity walking and resistance training program.
- Home based Isometric Unilateral Strength Training with Mirror Therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home based Isometric Unilateral Strength Training.
- Strength Training with Visual Feedback may be beneficial for improving motor recovery and muscle strength, but not gait speed and balance, after stroke when compared to Physical Therapy; the literature is mixed regarding sensory and proprioceptive function.
- Resistance Training with Balance Training may be beneficial for improving gait speed and gait endurance, but not motor recovery, neurophysiological measures, activities of daily living, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy; the literature is mixed regarding balance.

- Resistance Training with and without repetitive transcranial magnetic stimulation may be beneficial for improving neurophysiological measures and gait speed after stroke when compared to Resistance Training or repetitive transcranial magnetic stimulation Alone.
- Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to Ankle Strengthening.
- Dietary Supplements with Resistance training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistance Training Alone; the literature is mixed regarding activities of daily living.
- Muscle Strength Training to Paralytic Muscles may not be beneficial for improving neurophysiological measures, gait speed, and functional mobility after stroke when compared to Muscle Strength Training to Non-paralytic Muscles.
- Strength Training with Neurodevelopmental Techniques may be beneficial for improving biomechanical gait measures after stroke when compared to Neurodevelopmental Techniques Alone.
- Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus may not be beneficial for improving motor recovery and balance after stroke when compared to Home exercise program.
- Core strengthening exercises with Conventional rehab may be beneficial for improving functional mobility and balance after stroke when compared to Conventional rehab.
- Metronome training with core strengthening and general balance exercises may be beneficial for improving functional mobility after stroke when compared to Core strengthening with general balance exercises.
- 120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program may not be beneficial for improving muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, and gait endurance after stroke when compared to Resistance training exercise program.
- Acupuncture with trunk strengthening training and conventional rehab may be beneficial for improving biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Conventional rehab with trunk strengthening training.
- Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab may not be beneficial for improving aerobic measures, functional mobility, and balance after stroke when compared to Conventional Stroke Rehabilitation.
- Circuit walking, balance, cycling and strength training (CBCS) may be beneficial for improving motor recovery, gait endurance, balance, and quality of life, but not gait speed, after stroke when compared to Sociocultural intervention (board games, cultural discourse and drama).
- The literature is mixed regarding the effect of Extracorpeal shockwave therapy on spasticity and neurophysiological measures after stroke when compared to conventional rehab.
- Extracorpeal shockwave therapy may be beneficial for improving spasticity after stroke when compared to extracorporeal shockwave therapy with Isokinetic strength training; the literature is mixed regarding neurophysiological measures.
- The literature is mixed regarding the effect of Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations) on biomechanical balance measures after stroke when compared to Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations.
- Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training) may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, balance, and falls and fear of falling after stroke when compared to Sham taping with exercise training.
- Dual Task (Consisting aerobic and resistance exercises while performing cognitive task) may not be beneficial for improving muscle strength, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Aerobic and Resistance Exercises, without Performing Cognitive Task.

- Aquatic training with under water strength training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Aquatic training.
- Early conventional physical therapy with intensive strength exercises may be beneficial for improving motor recovery, but not activities of daily living and balance, after stroke when compared to Conventional physiotherapy.
- Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training may not be beneficial for improving gait speed, gait endurance, functional mobility, and quality of life after stroke when compared to Sham Combined aerobic and resistance training with Sham Cognitive training.
- Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA may be beneficial for improving gait speed, but not biomechanical gait measures and balance, after stroke when compared to Ankle strengthening training with functional electrical stimulation on TA.
- Leucine enriched amino acid with resistant training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistant training; the literature is mixed regarding activities of daily living.
- Task oriented circuit gait training may be beneficial for improving gait speed, functional mobility, balance, and gait endurance after stroke when compared to Educational session on stroke management.
- Aerobic training on cycle ergometer may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and balance after stroke when compared to Sham training of upper extremities.
- Aerobic training (over ground walking) with Resistance training may not be beneficial for improving range of motion, neurophysiological measures, aerobic measures, gait endurance, and functional mobility after stroke when compared to Aerobic Training.
- Aerobic Training (fast walking and walking up-stairs) with Resistance Training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Conventional care; the literature is mixed regarding aerobic measures.
- Task Oriented circuit LE strength training with physiotherapy may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional physiotherapy.
- Aerobic cycling with progressive resistance training (PRT) may be beneficial for improving muscle strength after stroke when compared to Sham cycling with Sham PRT; the literature is mixed regarding gait speed, aerobic measures, gait endurance, quality of life, and functional mobility.
- Task-oriented progressive resistance strength training may be beneficial for improving biomechanical gait measures, muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to No treatment.
- Strength training of lower extremities may be beneficial for improving gait endurance after stroke when compared to Educational session on stroke management.
- Rehabilitation program with leg training may be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with arm & leg immobilized.
- Rehabilitation program with Arm training may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Rehabilitation program with arm & leg immobilized.
- Progressive resistance training may not be beneficial for improving muscle strength, aerobic measures, gait speed, gait endurance, and quality of life after stroke when compared to Resistance training of the arms (sham).
- Aerobic training may be beneficial for improving aerobic measures, but not gait speed, gait endurance, and quality of life, after stroke when compared to Resistance training of the arms (sham).
- Progressive resistive training with Open-kinetic chain may not be beneficial for improving biomechanical gait measures after stroke when compared to No training.
- The literature is mixed regarding the effect of Progressive resistive training with closed-kinetic chain on biomechanical gait measures after stroke when compared to Progressive resistive training with Open-kinetic chain or No training.

A.22 Rhythmic Auditory Stimulation (Table 22)

Key Points

- Treadmill Training with Rhythmic Auditory Stimulation may be beneficial for improving gait endurance, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical gait measures and gait speed.
- Overground Gait Training with Rhythmic Auditory Stimulation may be beneficial for improving biomechanical balance measures, neurophysiological measures, gait speed, and quality of life, but not motor recovery, activities of daily living, gait endurance, functional mobility, and balance, after stroke when compared to Overground Gait Training; the literature is mixed regarding biomechanical gait measures.
- Physical Therapy with Rhythmic Auditory Feedback may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and quality of life after stroke when compared to Physical Therapy or Conventional Therapy; the literature is mixed regarding range of motion.
- Treadmill Training with Rhythmic Auditory Stimulation may be beneficial for improving gait speed, gait endurance, and functional mobility after stroke when compared to Overground Gait with Rhythmic Auditory Stimulation; the literature is mixed regarding biomechanical gait measures.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.
- Auditory Stimulation with Robot Training may be beneficial for improving motor recovery and gait speed, but not activities of daily living, after stroke when compared to Virtual Reality with Robot Training or Conventional Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training.
- Visual Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Kinesthetic Locomotor Imagery Training may not be beneficial for improving functional mobility after stroke when compared to Visual Locomotor Training with Auditory Step Rhythm.
- Visual Locomotor Training with Auditory Step Rhythm may not be beneficial for improving functional mobility after stroke when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.
- Action observation training with Rhythmic auditory stimulation and physical therapy may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Action observation with physical therapy.
- Music-movement therapy (MMT) may not be beneficial for improving muscle strength and range of motion after stroke when compared to Conventional care.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Inclined treadmill training may be beneficial for improving gait speed, gait endurance, functional mobility, and balance after stroke when compared to Treadmill training; the literature is mixed regarding biomechanical gait measures.
- Inclined treadmill training with Rhythmic auditory stimulation may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Inclined treadmill training.

- Rhythmic auditory stimulation with conventional treatment may not be beneficial for improving motor recovery after stroke when compared to Visual cueing with conventional treatment; Rhythmic auditory stimulation with conventional treatment may result in lesser improvements in functional mobility when compared to Visual cueing with conventional treatment.
- Rhythmic auditory stimulation with conventional treatment may be beneficial for improving motor recovery and functional mobility after stroke when compared to Conventional treatment.
- Visual cueing with conventional treatment may be beneficial for improving motor recovery and functional mobility after stroke when compared to Conventional treatment.
- Visual Locomotor Imagery Training may result in lesser improvements in neurophysiological measures and functional mobility when compared to Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm.

A.23 Respiratory Training and Devices (Table 23)

Key Points

- 4 week inspiratory muscle training may not be beneficial for improving activities of daily living after stroke when compared to 8 week inspiratory muscle training; 4 week inspiratory muscle training may result in lesser improvements in aerobic measures and gait endurance when compared to 8 week inspiratory muscle training.
- Respiratory Muscle Training may be beneficial for improving aerobic measures and gait endurance, but not motor recovery, activities of daily living, functional mobility, balance, and quality of life, after stroke when compared to Conventional Rehabilitation or Sham Respiratory Muscle Training; the literature is mixed regarding muscle strength.
- Respiratory Training may be beneficial for improving activities of daily living and balance, but not aerobic measures, after stroke when compared to Conventional Rehabilitation with Liuzijue Qigong.
- Continuous Positive Airway Pressure may not be beneficial for improving activities of daily living, gait endurance, and balance after stroke when compared to Conventional Rehabilitation.
- Respiratory Muscle Training may be beneficial for improving aerobic measures, but not gait endurance, after stroke when compared to Cycle Ergometer Training.
- Inspiratory muscle training (IMT) may be beneficial for improving aerobic measures and functional mobility, but not pain, after stroke when compared to Conventional rehabilitation; the literature is mixed regarding activities of daily living.
- Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT) may be beneficial for improving pain, but not aerobic measures, activities of daily living, and functional mobility, after stroke when compared to Conventional rehabilitation.
- Inspiratory muscle training (IMT) may be beneficial for improving aerobic measures after stroke when compared to Breathing retraining, diaphragmatic breathing and pursed-lips breathing (BRT).

A.24 Home-Based and Caregiver-Mediated Exercise Programs (Table 24)

Key Points

- Home-Based Physiotherapy and Exercise Programs may be beneficial for improving motor recovery, but not biomechanical gait measures, muscle strength, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Therapy; the literature is mixed regarding spasticity.
- Home rehabilitation, then Clinic rehabilitation may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Clinic rehabilitation, then home rehabilitation. Both settings involved mirror therapy and functional task practice; the literature is mixed regarding quality of life.

- Home-based Oculomotor/Gaze Stability Exercises may be beneficial for improving functional mobility, but not falls and fear of falling, after stroke when compared to Conventional Rehabilitation.
- Caregiver-Mediated Programs may be beneficial for improving motor recovery, spasticity, activities of daily living, gait endurance, balance, and quality of life, but not gait speed and functional mobility, after stroke when compared to Conventional Care.
- Nursing Mediated Program may be beneficial for improving motor recovery, spasticity, activities of daily living, gait speed, and quality of life, but not muscle strength and functional mobility, after stroke when compared to Conventional Care.
- Home-based cycle ergometer exercise may not be beneficial for improving gait speed, gait endurance, balance, and quality of life after stroke when compared to Home-based overground walking exercise.
- Early Discharged At-Home Supported Training may not be beneficial for improving gait speed and balance after stroke when compared to Conventional Post-Discharge Rehabilitation.
- Outpatient Clinic Care Follow-up may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Control.
- Specialist Community Rehabilitation may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Conventional Rehabilitation.
- Rapid rehabilitation nursing with continuous nursing after discharge may be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Routine nursing.
- Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training) may be beneficial for improving motor recovery, activities of daily living, and quality of life after stroke when compared to routine rehabilitation training.
- Home based physical activity and walking training program may not be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Conventional care.
- Augmented reality with home based exercise program may be beneficial for improving falls and fear of falling, but not balance and quality of life, after stroke when compared to Home based exercise program; the literature is mixed regarding functional mobility.
- Active dual-hemispheric transcranial direct current stimulation with Home-based exercise may not be beneficial for improving motor recovery, muscle strength, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Home-based exercise.
- Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may be beneficial for improving gait endurance, functional mobility, and balance, but not aerobic measures and activities of daily living, after stroke when compared to Physical Activity with Usual physiotherapy.
- BASNEF model motivational training with home-based rehabilitation may be beneficial for improving motor recovery after stroke when compared to Conventional Care.
- Home-based isometric unilateral strength training with mirror therapy may not be beneficial for improving muscle strength, spasticity, gait speed, functional mobility, and quality of life after stroke when compared to Home-based isometric unilateral strength training.
- Caregiver-mediated exercise program with e-health support with telerehabilitation may not be beneficial for improving motor recovery, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional therapy.
- Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application) may not be beneficial for improving activities of daily living and quality of life after stroke when compared to Usual care; the literature is mixed regarding functional mobility.
- Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback) may not be beneficial for improving motor recovery, muscle strength, activities of daily living, functional mobility, balance, and quality of life after stroke when compared to Usual care.
- Custom Occupational therapy with Caregiver training workshop may not be beneficial for improving activities of daily living, functional mobility, and quality of life after stroke when compared to Usual care alone.
- Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may be beneficial for improving gait speed, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Botulinum Toxin A Injection.

A.25 Telerehabilitation and Technology-Based Home Exercise Programs (Table 25)

Key Points

- Home Based Therapy Using Technology and Telerehabilitation may be beneficial for improving motor recovery, biomechanical gait measures, spasticity, neurophysiological measures, and gait endurance, but not muscle strength, range of motion, pain, activities of daily living, gait speed, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Therapy.
- Telerehabilitation Computerized Complex Repetitive Ankle Movement Training may not be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Simple Ankle Movement Training.
- Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation may be beneficial for improving motor recovery, but not activities of daily living, balance, and quality of life, after stroke when compared to Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation.
- Caregiver-Mediated Programs using Telerehabilitation or Technology may not be beneficial for improving muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional Care; the literature is mixed regarding motor recovery.
- Video-Based Home Exercise Training may be beneficial for improving activities of daily living after stroke when compared to Paper-Based Home Exercise Training; the literature is mixed regarding falls and fear of falling.
- Home based Multimodal rehabilitation program by mHealth app may be beneficial for improving activities of daily living, gait speed, gait endurance, and quality of life, but not functional mobility, after stroke when compared to Conventional care.
- Smart-watch feedback on daily activity level may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to local routine treatment.
- Virtual reality-based telerehabilitation in Home with conventional physical therapy may not be beneficial for improving functional mobility and balance after stroke when compared to Virtual reality-based rehabilitation in clinic with conventional physical therapy.

A.26 Virtual Reality (Table 26)

Key Points

- Virtual Reality may be beneficial for improving sensory and proprioceptive function, gait speed, and functional mobility, but not motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, pain, activities of daily living, gait endurance, balance, falls and fear of falling, and quality of life, after stroke when compared to Conventional Therapy or No Treatment; the literature is mixed regarding range of motion.
- Game-based constraint-induced movement therapy with Traditional physical therapy may be beneficial for improving biomechanical gait measures and biomechanical balance measures, but not gait speed, functional mobility, and balance, after stroke when compared to General game-based training with Traditional physical therapy.
- Virtual Reality may be beneficial for improving activities of daily living and functional mobility, but not gait speed, balance, and falls and fear of falling, after stroke when compared to Balance Training.
- Virtual Reality Exercise Program may be beneficial for improving falls and fear of falling, but not motor recovery, biomechanical gait measures, functional mobility, balance, and quality of life, after stroke when compared to Exercise Program; the literature is mixed regarding gait speed.
- Virtual Reality Training may not be beneficial for improving biomechanical gait measures after stroke when compared to Treadmill Training; the literature is mixed regarding biomechanical balance measures.

- Virtual Reality with Treadmill Training may be beneficial for improving gait speed, balance, and falls and fear of falling, but not biomechanical gait measures, biomechanical balance measures, gait endurance, functional mobility, and quality of life, after stroke when compared to Conventional Therapy or Treadmill Training.
- Virtual reality treadmill training-based community ambulation may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Community ambulation training.
- Treadmill with optic flow with conventional physical therapy may be beneficial for improving gait speed, gait endurance, and functional mobility, but not balance, after stroke when compared to Treadmill with conventional physical therapy.
- Virtual Reality with Treadmill Training may be beneficial for improving gait speed, but not motor recovery, biomechanical gait measures, biomechanical balance measures, activities of daily living, gait endurance, and functional mobility, after stroke when compared to Overground Gait Training.
- Virtual Reality Robotic Training may be beneficial for improving neurophysiological measures, but not biomechanical gait measures, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to Robotic Training and Conventional Therapy.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving muscle strength, but not activities of daily living, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy; the literature is mixed regarding gait speed.
- Virtual Reality Robotic Training may be beneficial for improving gait speed, but not activities of daily living, after stroke when compared to Robotic Training, Auditory Stimulation, and Conventional Therapy.
- Virtual Reality with Other Modalities may be beneficial for improving biomechanical gait measures, spasticity, and gait speed, but not aerobic measures, activities of daily living, and falls and fear of falling, after stroke when compared to Task-specific training; the literature is mixed regarding biomechanical balance measures, gait endurance, functional mobility, and balance.
- Task-oriented training with Virtual reality training may be beneficial for improving motor recovery and balance after stroke when compared to Task-oriented training; the literature is mixed regarding functional mobility.
- Virtual reality therapy and mirror therapy (MT) exercises may be beneficial for improving motor recovery and range of motion, but not spasticity and activities of daily living, after stroke when compared to lower extremity rehabilitation; the literature is mixed regarding balance.
- One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to two sessions daily high intensity Videogame exercises with medical massage; the literature is mixed regarding biomechanical balance measures.
- Virtual Reality may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality (Nintendo Wii) may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Treadmill training with Virtual reality and Ankle robotics may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, range of motion, and gait speed after stroke when compared to Seated training with Virtual reality and Ankle robotics.
- Brain-Computer Interface Controlled Training may be beneficial for improving motor recovery, but not neurophysiological measures, activities of daily living, functional mobility, and balance, after stroke when compared to Sham.
- Virtual Reality Training may be beneficial for improving activities of daily living and functional mobility after stroke when compared to Strength and Resistance Training; the literature is mixed regarding balance.
- Adaptive foot switch Videogame with Regular physiotherapy may be beneficial for improving biomechanical balance measures after stroke when compared to Regular physiotherapy.
- Wii Balance Intervention may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional Balance Intervention.

- Group Video game therapy may not be beneficial for improving gait speed after stroke when compared to Conventional care.
- Peripheral nerve mobilization with virtual reality-based gait training may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Conventional exercises.
- Motor imagery with virtual reality training may be beneficial for improving motor recovery, gait speed, functional mobility, and balance after stroke when compared to virtual reality training with Conventional therapy.
- Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training may be beneficial for improving motor recovery, gait speed, and balance, but not biomechanical gait measures, muscle strength, and neurophysiological measures, after stroke when compared to Augmented reality gait adaptive training.
- Selfpaced treadmill walking in virtual reality environment may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Self Placed Overground Platform walking.
- Lokomat endurance video games may not be beneficial for improving biomechanical gait measures after stroke when compared to Conventional Physiotherapy; the literature is mixed regarding gait speed, gait endurance, biomechanical balance measures, and balance.
- Xbox training during anodal tDCS stimulation to cerebellum may be beneficial for improving gait speed, functional mobility, and balance, but not gait endurance and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.
- Xbox training during anodal tDCS stimulation to cerebellum may not be beneficial for improving gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Xbox training during nodal tDCS stimulation to motor cortex; Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.
- Self paced treadmill walking in virtual reality environment may be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Fixed speed treadmill walking in virtual reality environment.
- Telerehabilitation video games may not be beneficial for improving range of motion, pain, activities of daily living, balance, and quality of life after stroke when compared to Conventional rehab.
- Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy may be beneficial for improving muscle strength, gait speed, functional mobility, balance, and quality of life after stroke when compared to Sit-to-stand Training with physiotherapy.
- Treadmill-based with augmented reality may not be beneficial for improving activities of daily living, gait speed, and functional mobility after stroke when compared to Overground walking with physical obstacles.
- Telerehabilitation using a Kinect camera-based interactive telerehabilitation system may not be beneficial for improving muscle strength, functional mobility, balance, and falls and fear of falling after stroke when compared to Conventional physiotherapy.
- Virtual reality augmented robot-assisted gait training with conventional care may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Robot-assisted gait training with conventional care.
- Speed-Interactive Pedaling Training with Virtual Reality may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Pedaling Training.
- Virtual Reality or Virtual Reality with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Virtual Reality may not be beneficial for improving motor recovery after stroke when compared to Virtual Reality with Proprioceptive Neuromuscular Facilitation.
- Cognitive motor exergaming training may be beneficial for improving biomechanical balance measures, but not gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Conventional training (stretching, strengthening, balance and endurance training).

- Dual-task (virtual reality-based UL training while walking on treadmill) may be beneficial for improving gait speed, balance, and falls and fear of falling, but not functional mobility, after stroke when compared to Single task treadmill walking.
- Robotic-assisted gait training (Lokomat-Pro) with VR may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, after stroke when compared to Robotic-assisted gait training (Lokomat-Nanos).
- The literature is mixed regarding the effect of Virtual reality with cognitive load with conventional rehabilitation on biomechanical gait measures and gait speed after stroke when compared to Treadmill walking with virtual environment with conventional rehabilitation.
- Virtual walking training (virtual reality) with rehabilitation program may be beneficial for improving gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Treadmill gait training with rehabilitation.
- One session daily high intensity Videogame exercises with medical massage may be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Two sessions daily high intensity Videogame exercises with medical massage may not be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Virtual Reality with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving motor recovery, sensory and proprioceptive function, and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving falls and fear of falling, but not sensory and proprioceptive function, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Anodal M1 tDCS with Xbox Kinect games.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, balance, and falls and fear of falling, but not gait speed and gait endurance, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Anodal M1 tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, and balance, but not gait speed, gait endurance, and falls and fear of falling, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Xbox training during nodal tDCS stimulation to motor cortex may be beneficial for improving balance, but not gait speed, gait endurance, functional mobility, and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.

A.27 Electromechanical and Robotic Devices (Table 27)

Key Points

- Robot Assisted Gait Training may be beneficial for improving muscle strength and falls and fear of falling, but not motor recovery, biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy and Overground Gait Training; the literature is mixed regarding neurophysiological measures.
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA).

- Gait Trainer GT I (Rehastim) may not be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility after stroke when compared to Overground gait training.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation.
- Early Robot Assisted Gait Training may be beneficial for improving neurophysiological measures after stroke when compared to Late Start Robot Assisted Gait Training.
- Robot Assisted Gait Training may be beneficial for improving gait endurance, but not biomechanical balance measures, gait speed, functional mobility, and balance, after stroke when compared to Balance Training.
- Electromechanical Gait Training may be beneficial for improving gait speed and functional mobility, but not biomechanical balance measures, activities of daily living, and balance, after stroke when compared to Conventional Treatment or No Treatment; the literature is mixed regarding muscle strength and gait endurance.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional physical therapy.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not be beneficial for improving biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional therapy.
- End-Effector Gait Training may be beneficial for improving motor recovery, but not neurophysiological measures, gait speed, and functional mobility, after stroke when compared to Body Weight Supported Treadmill.
- Electromechanical gait trainer therapy with Conventional rehabilitation may be beneficial for improving functional mobility, but not motor recovery, spasticity, and gait speed, after stroke when compared to Body weight-supported treadmill training with Conventional rehabilitation.
- Exoskeleton Systems may be beneficial for improving neurophysiological measures and falls and fear of falling, but not motor recovery, biomechanical gait measures, muscle strength, spasticity, range of motion, aerobic measures, sensory and proprioceptive function, activities of daily living, gait speed, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Overground Gait Training; the literature is mixed regarding biomechanical balance measures.
- ExoAtlet exoskeleton exercises with rehabilitation may be beneficial for improving muscle strength, activities of daily living, gait speed, and functional mobility, but not spasticity, after stroke when compared to Ortorent MOTO pedal trainer for active-passive training with rehabilitation; the literature is mixed regarding balance.
- Robot Assisted Gait Training (Lokomat) with Conventional Therapy may be beneficial for improving activities of daily living, gait endurance, functional mobility, and quality of life, but not motor recovery and aerobic measures, after stroke when compared to Robot Assisted Gait Training (Lokomat); the literature is mixed regarding gait speed.
- Resistance load Robotic gait system training may not be beneficial for improving gait speed, gait endurance, and balance after stroke when compared to Assistance Robotic gait system training.
- Therapist-assisted locomotor training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Robotic-assisted locomotor training.
- Exoskeleton Systems may be beneficial for improving biomechanical gait measures, neurophysiological measures, gait speed, and falls and fear of falling, but not motor recovery, gait endurance, and balance, after stroke when compared to Treadmill Training; the literature is mixed regarding functional mobility.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to 50% weight robot gait training with general physical therapy.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to 70% weight robot gait training with general physical therapy.

- Home-based overground Robot-assisted gait training (AlterG Bionic Leg) with Usual care may be beneficial for improving gait speed, gait endurance, functional mobility, and balance, but not aerobic measures and activities of daily living, after stroke when compared to Physical Activity with Usual physiotherapy.
- Exoskeleton Gait Training may be beneficial for improving gait speed, gait endurance, and balance, but not motor recovery, neurophysiological measures, pain, functional mobility, falls and fear of falling, and quality of life, after stroke when compared to Functional Task-Specific Training.
- Exoskeleton Systems Administration Method may be beneficial for improving motor recovery and biomechanical gait measures, but not activities of daily living, functional mobility, and balance, after stroke when compared to Therapist controlled robot-assisted gait training; the literature is mixed regarding gait speed.
- Exoskeleton Portable Devices may be beneficial for improving muscle strength, spasticity, and neurophysiological measures, but not motor recovery, biomechanical gait measures, gait speed, gait endurance, and balance, after stroke when compared to Overground Gait Training or Stretching or Sham Ankle Foot Orthosis; the literature is mixed regarding range of motion and functional mobility.
- Robot-assisted training with Power-assisted ankle robot with Conventional training may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Robot-assisted training with Swing-controlled ankle robot with Conventional training.
- Exoskeleton Portable Devices may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, range of motion, activities of daily living, and balance, after stroke when compared to Stretching; the literature is mixed regarding biomechanical gait measures.
- Exoskeleton Portable Devices with Ankle Foot Orthosis may be beneficial for improving motor recovery, gait speed, and functional mobility, but not biomechanical gait measures, spasticity, gait endurance, and balance, after stroke when compared to Sham Ankle Foot Orthosis.
- Robotic-Assisted Gait Training and Restraint may be beneficial for improving motor recovery, activities of daily living, balance, and range of motion, but not gait speed, functional mobility, falls and fear of falling, and biomechanical gait measures, after stroke when compared to Robot-assisted (Lokomat) walking training with arm fixation with conventional care.
- Robotics Combined with Virtual Reality may be beneficial for improving motor recovery and neurophysiological measures, but not spasticity, activities of daily living, gait speed, balance, and falls and fear of falling, after stroke when compared to Robotics, Robotics Combined with Auditory Stimulation or Conventional Training; the literature is mixed regarding functional mobility.
- Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy may be beneficial for improving motor recovery and muscle strength, but not activities of daily living, gait speed, functional mobility, and balance, after stroke when compared to Auditory stimulation with robot- assisted gait training (Treadmill) and conventional physical therapy.
- Galvanic vestibular stimulation may not be beneficial for improving balance after stroke when compared to Gait training (Lokomat) or Physiotherapy with visual feedback.
- The literature is mixed regarding the effect of Gait training (Lokomat) on balance after stroke when compared to Physiotherapy with visual feedback.
- Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, range of motion, gait speed, functional mobility, and balance after stroke when compared to Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot-assisted training for unaffected limb.
- Robot-assisted Trunk Training may be beneficial for improving biomechanical balance measures and balance after stroke when compared to Conventional Therapy.
- Gait training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving functional mobility, but not biomechanical gait measures, gait speed, and quality of life, after stroke when compared to Gait training with treadmill; the literature is mixed regarding gait endurance.
- Gait Training with Gait Exercise Assist Robot (GEAR) may be beneficial for improving activities of daily living, but not motor recovery, after stroke when compared to Overground Gait Training.
- Robotic Verticalization with functional electrical stimulation may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and balance after stroke when compared to

Conventional therapy; the literature is mixed regarding aerobic measures and sensory and proprioceptive function.

- Robotic-assisted Stretching may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional Therapy.
- Regent Suit with Neuromotor rehabilitation may be beneficial for improving activities of daily living, gait speed, and balance, but not biomechanical gait measures and aerobic measures, after stroke when compared to Neuromotor rehabilitation.
- Vibration on sole of foot may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Contact on Sole of Foot with No Vibration.
- Robot-Assisted Gait Training with Visuomotor feedback may be beneficial for improving neurophysiological measures, but not quality of life, after stroke when compared to Robot-Assisted Gait Training; the literature is mixed regarding motor recovery.
- Robotics with Treadmill Training and Virtual Reality may be beneficial for improving motor recovery, but not biomechanical gait measures, biomechanical balance measures, spasticity, range of motion, pain, activities of daily living, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Seated Training.
- Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy may be beneficial for improving quality of life, but not activities of daily living and gait endurance, after stroke when compared to Robotic gait training with Lokomat Free-D with Conventional physiotherapy.
- Ankle robot training low frequency, low intensity may not be beneficial for improving motor recovery and range of motion after stroke when compared to ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity.
- Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation may be beneficial for improving motor recovery, range of motion, gait speed, and balance after stroke when compared to Conventional Therapy.
- Robot-Assisted Gait Training with Robotic Balance Platform may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, pain, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Robot-Assisted Gait Training Alone.
- Robot-Assisted Gait Training may be beneficial for improving motor recovery, but not activities of daily living, after stroke when compared to Upper Limb Therapy.
- Robot-Assisted Gait Training with Balance Training may not be beneficial for improving functional mobility, balance, and falls and fear of falling after stroke when compared to Balance Training Alone; the literature is mixed regarding motor recovery.
- Robot-Assisted Gait Training may be beneficial for improving motor recovery and aerobic measures, but not muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Home-Based Exercise Program.
- Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy may not be beneficial for improving motor recovery, biomechanical gait measures, and spasticity after stroke when compared to Gait training + Conventional PT.
- Healbot T (Exoskeleton) with pelvic motion on may be beneficial for improving neurophysiological measures, but not biomechanical gait measures and gait speed, after stroke when compared to Healbot T (Exoskeleton) with pelvic motion off.
- Progressive reducing assistance force during robot-assisted gait training + conventional PT may be beneficial for improving muscle strength, activities of daily living, functional mobility, and balance after stroke when compared to Full assistance force during robot-assisted gait training + conventional PT.
- Gait trainer device (REHA-STIM) may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional rehabilitation (Bobath).
- 2x Lokomat gait training + 1x Conventional PT may not be beneficial for improving motor recovery, muscle strength, spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to 2x Conventional PT + 1x Lokomat gait training.

- Daoyin with Conventional rehab may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional rehab.
- Daoyin with Conventional rehab may not be beneficial for improving motor recovery and balance after stroke when compared to Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab; the literature is mixed regarding activities of daily living.
- High definition transcranial direct current stimulation (dual) with Robot assisted gait training may be beneficial for improving activities of daily living, but not gait speed, functional mobility, and balance, after stroke when compared to Sham High definition transcranial direct current stimulation with Robot assisted gait training; the literature is mixed regarding motor recovery.
- Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection may be beneficial for improving gait speed and gait endurance, but not spasticity, functional mobility, and balance, after stroke when compared to Botulinum toxin injection with Conventional physiotherapy.
- Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Acupuncture with Conventional rehab.
- Robotic balance training with conventional rehabilitation may be beneficial for improving balance, but not motor recovery, biomechanical balance measures, muscle strength, activities of daily living, functional mobility, and falls and fear of falling, after stroke when compared to Conventional training.
- Brain-computer interface- controlled training robot with Conventional Physiotherapy may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, and functional mobility after stroke when compared to Sham brain-computer interface-controlled training robot with Conventional Physiotherapy.
- Dynamic tilt table with robotic leg movement with functional electrical stimulation may be beneficial for improving gait speed, but not motor recovery, biomechanical gait measures, and range of motion, after stroke when compared to dynamic tilt table with robotic leg movement.
- Virtual reality augmented robot- assisted gait training with conventional care may not be beneficial for improving activities of daily living, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to Robot-assisted gait training with conventional care.
- Brain-computer interface- operated lower limb rehabilitation robot may be beneficial for improving motor recovery, but not functional mobility and balance, after stroke when compared to Sham (Lower limb pedal training without image, video, sound hint); the literature is mixed regarding neurophysiological measures.
- Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment may be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait endurance, and balance after stroke when compared to Scalp Acupuncture with Basic Treatment.
- Trunk stability robot training (3DBT-33) with conventional physical therapy may be beneficial for improving motor recovery and balance, but not functional mobility, after stroke when compared to Conventional Physical Therapy.
- Robot-assisted balance exercises may be beneficial for improving sensory and proprioceptive function, but not functional mobility and balance, after stroke when compared to Conventional care.
- Robotic tilt table (Erigo) therapy may be beneficial for improving muscle strength and quality of life after stroke when compared to Conventional physiotherapy.
- The literature is mixed regarding the effect of Haemorrhagic Stroke Erigo Robotic Tilt Table on motor recovery, muscle strength, spasticity, and quality of life after stroke when compared to Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care.
- Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and functional mobility after stroke when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training.
- Robotic Tilt table with Upper extremity exercises may be beneficial for improving muscle strength and quality of life after stroke when compared to Conventional therapy.

- Robotic ankle stretching exercises may be beneficial for improving biomechanical balance measures and range of motion, but not biomechanical gait measures and gait speed, after stroke when compared to Conventional stretching board.
- Robot-assisted gait training with Virtual reality may not be beneficial for improving muscle strength, gait speed, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training.
- Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy may be beneficial for improving functional mobility and balance, but not spasticity and range of motion, after stroke when compared to Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks.
- Robot-assisted gait training (Lokomat) with Virtual reality may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, after stroke when compared to Robot-assisted gait training (Lokomat).
- Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area may not be beneficial for improving gait speed and functional mobility after stroke when compared to Robot-assisted gait training only.
- Robot-assisted gait training and anodal transcranial direct current stimulation may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Robot-assisted gait training and sham stimulation.
- Botox (250U) With Robot- Assisted Gait Therapy may be beneficial for improving gait endurance, but not spasticity, after stroke when compared to Botox Alone.
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA); Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures and gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side may not be beneficial for improving biomechanical gait measures, range of motion, gait speed, functional mobility, and balance after stroke when compared to Robot-assisted (Lokomat) gait training.
- Anodal transcranial direct current stimulation with Robot- assisted gait training may not be beneficial for improving gait speed, balance, quality of life, biomechanical gait measures, and gait endurance after stroke when compared to Sham transcranial direct current stimulation with Robot- assisted gait training; the literature is mixed regarding functional mobility.
- Anodal transcranial direct current stimulation with Robot- assisted gait training may be beneficial for improving biomechanical gait measures and functional mobility after stroke when compared to Gait training.
- Virtual reality robotic training (computer) may not be beneficial for improving biomechanical gait measures, gait speed, and gait endurance after stroke when compared to Robotic training.
- Lower Limb Robot with Conventional rehab may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Daoyin with Lower Limb Robot with Conventional rehab.
- 30% weight robot gait training with general physical therapy may be beneficial for improving gait speed, functional mobility, and balance after stroke when compared to Treadmill training with general physical therapy.

- Virtual reality with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Auditory stimulation with robot- assisted gait training (Treadmill) with conventional physical therapy may be beneficial for improving muscle strength after stroke when compared to Conventional physical therapy with treadmill training.
- Robot-assisted gait training with Conventional care may not be beneficial for improving motor recovery, muscle strength, spasticity, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Conventional gait training with Conventional care in patients with high motricity.
- Robot-assisted gait training with Conventional care may be beneficial for improving activities of daily living, gait endurance, functional mobility, and balance, but not muscle strength, spasticity, and gait speed, after stroke when compared to Conventional gait training with Conventional care in patients with low motricity.
- Overground gait training using E-Go device with Standard Physiotherapy may not be beneficial for improving motor recovery, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Overground walking training with Standard Physiotherapy.
- 50% weight robot gait training with general physical therapy may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Treadmill training with general physical therapy.
- 70% weight robot gait training with general physical therapy may be beneficial for improving gait speed, but not functional mobility and balance, after stroke when compared to Treadmill training with general physical therapy.

A.28 Functional Electrical Stimulation (Table 28)

Key Points

- Functional electrical stimulation Therapy or Sham Stimulation may be beneficial for improving biomechanical gait measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, and gait speed, but not motor recovery, activities of daily living, gait endurance, functional mobility, balance, and quality of life, after stroke when compared to Conventional Therapy or Sham Stimulation.
- Rehabilitation with functional electrical stimulation may be beneficial for improving muscle strength, spasticity, neurophysiological measures, and functional mobility after stroke when compared to rehabilitation with Placebo stimulation.
- Functional electrical stimulation Combined with Gait Training may be beneficial for improving range of motion, aerobic measures, activities of daily living, and quality of life, but not biomechanical gait measures, spasticity, neurophysiological measures, gait speed, functional mobility, and balance, after stroke when compared to Gait Training or Conventional Therapy; the literature is mixed regarding motor recovery, muscle strength, and gait endurance.
- Cycling with functional electrical stimulation may be beneficial for improving motor recovery, but not biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, aerobic measures, activities of daily living, gait speed, gait endurance, and balance, after stroke when compared to Cycling with or without Sham functional electrical stimulation or Conventional Therapy; the literature is mixed regarding functional mobility.
- Interval Cycling with functional electrical stimulation may be beneficial for improving spasticity and range of motion, but not gait speed and balance, after stroke when compared to Linear Cycling with functional electrical stimulation; the literature is mixed regarding functional mobility.
- Treadmill Training with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, functional mobility, and balance after stroke when compared to Treadmill Training with or without Sham functional electrical stimulation; the literature is mixed regarding muscle strength and gait endurance.

- Robot-assisted Gait Training with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, range of motion, activities of daily living, gait speed, gait endurance, functional mobility, and balance after stroke when compared to Gait Training or Robot-assisted Gait Training.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional physical therapy.
- Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy may not be beneficial for improving biomechanical balance measures, muscle strength, activities of daily living, gait endurance, functional mobility, and balance after stroke when compared to Electromechanical gait trainer with Conventional therapy.
- Balance Training with functional electrical stimulation may be beneficial for improving neurophysiological measures and balance, but not biomechanical gait measures and gait speed, after stroke when compared to Balance Training or Conventional Care; the literature is mixed regarding functional mobility.
- Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation may not be beneficial for improving functional mobility and balance after stroke when compared to Proprioceptive Neuromuscular Facilitation.
- Ankle Training with brain-computer interface-based functional electrical stimulation may be beneficial for improving gait speed, but not biomechanical gait measures, balance, and functional mobility, after stroke when compared to Ankle Training with functional electrical stimulation.
- Functional electrical stimulation with Tilt Table may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, gait speed, and balance, but not biomechanical gait measures and range of motion, after stroke when compared to Conventional Therapy or Simple Tilt Table; the literature is mixed regarding aerobic measures and sensory and proprioceptive function.
- Functional electrical stimulation with Motor Training on Rocker Board may be beneficial for improving spasticity and functional mobility, but not biomechanical balance measures, muscle strength, range of motion, and gait speed, after stroke when compared to Conventional Exercises.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy.
- Functional electrical stimulation Muscle Stimulation may be beneficial for improving motor recovery, spasticity, gait speed, functional mobility, and balance, but not biomechanical balance measures, after stroke when compared to Electrical Muscle Stimulation.
- Four-channel functional electrical stimulation with physiotherapy may be beneficial for improving activities of daily living and balance, but not motor recovery, after stroke when compared to Dual-channel functional electrical stimulation with physiotherapy.
- Four-Channel functional electrical stimulation may be beneficial for improving activities of daily living and balance, but not functional mobility, after stroke when compared to Dual-Channel functional electrical stimulation or Sham; the literature is mixed regarding motor recovery.
- Four-channel functional electrical stimulation with Conventional therapy may be beneficial for improving motor recovery and activities of daily living, but not functional mobility and balance, after stroke when compared to Dual-channel functional electrical stimulation with Conventional therapy.
- Faradic electrical stimulation with Task-oriented exercise may be beneficial for improving spasticity, but not functional mobility, after stroke when compared to Russian electrical stimulation with Task-oriented exercises; the literature is mixed regarding range of motion.
- Faradic Electrical Stimulation may not be beneficial for improving range of motion and functional mobility after stroke when compared to Russian Electrical Stimulation; the literature is mixed regarding spasticity.
- Mirror Therapy with Functional Electrical Stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional Therapy.

- Transcranial direct current stimulation with conventional therapy may be beneficial for improving motor recovery, activities of daily living, and functional mobility, but not neurophysiological measures, after stroke when compared to Functional electrical stimulation with conventional therapy.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation.
- Gait training with transcranial direct current stimulation with conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Ankle foot orthosis with gait training may be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility, but not aerobic measures, after stroke when compared to functional electrical stimulation with gait training.
- Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not be beneficial for improving motor recovery, aerobic measures, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Ankle-Foot Orthosis.
- Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator) may not be beneficial for improving motor recovery, biomechanical gait measures, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Conventional Therapy or Gait Training; the literature is mixed regarding spasticity and range of motion.
- Peroneal Nerve Stimulation may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, activities of daily living, gait speed, and functional mobility after stroke when compared to Sham Stimulation or Conventional Therapy; the literature is mixed regarding motor recovery.
- Core Muscle Training with functional electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance after stroke when compared to Core Muscle Training Alone; the literature is mixed regarding functional mobility.
- FES with Perturbation Training may be beneficial for improving biomechanical gait measures and falls and fear of falling after stroke when compared to Perturbation Training Alone.
- Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes may not be beneficial for improving biomechanical gait measures after stroke when compared to Over-Ground Gait Training + BWS Treadmill Training.
- Mirror feedback with functional electrical stimulation may be beneficial for improving motor recovery, biomechanical gait measures, balance, and falls and fear of falling after stroke when compared to Conventional rehab with functional electrical stimulation.
- Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis) may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with gait training and foot drop stimulator.
- Contralaterally controlled functional electrical stimulation with rehab may not be beneficial for improving range of motion, neurophysiological measures, activities of daily living, gait speed, and functional mobility after stroke when compared to Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab; the literature is mixed regarding motor recovery.
- M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care may be beneficial for improving spasticity and balance after stroke when compared to 20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks; the literature is mixed regarding neurophysiological measures.

- Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training.
- Foot drop stimulator with treadmill training and Basic rehabilitation training may be beneficial for improving biomechanical gait measures, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Foot drop stimulator training with Basic rehabilitation training.
- Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) with Conventional physiotherapy may be beneficial for improving gait speed after stroke when compared to Conventional physiotherapy.
- Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may be beneficial for improving biomechanical balance measures, but not neurophysiological measures and balance, after stroke when compared to Functional electric stimulation (functional electrical stimulation).
- Mirror therapy with Functional electrical stimulation may be beneficial for improving motor recovery, range of motion, and gait speed after stroke when compared to Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout.
- Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer) may be beneficial for improving motor recovery, but not gait speed, gait endurance, and functional mobility, after stroke when compared to Conventional Care.
- Gait training with functional electrical stimulation and Action observation may be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Gait training with functional electrical stimulation.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may not be beneficial for improving muscle strength, activities of daily living, gait speed, functional mobility, and balance after stroke when compared to Gait Trainer GT II (Rehastim) with Regular rehabilitation.
- Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation may be beneficial for improving functional mobility, but not muscle strength, activities of daily living, and balance, after stroke when compared to Overground gait training.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy may be beneficial for improving aerobic measures and gait speed, but not motor recovery, spasticity, and quality of life, after stroke when compared to Conventional physiotherapy.
- Rehabilitation with electromyography biofeedback may be beneficial for improving range of motion after stroke when compared to Conventional rehabilitation; the literature is mixed regarding biomechanical gait measures.
- Customized unilateral ankle-foot orthosis may be beneficial for improving functional mobility after stroke when compared to No Intervention.
- Four-channel functional electrical stimulation (FES) with Standard physiotherapy may be beneficial for improving activities of daily living after stroke when compared to Sham FES with Standard physiotherapy.
- Dual-channel FES with Standard physiotherapy may be beneficial for improving activities of daily living after stroke when compared to Sham FES with Standard physiotherapy.
- Common peroneal nerve stimulation may not be beneficial for improving neurophysiological measures after stroke when compared to Low Frequency rTMS.

A.29 Neuromuscular Electrical Stimulation (NMES) (Table 29)

Key Points

- Cyclic neuromuscular electrical stimulation may be beneficial for improving muscle strength, spasticity, and range of motion, but not neurophysiological measures, after stroke when compared to Conventional Therapy or Neurodevelopmental Techniques.
- Neuromuscular electrical stimulation Therapy may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery, muscle strength, and balance.
- Neuromuscular electrical stimulation on tibialis anterior with ambulation training may not be beneficial for improving biomechanical gait measures, muscle strength, range of motion, and gait speed after stroke when compared to neuromuscular electrical stimulation on medial gastrocnemius with ambulation training; the literature is mixed regarding spasticity.
- Electromyography-triggered neuromuscular electrical stimulation may not be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, and functional mobility after stroke when compared to Conventional Therapy.
- Interferential Current neuromuscular electrical stimulation with Air-pump Massage may be beneficial for improving spasticity, gait speed, functional mobility, and balance after stroke when compared to Sham.
- Passive Movement Training with cyclic neuromuscular electrical stimulation may be beneficial for improving gait speed, but not spasticity, after stroke when compared to Passive Movement Training.
- Passive Movement Training with cyclic neuromuscular electrical stimulation may be beneficial for improving gait speed, but not spasticity, after stroke when compared to Cyclic neuromuscular electrical stimulation.
- Cyclic neuromuscular electrical stimulation may not be beneficial for improving activities of daily living after stroke when compared to Trunk/Core Training; the literature is mixed regarding balance.
- Trunk neuromuscular electrical stimulation with Core muscle training may not be beneficial for improving activities of daily living and balance after stroke when compared to Trunk neuromuscular electrical stimulation.
- Sensory threshold neuromuscular electrical stimulation with Conventional therapy may be beneficial for improving spasticity and range of motion, but not functional mobility, after stroke when compared to Conventional therapy.
- Contralaterally controlled neuromuscular electrical stimulation with conventional therapy may be beneficial for improving motor recovery and activities of daily living, but not neurophysiological measures, after stroke when compared to neuromuscular electrical stimulation with conventional therapy.
- Contralaterally Controlled neuromuscular electrical stimulation may not be beneficial for improving range of motion, neurophysiological measures, activities of daily living, gait speed, functional mobility, biomechanical gait measures, and muscle strength after stroke when compared to Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation; the literature is mixed regarding motor recovery.
- Mirror Therapy with Cyclic neuromuscular electrical stimulation may be beneficial for improving muscle strength, gait speed, and balance, but not motor recovery, spasticity, range of motion, gait endurance, and functional mobility, after stroke when compared to Conventional Therapy.
- Neuromuscular electrical stimulation Therapy may not be beneficial for improving motor recovery, activities of daily living, and balance after stroke when compared to Mirror Therapy.
- Neuromuscular electrical stimulation with Exercise Therapy may not be beneficial for improving motor recovery, gait speed, gait endurance, functional mobility, balance, and quality of life after stroke when compared to Exercise Therapy.
- Neuromuscular electrical stimulation with Walking Training may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Conventional Walking Training with Ankle-Foot Orthosis; the literature is mixed regarding functional mobility.
- Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not be beneficial for improving muscle strength, spasticity, range of motion, gait speed, and gait endurance after stroke when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles.

- Neuromuscular electrical stimulation with Passive Ankle Movement Training may not be beneficial for improving motor recovery, biomechanical gait measures, muscle strength, range of motion, sensory and proprioceptive function, gait speed, functional mobility, balance, and falls and fear of falling after stroke when compared to neuromuscular electrical stimulation Alone.
- Neuromuscular electrical stimulation Stimulation may be beneficial for improving spasticity, but not gait speed and functional mobility, after stroke when compared to Sham Stimulation.
- Neuromuscular electrical stimulation (NMES) may not be beneficial for improving spasticity, neurophysiological measures, and gait speed after stroke when compared to Sham NMES.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).
- Electromyography-triggered Pedaling training may be beneficial for improving motor recovery, biomechanical gait measures, and gait speed after stroke when compared to Pedaling training; the literature is mixed regarding neurophysiological measures.
- Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation may not be beneficial for improving functional mobility and balance after stroke when compared to proprioceptive neuromuscular facilitation trunk pattern.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may not be beneficial for improving biomechanical balance measures and gait speed after stroke when compared to Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy.
- Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy may be beneficial for improving gait speed, but not biomechanical balance measures, after stroke when compared to Conventional rehabilitation.
- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may be beneficial for improving activities of daily living and balance after stroke when compared to rehabilitation.
- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may not be beneficial for improving activities of daily living and balance after stroke when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation.
- Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation) may be beneficial for improving biomechanical balance measures, but not neurophysiological measures and balance, after stroke when compared to Functional electric stimulation (functional electrical stimulation).
- Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation) may not be beneficial for improving activities of daily living, balance, and quality of life after stroke when compared to Conventional Care.
- Neuromuscular Electrical Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to Occupational Therapy.
- Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy may be beneficial for improving muscle strength and balance, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Conventional therapy.
- Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy may be beneficial for improving gait speed, but not motor recovery, muscle strength, spasticity, and activities of daily living, after stroke when compared to Walking training with ankle-foot- orthosis and conventional therapy; the literature is mixed regarding functional mobility.

A.30 Transcutaneous Electrical Nerve Stimulation (TENS) (Table 30)

Key Points

- Transcutaneous electrical nerve stimulation may be beneficial for improving biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, and neurophysiological measures, but not range of motion, pain, activities of daily living, functional mobility, and quality of life, after stroke when compared to Sham Stimulation, Conventional Therapy or No Treatment; the literature is mixed regarding motor recovery, sensory and proprioceptive function, and gait speed.
- Transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Cryotherapy.
- Transcutaneous electrical nerve stimulation with rehabilitation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Sham transcutaneous electrical nerve stimulation with rehabilitation.
- Transcutaneous electrical nerve stimulation with exercise may not be beneficial for improving spasticity and activities of daily living after stroke when compared to Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment.
- Transcutaneous electrical nerve stimulation with Task-related Training may be beneficial for improving spasticity, but not range of motion and functional mobility, after stroke when compared to Task-related training.
- Transcutaneous electrical nerve stimulation (60min) with Task- related training may be beneficial for improving range of motion after stroke when compared to transcutaneous electrical nerve stimulation (30min) with Task- related training; the literature is mixed regarding spasticity.
- Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy may be beneficial for improving balance, but not gait endurance and quality of life, after stroke when compared to C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy; the literature is mixed regarding functional mobility.
- TENS with Task-related training or Sham TENS and Task- related training may be beneficial for improving muscle strength and balance after stroke when compared to No active treatment (health education).
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving balance, but not muscle strength, after stroke when compared to Sham transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No treatment.
- TENS with Task-related training may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity, after stroke when compared to TENS; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed and functional mobility, but not muscle strength, spasticity, and gait endurance, after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, gait speed, gait endurance, and functional mobility after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Task- related training; the literature is mixed regarding muscle strength.
- Transcutaneous electrical nerve stimulation may be beneficial for improving gait speed after stroke when compared to No active treatment.
- Transcutaneous electrical nerve stimulation with Task-related training may be beneficial for improving gait speed, but not muscle strength and spasticity, after stroke when compared to transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training.
- Unilateral transcutaneous electrical nerve stimulation may not be beneficial for improving motor recovery, muscle strength, and balance after stroke when compared to Bilateral transcutaneous electrical nerve stimulation; the literature is mixed regarding functional mobility.

- Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation may be beneficial for improving activities of daily living and balance after stroke when compared to Neuromuscular Electrical Stimulation with Early Rehabilitation.
- Transcutaneous electrical nerve stimulation vs Conventional Therapy may not be beneficial for improving activities of daily living and balance after stroke when compared to neuromuscular electrical stimulation or Conventional Therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation.
- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures and balance after stroke when compared to Conventional care.
- Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care may be beneficial for improving neurophysiological measures and balance after stroke when compared to Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care.
- Balance Training with transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Sham transcutaneous electrical nerve stimulation with Balance Training or Conventional Care; the literature is mixed regarding balance.
- Trunk Training with Balance Training and transcutaneous electrical nerve stimulation may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill Training and Placebo transcutaneous electrical nerve stimulation.
- Transcutaneous electrical nerve stimulation with Heel-raise-lower training may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training.
- Instructed sensory training with transcutaneous electrical nerve stimulation may not be beneficial for improving sensory and proprioceptive function, functional mobility, falls and fear of falling, and quality of life after stroke when compared to Uninstructed sensory training with transcutaneous electrical nerve stimulation.
- Transcutaneous electrical nerve stimulation with Taping and Exercise may be beneficial for improving muscle strength, spasticity, and gait speed after stroke when compared to transcutaneous electrical nerve stimulation with Exercise.
- Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy may be beneficial for improving sensory and proprioceptive function, but not balance, after stroke when compared to Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy.
- Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy may be beneficial for improving biomechanical balance measures and spasticity, but not muscle strength, after stroke when compared to Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy.
- Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation.
- TENS with Task-related training may be beneficial for improving gait speed after stroke when compared to No treatment.

A.31 Muscle Vibration (Table 31)

Key Points

- Whole Body Vibration may be beneficial for improving range of motion, but not motor recovery, biomechanical gait measures, biomechanical balance measures, muscle strength, spasticity, neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life, after stroke when compared to Sham Stimulation, No Stimulation, or Conventional Care.
- Matrix Rhythm Therapy may be beneficial for improving spasticity, range of motion, gait speed, functional mobility, and balance, but not biomechanical gait measures, after stroke when compared to Bobath Therapy.
- Whole Body Vibration may not be beneficial for improving muscle strength, sensory and proprioceptive function, activities of daily living, functional mobility, and balance after stroke when compared to Musical Exercise Therapy.
- Balance Training with Whole Body Vibration may not be beneficial for improving functional mobility and balance after stroke when compared to Conventional Rehabilitation; the literature is mixed regarding activities of daily living.
- Whole Body Vibration with Treadmill Training may be beneficial for improving biomechanical gait measures and gait speed, but not gait endurance, after stroke when compared to Treadmill Training.
- Local Muscle Vibration may be beneficial for improving biomechanical balance measures, muscle strength, spasticity, gait speed, functional mobility, balance, and falls and fear of falling, but not biomechanical gait measures, range of motion, neurophysiological measures, and activities of daily living, after stroke when compared to Conventional Therapy or Sham Muscle Vibration; the literature is mixed regarding motor recovery.
- Gastrocnemius vibration with conventional may be beneficial for improving gait speed, but not motor recovery, spasticity, neurophysiological measures, and activities of daily living, after stroke when compared to Tibialis anterior vibration with conventional; the literature is mixed regarding functional mobility.
- High-frequency (26 Hz) Whole-body vibration training with therapy may not be beneficial for improving balance after stroke when compared to Low-frequency (13 Hz) Whole-body vibration training with therapy; the literature is mixed regarding functional mobility.
- Comparing Whole-Body Vibration Intensity may be beneficial for improving spasticity, but not functional mobility, balance, muscle strength, aerobic measures, gait endurance, and falls and fear of falling, after stroke when compared to Sham with therapy.
- High frequency (30Hz) whole body vibration may not be beneficial for improving neurophysiological measures and gait endurance after stroke when compared to Low frequency (20Hz) whole body vibration.
- Whole Body Vibration may be beneficial for improving functional mobility and balance after stroke when compared to Strength Training.
- Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise may be beneficial for improving spasticity, but not quality of life, after stroke when compared to Meridian Dredging Exercise; the literature is mixed regarding motor recovery.
- Vibration on sole of foot may be beneficial for improving biomechanical balance measures and falls and fear of falling after stroke when compared to Contact on sole of foot with No vibration.
- Neuromuscular Electrical Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to Occupational Therapy.
- Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time) may not be beneficial for improving muscle strength and balance after stroke when compared to Task-Specific Training with Sham Vibration.
- 30 Hz Whole Body Vibration may be beneficial for improving neurophysiological measures, but not spasticity, after stroke when compared to Non-Whole Body Vibration.

A.32 Additional Afferent and Peripheral Stimulation Methods (Table 32)

Key Points

- Tactile Sensory Stimulation may not be beneficial for improving biomechanical gait measures, sensory and proprioceptive function, functional mobility, and balance after stroke when compared to Conventional Care; the literature is mixed regarding biomechanical balance measures.
- Afferent Electrical Stimulation with Mirror Therapy may be beneficial for improving muscle strength, gait speed, and balance, but not biomechanical gait measures and spasticity, after stroke when compared to Sham.
- Intermittent Pneumatic Compression may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy.
- Laser Photo-biomodulation may be beneficial for improving gait endurance and functional mobility after stroke when compared to Sham.
- Sensory Training with Trunk Training may be beneficial for improving sensory and proprioceptive function, but not activities of daily living, gait endurance, and balance, after stroke when compared to Trunk Training Alone.
- Sensory Training may not be beneficial for improving balance after stroke when compared to Conventional Therapy.
- Instructed Sensory Training with transcutaneous electrical nerve stimulation may not be beneficial for improving sensory and proprioceptive function, functional mobility, falls and fear of falling, and quality of life after stroke when compared to Uninstructed Sensory Training with transcutaneous electrical nerve stimulation.
- Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, and balance after stroke when compared to Conventional Therapy.
- Tactile stimulation and mobilization + task specific gait training may not be beneficial for improving muscle strength, range of motion, gait speed, and functional mobility after stroke when compared to task specific gait training + unlimited textured insole wearing.
- NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode may be beneficial for improving gait speed, but not biomechanical balance measures and functional mobility, after stroke when compared to Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode.

A.33 Remote Ischemic Conditioning (Table 33)

Key Points

- Remote Ischemic Conditioning may not be beneficial for improving muscle strength and neurophysiological measures after stroke when compared to Sham or Conventional Therapy; the literature is mixed regarding gait speed.

A.34 Thermal Stimulation and Cryotherapy (Table 34)

Key Points

- Thermal Stimulation may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and functional mobility, but not aerobic measures, activities of daily living, and balance, after stroke when compared to Sham or No Stimulation; the literature is mixed regarding spasticity.
- Transcutaneous electrical nerve stimulation may be beneficial for improving neurophysiological measures after stroke when compared to Cryotherapy.
- Cryotherapy may be beneficial for improving spasticity, but not biomechanical gait measures and muscle strength, after stroke when compared to Sham.

- Cryotherapy with Physical Therapy with Ankle foot Orthosis may be beneficial for improving spasticity and range of motion, but not neurophysiological measures, after stroke when compared to Physical Therapy with Ankle foot Orthosis.
- Ankle Proprioceptive Training with Thermotherapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, gait speed, and balance after stroke when compared to Conventional Therapy.
- Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy may be beneficial for improving motor recovery, range of motion, gait speed, and balance after stroke when compared to Conventional Therapy.

A.35 Extracorporeal Shockwave Therapy and Therapeutic Ultrasound (Table 35)

Key Points

- Extracorporeal Shockwave Therapy may be beneficial for improving biomechanical gait measures, muscle strength, and spasticity, but not motor recovery, range of motion, neurophysiological measures, pain, activities of daily living, gait speed, and gait endurance, after stroke when compared to Sham or Conventional Therapy.
- Extracorpeal shockwave therapy may not be beneficial for improving spasticity after stroke when compared to extracorporeal shockwave therapy with Isokinetic strength training; the literature is mixed regarding neurophysiological measures.
- Focused Shockwave Therapy may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Radial Shockwave Therapy.
- Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots) may not be beneficial for improving spasticity after stroke when compared to Sham Extracorporeal Shock- wave Therapy (sound only).
- Therapeutic Ultrasound may not be beneficial for improving motor recovery, spasticity, and range of motion after stroke when compared to Sham or Conventional Therapy; the literature is mixed regarding neurophysiological measures.
- Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training may be beneficial for improving motor recovery, biomechanical balance measures, spasticity, and range of motion, but not balance, after stroke when compared to Sham with Visual Feedback Balance Training; the literature is mixed regarding functional mobility.
- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Therapeutic ultrasound may not be beneficial for improving muscle strength, spasticity, range of motion, neurophysiological measures, and functional mobility after stroke when compared to Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy).
- Double dose extracorporeal shockwave therapy may be beneficial for improving functional mobility, but not spasticity and range of motion, after stroke when compared to Single dose extracorpeal shockwave therapy.

A.36 Repetitive Peripheral Magnetic Stimulation (Table 36)

Key Points

- Repetitive Peripheral Magnetic Stimulation may be beneficial for improving neurophysiological measures, but not muscle strength, after stroke when compared to neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy.
- Repetitive Peripheral Magnetic Stimulation may be beneficial for improving motor recovery and muscle strength, but not range of motion, after stroke when compared to Sham.

A.37 Repetitive Transcranial Magnetic Stimulation (rTMS) (Table 37)

Key Points

- Low frequency (1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, activities of daily living, gait endurance, functional mobility, and balance, but not spasticity, gait speed, and quality of life, after stroke when compared to Sham Stimulation; the literature is mixed regarding biomechanical balance measures.
- Primary motor area repetitive transcranial magnetic stimulation may not be beneficial for improving motor recovery after stroke when compared to Supplementary motor area repetitive transcranial magnetic stimulation; Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures and balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.
- High Frequency (>1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, spasticity, gait speed, and balance, but not muscle strength, aerobic measures, gait endurance, and functional mobility, after stroke when compared to Sham Stimulation; the literature is mixed regarding motor recovery, neurophysiological measures, and activities of daily living.
- High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy; the literature is mixed regarding neurophysiological measures.
- High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures and balance after stroke when compared to Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery, neurophysiological measures, and activities of daily living.
- Ipsilesional repetitive transcranial magnetic stimulation (3Hz) with Physical therapy may be beneficial for improving neurophysiological measures after stroke when compared to Contralesional repetitive transcranial magnetic stimulation (1Hz) with Physical therapy.
- Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care.
- Combined High and Low Frequency repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, but not neurophysiological measures and functional mobility, after stroke when compared to Therapy.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy.
- High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training may be beneficial for improving motor recovery, gait speed, gait endurance, and functional mobility, but not neurophysiological measures, after stroke when compared to Treadmill Training.

- Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to Ankle Strengthening.
- Ankle Strengthening may be beneficial for improving muscle strength, neurophysiological measures, and gait speed after stroke when compared to repetitive transcranial magnetic stimulation.
- The literature is mixed regarding the effect of High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation on motor recovery after stroke when compared to repetitive transcranial magnetic stimulation.
- Low Frequency (1Hz) repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical gait measures, range of motion, and neurophysiological measures after stroke when compared to Conventional Therapy.
- Repetitive transcranial magnetic stimulation Combined with Cycling Exercise may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and balance after stroke when compared to Cycling Exercise Alone.
- Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training may be beneficial for improving motor recovery and gait speed, but not biomechanical gait measures, muscle strength, and neurophysiological measures, after stroke when compared to Virtual/Augmented Reality Gait Training Alone; the literature is mixed regarding balance.
- Repetitive transcranial magnetic stimulation Combined with Motor Relearning may be beneficial for improving motor recovery, spasticity, and neurophysiological measures, but not functional mobility, after stroke when compared to Motor Relearning Alone.
- Mirror therapy with Repetitive transcranial magnetic stimulation may be beneficial for improving biomechanical balance measures, but not functional mobility and balance, after stroke when compared to Mirror therapy with Sham stimulation.
- LF-rTMS with Conventional rehab may be beneficial for improving biomechanical gait measures, range of motion, activities of daily living, gait speed, and balance, but not motor recovery, after stroke when compared to Sham rTMS with Conventional rehab.
- Cathodal tDCS with rTMS (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy.
- LF-rTMS with Conventional rehab may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, gait speed, and balance after stroke when compared to Conventional rehab.
- Sham rTMS with Conventional rehab may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, and activities of daily living, but not gait speed and balance, after stroke when compared to Conventional rehab.

A.38 Theta Burst Stimulation (TBS) (Table 38)

Key Points

- Intermittent Theta Burst Stimulation may not be beneficial for improving motor recovery, neurophysiological measures, activities of daily living, gait speed, and balance after stroke when compared to Sham Stimulation.
- Cerebellar Intermittent Theta Burst Stimulation may be beneficial for improving biomechanical gait measures, gait speed, and balance, but not motor recovery, neurophysiological measures, and functional mobility, after stroke when compared to Sham; the literature is mixed regarding activities of daily living.
- Peripheral Intermittent Theta Burst Stimulation may be beneficial for improving spasticity after stroke when compared to Sham.
- Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not be beneficial for improving balance after stroke when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group).

- iTBS to M1 with Conventional physiotherapy may be beneficial for improving neurophysiological measures, but not activities of daily living and balance, after stroke when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy; iTBS to M1 with Conventional physiotherapy may result in lesser improvements in motor recovery when compared to iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy.
- iTBS to M1 with Conventional physiotherapy may be beneficial for improving neurophysiological measures, functional mobility, and balance, but not motor recovery and activities of daily living, after stroke when compared to Sham iTBS with Conventional physiotherapy.
- iTBS to contralateral cerebellar hemisphere with Conventional physiotherapy may be beneficial for improving motor recovery, neurophysiological measures, functional mobility, and balance, but not activities of daily living, after stroke when compared to Sham iTBS with Conventional physiotherapy.

A.39 Transcranial Direct Current Stimulation (tDCS) (Table 39)

Key Points

- Comparison of transcranial direct current stimulation Stimulation Conditions may be beneficial for improving spasticity, but not gait speed, biomechanical balance measures, quality of life, balance, and gait endurance, after stroke when compared to Sham transcranial direct current stimulation; the literature is mixed regarding biomechanical gait measures, neurophysiological measures, motor recovery, activities of daily living, sensory and proprioceptive function, muscle strength, and functional mobility.
- Anodal tDCS (2mA) may not be beneficial for improving motor recovery, biomechanical gait measures, neurophysiological measures, and functional mobility after stroke when compared to Sham tDCS.
- Anodal transcranial direct current stimulation (2mA) may not be beneficial for improving biomechanical gait measures after stroke when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA); Anodal transcranial direct current stimulation (2mA) may result in lesser improvements in neurophysiological measures and gait speed when compared to Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA).
- Bilateral transcranial direct current stimulation (2mA) may not be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed after stroke when compared to Cathodal transcranial direct current stimulation (2mA).
- Bilateral tDCS (2mA) may be beneficial for improving biomechanical gait measures, neurophysiological measures, and gait speed, but not motor recovery, after stroke when compared to Sham tDCS.
- Cathodal tDCS (2mA) may be beneficial for improving neurophysiological measures and gait speed, but not biomechanical gait measures and motor recovery, after stroke when compared to Sham tDCS.
- Anodal transcranial direct current stimulation (2mA) with Conventional care may be beneficial for improving balance, but not quality of life, after stroke when compared to Cathodal transcranial direct current stimulation (2mA) with Conventional care.
- Bilateral transcranial direct current stimulation (tDCS) may not be beneficial for improving muscle strength and neurophysiological measures after stroke when compared to Sham tDCS.
- Dual transcranial direct current stimulation may be beneficial for improving gait endurance and functional mobility, but not biomechanical balance measures, after stroke when compared to Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation; the literature is mixed regarding balance and falls and fear of falling.
- Anodal transcranial direct current stimulation with Conventional care may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with Conventional care.
- Anodal tDCS may be beneficial for improving range of motion, biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Transcranial direct current stimulation with Robot-assisted Gait Training may be beneficial for improving biomechanical gait measures and activities of daily living, but not motor recovery, muscle strength, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and quality of life,

after stroke when compared to Sham transcranial direct current stimulation with Robot-assisted gait training.

- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait endurance, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may not be beneficial for improving muscle strength, spasticity, and functional mobility after stroke when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA); Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation may result in lesser improvements in biomechanical gait measures and gait endurance when compared to Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2.5mA) or Robot-assisted gait training (G-EO), Anodal transcranial direct current stimulation (2mA) and Cathodal transcutaneous spinal direct current stimulation (2.5mA).
- Anodal transcranial direct current stimulation with Robot- assisted gait training may not be beneficial for improving biomechanical gait measures, gait speed, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Robot- assisted gait training.
- Dual transcranial direct current stimulation with Task-oriented training may not be beneficial for improving gait speed, functional mobility, balance, quality of life, activities of daily living, and biomechanical gait measures after stroke when compared to Sham transcranial direct current stimulation with Task-oriented training; the literature is mixed regarding motor recovery.
- Cerebellar transcranial direct current stimulation with Split-belt treadmill training may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training.
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to High-intensity speed-based treadmill training.
- Transcranial direct current stimulation with Body weight supported treadmill training may be beneficial for improving gait speed, but not motor recovery and balance, after stroke when compared to transcranial direct current stimulation with Body weight supported treadmill training; the literature is mixed regarding functional mobility.
- Transcranial direct current stimulation with Task-related training may be beneficial for improving gait speed after stroke when compared to Task-related training; the literature is mixed regarding biomechanical gait measures.
- Anodal tDCS or Aerboic exercise with Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and functional mobility after stroke when compared to Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training.

- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Sham repetitive transcranial magnetic stimulation; the literature is mixed regarding motor recovery.
- Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy may not be beneficial for improving neurophysiological measures and activities of daily living after stroke when compared to Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy; the literature is mixed regarding motor recovery.
- The literature is mixed regarding the effect of Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz) on motor recovery after stroke when compared to repetitive transcranial magnetic stimulation (10Hz).
- Transcranial Direct Current Stimulation may be beneficial for improving spasticity and balance after stroke when compared to Functional Electrical Stimulation; the literature is mixed regarding neurophysiological measures.
- Transcranial direct current stimulation with conventional therapy may be beneficial for improving motor recovery, activities of daily living, and functional mobility, but not neurophysiological measures, after stroke when compared to Functional electrical stimulation with conventional therapy.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation with conventional rehabilitation.
- Gait training with transcranial direct current stimulation with conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation may not be beneficial for improving biomechanical gait measures and gait speed after stroke when compared to Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation.
- Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy.
- Transcranial direct current stimulation with Trunk Training may be beneficial for improving balance and quality of life, but not gait speed, after stroke when compared to Sham transcranial direct current stimulation with Trunk Training.
- Xbox training during anodal tDCS stimulation to cerebellum may not be beneficial for improving gait speed, gait endurance, functional mobility, and falls and fear of falling after stroke when compared to Xbox training during nodal tDCS stimulation to motor cortex; Xbox training during anodal tDCS stimulation to cerebellum may result in lesser improvements in balance when compared to Xbox training during nodal tDCS stimulation to motor cortex.
- Transcranial direct current stimulation with Videogame Training may not be beneficial for improving gait endurance after stroke when compared to Sham transcranial direct current stimulation with Videogame Training.
- Transcranial direct current stimulation with Gait Training may not be beneficial for improving activities of daily living, functional mobility, quality of life, biomechanical balance measures, motor recovery, and neurophysiological measures after stroke when compared to Sham transcranial direct current stimulation with Gait Training; the literature is mixed regarding balance.
- Transcranial direct current stimulation with Conventional Therapy may be beneficial for improving balance and gait speed, but not quality of life, after stroke when compared to Sham transcranial direct current stimulation with Conventional Therapy; the literature is mixed regarding functional mobility and motor recovery.
- Transcranial direct current stimulation with Treadmill Training may be beneficial for improving motor recovery and neurophysiological measures, but not range of motion and functional mobility, after stroke

when compared to Sham transcranial direct current stimulation with Treadmill Training; the literature is mixed regarding biomechanical gait measures and gait speed.

- Bilateral transcranial direct current stimulation and Treadmill may not be beneficial for improving motor recovery, biomechanical gait measures, and functional mobility after stroke when compared to Cathodal transcranial direct current stimulation and Treadmill; the literature is mixed regarding gait speed; Bilateral transcranial direct current stimulation and Treadmill may result in lesser improvements in neurophysiological measures when compared to Cathodal transcranial direct current stimulation and Treadmill.
- Transcranial direct current stimulation with Individualized Physiotherapy may not be beneficial for improving motor recovery, muscle strength, aerobic measures, and gait speed after stroke when compared to Sham transcranial direct current stimulation with Individualized Physiotherapy.
- Bihemisphere tDCS with individual physio plan may not be beneficial for improving motor recovery, spasticity, neurophysiological measures, and balance after stroke when compared to Unihemisphere tDCS with individual physio plan.
- Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training may not be beneficial for improving spasticity, gait endurance, functional mobility, and quality of life after stroke when compared to Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training.
- Transcranial direct current stimulation with Home-Based Exercise may not be beneficial for improving motor recovery, muscle strength, gait endurance, and functional mobility after stroke when compared to Sham transcranial direct current stimulation with Home-Based Exercise.
- Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation may be beneficial for improving motor recovery, biomechanical gait measures, range of motion, activities of daily living, functional mobility, and balance after stroke when compared to Neurodevelopmental Bobath supplemented with Occupational Therapy.
- Cathodal tDCS with rTMS (1Hz) with conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and activities of daily living after stroke when compared to Anodal tDCS with rTMS (1Hz) with conventional therapy.
- Anodal tDCS with Conventional therapy may not be beneficial for improving motor recovery, neurophysiological measures, and functional mobility after stroke when compared to Dual tDCS with Conventional therapy; Anodal tDCS with Conventional therapy may result in lesser improvements in muscle strength when compared to Dual tDCS with Conventional therapy.
- Cathodal tDCS with Conventional therapy may not be beneficial for improving motor recovery and neurophysiological measures after stroke when compared to Dual tDCS with Conventional therapy; Cathodal tDCS with Conventional therapy may result in lesser improvements in muscle strength and functional mobility when compared to Dual tDCS with Conventional therapy.
- Dual tDCS may be beneficial for improving biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Cathodal tDCS may be beneficial for improving biomechanical balance measures, gait endurance, functional mobility, balance, and falls and fear of falling after stroke when compared to Sham tDCS.
- Anodal tDCS with Conventional therapy may be beneficial for improving muscle strength, but not motor recovery, neurophysiological measures, and functional mobility, after stroke when compared to Sham tDCS with conventional rehab.
- Cathodal tDCS with Conventional therapy may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, and functional mobility after stroke when compared to Sham tDCS with conventional rehab.
- Dual tDCS with Conventional therapy may be beneficial for improving muscle strength and functional mobility, but not motor recovery and neurophysiological measures, after stroke when compared to Sham tDCS with conventional rehab.
- Xbox training during anodal tDCS stimulation to cerebellum may be beneficial for improving gait speed, functional mobility, and balance, but not falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.

- Xbox training during nodal tDCS stimulation to motor cortex may be beneficial for improving balance, but not gait speed, functional mobility, and falls and fear of falling, after stroke when compared to Sham tDCS with xbox training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) may not be beneficial for improving motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, falls and fear of falling, and quality of life after stroke when compared to Transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training).
- Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training) may be beneficial for improving quality of life, but not motor recovery, neurophysiological measures, gait speed, gait endurance, functional mobility, balance, and falls and fear of falling, after stroke when compared to 15min rest with High- intensity speed-based treadmill training.
- Aerboic exercise with Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Anodal tDCS may not be beneficial for improving neurophysiological measures after stroke when compared to Aerobic exercise with Sham tDCS.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving falls and fear of falling, but not sensory and proprioceptive function, gait speed, gait endurance, functional mobility, and balance, after stroke when compared to Anodal M1 tDCS with Xbox Kinect games.
- Anodal Cerebellar tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, balance, and falls and fear of falling, but not gait speed, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Anodal M1 tDCS with Xbox Kinect games may be beneficial for improving sensory and proprioceptive function, functional mobility, and balance, but not gait speed and falls and fear of falling, after stroke when compared to Sham Stimulation Group with Xbox Kinect games.
- Bihemisphere tDCS with individual physio plan or Unihemisphere tDCS with individual physio plan may be beneficial for improving motor recovery, neurophysiological measures, and balance, but not spasticity, after stroke when compared to Sham tDCS with individual PT.
- Cathodal cerebellar stimulation (tcDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training may be beneficial for improving biomechanical gait measures, muscle strength, and gait endurance, but not spasticity and functional mobility, after stroke when compared to Anodal cerebral stimulation (tDCS) with cathodal spinal stimulation (tsDCS) and Robot-assisted Gait training.

A.40 Antidepressants (Table 40)

Key Points

- Fluoxetine may be beneficial for improving activities of daily living, but not quality of life, after stroke when compared to Placebo; the literature is mixed regarding motor recovery.
- Fluoxetine (20mg/d) may be beneficial for improving activities of daily living after stroke when compared to Maprotiline (150mg/d); the literature is mixed regarding motor recovery.
- Fluoxetine vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Maprotiline or Placebo.
- Escitalopram may not be beneficial for improving motor recovery, muscle strength, range of motion, gait speed, and gait endurance after stroke when compared to Placebo; the literature is mixed regarding neurophysiological measures.
- 20mg/d Citalopram & Physiotherapy may not be beneficial for improving motor recovery after stroke when compared to 20mg/day Fluoxetine & Physiotherapy.

- Fluoxetine (20mg/d) may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- Maprotiline (150mg/d) may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- 20mg/d Citalopram & Physiotherapy may be beneficial for improving motor recovery after stroke when compared to Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT.
- 20mg/day Fluoxetine & Physiotherapy may be beneficial for improving motor recovery after stroke when compared to Placebo & Physiotherapy 1/d, for 90d medication/placebo & 1hr/d, 5d/wk, for 12wks PT.
- Fluoxetine (20 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu (2160 mg daily) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu capsule (720 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.

A.41 Secondary Prevention Medications (Table 41)

Key Points

- Tirofiban may be beneficial for improving motor recovery, but not neurophysiological measures and sensory and proprioceptive function, after stroke when compared to Placebo.
- PF-3049423 may not be beneficial for improving activities of daily living and gait speed after stroke when compared to Placebo.
- Olmesartan may be beneficial for improving motor recovery, but not aerobic measures and activities of daily living, after stroke when compared to Amlodipine.
- Naftidrofuryl fumarate may not be beneficial for improving motor recovery after stroke when compared to Placebo.
- Nimodipine may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- DLBS1033 (Lumbrokinase) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy.
- Alteplase may be beneficial for improving motor recovery and balance after stroke when compared to Aspirin; the literature is mixed regarding activities of daily living.

A.42 Edaravone (Table 42)

Key Points

- Edaravone Injection may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Treatment.
- Long term intravenous Edaravone (30mg) with Conventional care may be beneficial for improving muscle strength and gait speed, but not motor recovery, after stroke when compared to Short term intravenous Edaravone (30mg) with Conventional care.

A.43 Stimulants (Table 43)

Key Points

- Amphetamines may be beneficial for improving aerobic measures, but not motor recovery, activities of daily living, gait speed, gait endurance, functional mobility, and quality of life, after stroke when compared to Placebo.

- Amphetamine with Intensive Physiotherapy may not be beneficial for improving motor recovery after stroke when compared to Amphetamine with Conventional Physiotherapy.
- Amphetamine vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levodopa or Placebo.
- Methylphenidate vs Placebo may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levodopa or Placebo.

A.44 Dopamine Agonists (Table 44)

Key Points

- Levadopa or No Medication may be beneficial for improving motor recovery, but not activities of daily living and gait speed, after stroke when compared to Placebo or No Medication; the literature is mixed regarding functional mobility and quality of life.
- L-DOPA 100mg/d may be beneficial for improving gait speed, but not motor recovery and neurophysiological measures, after stroke when compared to Placebo.
- Methylphenidate (20mg/d) with conventional physiotherapy may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy.
- Amphetamine (10mg/d) with Levodopa (50mg/d) may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Amphetamine placebo with Levodopa placebo.
- Ropinirole may not be beneficial for improving motor recovery, activities of daily living, gait speed, gait endurance, and quality of life after stroke when compared to Placebo.

A.45 Nerve Block Agents (Table 45)

Key Points

- Botulinum Toxin A (400 U) may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Tibial nerve blockade (Phenol).
- 50% Ethyl alcohol injection (5mL) may not be beneficial for improving muscle strength, spasticity, and range of motion after stroke when compared to 5% Phenol injection (5mL).
- Tibial nerve block through thermocoagulation with ankle-foot orthosis may not be beneficial for improving motor recovery, spasticity, gait speed, and quality of life after stroke when compared to Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis.
- Curare Medications may not be beneficial for improving muscle strength and quality of life after stroke when compared to Homeopathic Medications.

A.46 Botulinum Toxin (Table 46)

Key Points

- Botulinum Toxin A may be beneficial for improving biomechanical gait measures, spasticity, gait endurance, and quality of life, but not biomechanical balance measures, muscle strength, aerobic measures, pain, activities of daily living, gait speed, and functional mobility, after stroke when compared to Placebo; the literature is mixed regarding motor recovery and range of motion.
- The literature is mixed regarding the effect of Botulinum Toxin A with Ankle-foot Orthosis on motor recovery, spasticity, activities of daily living, and balance after stroke when compared to Conventional rehabilitation.
- Botulinum toxin A (190-320U) with ankle-foot orthosis may be beneficial for improving biomechanical gait measures and spasticity, but not gait speed, after stroke when compared to Botulinum toxin A (190-320U).

- Botulinum toxin A (100U) with Serial casting and stretching and gait training may be beneficial for improving spasticity and range of motion, but not muscle strength, gait speed, gait endurance, and functional mobility, after stroke when compared to Botulinum toxin A (100U) with Taping and stretching and gait training.
- Botulinum Toxin A with Casting or Taping may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (75- 100U) with Sham taping and home exercises.
- Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping may not be beneficial for improving biomechanical gait measures, spasticity, range of motion, and gait speed after stroke when compared to electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles.
- Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles may not be beneficial for improving muscle strength, spasticity, range of motion, gait speed, and gait endurance after stroke when compared to Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles.
- Botulinum Toxin A with Electrical Stimulation may not be beneficial for improving spasticity, activities of daily living, and gait endurance after stroke when compared to Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Injected Agonist Muscles.
- Botulinum Toxin A with functional electrical stimulation may be beneficial for improving activities of daily living, gait speed, and aerobic measures, but not quality of life, after stroke when compared to Botulinum toxin A injection; the literature is mixed regarding motor recovery and spasticity.
- Botulinum toxin A (500U) with functional electrical stimulation may not be beneficial for improving biomechanical gait measures, spasticity, and range of motion after stroke when compared to Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching.
- Therapeutic ultrasound with Home exercises & conventional therapy may not be beneficial for improving spasticity and range of motion after stroke when compared to transcutaneous electrical nerve stimulation with Home exercises & conventional therapy.
- Therapeutic ultrasound with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy may result in lesser improvements in spasticity and range of motion when compared to Botulinum toxin A (200U) with Home exercises & conventional therapy.
- Botulinum Toxin A with transcutaneous electrical nerve stimulation may not be beneficial for improving spasticity, range of motion, and gait speed after stroke when compared to High-dose Botulinum toxin (400U) with Sham electrical stimulation.
- Botulinum toxin (200U) may be beneficial for improving spasticity, but not biomechanical gait measures, range of motion, gait speed, and functional mobility, after stroke when compared to Neurotomy.
- Botulinum Toxin A (400 U) may be beneficial for improving spasticity, but not range of motion, after stroke when compared to Phenol.
- Location of Injection may not be beneficial for improving spasticity, range of motion, gait speed, and functional mobility after stroke when compared to Distal gastrocnemius Botulinum toxin A injection 200U.
- Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa may not be beneficial for improving motor recovery, spasticity, range of motion, and gait speed after stroke when compared to Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly.
- Dosage of Injection may not be beneficial for improving motor recovery, biomechanical gait measures, range of motion, pain, and gait endurance after stroke when compared to Placebo; the literature is mixed regarding spasticity.
- Low-dose/low- concentration Botulinum toxin A may not be beneficial for improving gait speed after stroke when compared to Low-dose/high- concentration botulinum toxin A or High-dose/low- concentration botulinum toxin A or High-dose/high- concentration botulinum toxin A; the literature is mixed regarding spasticity and functional mobility.

- Botulinum toxin A with Conventional Therapy (300U) may be beneficial for improving spasticity, but not activities of daily living and gait speed, after stroke when compared to Botulinum toxin A with Conventional Therapy (100U).
- OnabotulinumtoxinA (200U) may not be beneficial for improving spasticity after stroke when compared to OnabotulinumtoxinA (300U); the literature is mixed regarding range of motion, pain, and functional mobility.
- Botulinum toxin A (167U) may not be beneficial for improving pain after stroke when compared to Botulinum toxin A (322U); Botulinum toxin A (167U) may result in lesser improvements in spasticity and gait speed when compared to Botulinum toxin A (322U).
- Botulinum toxin A (167U) may not be beneficial for improving pain after stroke when compared to Botulinum toxin A (540U); Botulinum toxin A (167U) may result in lesser improvements in spasticity when compared to Botulinum toxin A (540U); the literature is mixed regarding gait speed.
- Botulinum toxin A (322U) may not be beneficial for improving spasticity and pain after stroke when compared to Botulinum toxin A (540U); the literature is mixed regarding gait speed.
- Ultrasonography guided Botulinum toxin A (1000U) may not be beneficial for improving motor recovery, spasticity, activities of daily living, and gait speed after stroke when compared to Electrical stimulation guided Botulinum toxin A (1000U).
- Botulinum toxin A (200U) by ultrasonography may not be beneficial for improving spasticity and range of motion after stroke when compared to Botulinum toxin A (200U) by electrical stimulation.
- Botulinum toxin A (200U) by ultrasonography may not be beneficial for improving spasticity after stroke when compared to Botulinum toxin A (200U) by palpation; Botulinum toxin A (200U) by ultrasonography may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.
- Botulinum toxin A (200U) by electrical stimulation may not be beneficial for improving spasticity after stroke when compared to Botulinum toxin A (200U) by palpation; Botulinum toxin A (200U) by electrical stimulation may result in lesser improvements in range of motion when compared to Botulinum toxin A (200U) by palpation.
- Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy may be beneficial for improving gait speed, but not spasticity, gait endurance, and functional mobility, after stroke when compared to Botulinum Toxin A Injection.
- Botox Combined with Robotics may be beneficial for improving gait speed, gait endurance, and functional mobility, but not spasticity and range of motion, after stroke when compared to Botox and Conventional Therapy; the literature is mixed regarding balance.
- Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care may not be beneficial for improving biomechanical gait measures, spasticity, and gait speed after stroke when compared to Botulinum Toxin A with Conventional Care.
- Forward Treadmill Training with Botulinum Toxin may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to Backward Treadmill Training with Botulinum Toxin.
- Botulinum Toxin A may be beneficial for improving motor recovery, biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Conventional Therapy.
- Botulinum Toxin A (50-100U) + Isokinetic training may not be beneficial for improving biomechanical gait measures, muscle strength, spasticity, gait speed, and gait endurance after stroke when compared to Botulinum Toxin A (50-100U).
- Received co-injection of abobotulinumtoxinA (aboBoNT-A) in both the upper and lower limbs during treatment cycle 3 and 4 may not be beneficial for improving gait speed after stroke when compared to 1000-1500 U total botulinum toxin lower limb with upper limb injection.
- Botulinum neurotoxin Type A with functional electrical stimulation and conventional physiotherapy may not be beneficial for improving aerobic measures and gait speed after stroke when compared to Conventional physiotherapy.
- Backward treadmill training with botulinum toxin type A therapy may be beneficial for improving biomechanical balance measures and gait speed, but not biomechanical gait measures and spasticity, after stroke when compared to forward treadmill training with botulinum toxin type A therapy.

A.47 Antispastic Drugs (Table 47)

Key Points

- Tolperisone may be beneficial for improving spasticity and gait endurance, but not activities of daily living, after stroke when compared to Placebo.
- Intrathecal Baclofen may be beneficial for improving spasticity, but not motor recovery and activities of daily living, after stroke when compared to Placebo.
- Dantrolene may be beneficial for improving muscle strength and spasticity after stroke when compared to Placebo.
- Tizanidine (8mg, titrated up to max 20mg) may not be beneficial for improving muscle strength and spasticity after stroke when compared to Baclofen (20mg, titrated up to max 50mg).
- Tizanidine may not be beneficial for improving range of motion and activities of daily living after stroke when compared to Placebo; the literature is mixed regarding spasticity and neurophysiological measures.
- Magnesium Sulphate Iontophoresis may be beneficial for improving biomechanical gait measures and neurophysiological measures after stroke when compared to Stretching.

A.48 Cerebrolysin (Table 48)

Key Points

- Taping may not be beneficial for improving motor recovery after stroke when compared to no taping, sham taping, or conventional therapy.

A.49 4-Aminopyridine (Table 49)

Key Points

- Dalfampridine may not be beneficial for improving motor recovery, activities of daily living, and functional mobility after stroke when compared to Placebo; the literature is mixed regarding gait endurance.

A.50 Biologics and Targeted Molecular Therapies (Table 50)

Key Points

- Granulocyte-colony Stimulating Factor may not be beneficial for improving activities of daily living after stroke when compared to Placebo.
- Ganglioside GM1 may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Cutamesine may not be beneficial for improving activities of daily living and gait speed after stroke when compared to Placebo; the literature is mixed regarding motor recovery.
- Mesenchymal Stem Cell Injection may not be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, and functional mobility after stroke when compared to Placebo or Conventional Therapy.
- Neuronal Cell may not be beneficial for improving motor recovery and quality of life after stroke when compared to Conventional Therapy.
- 5million implanted human neuronal cells with Conventional rehabilitation may not be beneficial for improving motor recovery after stroke when compared to 10million implanted human neuronal cells with Conventional rehabilitation.

A.51 Anabolic Steroids (Table 51)

Key Points

- Taping may be beneficial for improving muscle strength after stroke when compared to no taping, sham taping, or conventional therapy.

A.52 Supplements and Vitamins (Table 52)

Key Points

- Dietary Protein Supplement with Cycle Ergometer may be beneficial for improving motor recovery, neurophysiological measures, aerobic measures, gait endurance, functional mobility, and balance after stroke when compared to Carbohydrate Supplement with Cycle Ergometer.
- Leucine-enriched Amino Acid Supplementation may be beneficial for improving balance, but not neurophysiological measures, aerobic measures, activities of daily living, gait speed, gait endurance, and functional mobility, after stroke when compared to Resistance training exercise program; the literature is mixed regarding muscle strength.
- Primary motor area rTMS or Supplementary motor area rTMS may be beneficial for improving motor recovery and balance after stroke when compared to Sham rTMS.
- Soymilk Supplementation may be beneficial for improving gait speed and gait endurance, but not functional mobility, after stroke when compared to Placebo.
- Vitamin and comprehensive Dietary Supplementation may be beneficial for improving functional mobility, balance, and quality of life, but not muscle strength, gait speed, and motor recovery, after stroke when compared to regular meds (meds required for their clinical condition) with intensive rehabilitation treatment; the literature is mixed regarding gait endurance and activities of daily living.
- Primary motor area repetitive transcranial magnetic stimulation may be beneficial for improving motor recovery, neurophysiological measures, and balance after stroke when compared to Sham repetitive transcranial magnetic stimulation.
- Primary motor area repetitive transcranial magnetic stimulation may not be beneficial for improving motor recovery after stroke when compared to Supplementary motor area repetitive transcranial magnetic stimulation; Primary motor area repetitive transcranial magnetic stimulation may result in lesser improvements in neurophysiological measures and balance when compared to Supplementary motor area repetitive transcranial magnetic stimulation.
- Intermittent theta burst stimulation unilateral cerebellar area (CB Single group) may not be beneficial for improving balance after stroke when compared to intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group).
- DLBS1033 supplement (Lumbrokinase) with therapy may be beneficial for improving motor recovery and activities of daily living after stroke when compared to therapy.
- Leucine enriched amino acid with resistant training may be beneficial for improving muscle strength, but not neurophysiological measures, after stroke when compared to Resistant training; the literature is mixed regarding activities of daily living.

A.53 Acupuncture and Massage (Table 53)

Key Points

- Acupuncture Therapy may be beneficial for improving biomechanical gait measures, biomechanical balance measures, spasticity, neurophysiological measures, gait speed, functional mobility, and balance, but not motor recovery, muscle strength, and activities of daily living, after stroke when compared to Conventional Therapy; the literature is mixed regarding quality of life.
- Acupuncture may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Physiotherapy or Acupuncture with PhysiotherapyNI.

- Contra-lateral Needling (acupuncture on unaffected limbs) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Traditional acupuncture.
- Acupuncture may be beneficial for improving motor recovery, spasticity, range of motion, activities of daily living, gait speed, functional mobility, and balance, but not biomechanical gait measures, pain, gait endurance, and quality of life, after stroke when compared to Sham; the literature is mixed regarding neurophysiological measures.
- Acupuncture Treatment may be beneficial for improving spasticity after stroke when compared to No Treatment; the literature is mixed regarding pain.
- Channel Palpation Guided Acupuncture may not be beneficial for improving motor recovery and quality of life after stroke when compared to Traditional Acupuncture.
- Scalp Acupuncture and Robot Assisted Training may be beneficial for improving motor recovery, biomechanical gait measures, activities of daily living, gait endurance, and balance after stroke when compared to Basic Treatment.
- Scalp Acupuncture may be beneficial for improving motor recovery, muscle strength, neurophysiological measures, activities of daily living, and quality of life after stroke when compared to Conventional Therapy or Other Modalities.
- Auricular Intradermal Acupuncture may be beneficial for improving motor recovery after stroke when compared to Conventional Therapy.
- Acupuncture with Manipulation may be beneficial for improving muscle strength, motor recovery, spasticity, neurophysiological measures, and activities of daily living after stroke when compared to Acupuncture.
- Eye Acupuncture may be beneficial for improving biomechanical gait measures after stroke when compared to Body Acupuncture.
- Multifaceted Alternative Medicine Approaches may be beneficial for improving muscle strength, range of motion, and gait speed, but not quality of life, neurophysiological measures, and aerobic measures, after stroke when compared to Meridian Dredging Exercise; the literature is mixed regarding spasticity, motor recovery, balance, and activities of daily living.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Neuronavigation-assisted aspiration.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Electroacupuncture.
- Neuronavigation-assisted aspiration may be beneficial for improving motor recovery and spasticity after stroke when compared to Electroacupuncture; the literature is mixed regarding activities of daily living.
- Electroacupuncture may be beneficial for improving motor recovery, but not spasticity and activities of daily living, after stroke when compared to Conservative therapy.
- Massage and other integrated rehabilitation techniques may be beneficial for improving gait speed, balance, and functional mobility, but not biomechanical gait measures and aerobic measures, after stroke when compared to Health education program; the literature is mixed regarding motor recovery, muscle strength, spasticity, activities of daily living, biomechanical balance measures, and quality of life.
- Chiropractic intervention may not be beneficial for improving neurophysiological measures after stroke when compared to Placebo chiropractic intervention.
- Dry Needling with Conventional Rehabilitation may be beneficial for improving spasticity, range of motion, gait speed, and balance after stroke when compared to Conventional Rehabilitation Alone.
- Acupuncture with Robot-Assisted Gait Training may be beneficial for improving biomechanical gait measures, gait speed, and functional mobility after stroke when compared to Acupuncture Alone.
- Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy may be beneficial for improving gait speed and functional mobility, but not biomechanical balance measures and activities of daily living, after stroke when compared to Overground gait adaptation training with acupuncture and conventional physical therapy.
- Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy) may be beneficial for improving range of motion, but not balance, after stroke when

compared to Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy).

- Joint mobilization with acupuncture may be beneficial for improving activities of daily living, but not pain and gait speed, after stroke when compared to Conventional rehab; the literature is mixed regarding range of motion.
- Joint mobilization with acupuncture may be beneficial for improving range of motion and activities of daily living, but not pain and gait speed, after stroke when compared to Joint mobilization.
- Electroacupuncture with Conventional therapy may be beneficial for improving functional mobility, but not activities of daily living and gait speed, after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery.
- One session daily high intensity Videogame exercises with medical massage may result in lesser improvements in aerobic measures when compared to physical therapy with medical massage or 60min/d care and 20min/d massage; the literature is mixed regarding biomechanical balance measures.
- One session daily high intensity Videogame exercises with medical massage may not be beneficial for improving biomechanical balance measures, aerobic measures, and activities of daily living after stroke when compared to two sessions daily high intensity Videogame exercises with medical massage.
- Electroacupuncture, usual care may not be beneficial for improving motor recovery, spasticity, and activities of daily living after stroke when compared to Usual care.
- Unani Medicine (Herbal and Massage) may be beneficial for improving functional mobility after stroke when compared to Western Medicine (Piracetam 800mg).
- Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation may be beneficial for improving spasticity, gait speed, functional mobility, and balance after stroke when compared to Placebo-ICT with air-pump massage and rehabilitation.
- Electroacupuncture with Conventional medication may be beneficial for improving motor recovery and neurophysiological measures after stroke when compared to Conventional medication.
- Electroacupuncture may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Sham transcutaneous electrical nerve stimulation.
- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high- frequency electrostimulation (80Hz).
- Electrical Acupuncture with Conventional Therapy may be beneficial for improving motor recovery after stroke when compared to Conventional therapy; the literature is mixed regarding activities of daily living.
- Electroacupuncture with Heparin, low molecular dextran, nimodipine may not be beneficial for improving motor recovery after stroke when compared to Heparin, low molecular dextran, nimodipine.
- One session daily high intensity Videogame exercises with medical massage may be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Two sessions daily high intensity Videogame exercises with medical massage may not be beneficial for improving activities of daily living after stroke when compared to Standard physical therapy with medical massage.
- Traditional acupuncture may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Convenional Care.

A.54 Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation (Table 54)

Key Points

- Electroacupuncture Therapy may be beneficial for improving neurophysiological measures and functional mobility, but not spasticity, activities of daily living, and gait speed, after stroke when compared to Conventional Therapy; the literature is mixed regarding motor recovery.
- Electroacupuncture or transcutaneous electrical acupoint stimulation may not be beneficial for improving muscle strength, activities of daily living, and quality of life after stroke when compared to Sham.

- Electroacupuncture may not be beneficial for improving activities of daily living, gait speed, functional mobility, and quality of life after stroke when compared to Low-intensity, high- frequency electrostimulation (80Hz).
- Electroacupuncture with Heparin may not be beneficial for improving motor recovery after stroke when compared to Heparin.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Neuronavigation-assisted aspiration.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving spasticity and activities of daily living, but not motor recovery, after stroke when compared to Electroacupuncture.
- Neuronavigation-assisted aspiration with electroacupuncture may be beneficial for improving motor recovery and spasticity after stroke when compared to Conservative therapy; the literature is mixed regarding activities of daily living.
- Neuronavigation-assisted aspiration may not be beneficial for improving motor recovery, spasticity, and activities of daily living after stroke when compared to Electroacupuncture.

A.55 Traditional Herbal Medicines (Table 55)

Key Points

- NeuroAid may not be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Other Herbal Medications may be beneficial for improving motor recovery, spasticity, activities of daily living, functional mobility, and balance, but not neurophysiological measures and quality of life, after stroke when compared to Placebo or No Medication.
- Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch may be beneficial for improving motor recovery, but not neurophysiological measures, after stroke when compared to Naoxintong (400mg capsules) taken after each meal; the literature is mixed regarding activities of daily living.
- Other Herbal Medications may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional Therapy; the literature is mixed regarding spasticity.
- Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Conventional care.
- Fluoxetine (20 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu (2160 mg daily) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.
- Shu-Gan-Jie-Yu capsule (720 mg) may be beneficial for improving motor recovery and activities of daily living after stroke when compared to Placebo.

Conclusions Matrix

This table presents 1,426 conclusion statements across 55 intervention categories. Each row presents the intervention, the comparator, and its verdict in each outcome measure domain. Green = favourable, yellow = mixed evidence, red = not beneficial. A blank cell means the domain was not graded for that comparison.

Neurodevelopmental Techniques and Motor Relearning (33 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Bobath Concept Approach	Conventional Therapies												
Motor relearning with lower limb force-feedback	Motor relearning with upper limb force-feedback												
Motor Relearning	Bobath Concept Approach												
Modified constraint-induced movement therapy with Neurodevelopmental therapy	neurodevelopmental therapy												
Body weight supported Treadmill with Bobath physiotherapy	Bobath physiotherapy												
Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise												
Repetitive transcranial magnetic stimulation with Motor relearning procedure	Motor relearning procedure with Conventional rehabilitation												
Bobath with dry needling	Bobath												
Functional (adaptive) movement approach	functional approach for lower limb dressing												
Bobath Concept Approach with Task-Specific Training	Task-Specific Training												
Motor Relearning Programmes	Conventional Therapy or Sham												
Bobath Concept Approach Combined with Other Therapies	Bobath or Conventional Therapy												
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	Balance exercises with neurodevelopmental treatment												
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment												
Cervical mobilization with Bobath neurodevelopmental therapy	Sham spinal mobilization with Bobath neurodevelopmental therapy												
Sustained natural apophyseal glides with neurodevelopmental techniques	Maitland mobilization with neurodevelopmental techniques												
Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques	Talocrural joint only mobilization with neurodevelopmental techniques												
Motor relearning with electromyography biofeedback	Motor relearning												
Action observation of community ambulation with Functional training based on neurodevelopmental techniques	Landscape observation with Functional training based on neurodevelopmental techniques												
Muscle strengthening training to non-paralytic dorsiflexion muscles with neurodevelopmental therapy	Muscle strengthening training to paralytic dorsiflexion muscles with neurodevelopmental therapy												
Gait training with Rhythmic auditory stimulation and conventional therapy (bobath)	Gait training with conventional therapy (bobath)												
Inspiratory Muscle Training with Neurodevelopmental Bobath Treatment	Neurodevelopmental Bobath Treatment												
Whole body vibration with Neurodevelopmental treatment	Neurodevelopmental treatment												

Dry needling with Neurodevelopmental therapy	Neurodevelopmental therapy												
Early Bobath Approaches	Late Bobath Approaches												
Bobath Concept Approach	Task-Specific Training												
Motor Relearning Program with Obstacle walking	Motor Relearning Program												
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy												
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)												
Matrix Rhythm Therapy (vibration) from thoracic spine to lower extremity with Bobath Therapy	Bobath Therapy												
Neurodevelopmental Bobath Concept Approach	proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation)												
Musical motor feedback with Conventional gait therapy and Neurodevelopmental therapy	Conventional gait therapy with Neurodevelopmental therapy												
Cyclic neuromuscular electrical stimulation with Bobath	Bobath Approach												

Sit-to-Stand Training (12 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Sit-to-Stand Training (with Swiss ball)	Sit-to-stand Training (with stool)												
Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to-stand Training												
Sit-to-Stand Training	Conventional Therapy												
Unstable Sit-to-Stand Support Surface	Stable Sit-to-Stand Support Surface												
Sit-to-stand Training with Asymmetrical Foot Position	Sit-to-stand Training with Symmetrical Foot Position												
Sit-to-Stand training with Visual Feedback	Sit-to-stand Training with physiotherapy												
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit to Stand Training with physiotherapy												
Modified Sit-to-Stand Training	Conventional Therapy												
Intensive Sit-to-Stand Training	Regular Sit-to-Stand Training												
Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation	Conventional rehabilitation												
Sit-to-Stand training combined with transcutaneous electrical nerve stimulation	Sit-to-Stand Training												
Lateral Weight Transference Exercises in Sitting and Standing	Conventional Care												

Wheelchair Use (2 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Neater Uni-Wheelchair Attachment	Wheelchair												
Encouraging Self-Propulsion	Discouraging Self-Propulsion												

Trunk Training (32 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Trunk Training	Conventional Therapy												
Trunk Training with Tilted Platforms	Trunk Training with Horizontal Platforms												
Trunk Exercise with Unstable Surface	Trunk Exercise with Stable Surface or conventional therapy												
Trunk Training Combined with Robotics	Conventional Therapy												
Trunk Training Combined with Dual-Task Training	Trunk Training												
Trunk Training	Cognitive Training												
Kneeling Training	Treadmill Training												
Sensory training with Trunk-centred Bobath exercise	Trunk-centred Bobath exercise												
Trunk stabilization exercise using weights with general physiotherapy	Trunk stabilization without weights with general physiotherapy												
Trunk Training with Physio Equipment	Trunk stabilization exercises with conventional physical exercise												
Trunk stabilization exercise with Pelvic compression belt on paretic side and comprehensive rehabilitation therapy	Trunk stabilization exercise with Pelvic compression belt on non-paretic side and comprehensive rehabilitation therapy												
Stable trunk training with plinth	Unstable trunk training with Swiss ball												
Dynamic Neuromuscular Stabilization	Conventional Core Exercises												
Trunk Training with Visual or Auditory Feedback	Conventional Therapy												
Different Trunk Muscle Activation Exercises Compared to Each other	Bobath based trunk training with Conventional therapy												
Trunk stabilization exercise with abdominal hallowing with Conventional rehabilitation program	Trunk stabilization exercise with bracing maneuver with Conventional rehabilitation program												
Trunk Training with Delayed	Real-Time Visual Feedback												
Smartphone visual feedback for trunk control training with Conventional care	Conventional care												
Core stability exercises with real time feedback and conventional physical therapy	Core stability exercises with conventional physical therapy												
Aquatic therapy (Halliwick, Watsu, and Trunk Training)	Trunk control exercises Duration: 30min/d, 3d/wk, 4wks												
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises												
Core muscle training with Functional electrical stimulation	Core muscle training												
Segmental mid-thoracic mobilization with neurodevelopmental therapy	Foam roller exercises with neurodevelopmental therapy												

Core stability training on stable surface	Core stability training on unstable surface												
Bobath with Core stability training	Conventional physical therapy												
Space Balance 3D system for active trunk training with conventional physical and occupational therapy	General trunk training with Conventional physical and occupational physiotherapy												
Smartphone-based visual feedback trunk control training with Conventional rehabilitation	Conventional Rehabilitation												
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises												
Robot-assisted trunk control training with Conventional trunk stabilization exercise	Conventional trunk stabilization exercise with stretching exercise												
Trunk neuromuscular electrical stimulation with Core muscle training	Core Training												
Trunk neuromuscular electrical stimulation with Core muscle training	Trunk neuromuscular electrical stimulation												
Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation												

Task-Specific Training (53 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Task-Specific Training	Conventional Therapy												
Task Oriented Gait Training	Conventional Training												
Task Specific Circuit Training	Conventional/Sham												
Task Specific Training Combined with Other Therapies	Task Specific Therapy												
Task Oriented Training with Tilt Table	Tilt Table Alone												
Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training												
Task-oriented training with Virtual reality training	Task-oriented training												
Dual transcranial direct current stimulation with Task-specific training	Sham transcranial direct current stimulation with Task specific training												
Bihemispheric transcranial direct current stimulation with task oriented training	Sham transcranial direct current stimulation with task oriented therapy												
Task oriented training with altered sensory input	Conventional physical therapy												
Task Oriented sitting Reach Training	Sham Training												
Task Specific Treadmill Training	Treadmill Training												
Task Oriented Resistance Training	No Treatment												
Task oriented circuit gait training	Strength training of lower extremities												
Task-Specific Training	Orthoses												
Lower extremity task- specific rehabilitation	Upper extremity task- specific rehabilitation												
Task Oriented Leg Training	Body Weight Support Training												
Activity Repetition Training	Task Oriented Training												

Early supported discharge to Day unit focussed on task- oriented training	Traditional treatment													
Early supported discharge to Day unit focussed on task- oriented training	early supported discharge to patients home focussed on task-oriented training													
Task-specific training with cognitive sensorimotor exercise	Task-specific training with conventional physical therapy													
Lower body	Upper Body Task Specific Training													
High Intensity Task-Specific Training	Low Intensity Training or vs Conventional Therapy													
Tilt table one-leg standing training with Conventional rehabilitation	Tilt table progressive task-oriented training with Conventional rehabilitation													
Task-Specific Circuit Training	Group Activities													
Group Task-Oriented Circuit Training	Conventional Training													
Task-related Training combined with transcutaneous electrical nerve stimulation	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy													
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation													
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task- related training													
Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task- related training													
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training													
Task-Specific Training with Bobath Concept Approach	Task-Specific Training													
Bobath Concept Approach with Task specific practice	Task specific practice													
Manual therapy with task oriented training and home exercise program	conventional rehab													
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program													
Task-specific training with Mental practice (Motor Imagery)	Task-specific training													
Task-oriented training with mirror therapy	Task oriented training													
Armed4Stroke (Task-specific Exercise Telerehabilitation Program) with Usual Care	Usual Care													
Faradic electrical stimulation with Task-oriented exercise	Conventional care with task-oriented approach or 40 min conventional care 5d/wk, for 6wks													
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises													
Transcutaneous electrical nerve stimulation	No treatment													
Transcutaneous electrical nerve stimulation	No active treatment													
Transcranial direct current stimulation with Task-related training	Task-related training													
Single dose of botulinum toxin-A (500U) with Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting)	Single dose of botulinum toxin-A (500U) or Intensive rehabilitation program (includes electrical stimulation, task-specific training and casting)													

Task-Oriented Training	Speed Dependent Treadmill Training												
Task-specific training	Proprioceptive Neuromuscular Facilitation												
Task-oriented training with Abdominal drawing-in maneuver	Task-oriented training												
Task-Specific Training	Trunk Training												
Task-specific training with physiotherapy	physiotherapy												
Visual scanning exercises with task specific activities	Placebo eye exercises with task specific activities(not sham)												
Transcutaneous electrical nerve stimulation with Task-related training	No active treatment (health education)												
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training												
Task-oriented approach training + Conventional PT	Task-oriented training only												

Constraint-Induced Movement Therapy (CIMT) (10 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Modified constraint-induced movement therapy Therapy or Conventional Rehabilitation	Neurodevelopmental Therapy or Conventional Rehabilitation												
Modified constraint-induced movement therapy Use Therapy	Forced Use Therapy												
Constraint-induced movement therapy with task specific training	modified constraint-induced movement therapy with task specific training												
Virtual reality Combined with constraint-induced movement therapy	virtual reality or Conventional Training												
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy												
Constraint-induced movement therapy With Immobilization	Without Immobilization												
Constraint induced movement training on treadmill with home exercises	Treadmill training												
Game-based constraint-induced movement therapy with Traditional physical therapy	Traditional physical therapy												
Healbot no pelvic mode	Conventional gait training with treadmill												
Constraint-induced movement therapy uses number of repetition of tasks	control												

Non-Technological Overground Walking and Gait Training (50 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
High Intensity Overground Walking	Conventional Therapy												
Backward or Sideway Walking Training	Standing Practice or Conventional Therapy												
Gait Training with Postural Assistance Support	Gait Training with Conventional Support												
Accurate adaptability walking	Steady state walking												

Implicit Motor Learning with Walking	Explicit Motor Learning with Walking												
Overground walking with body weight supported	Treadmill training with body weight supported												
Overground gait training with Rhythmic auditory stimulation	Overground gait training												
Robot-assisted overground gait training	Conventional rehab												
Gait training program (half overground walking, half treadmill training) with Hip-assist robot	Gait training program (half overground walking, half treadmill training)												
Overground gait training using E-Go device with Physiotherapy	Overground walking training with Physiotherapy												
Gait Trainer GT I (Rehastim)	Overground gait training												
Gait training program (treadmill with overground walking) wearing a hip-assist robot	Gait training (treadmill training with over ground walking)												
Overground Walking	Treadmill Training												
Treadmill-based with augmented reality	Overground walking with physical obstacles												
Community-based gait training	conventional training												
Lateral Walking Training with Conventional physical therapy	Backward Walking Training with Conventional physical therapy												
Stair or Ramp Training	Flat Surface Gait Training												
15cm Stair Height Training with Comprehensive rehabilitation	10cm Stair Height Training with Comprehensive rehabilitation												
Gait Training with Motor Imagery	Conventional Gait Training												
Gait Training or Overground Walking with Feedback	Without Feedback												
Gait training with Insoles	Gait training with Conventional Shoes												
Curved Gait Training	Straight Gait Training												
Outward curved gait training	Inward curved gait training												
Gait Training on Sand	Gait Training on Firm Surface												
High-intensity Walking intervention	Step activity monitoring behavioural intervention												
High-intensity Walking intervention	High-intensity Walking intervention with Step activity monitoring behavioural intervention												
Step activity monitoring behavioural intervention	High-intensity Walking intervention with Step activity monitoring behavioural intervention												
Overground gait training	Treadmill gait training												
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program												
Inclined treadmill training with overground walking	Regular treadmill training with overground walking												
Treadmill-based C-Mill (using gait-dependent augmented reality)	Overground walking therapy (walking-adaptability exercises with physical obstacles)												
Long-term Treadmill and Overground Walking	No Intervention												
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking												
Intensive locomotor training (body weight supported treadmill with overground walking)	No training												
Treadmill training with overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation												

Error Augmentation treadmill training with Overground walking	Conventional treadmill training with Overground walking												
Error Augmentation treadmill training with Overground walking	Error Minimization treadmill training with Overground walking												
Visual performance feedback training during overground walking with conventional physical therapy	Overground walking without feedback with conventional physical therapy												
Overground gait training with Auditory feedback	Gait training												
Backward walking observational training & Conventional therapy	Landscape observational training (sham) & Conventional therapy												
Action observation of backward walking	Landscape video with Backward walking training												
Home-based cycle ergometer exercise	Home-based overground walking exercise												
Treadmill training and overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation												
Overground walking training with i-Walker robotic assistive device	Conventional overground walking training												
Gait Trainer GT I (Rehastim)	Conventional physiotherapy												
Functional electrical stimulation of Dorsiflexors and Plantar Flexors with Overground Walking program	Overground Walking program												
Conventional gait training therapy + Conductive (Petho) methods education	Conventional gait training												
Kleynen et al.	control												
Bent Knee (Prowling) Gait Training	Conventional Therapy												
Discrete-skill step training on paretic hip extension movement	control												

Cycle Ergometer Training (40 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Cycle Ergometer Training	Conventional Therapy												
Cycle Ergometer Training	Sham or No Treatment												
Cycle Ergometer	Stretching												
Interlimb Coupling Training	Conventional Therapy												
Cycle Ergometry with virtual reality	Cycle Ergometry												
Electromyography-triggered Pedalling Training	Pedalling Training												
Conventional Rehabilitation with Cycling training and biofeedback	Conventional Rehabilitation (CR)												
Brain-computer interface- controlled pedaling training	Sham brain-computer interface-controlled pedaling training												
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care												
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling)	Conventional Therapy												
Cycling with functional electrical stimulation	Cycling with Sham functional electrical stimulation												
Functional electrical stimulation with Cycling Ergometer and Conventional Care	Conventional Care												

High-frequency repetitive transcranial magnetic stimulation with Hesed coil during active cycling	Sham repetitive transcranial magnetic stimulation during cycling												
Repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise	Sham repetitive transcranial magnetic stimulation with Visual-Feedback Cycling Exercise												
Protein supplement with Cycle ergometer exercise	Carbohydrate supplement with Cycle ergometer exercise												
In-Bed Cycling	Usual Care												
Active Cycling with Education and Coaching	Active Cycling with Education or Passive Mobilization												
Cycle Ergometer and Treadmill Training	Conventional Therapy												
Cycle Ergometer Training	Overground Walking												
Aerobic training (Ergometer bicycle training)	Aerobic training (sliding machine)												
Progressive Resistance Training and Cycling	Sham Progressive Resistance Training and Cycling												
Aerobic cycling exercise training	Computerized cognitive training or Aerobic exercise with computerized cognitive training												
Computerized cognitive training	Aerobic exercise with computerized cognitive training												
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training												
Body weight supported treadmill with upper extremity ergometry training	body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise												
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training												
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)												
Aerobic training on cycle ergometer	Sham training of upper extremities												
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT												
Home-based cycle ergometer exercise	Home-based overground walking exercise												
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation												
Active cycling with functional electrical stimulation	Physiotherapy												
Active Leg Cycling with functional electrical stimulation (unilaterally on the paretic lower limb)	Active Leg Cycling												
Cycling induced by functional electrical stimulation with Conventional Rehabilitation	Cycling placebo functional electrical stimulation with Conventional Rehabilitation												
Leg cycling with functional electrical stimulation with interval patterns timing	Leg cycling with functional electrical stimulation with linear patterns timing												
Functional electrical stimulation with cycling	Cycling												
Cycling with functional electrical stimulation and conventional care	Conventional care												

Progressive resistance training with Cycling	Progressive resistance training with Sham cycling or Sham progressive resistance training, Cycling or Sham progressive resistance training and Sham cycling													
Progressive resistance training with Cycling	Progressive resistance training with Sham cycling													
Sham progressive resistance training with Cycling	Sham progressive resistance training with Sham cycling													

Treadmill Training (126 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Body weight supported Treadmill Training	Conventional Therapy												
Body weight supported Treadmill Training	Overground Walking												
Body weight supported Treadmill Training with Facilitation Technique	body weight supported Training with Mechanical Assistance												
Body weight supported Treadmill Training for Different Durations	Home Exercise												
Treadmill Training with Load	Treadmill Training without Load or Conventional Therapy												
Treadmill Training with Incline	Treadmill Training with Decline or Level Treadmill Training												
Treadmill Training with Mirror Therapy	Treadmill Training												
Backward Treadmill Training	Treadmill or Conventional Rehabilitation												
Treadmill Training with Orthotic Devices	Treadmill Training												
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation												
Specialized task oriented locomotor training (includes using Tilt table, limb-load monitor, isokinetic device and treadmill training) with Conventional physiotherapy	Conventional physiotherapy												
Early, intensive, gait- oriented Task specific training (isokinetic device, treadmill, tilt table) with conventional hospital care	Early, intensive traditional physical therapy approach with conventional hospital care or Conventional physical therapy and conventional hospital care or 60min/d, 5d/wk, 5wks												
Baseline conventional therapy with Treadmill training with partial body weight supported and Individual physical therapy	Baseline conventional therapy with Treadmill training with partial body weight supported												
Treadmill training with Thera- band	Treadmill training												
Treadmill Training with Mirror Therapy	Treadmill Training with Sham												
Water-based aerobic exercise on a motorized aquatic treadmill with Conventional rehabilitation therapy	Aerobic Exercise (by upper and lower body ergometers) with Conventional rehabilitation therapy												
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Conventional physical therapy with treadmill training												

Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy													
Treadmill training with Virtual reality	Stepping over real objects on 10m walkway													
Gait training program (half overground walking, half treadmill training) with Hip-assist robot	Gait training program (half overground walking, half treadmill training)													
Gait training program (treadmill with overground walking) wearing a hip-assist robot	Gait training (treadmill training with over ground walking)													
Functional electrical stimulation with treadmill gait training	Sham Functional electrical stimulation with treadmill gait training													
High Frequency repetitive transcranial magnetic stimulation (5Hz) with Treadmill Training	Sham repetitive transcranial magnetic stimulation with Treadmill Training													
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	15min rest with High- intensity speed-based treadmill training													
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)													
Body weight supported treadmill training with anodal transcranial direct current stimulation	Body weight supported treadmill training with sham transcranial direct current stimulation													
Bilateral transcranial direct current stimulation and Treadmill	Sham transcranial direct current stimulation with Treadmill													
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill													
Treadmill Training	Conventional Therapy													
Treadmill Training	Overground Training													
Treadmill training with Rehabilitation program	Overground gait training with Rehabilitation program													
Body weight supported treadmill training	body weight supported treadmill training with Conventional care													
Body weight supported Treadmill Training	Treadmill Training													
Body weight supported Treadmill Training with Mobility Skills	body weight supported Treadmill Training													
Body weight supported treadmill with upper extremity ergometry training	Resistive leg cycling with upper extremity ergometry training													
Body weight supported treadmill with upper extremity ergometry training	body weight supported treadmill with resistive leg cycling training or body weight supported treadmill with lower extremity progressive resistive exercise													
Treadmill Training with Nordic Poles	Treadmill Training													
Treadmill Training with Increased Speed	Treadmill Training with Increased Incline													
Constraint Induced Movement with Home Exercise	Treadmill Training													
Treadmill Training with Foot Drop Stimulator	Foot Drop Stimulator													
Perturbation Treadmill Training	Treadmill Training													

Turning Treadmill Training	Treadmill Training												
Treadmill Training with Proprioceptive Neuromuscular Facilitation	Treadmill Training												
Body weight supported Treadmill Training	Proprioceptive Neuromuscular Facilitation												
Treadmill Training with Obstacles	Treadmill Training												
Treadmill Training on Unstable Surface	Treadmill Training												
Treadmill Training with Horizontal Force	Treadmill Training												
Treadmill Training with virtual reality	Other Training												
Treadmill-based C-Mill (using gait-dependent augmented reality)	Overground walking therapy (walking-adaptability exercises with physical obstacles)												
Treadmill Training with Visual Deprivation	Treadmill Training												
Backward treadmill with partial body weight supported	Forward treadmill with partial body weight supported treadmill												
Treadmill Training with Overground Training	Home Exercise/ no treatment												
Long-term Treadmill and Overground Walking	Short-term Treadmill and Overground Walking												
High Intensity Treadmill Training	Low Intensity Treadmill Training												
Treadmill Training	Strength Training												
Fast Speed Treadmill Training with functional electrical stimulation	Self-selected or Fast Speed Treadmill Training												
Speed Dependent Treadmill Training	Other Treadmill Training												
Structured speed- dependent treadmill training with Conventional therapy	Limited progressive treadmill training with Conventional therapy												
Body weight supported treadmill training (fast speed)	body weight supported treadmill training (slow speed) or body weight supported treadmill training (variable speed)												
Error Augmentation Treadmill Training	Treadmill Training												
Error Augmentation treadmill training with Overground walking	Error Minimization treadmill training with Overground walking												
Treadmill Training	Stretching												
Treadmill Training with Action Observation	Treadmill Training												
Task-oriented treadmill training with conventional therapy	Treadmill training with conventional therapy												
Body weight supported treadmill training (BWST) with conventional rehabilitation	Overground gait training with conventional rehabilitation												
Treadmill-based with augmented reality	Overground walking with physical obstacles												
Body weight supported treadmill training	Overground walking training												
Overground gait training with ankle mass	Overground gait training without mass or Treadmill gait training without mass												
Aerobic training (treadmill and cycle ergometer)	Conventional rehabilitation												
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training												
High-Intensity Interval Training – Treadmill	Moderate-intensity Continuous Exercise - Treadmill												

High intensity (70-80% of heart rate reserve), variable stepping training on multiple surfaces (overground, treadmill, stair climbing etc)	Conventional physical therapy care												
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training												
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training												
Treadmill training using insole on less affected side	Treadmill training												
Body weight support treadmill training with visual biofeedback	Body weight support treadmill training												
Treadmill training with Gait Trainer 2 Biodex biofeedback (30-45min/d) with Conventional individual exercises	Treadmill training without biofeedback with Conventional individual exercises												
Partial body-weight support treadmill training with Visual biofeedback	Partial body-weight support treadmill training												
Treadmill training with visual biofeedback and basic physiotherapy	Treadmill training with basic physiotherapy												
Dual-task gait training with treadmill	Single-task gait training with treadmill												
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking												
Cognitive-motor dual task training while treadmill walking with Conventional rehabilitation	Single task training on Treadmill walking with Conventional rehabilitation												
Action observational training with Treadmill training	Sham action observational training with Treadmill training												
Underwater Treadmill gait training with conventional rehabilitation	Overground gait training with conventional rehabilitation												
Aquatic-based treadmill aerobic training with conventional care	Land-based aerobic exercises on cycle ergometer with conventional care												
Aquatic therapy (physical therapy exercises) with aquatic treadmill	Conventional physical therapy exercise with land-based treadmill												
Rhythmic Auditory Stimulation with Custom Physiotherapy program and Treadmill gait training	Custom physiotherapy program with Treadmill gait training												
Treadmill training with Rhythmic auditory stimulation	Treadmill training												
Treadmill training with Rhythmic auditory feedback	Treadmill training												
Inclined treadmill training with Rhythmic auditory stimulation	Treadmill training												
Treadmill training with Rhythmic auditory stimulation	Overground training with Rhythmic auditory stimulation												
Treadmill training and overground gait training	Placebo program of low- intensity home exercise program with Telerehabilitation												
Augmented reality treadmill-based gait adaptation training	Treadmill training with overground walking												
Virtual reality treadmill training-based community ambulation	Conventional rehabilitation												
Virtual reality treadmill training-based community ambulation	Community ambulation training												
Treadmill training based real- world video recording with rehabilitation	Treadmill training with rehabilitation												
Treadmill training with Virtual reality	Treadmill training												
Treadmill with optic flow with conventional physical therapy	Conventional therapy												
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy												

Treadmill training with Virtual reality and Conventional rehabilitation	Treadmill training with Conventional rehabilitation												
Treadmill training with Virtual reality and Ankle robotics	Seated training with Virtual reality and Ankle robotics												
Hybrid Assistive Limb (HAL) exoskeleton with Bodyweight supported treadmill training	Conventional Physical therapy												
Treadmill training with HEALBOT exoskeleton	Treadmill training												
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill												
Functional electrical stimulation with treadmill training	Treadmill training												
Fast speed treadmill training with functional electrical stimulation	Self-Selected Speed Treadmill Training or Fast Speed Treadmill Training												
Treadmill training with functional electrical stimulation on gluteus medius and tibialis anterior	Treadmill training												
Treadmill training with Tilt sensor functional electrical stimulation with conventional physical therapy	Treadmill training with Placebo Tilt sensor functional electrical stimulation with conventional physical therapy												
Body Weight-Supported Treadmill Training with functional electrical stimulation	Body Weight Supported Treadmill Training												
Whole body vibration with Treadmill training	Exercises on platform without vibration with Treadmill training												
High frequency repetitive transcranial magnetic stimulation with Treadmill Training	Sham repetitive transcranial magnetic stimulation with Treadmill Training												
Cerebellar transcranial direct current stimulation with split-belt treadmill training	Sham cerebellar transcranial direct current stimulation with split-belt treadmill training												
Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training	Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training												
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy												
Treadmill walking training + conventional PT	conventional PT												
Overground gait training + visual cue feedback	Standard physiotherapy												
Speed-dependent Treadmill Training	Task-oriented Training												
Underwater treadmill walking	Overground treadmill walking												
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Neurodevelopmental treatment with conventional physical therapy												
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Treadmill training with conventional physical therapy												
Treadmill training with Virtual reality	Conventional rehabilitation												
Treadmill Training with Smartphone Application	Treadmill Training												
Body weight supported, backward and forward treadmill training	body weight supported, forward treadmill training or body weight supported, backward treadmill training												
Treadmill training with visual biofeedback and physiotherapy exercises	Treadmill training with physiotherapy exercises												
Anodal transcranial direct current stimulation with Treadmill training	Sham transcranial direct current stimulation with Treadmill training												

Aerobic training (cycle ergometer, treadmill, balance)	Conventional rehabilitation												

Physiotherapy and Exercise Programs (40 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Body Weight Shift Technique	Conventional Therapy												
Self-regulation Rehabilitation	Conventional Therapy												
Early Rehabilitation Programs	Conventional Therapy or Rehabilitation Programs Starting at Different Times Post-Stroke												
Early Conventional therapy (after 24-48 hours)	Late Conventional therapy (72-96 hours post stroke)												
Physical Therapy	No Treatment												
Custom Exercise Programs	Conventional Therapy												
Closed Chain Exercise	Open Chain Exercise or Rehabilitation												
Sling Exercise Therapy	Conventional Therapy												
Higher Intensity Training	Lower Intensity Training or Conventional Care												
Low-to-Moderate Intensity Continuous Training	Moderate Intensity Interval Training												
Low-to-Moderate Intensity Continuous Training	Reduced-Exertion High-Intensity Interval Training												
Moderate Intensity Interval Training	Reduced-Exertion High-Intensity Interval Training												
Increased Duration of Exercise	Conventional Care/Exercise												
Aerobic Exercise with Task-Specific Training	Task-Specific Training Alone												
Motivational Interviewing with Occupational Therapy	Occupational Therapy Alone												
Leisure-time Physical Activity	Nonleisure-time Physical Activity												
Agility Exercise	Stretching												
Cross-training Physiotherapy	Conventional Physiotherapy												
Aerobic and Resistance Training	Aerobic Training												
Aerobic and Resistance Training	Conventional Care												
Aerobic Exercise with Cognitive Training	Nonaerobic Exercise with Unstructured Mental Activities or Sham												
Virtual Reality Exercise Program	Customized Physiotherapy or Conventional Physiotherapy												
High-intensity variable stepping training	High-intensity forward stepping training or Low-intensity variable stepping training												
Community-based Physical Activity	No Intervention												
Community-based Exercise Program	Other Care												
Community-based Exercise Program	Upper Extremity Exercise Program												
Falls Prevention Program	Usual Care												
High-Intensity Training with Acute Intermittent Hypoxia	High-Intensity Training Alone												
Cognitive therapy with graded activity training	Cognitive therapy												
Skating Exercise	Treadmill Training												

If-Then goal setting for exercise	Goal setting												
Neurorestoration Protocol Physiotherapy	Conventional Physiotherapy												
Physio equipment	Conventional Therapy												
High-intensity Functional Exercise Program	Education												
Non-Paretic Side Training	Conventional Therapy												
Specific PT protocol (Techniques aimed to strengthen sensitivity, movement dissociation and balance. Were added based on patients functional level)	Conventional PT protocol												
Repetitive weight bearing exercises repeated 40 times	Repetitive weight bearing exercises repeated 20 times												
Range of Motion exercise program by themselves	Range of Motion exercise program with physical help												
Occupational Therapy	No Treatment												
Team Care	conventional care												

Balance Training (95 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Balance-Focused Exercise Programs	Conventional Rehabilitation												
Balance Training with Posture Changes	Balance Training												
Shoulder elevation posture change with balance training and Conventional training	Back posture change with balance training and Conventional training												
Balance Training Using SMART Balance Master	Conventional Rehabilitation												
Balance Training with Visual Biofeedback	Conventional Therapy or Balance Training												
Standing Practice	Conventional Therapy												
Perturbation Balance Trainers with Feedback	Conventional Therapy or Balance Training												
Perturbation Balance Trainers	Conventional Therapy or Balance Training												
Balance Training with Kinesthetic Ability Training Device	Conventional Rehabilitation												
Balance Training with Biofeedback	Balance Training												
Balance Training with transcutaneous electrical nerve stimulation	Balance Training with Conventional Care												
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care												
Strength or Resistance Training with Balance Training	Conventional Therapy												
Class-Based Body Awareness Training	Home-Based Body Awareness Training												
Computer-generated interactive visual feedback balance training with Physical therapy	Mirror visual feedback balance training with Physical therapy												
Balance training with cognitive training	Balance training with balance board												
Progressive resistance with balance training and motivational session	Usual activity												

Virtual balance training (VBT) with Conservative training	Conservative training (traditional rehab techniques)												
Robot assisted gait training with Traditional balance training	Traditonal balance training												
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy												
Task Specific Balance Training	Upper Limb Exercise												
Balance training with Visual feedback	Balance training with Verbal and tactile cues												
Non-Supportive Balance Trainers with Feedback	Conventional Therapy or Balance Training												
Balance Training with Visual Deprivation	Balance Training with Visual Cues												
Balance Training with Muscle Vibration	Conventional Rehabilitation												
Vestibular Training	Conventional Therapy												
Gaze stabilization exercises with balance exercises and neurodevelopmental treatment	gaze stabilization exercises with neurodevelopmental treatment												
Robotic Balance Training	Conventional Therapy												
Robotic balance training with conventional rehabilitation	Intensive balance training with conventional rehabilitation												
Trampoline Balance Training	Stable Surface Balance Training												
Ankle-Foot orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes												
Balance Training with Fresnel Prism Glasses	Balance and Walking Training												
Sensory Balance Training	Robot-assisted Stair Climbing												
Sitting Balance Training with Sensory Input	Sitting Balance												
External focus on balance board task	Internal focus on balance board task												
Vestibular rehabilitation	Convectional treatment												
Perturbation Balance Training	Proprioceptive Neuromuscular Facilitation												
Vestibular Training	Virtual Reality Training												
Trunk balance training on rocker board with conventional therapy	Trunk balance training on plain surface with conventional therapy												
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy												
Treadmill gait and balance training with Traditional gait and balance training	Traditional gait with balance training												
Perturbation treadmill training group	Non-perturbation treadmill training group												
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole												
Pro-Kin system with weight loss system (body-weight support) with balance training	Conventional balance training												
Visual feedback with Unstable surface balance training	Conventional physical therapy												

Visual feedback with Unstable surface balance training	Unstable surface balance training												
Tetrax biofeedback balance training with Conventional care	Conventional care												
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises												
Virtual reality balance training with Nintendo Wii with conventional physical therapy	Conventional physical therapy												
Modified PC Balance Training Gaming Platform	PC gaming with Mouse												
Wii Fit-based balance exercise with conventional rehabilitation	Conventional rehabilitation												
Virtual reality balance training with treatment	treatment												
Virtual reality-based balance training	Conventional rehabilitation												
Video Game-Based Balance Training with conventional physical therapy	Conventional physical therapy with Balance Training												
Wii-based balance training	Conventional rehabilitation												
Balance training with Balance Control Trainer	Conventional rehabilitation												
Virtual reality-based balance training	Conventional therapy												
Conventional balance training with visual balance training with Pro-kin system and Game training	Conventional balance training												
Dynamic balance training with Balance Trainer	Static balance training with a conventional standing frame												
Wii-based balance training	Progressive balance training												
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises												
Wii Fit Plus video game (Balance training)	Wii Sports video game (Upper limb training)												
Balance Training with electromyography- triggered functional electrical stimulation and General Rehabilitation	Balance Training without functional electrical stimulation with General Rehabilitation												
Standing balance exercises with functional electrical stimulation	Usual care												
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	Sham transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy												
Vibrosphere (balance training with whole body vibration) and conventional geriatric rehabilitation	Conventional geriatric rehabilitation												
Vestibular rehabilitation therapy + Conventional physical therapy	Conventional care												
Contemporary Bobath Concept Approach with early sitting, standing, and walking strategies with balance training	Contemporary Bobath Concept Approach												
Biofeedback Balance training (RIABLO training)	Conventional balance training												
Wobble Board Training	Conventional Physiotherapy												
Balance-Focused Exercise Programs	At-home Exercises												
Balance training with self- controlled postural control visual biofeedback	Balance training with no control over postural control visual biofeedback												
Visual Deprivation Group Balance Training Group with Conventional Therapy	Visual Feedback Balance Training Group with Conventional Therapy												

Visual cue deprivation with balance training and head control	Visual cue deprivation with Balance training													
Balance Training with Full Rest Periods	Balance Training with Short Rest Periods													
Pressure sensor-based vibrotactile biofeedback	Visual biofeedback providing posture information													
Wii Fit balance training	Tetrax biofeedback balance training													
Balance Training with Shoe Lift	Balance Training													
Structured Balance Awareness	Health Awareness Program													
Progressive Balance Training	Balance Training													
Visual Scanning Training with Task-Specific Activities	Task-Specific Activities Alone													
Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations)	Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations													
Ankle Foot Orthosis (Joint type) with Balance Training	No Orthotic with Balance Training													
Balance training with cognitive training	Balance training													
Dual-task balance training	Single-task balance training													
Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training)	Visual feedback via Mirror with Conventional treatment (static and dynamic balance training)													
Isokinetic strength training with balance exercises	Conventional physiotherapy													
Wii Fit balance training	Conventional weight-shifting training													
Gaming Assisted Visual feedback for balance training with Conventional therapy	Balance training exercises with Conventional therapy													
Wii-based balance training	Control group													
Vestibular rehabilitation + conventional PT	conventional PT													
Cognitive behaviour therapy + task-oriented balance training	General health education + task-oriented balance training													
Visual-spatial training exercises using specular vision training, mirror training, and target identification while walking + Conventional rehabilitation	Trunk stabilization and weight transfer exercises + Conventional rehabilitation													

Stretching or Mobilization Exercises (56 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Mobilization Therapy or Placebo	Conventional Therapy or Placebo												
Early and Intense Mobilization	Care												
Dynamic Stretching (Tai Chi, Yoga, Pilates)	Conventional or No Therapy												
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab												
Body Weight Supported Dynamic Stretching	Conventional Therapy												
Proprioceptive Neuromuscular Facilitation with virtual reality	proprioceptive neuromuscular facilitation or virtual reality Alone												

Virtual Reality (Nintendo Wii)	Proprioceptive Neuromuscular Facilitation												
Virtual Reality (Nintendo Wii)	Virtual Reality with Proprioceptive Neuromuscular Facilitation												
Robot assisted ankle stretching device (Beijing LTK Science and Technology Co., Ltd., Beijing, China)	Manual stretching by the appointed physiotherapist												
Therapeutic ultrasound with passive stretching exercise	Passive stretching exercise												
Baduanjin exercise training with Health education program	Health education program												
Chiropractic spinal adjustments + Physical Therapy	Sham chiropractic + physical therapy												
Functional Stretching	Conventional Therapy												
Manual therapy with task oriented training and home exercise program	task oriented training with home exercise program												
Sustained natural apophyseal glides with neurodevelopmental techniques	Maitland mobilization with neurodevelopmental techniques												
Joint mobilization with acupuncture	Joint mobilization												
Active Stretching	Joint mobilization with active stretching												
Mobilization With Movement	Muscle Stretching												
Self-ankle mobilization with rehabilitation	Self-ankle mobilization with 10-degree inclined board with rehabilitation												
Early Proprioceptive Neuromuscular Facilitation	late Proprioceptive Neuromuscular Facilitation												
Baduanjin Training	Conventional Exercise												
Technology-Assisted Ankle Stretcher	Stretching Board												
Isotonic muscle stretch with weight bearing	Healthy isotonic muscle stretch with weight bearing or Healthy isotonic stretch without weight bearing or Healthy isokinetic stretch												
Ankle Range of Motion Training	No Treatment												
Subtalar joint and talocrural joint mobilization with neurodevelopmental techniques	Talocrural joint only mobilization with neurodevelopmental techniques												
Peripheral Nerve Mobilization with virtual reality-Based Gait Training	Conventional Exercises												
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training												
Ankle Kinesio taping	No Taping												
Stretching exercise with wearing toe spreader	No Orthotic (conventional care)												
Aquatic therapy (based on proprioceptive neuromuscular facilitation)	Proprioceptive neuromuscular facilitation on the ground												
Aquatic therapy (based on proprioceptive neuromuscular facilitation)	Conventional therapy												
Robot assisted passive stretching and active movement training	At-home passive ankle stretching												
Robotic ankle stretching exercises	Conventional stretching board 2d/wk, for 3												
Whole Body Vibration (40 hz,4 mm) with Exercise (Stretching and active ROM exercise)	Sham Vibration with Exercise (Stretching and active ROM exercise)												

Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises	Sham Radial Extracorporeal Shock Wave Therapy with antispastic meds and stretching excercises												
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Convetional physiotherapy												
Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Botulinum toxin A (100U) with Taping and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Tai Chi Yunshou	Common Balance Rehabilitation Therapy												
Dynamic Stretching	SilverSneaker exercises vs Usual care												
Tai Chi	SilverSneakers exercises												
Proprioceptive Neuromuscular Facilitation with Electrical Stimulation	proprioceptive neuromuscular facilitation Alone												
Task-specific training with Ankle joint mobilizations	Task-specific training												
Task-specific training	Proprioceptive Neuromuscular Facilitation												
Proprioceptive neuromuscular facilitation trunk pattern with electromyography- triggered functional electrical stimulation	Proprioceptive neuromuscular facilitation trunk pattern												
Proprioceptive Neuromuscular Facilitation	Conventional Therapy												
Proprioceptive neuromuscular facilitation-Based Gait Training	Conventional Gait Training												
Performance-based training with Anklebot stretching	Manual stretching of ankle												
Tai Chi Chuan exercises	Conventional care physiotherapy												
Neurodevelopmental Bobath Concept Approach	proprioceptive neuromuscular facilitation method (proprioceptive neuromuscular facilitation)												
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching												
Proprioceptive Neuromuscular Facilitation with Custom Exercises	Custom Exercises Alone												
Extracorporeal Shock Wave Therapy with stretching and Oral anti-spastic drugs	stretching with Oral anti-spastic drugs												
Stretching in a Supine Position	Stretching in a Seated Position												

Orthotic Devices (73 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL

Taping	no taping, sham taping, or conventional therapy												
Weight-Shift Therapy Using Shoe Insert	Conventional Treatment												
Ankle-Foot Orthosis	No Ankle-Foot Orthosis or Sham Ankle-Foot Orthosis												
Oswestry standing frame treatment	Usual treatment												
Treadmill Training with Orthotic Devices	Treadmill Training Alone												
Robot-assisted ankle-foot- orthosis (ankle-foot orthosis) with dorsiflexion assistance	Sham Ankle foot orthosis (ankle-foot orthosis) with torque impedance												
Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis)	Sham transcranial direct current stimulation with gait training and foot drop stimulator												
Tibial nerve block through thermocoagulation with ankle-foot orthosis	Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis												
Botulinum toxin A under ultrasound guidance with ankle foot orthosis (ankle-foot orthosis) and Conventional rehabilitation	Conventional rehabilitation												
Anterior Kinesio Taping	Posterior Kinesio Taping												
Extensor Digitorum Longus Taping	Tibialis Anterior Taping												
Pelvic stability training with posterior and lateral taping	Pelvic stability training with posterior taping only												
Walking with hip abductor taping	Walking with cane at normal height												
Walking with TheraTogs	Walking with cane at normal height												
Taping With Electrical Stimulation	Electrical Stimulation or Taping Alone or No Taping												
New Body Orthosis	No Orthosis												
Shoe Insole Orthotics During Walking	Overground Walking or Conventional Therapy or Sham												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole												
C-ankle-foot orthosis ("off the shelf" composite ankle-foot orthosis)	P-ankle-foot orthosis (custom made plastic ankle-foot orthosis)												
Ankle-Foot Orthosis with Botulinum Toxin	Botulinum Toxin												
Taping with Botulinum Toxin	Botulinum Toxin												
Early Ankle Foot Orthosis	Late Ankle Foot Orthosis												
A Comparison of Orthoses	Oil Damper ankle-foot orthosis with Gait training												
High PFR DAFO	Medium PFR DAFO or Low PFR Dynamic Ankle-Foot Orthosis (DAFO)												
Low PFR Dynamic Ankle-Foot Orthosis (DAFO)	Medium PFR DAFO												
Carbon composite ankle-foot orthosis	Posterior leaf spring ankle-foot orthosis												
Using an off-the-shelf carbon ankle-foot orthosis (C- ankle-foot orthosis)	Using a custom plastic ankle-foot orthosis (P-ankle-foot orthosis)												
5-degree lateral wedge orthotic in both shoes	8												
Anterior ankle foot orthosis	Posterior ankle foot orthosis												
Toe Spreader	Conventional Care												

Comparing Types of Canes	Ambulation therapy with cane with Conventional therapy												
Single-point cane	Quad cane												
Single-point cane	Hemi-walker												
Neuromuscular electrical stimulation Orthosis	Ankle-Foot Orthosis												
Ankle-Foot Orthosis with Balance Training Shoes	Ankle-Foot Orthosis with Regular Shoes												
Arm Sling	No Therapy												
Wearable Devices	Conventional Care or No Therapy												
Knee Orthosis with Gait Training	Gait Training Alone												
Gait training with compelled weight-shift insole device	Gait training with conventional insole												
Treadmill training with Proprioceptive neuromuscular facilitation lower-leg taping (PNFLT)	Sham taping with treadmill training												
Shoulder brace during treadmill training	conventional treadmill training												
Solid Ankle-foot orthosis, then Rocker shoes	Solid Ankle-foot orthosis, then Regular shoes												
Gait training with Insole Shoe Wedge and Sensors with Auditory feedback and Conventional rehabilitation	Conventional gait training with Conventional rehabilitation												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program												
Robot-assisted gait training (Welwalk orthosis-type robotic leg) with Conventional rehab	Conventional rehab												
Gait training with robotic leg brace	Group exercise without robotic leg brace												
Ankle foot orthosis with gait training	functional electrical stimulation with gait training												
6wk of Peroneal nerve functional electrical stimulation (WalkAide Foot-Drop Stimulator) followed by 6wk of Ankle Foot Orthosis ; (ankle-foot orthosis)	Ankle Foot Orthosis only or 12wk ankle-foot orthosis												
Odstock Dropped-foot Stimulator (peroneal nerve functional electrical stimulation)	No Intervention												
Botulinum toxin A (190- 320U) with ankle-foot orthosis	Botulinum toxin A (190- 320U)												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Botulinum toxin A (100U) with Taping and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Botulinum toxin A (75- 100U) with Kinesio Taping and home exercises	Botulinum toxin A (75- 100U) with Sham taping and home exercises												
Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping	electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles												
Wearing an Inhibitor Hand Splint during ambulation	no treatment												
Physical Therapy Wearing Insole (unaffected side)	Physical Therapy												
Arm sling	No Treatment												
Regent Suit	Conventional Therapy												

Knee immobilizer brace	Knee immobilizer brace with Rigid taping												
Knee immobilizer brace with Foot lifter orthosis	Knee immobilizer brace with Rigid taping												
Ankle-foot orthosis-PlfS with shoe (SSh)	SSh only												
Ankle-foot orthosis with mechanical plantar flexion stops (ankle-foot orthosis-PlfS) with Rocker shoe (RSh)	ankle-foot orthosis-PlfS with shoe (SSh)												
Solid Ankle Foot Orthosis	Dynamic Ankle Foot Orthosis												
Plastic ankle foot orthosis made with polypropylene	Hybrid ankle foot orthosis made with polypropylene covered with canvas fabric												
Posterior Ankle-Foot Orthosis	Anterior Ankle-Foot Orthosis												
Gait training (with insole on non-paretic foot)	Gait training (without insole)												
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching												
Bivalve Cast	Pressure-Relieving Ankle-Foot Orthosis vs Conventional Care												
Nighttime splint wearing with Inpatient rehabilitation	Standing on a tilt table with Inpatient rehabilitation												
Visual Biofeedback with Orthotic Devices	Sham Feedback												
Ankle treatment with biomechanical visual biofeedback (using an active sensorized ankle-foot orthosis)	Ankle treatment with an inactive sensorized ankle-foot orthosis (sham)												
Cryo-airflow therapy for calf muscle with Physical therapy and Ankle foot orthosis at night	Physical therapy with Ankle foot orthosis												

Hippotherapy (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Hippotherapy Training Therapy	Trunk Training Therapy												
Hippotherapy Therapy or No Treatment	Conventional Therapy or No Treatment												
Hippotherapy or Rhythm and Music-Based Therapy	No Treatment												
Hippotherapy Training	Treadmill Training												
Rhythm and Music-based therapy	No treatment												
Horse riding therapy	Wait list control												

Biofeedback (82 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Gait Training with Visual Feedback	Gait Training or Conventional Therapy												
Rehabilitation with electromyography biofeedback	Conventional Therapy												
Balance Training with Computer-based Visual Feedback	Mirror Feedback												
Cycling Training with Biofeedback	Conventional Rehabilitation												

Overground Gait Training with Auditory Feedback	Gait Training												
Strength Training with Visual Feedback	Physical Therapy												
Robot-Assisted Gait Training with Biofeedback	No Biofeedback or Conventional Biofeedback												
Knowledge of Results (Real-time visual feedback)	Knowledge of Performance (Real-time feedback with instructions on how to adjust/ direct cues)												
Continuous Auditory Feedback During Sit-to-Stand Training	No Feedback During Sit-to-stand Training												
Balance training with postural control visual biofeedback (SMART Balance master)	Conventional physical therapy with balance training												
Balance training with postural control visual biofeedback from unaffected side and physiotherapy	Stand-up task with physiotherapy												
Visual feedback with Nottingham Balance Platform training and physical therapy	Sham visual feedback with Nottingham Balance Platform training and physical therapy												
Whole-Body Tilting Postural Training (Visual feedback monitor with Trunk sensor, 8- direction body tilt and Spine balance 3D)	General Postural Training												
Balance Training with a kinaesthetic ability training (KAT) device (postural control visual biofeedback)	Conventional rehabilitation												
Balance training with force platform biofeedback and Conventional rehabilitation	Conventional rehabilitation												
Neurofeedback facilitation with motor imagery	Sham neurofeedback with motor imagery												
Bi-axial ankle-resistive strengthening muscle training with visual feedback	Ankle Physical therapy												
Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy	Sham Radial Extracorporeal Shock Wave Therapy with Prokin (visual feedback balance training) and Conventional therapy												
Treadmill Training with Visual Biofeedback	Treadmill Training												
Gait Training with Activity Feedback	Gait Training or Conventional Therapy												
Gait Training with Postural Control Visual Feedback	Gait Training or electromyography Biofeedback												
Trunk Training with Visual Biofeedback	Conventional Therapy												
Constant-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy	Variable-force electromyography-biofeedback Tibalis anterior training with general Physiotherapy												
Gait training with auditory feedback caused by active weight bearing on their paralyzed foot	General gait training over the ground												
Verbal Cues and Feedback During Walking	Tactile Cues and Feedback During Walking												
Biofeedback combined with sit-to-stand training	Sit to Stand Training with physiotherapy												
Balance Training with Biofeedback	Balance Training or Conventional Therapy												
Visual feedback with Unstable surface balance training	Unstable surface balance training												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program with lateral wedge insole												
Target or Reach Visual Feedback Training	Conventional Rehabilitation												

Neurofeedback	Sham												
Electromyography Biofeedback During Single Support Phase	Stance Phase												
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit-to-stand Training with physiotherapy												
Usual rehabilitation with Sit-to- Stand training and visual feedback	Usual rehabilitation with Arm task training												
Smartphone visual feedback for trunk control training with Conventional care	Conventional care												
Trunk postural control training with visual and auditory feedback with Conventional neurorehabilitation	Conventional neurorehabilitation												
Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback with 500 (ms) delay	Dynamic sitting excercises in the mediolateral and anteroposterior directions with computer visual feedback in real time												
Physical therapy with visual biofeedback (SMART Balance master forceplate)	Physical therapy												
Balance training with Visual feedback	Conventional rehabilitation												
Balance training with Visual feedback	Balance training with Verbal and tactile cues												
Posturographic platform biofeedback training	hospital treatment												
3D balance training using visual feedback with Conventional therapy	Conventional therapy												
Balance training with postural control visual biofeedback and conventional rehabilitation	Conventional rehabilitation												
Space balance 3D training using visual feedback program with Conventional rehabilitation	Conventional rehabilitation												
Force platform biofeedback balance training with Conventional rehabilitation	Conventional rehabilitation												
Visual Deprivation Group Balance Training Group with Conventional Therapy	Conventional Therapy												
Vestibular rehabilitation (consisted of eye-head coordination exercises, balance and ambulation exercises)	Usual Home Exercise												
Gait training with Insole Shoe Wedge and Sensors with Auditory feedback and Conventional rehabilitation	Conventional gait training with Conventional rehabilitation												
Treadmill training with Rhythmic auditory feedback	Treadmill training												
3D balance exercises (3D Thera-Balance) with visual feedback	Weight shifting exercises												
Lokomat robotic training with electromyography biofeedback and Conventional therapy	Lokomat robotic training with Commercial joint torque biofeedback and Conventional therapy												
Botulinum Toxin A injection (under ultrasound guidance) with electromyography biofeedback treatment and conventional care	Botulinum Toxin A injection (under ultrasound guidance) with conventional care												
Multimodal training: Biofeedback FES +cycling training + biofeedback platform-based balance training + conventional rehabilitation	Conventional rehabilitation												
Weight support feedback cane (WSFC) gait training + conventional care	Regular cane gait training + conventional care												
100% performance feedback and scatter plot visual feedback	No performance feedback												

Biofeedback Balance training (RIABLO training)	Conventional balance training												
Galvanic vestibular stimulation	Lokomat gait training or Physiotherapy with visual feedback												
Lokomat gait training	Physiotherapy with visual feedback												
Perceptual Feedback	Conventional Treatment												
Standing postural symmetry training with a visual and auditory biofeedback trainer with repetitive sit-to-stand training and conventional rehabilitation	Conventional rehabilitation												
Smartphone-based visual feedback trunk control training with Conventional rehabilitation	Conventional Rehabilitation												
Trunk stabilization exercises with audiovisual biofeedback (Pressure biofeedback unit)	Trunk stabilization exercises												
Balance training with postural control visual biofeedback (SMART Balance master)	Conventional rehabilitation												
Gaming Assisted Visual feedback for balance training with Conventional therapy	Balance training exercises with Conventional therapy												
Balance training using Biodex stability system with visual biofeedback	Balance training												
Balance Platform Training with Audio-visual Feedback with Rehabilitation program	Rehabilitation program with postural training with physiotherapy												
Balance training with postural control visual biofeedback	Conventional physiotherapy												
Balance training with self- controlled postural control visual biofeedback	Balance training												
Balance training with self- controlled postural control visual biofeedback	Balance training with no control over postural control visual biofeedback												
Visual Deprivation Group Balance Training Group with Conventional Therapy	Visual Feedback Balance Training Group with Conventional Therapy												
Pressure sensor-based vibrotactile biofeedback	Standing without biofeedback												
Pressure sensor-based vibrotactile biofeedback	Visual biofeedback providing posture information												
Wii Fit balance training	Conventional weight-shifting training												
Wii Fit balance training	Tetrax biofeedback balance training												
Rehabilitation with Balance training and Visual biofeedback	rehabilitation program												
Visual feedback via Mirror with Verbal feedback and Conventional treatment (static and dynamic balance training)	Visual feedback via Mirror with Conventional treatment (static and dynamic balance training)												
Galvanic vestibular stimulation	Gait training (Lokomat) or Physiotherapy with visual feedback												
Gait training (Lokomat)	Physiotherapy with visual feedback												
Gait training with functional electrical stimulation	care												
EMG biofeedback from the affected-side soleus muscle (EMG)	Physical therapy (PT)												
Visual Biofeedback with Orthotic Devices	Sham Feedback												
Ankle treatment with biomechanical visual biofeedback (using an active sensorized ankle-foot orthosis)	Ankle treatment with an inactive sensorized ankle-foot orthosis (sham)												

Dual-Task Training (16 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Cognitive Dual Motor Task	Conventional Therapy or No Treatment												
Dual Task	Single Task Training or Control												
Dual Cognitive-Motor Task	Balance Training												
High-intensity multiplanar trunk training with dual-task training and conventional rehabilitation	Trunk training with conventional rehabilitation												
Dual-Task and Resistance Exercise	Aerobic and Resistance Exercise												
Dual-task training with variable priority instructional sets	Dual-task training with fixed priority instructional sets												
Cognitive Task	Motor Task vs No Task in Various Settings												
Cognitive Therapeutic Exercise Combined with Goal-Directed Training	Goal-Directed Training Alone												
Cognitive Training	Conventional Therapy												
Dual-Task Training with Motor Imagery	Dual-Task Training Alone												
Dual-task balance/mobility	Upper limb exercise												
Aquatic-based Dual-task Motor Training	Land-based Dual-task Motor Training												
Problem-Oriented Willed-Movement Therapy	Conventional Treatment												
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care												
Dual-Task Training	Vestibular Rehabilitation												
Aquatic therapy (Dual-task training with upper extremity tasks)	Neurodevelopmental techniques												

Mental Practice (25 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Gait Training with Motor Imagery or Mental Practice	Gait Training												
Neurofeedback Facilitation with Motor Imagery	Sham												
Mental Practice	Muscle Relaxation												
Mental Imagery	Conventional Training or Sham												
Motor Imagery with Virtual Reality	Virtual Reality Alone												
Task-Specific Training with Mental Practice	Task-Specific Training												
Task-Specific Training with Mental Practice	Conventional Training or No Treatment												
Proprioception Training with Motor Imagery	Proprioception Training												
Action Observation	Motor Imagery vs Conventional Therapy												
Circuit Training with Mental Practice	Circuit Training with Education												
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training												

Visual Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm												
Kinesthetic Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm												
Kinesthetic Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm												
Visual Locomotor Training with Auditory Step Rhythm	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm												
Body Awareness Therapy	Continuing Usual Daily Activities												
Mental Practice	Cognitive Training												
Task-oriented circuit class training with Motor imagery	rehabilitation (Bobath)												
Gait training with guided motor imagery and conventional exercises	Gait training with conventional exercises or 30min/d, 3d/wk, 4wks gait training												
Dual-task training with motor imagery	Dual-task training												
Action observation training with physical training	physical training												
Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	the other study arms												
Modified sit-to-stand training with mental practice with conventional therapy	Conventional Treatment												
Motor dual task training with Conventional care	Cognitive dual task training with Conventional care or Motor imagery and Conventional care												
Cognitive Sensory Motor Training	Conventional Therapy												

Action Observation (9 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Backward Walking Action Observation	Sham or Conventional therapy												
Action Observation Physical Training	Sham Action Observation Training												
Action Observation Training with Gait Training	Gait Training												
Action Observation with Treadmill Training	Treadmill Training												
Action Observation with functional electrical stimulation and Gait Training	Gait Training and functional electrical stimulation												
Action observational training with Treadmill training	Sham action observational training with Treadmill training												
Action observation training with physical training	physical training												
Action observation training with Rhythmic auditory stimulation and physical therapy	Action observation with physical therapy												
Functional Action Observation	General Action Observation												

Mirror Therapy (24 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Mirror Therapy	Conventional Therapy or Sham Therapy												

Intensive Mirror Therapy	Mirror Therapy												
Treadmill Training Combined with Mirror Therapy	Treadmill Training												
Mirror Therapy with Stimulation	Mirror Therapy or Task Oriented Training												
Mirror therapy	Mirror therapy with Mesh glove (afferent stimulation)												
Mirror Therapy combined with neuromuscular electrical stimulation	Mirror Therapy with Sham neuromuscular electrical stimulation or Conventional Therapy												
Conventional rehabilitation with mirror therapy and neuromuscular electrical stimulation	conventional rehabilitation with mirror therapy												
Mirror Therapy combined with functional electrical stimulation	Conventional Therapy												
Mirror Therapy with Virtual Reality	Conventional therapy												
Treadmill Training with Mirror Therapy	Treadmill Training with Sham												
Virtual reality therapy and mirror therapy (MT) exercises	lower extremity rehabilitation												
Mirror therapy with Functional electrical stimulation	Conventional therapy												
Mirror Therapy with Task Oriented Training	Task Oriented Training												
Mirror Therapy with repetitive transcranial magnetic stimulation	Mirror Therapy with Sham Stimulation												
Task-oriented training with mirror therapy	Task oriented training												
Home based Isometric Unilateral Strength Training with Mirror Therapy	Home based Isometric Unilateral Strength Training												
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation												
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy												
Electrical stimulation with mirror therapy	Sham electrical stimulation with sham mirror therapy												
Low frequency (1Hz) Repetitive Transcranial Magnetic Stimulation with mirror therapy	Sham repetitive transcranial magnetic stimulation with mirror therapy												
Camera-Based Mirror Therapy	Conventional Therapy												
Mirror Therapy with Verbal Feedback	Mirror Therapy Alone												
At home Mirror therapy + Usual care	At home Lower limb exercises + Usual care												
Conventional rehabilitation with mirror therapy and neuromuscular electrical stimulation	Conventional rehabilitation with Sham mirror therapy												

Aquatic Therapy (11 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Aquatic Therapy	Conventional Therapy												
Aquatic Treadmill Walking or Aerobic Therapy	Overground or Treadmill Walking or Cycle Ergometer												
Aquatic Therapy	Land-Based Upper Extremity Exercises												
Aquatic Ai Chi Therapy with Dry Land Therapy	Aquatic Ai Chi Therapy												

Dual-Task Aquatic Training	Neurodevelopmental Techniques or Land-Based Dual Motor Task												
Aquatic Therapy with Strength Training	Aquatic Therapy												
Anti gravity treadmill	Conventional therapy												
Waterjet resistance aquatic treadmill training + conventional PT	control												
Aqua therapy in shallow water	Aqua therapy in deep water												
Sequential Preparatory Approach Aquatic Therapy	Aquatic Therapy												
Land-based and aquatic trunk exercises with conventional physiotherapy	Conventional physiotherapy or 60min/d, 5d/wk, 4wks conventional physiotherapy												

Strength and Resistance Training (48 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Strength or Resistance Training	Conventional Therapy or Educational Classes												
Strength and Resistance Training Modalities	Limb overloading resistance training												
Strength Training with Visual Feedback	Physical Therapy												
Resistance Training with Balance Training	Conventional Therapy												
Early conventional physical therapy with intensive strength exercises	Conventional physiotherapy												
Bi-axial ankle-resistive strengthening muscle training with visual feedback	Ankle Physical therapy												
Task oriented circuit gait training	Strength training of lower extremities												
Functional strength training - upper limb	Functional strength training - lower limb												
Rehabilitation program with leg training	Rehabilitation program with Arm training												
Strength or Resistance Training	Stretching or Relaxation												
Aerobic and Resistance Training	Conventional Therapy or Aerobic Training												
Aerobic training	Progressive resistance training												
Eccentric resistance training with Gait training	Concentric resistance training with Gait training												
Strength and Resistance Training Intensity	High intensity resistance training (HIRT)												
Low intensity walking and resistance training program	High intensity walking and resistance training program												
Home based Isometric Unilateral Strength Training with Mirror Therapy	Home based Isometric Unilateral Strength Training												
Resistance Training with and without repetitive transcranial magnetic stimulation	Resistance Training or repetitive transcranial magnetic stimulation Alone												
Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation	Ankle Strengthening												
Muscle Strength Training to Paralytic Muscles	Muscle Strength Training to Non-paralytic Muscles												
Core strengthening exercises with Conventional rehab	Conventional rehab												
Task-oriented progressive resistance strength training	No treatment												
Task oriented circuit gait training	Educational session on stroke management												

Task Oriented circuit LE strength training with physiotherapy	Conventional physiotherapy												
Aerobic training on cycle ergometer	Sham training of upper extremities												
Aerobic cycling with progressive resistance training (PRT)	Sham cycling with Sham PRT												
Aerobic training (over ground walking) with Resistance training	Aerobic Training												
Individualized cardio rehabilitation (aerobic & resistance training) with Conventional stroke rehab	Conventional Stroke Rehabilitation												
Aerobic Training (fast walking and walking up-stairs) with Resistance Training	Conventional care												
Aerobic training (Stationary treadmill or bicycle ergometer) with resistance training and cognitive training	Sham Combined aerobic and resistance training with Sham Cognitive training												
Circuit walking, balance, cycling and strength training (CBCS)	Sociocultural intervention (board games, cultural discourse and drama)												
Non-elastic taping with Exercise training (progressive resistance exercise, balance training and treadmill training)	Sham taping with exercise training												
Dual Task (Consisting aerobic and resistance exercises while performing cognitive task)	Aerobic and Resistance Exercises, without Performing Cognitive Task												
Aquatic training with under water strength training	Aquatic training												
Metronome training with core strengthening and general balance exercises	Core strengthening with general balance exercises												
Ankle strengthening training with brain-computer interface-based functional electrical stimulation on TA	Ankle strengthening training with functional electrical stimulation on TA												
Ankle Strengthening	repetitive transcranial magnetic stimulation												
120g Nutritional supplement (Reha-Time Jelly BCAA enriched nutritional supplement) with resistance exercise training program	Resistance training exercise program												
Acupuncture with trunk strengthening training and conventional rehab	Conventional rehab with trunk strengthening training												
Lower limb resistance training with Abdominal draw-in maneuver (abdominal drawing-in maneuver) and Conventional tailored physical therapy	lower limb exercise with abdominal drawing-in maneuver and Conventional tailored physical therapy												
Isokinetic strength training with balance exercises	Conventional physiotherapy												
Foot Mobilization with Intrinsic Foor Muscles Facilitation and (Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations)	Strength and Resistance training including proprioceptive neuromuscular facilitation, Gait training and Balance training through Pertubations												
Resistance-based, reciprocal, affected leg locomotor training protocol using the NuStep apparatus	Home exercise program												
Progressive resistive training with closed-kinetic chain	No training												
Progressive resistance training with Cycling	Progressive resistance training with Sham cycling or Sham progressive resistance training, Cycling or Sham progressive resistance training and Sham cycling												

Progressive resistance training with Cycling	Progressive resistance training with Sham cycling												
Sham progressive resistance training with Cycling	Sham progressive resistance training with Sham cycling												
Extracorpeal shockwave therapy	conventional rehab												
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training												

Rhythmic Auditory Stimulation (16 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Overground Gait Training with Rhythmic Auditory Stimulation	Overground Gait Training												
Auditory Stimulation with Robot Training	Virtual Reality with Robot Training or Conventional Training												
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy												
Rhythmic Auditory Stimulation	Visual Cueing or Conventional Treatment												
Treadmill Training with Rhythmic Auditory Stimulation	Treadmill Training												
Physical Therapy with Rhythmic Auditory Feedback	Physical Therapy or Conventional Therapy												
Treadmill Training with Rhythmic Auditory Stimulation	Overground Gait with Rhythmic Auditory Stimulation												
Visual Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training												
Visual Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm												
Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm	the other study arms												
Kinesthetic Locomotor Imagery Training	Visual Locomotor Training with Auditory Step Rhythm												
Kinesthetic Locomotor Imagery Training	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm												
Visual Locomotor Training with Auditory Step Rhythm	Kinesthetic Locomotor Imagery Training with Auditory Step Rhythm												
Rhythmic auditory stimulation with treadmill training and conventional physical therapy	Treadmill training with conventional physical therapy												
Action observation training with Rhythmic auditory stimulation and physical therapy	Action observation with physical therapy												
Music-movement therapy (MMT)	Conventional care												

Respiratory Training and Devices (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Respiratory Muscle Training	Conventional Rehabilitation or Sham Respiratory Muscle Training												
Continuous Positive Airway Pressure	Conventional Rehabilitation												

4 week inspiratory muscle training	8 week inspiratory muscle training												
Respiratory Muscle Training	Cycle Ergometer Training												
Inspiratory muscle training (IMT)	Conventional rehabilitation												
Respiratory Training	Conventional Rehabilitation with Liuzijue Qigong												

Home-Based and Caregiver-Mediated Exercise Programs (23 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Home-Based Physiotherapy and Exercise Programs	Conventional Therapy or No Therapy												
Caregiver-Mediated Programs	Conventional Care												
Nursing Mediated Program	Conventional Care												
Home-based nurse guided Telerehabilitation Exercise Program	Conventional Care												
BASNEF model motivational training with home-based rehabilitation	Conventional Care												
Caregiver-mediated exercise program with e-health support with telerehabilitation	Conventional therapy												
Caregiver-mediated iPad exercise program with FitBit activity monitor (real-time feedback)	Usual care												
Active dual-hemispheric transcranial direct current stimulation with Home-based exercise	Sham transcranial direct current stimulation with Home-based exercise												
Programmed Nursing Intervention (Including health education, personalized functional exercise plans, restoration function training)	routine rehabilitation training												
Home rehabilitation, then Clinic rehabilitation	Clinic rehabilitation, then home rehabilitation												
Home-based Oculomotor/Gaze Stability Exercises	Conventional Rehabilitation												
Home-based cycle ergometer exercise	Home-based overground walking exercise												
Early Discharged At-Home Supported Training	Conventional Post-Discharge Rehabilitation												
Specialist Community Rehabilitation	Conventional Rehabilitation												
Home-based isometric unilateral strength training with mirror therapy	Home-based isometric unilateral strength training												
Nurse-organized, family caregiver delivered rehabilitation (supported by a custom- designed smartphone application)	Usual care												
Augmented reality with home based exercise program	Home based exercise program												
Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection												
Custom Occupational therapy with Caregiver training workshop	Usual care alone												
Treadmill training with load (5% of body weight) on the nonparetic limb with home-based exercises	Treadmill training without load with home-based exercises												
Outpatient Clinic Care Follow-up	Conventional Control												
Home based physical activity and walking training program	Conventional care												

Rapid rehabilitation nursing with continuous nursing after discharge	Routine nursing												

Telerehabilitation and Technology-Based Home Exercise Programs (8 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Home Based Therapy Using Technology and Telerehabilitation	Conventional Therapy or No Therapy												
Telerehabilitation Physiotherapy Combined with electromyography-neuromuscular electrical stimulation	Conventional Therapy Combined with electromyography-neuromuscular electrical stimulation												
Caregiver-Mediated Programs using Telerehabilitation or Technology	Conventional Care												
Telerehabilitation Computerized Complex Repetitive Ankle Movement Training	Simple Ankle Movement Training												
Video-Based Home Exercise Training	Paper-Based Home Exercise Training												
Virtual reality-based telerehabilitation in Home with conventional physical therapy	Virtual reality-based rehabilitation in clinic with conventional physical therapy												
Smart-watch feedback on daily activity level	local routine treatment												
Home based Multimodal rehabilitation program by mHealth app	Conventional care												

Virtual Reality (48 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Virtual Reality	Conventional Therapy or No Treatment												
Virtual Reality Exercise Program	Exercise Program												
Virtual Reality with Treadmill Training	Overground Gait Training												
Virtual Reality Robotic Training	Robotic Training, Auditory Stimulation, and Conventional Therapy												
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy												
Virtual Reality with Other Modalities	Task-specific training												
Virtual Reality (Nintendo Wii)	Virtual Reality with Proprioceptive Neuromuscular Facilitation												
Brain-Computer Interface Controlled Training	Sham												
Task-oriented training with Virtual reality training	Task-oriented training												
Speed-Interactive Pedaling Training with Virtual Reality	Pedaling Training												
Virtual Reality	Proprioceptive Neuromuscular Facilitation												
Motor imagery with virtual reality training	virtual reality training with Conventional therapy												
Virtual reality therapy and mirror therapy (MT) exercises	lower extremity rehabilitation												

Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Conventional physical therapy with treadmill training													
Repetitive transcranial magnetic stimulation with Augmented reality gait adaptive training	Augmented reality gait adaptive training													
Game-based constraint-induced movement therapy with Traditional physical therapy	General game-based training with Traditional physical therapy													
Virtual Reality	Balance Training													
Virtual Reality with Treadmill Training	Conventional Therapy or Treadmill Training													
Virtual reality treadmill training-based community ambulation	Community ambulation training													
Treadmill with optic flow with conventional physical therapy	Treadmill with conventional physical therapy													
Virtual Reality Robotic Training	Robotic Training and Conventional Therapy													
Virtual Reality Training	Strength and Resistance Training													
Sit-to-stand training with visual feedback with Wii Balance Board and physiotherapy	Sit-to-stand Training with physiotherapy													
Treadmill-based with augmented reality	Overground walking with physical obstacles													
Selfpaced treadmill walking in virtual reality environment	Self Placed Overground Platform walking													
Treadmill-based C-Mill (using gait-dependent augmented reality)	Overground walking therapy (walking-adaptability exercises with physical obstacles)													
Virtual walking training (virtual reality) with rehabilitation program	Treadmill gait training with rehabilitation													
Customized Physiotherapy plan using interactive Motion Capture Rehabilitation (virtual reality- based)	Customized Physiotherapy plan													
Peripheral nerve mobilization with virtual reality-based gait training	Conventional exercises													
Dual-task (virtual reality-based UL training while walking on treadmill)	Single task treadmill walking													
Virtual reality with cognitive load with conventional rehabilitation	Treadmill walking with virtual environment with conventional rehabilitation													
Telerehabilitation using a Kinect camera-based interactive telerehabilitation system	Conventional physiotherapy													
Lokomat endurance video games	Conventional Physiotherapy													
Virtual reality augmented robot-assisted gait training with conventional care	Robot-assisted gait training with conventional care													
Treadmill training with Virtual reality and Ankle robotics	Seated training with Virtual reality and Ankle robotics													
Xbox training during anodal transcranial direct current stimulation stimulation to cerebellum	Sham transcranial direct current stimulation with xbox training													
Xbox training during anodal transcranial direct current stimulation stimulation to cerebellum	Xbox training during nodal transcranial direct current stimulation stimulation to motor cortex													
Anodal Cerebellar transcranial direct current stimulation with Xbox Kinect games ; E2 Anodal M1 transcranial direct current stimulation and Xbox Kinect games	Sham Stimulation Group with Xbox Kinect games													

Anodal Cerebellar transcranial direct current stimulation with Xbox Kinect games ; E2 Anodal M1 transcranial direct current stimulation and Xbox Kinect games	the other study arms												
Robotic-assisted gait training (Lokomat-Pro) with virtual reality	Robotic-assisted gait training (Lokomat-Nanos)												
Wii Fit balance training	Tetrax biofeedback balance training												
Wii Fit balance training	Conventional weight-shifting training												
Cognitive motor exergaming training	Conventional training (stretching, strengthening, balance and endurance training)												
Virtual Reality Training	Treadmill Training												
Self paced treadmill walking in virtual reality environment	Fixed speed treadmill walking in virtual reality environment												
Wii Balance Intervention	Conventional Balance Intervention												
Telerehabilitation video games	Conventional rehab												
Group Video game therapy	Conventional care												

Electromechanical and Robotic Devices (97 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Robot Assisted Gait Training	Conventional Therapy and Overground Gait Training												
Gait Trainer GT I (Rehastim)	Overground gait training												
End-Effector Gait Training	Body Weight Supported Treadmill												
Electromechanical gait trainer therapy with Conventional rehabilitation	Body weight-supported treadmill training with Conventional rehabilitation												
Exoskeleton Systems	Conventional Therapy or Overground Gait Training												
Robot Assisted Gait Training (Lokomat) with Conventional Therapy	Robot Assisted Gait Training (Lokomat)												
Exoskeleton Systems	Treadmill Training												
Exoskeleton Gait Training	Functional Task-Specific Training												
Exoskeleton Systems Administration Method	Therapist controlled robot-assisted gait training												
Exoskeleton Portable Devices	Overground Gait Training or Stretching vs Sham Ankle Foot Orthosis												
Exoskeleton Portable Devices	Stretching												
Exoskeleton Portable Devices with Ankle Foot Orthosis	Sham Ankle Foot Orthosis												
Robotic-Assisted Gait Training and Restraint	Robot-assisted (Lokomat) walking training with arm fixation with conventional care												
Robotics Combined with Virtual Reality	Robotics, Robotics Combined with Auditory Stimulation or Conventional Training												
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Auditory stimulation with robot-assisted gait training (Treadmill) and conventional physical therapy												

Assist-as-needed robot- assisted gait training for unaffected limb with fully-assisted robot-assisted training for affected limb	Assist-as-needed robot- assisted gait training for affected limb with fully-assisted robot- assisted training for unaffected limb													
Robotic Verticalization with functional electrical stimulation	Conventional therapy													
Robot-Assisted Gait Training with Visuomotor feedback	Robot-Assisted Gait Training													
Robotics with Treadmill Training and Virtual Reality	Seated Training													
Ankle robot training low frequency, low intensity	ankle robot training high frequency, low intensity or ankle robot training low frequency, high intensity or ankle robot training high frequency, high intensity													
Robot-Guided Ankle Proprioceptive Training with Thermal Stimulation	Conventional Therapy													
Robot-Assisted Gait Training	Upper Limb Therapy													
Robot-Assisted Gait Training with Balance Training	Balance Training Alone													
Robot-Assisted Gait Training	Home-Based Exercise Program													
Trunk stability robot training (3DBT-33) with conventional physical therapy	Conventional Physical Therapy													
Daoyin with Conventional rehab	Conventional rehab													
Daoyin with Conventional rehab	Daoyin with Lower Limb Robot, Conventional rehab or Lower Limb Robot and Conventional rehab													
Robot-assisted ankle-foot- orthosis (ankle-foot orthosis) with dorsiflexion assistance	Sham Ankle foot orthosis (ankle-foot orthosis) with torque impedance													
Virtual reality with robot- assisted gait training (Treadmill) and conventional physical therapy	Conventional physical therapy with treadmill training													
Brain-computer interface- controlled training robot with Conventional Physiotherapy	Sham brain-computer interface-controlled training robot with Conventional Physiotherapy													
Brain-computer interface- operated lower limb rehabilitation robot	Sham (Lower limb pedal training without image, video, sound hint)													
Dynamic tilt table with robotic leg movement with functional electrical stimulation	dynamic tilt table with robotic leg movement													
Robotic verticalization (ERIGO tilt table) with functional electrical stimulation and dynamic foot support	Physiotherapy-assisted verticalization (simple tilt-table)													
High definition transcranial direct current stimulation (dual) with Robot assisted gait training	Sham High definition transcranial direct current stimulation with Robot assisted gait training													
Robot-assisted gait training and anodal transcranial direct current stimulation	Robot-assisted gait training and sham stimulation													
Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment	Scalp Acupuncture with Basic Treatment													
Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment	Scalp Acupuncture with lower-limb robot training (LLRT, SA separately) and Basic Treatment													
2x Lokomat gait training + 1x Conventional PT	2x Conventional PT + 1x Lokomat gait training													
Gait trainer device (REHA-STIM)	Conventional rehabilitation (Bobath)													

Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2												
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Gait Trainer GT II (Rehastim) with Regular rehabilitation												
Robot Assisted Gait Training	Balance Training												
Electromechanical Gait Training	Conventional Treatment or No Treatment												
Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Electromechanical gait trainer with Conventional physical therapy												
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Electromechanical gait trainer with Conventional therapy												
ExoAtlet exoskeleton exercises with rehabilitation	Ortorent MOTO pedal trainer for active-passive training with rehabilitation												
Resistance load Robotic gait system training	Assistance Robotic gait system training												
Therapist-assisted locomotor training	Robotic-assisted locomotor training												
30% weight robot gait training with general physical therapy	50% weight robot gait training with general physical therapy												
30% weight robot gait training with general physical therapy	70% weight robot gait training with general physical therapy												
50% weight robot gait training with general physical therapy	70% weight robot gait training with general physical therapy												
Robot-assisted training with Power-assisted ankle robot with Conventional training	Robot-assisted training with Swing-controlled ankle robot with Conventional training												
Gait training with Gait Exercise Assist Robot (GEAR)	Gait training with treadmill												
Robotic-assisted Stretching	Conventional Therapy												
Regent Suit with Neuromotor rehabilitation	Neuromotor rehabilitation												
Robot-assisted Task Specific Training	Task Specific Walking												
Robotic gait training with Exoskeleton ExoAthlet with Conventional physiotherapy	Robotic gait training with Lokomat Free-D with Conventional physiotherapy												
Robot-Assisted Gait Training with Robotic Balance Platform	Robot-Assisted Gait Training Alone												
Robotic balance training with conventional rehabilitation	Conventional training												
Robotic balance training with conventional rehabilitation	Intensive balance training with conventional rehabilitation												
Robot-assisted balance exercises	Conventional care												
Robot-assisted stair climbing training (G-EO System)	Sensory integration balance training												
Robotic ankle stretching exercises	Conventional stretching board												
Lokomat robotic training with electromyography biofeedback and Conventional therapy	Lokomat robotic training with Commercial joint torque biofeedback and Conventional therapy												
Virtual reality augmented robot-assisted gait training with conventional care	Robot-assisted gait training with conventional care												
Robot-assisted gait training with Virtual reality	Robot-assisted gait training												
Virtual reality robotic training (computer)	Robotic training												

Treadmill training with Virtual reality and Ankle robotics	Seated training with Virtual reality and Ankle robotics													
Robot-assisted (Lokomat) gait training with functional electrical stimulation on the ankle dorsiflexor of affected side	Robot-assisted (Lokomat) gait training													
Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Gait training with Conventional physical therapy													
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Overground gait training with Conventional therapy													
Robot-assisted gait training and anodal transcranial direct current stimulation over the leg motor cortex area	Robot-assisted gait training only													
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2													
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training													
Anodal transcranial direct current stimulation with Robot- assisted gait training	Gait training													
Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training													
Robotic Gait Training (Lokomat robotic exoskeleton) with Botulinum toxin injection	Botulinum toxin injection with Conventional physiotherapy													
Botulinum toxin A with Robot assisted Gait Training (RoboGait) and Conventional Physiotherapy	Botulinum toxin A with Conventional Physiotherapy or 90min physical therapy 1session/d, 5d/wk, for 3wks													
Botox (250U) With Robot- Assisted Gait Therapy	Botox Alone													
Acupuncture with Gait rehab robot training (AiWalker-I) and Conventional rehab	Acupuncture with Conventional rehab													
Fast rhythmic robot-assisted locomotor training on body-weight supported treadmill	control													
Progressive reducing assistance force during robot-assisted gait training + conventional PT	Full assistance force during robot-assisted gait training + conventional PT													
Robot-assisted gait training (Lokomat) with Virtual reality	Robot-assisted gait training (Lokomat)													
Galvanic vestibular stimulation	Gait training (Lokomat) or Physiotherapy with visual feedback													
Gait training (Lokomat)	Physiotherapy with visual feedback													
Robot-assisted Trunk Training	Conventional Therapy													
Vibration on sole of foot	Contact on Sole of Foot with No Vibration													
Robot-assisted trunk control training with Conventional trunk stabilization exercise	Conventional trunk stabilization exercise with stretching exercise													
Galvanic vestibular stimulation	Lokomat gait training or Physiotherapy with visual feedback													

Lokomat gait training	Physiotherapy with visual feedback												
Ankle-knee-hip Interlimb coordinated humanoid robot + Conventional Physical therapy	Gait training + Conventional PT												
Healbot T (Exoskeleton) with pelvic motion on	Healbot T (Exoskeleton) with pelvic motion off												
Gait Training with Gait Exercise Assist Robot (GEAR)	Overground Gait Training												
Haemorrhagic Stroke Erigo Robotic Tilt Table	Haemorrhagic Stroke Conventional Care or Ischemic Stroke Conventional Care												
Robotic tilt table (Erigo) therapy	Conventional physiotherapy												
Robotic Tilt table with Upper extremity exercises	Conventional therapy												
Robot-Assisted Gait Training	Physiotherapy												

Functional Electrical Stimulation (53 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Functional electrical stimulation Therapy or Sham Stimulation	Conventional Therapy or Sham Stimulation												
Functional electrical stimulation Combined with Gait Training	Gait Training or Conventional Therapy												
Cycling with functional electrical stimulation	Cycling with or without Sham functional electrical stimulation or Conventional Therapy												
Treadmill Training with functional electrical stimulation	Treadmill Training with or without Sham functional electrical stimulation												
Functional electrical stimulation with Tilt Table	Conventional Therapy or Simple Tilt Table												
Functional electrical stimulation Muscle Stimulation	Electrical Muscle Stimulation												
Four-Channel functional electrical stimulation	Dual-Channel functional electrical stimulation vs Sham												
Four-channel functional electrical stimulation with physiotherapy	Dual-channel functional electrical stimulation with physiotherapy												
Four-channel functional electrical stimulation with Conventional therapy	Dual-channel functional electrical stimulation with Conventional therapy												
Mirror Therapy with Functional Electrical Stimulation	Conventional Therapy												
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy												
Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Ankle-Foot Orthosis												
Peroneal Nerve functional electrical stimulation (Foot-drop Stimulator)	Conventional Therapy or Gait Training												
Peroneal Nerve Stimulation	Sham Stimulation or Conventional Therapy												
Mirror feedback with functional electrical stimulation	Conventional rehab with functional electrical stimulation												
Mirror therapy with Functional electrical stimulation	Conventional therapy or 50 min, 4d/wk, for 2wks CT 1wk washout												
Robotic verticalization with functional electrical stimulation and dynamic foot support	Physiotherapy-assisted verticalization (simple tilt-table)												
Circuit Training (NESS L300 & Motomed Viva 2 functional electrical stimulation with Cycling & Brain trainer)	Conventional Care												

Contralaterally controlled functional electrical stimulation with rehab	Neuromuscular electrical stimulaion (neuromuscular electrical stimulation) with rehab												
Bicephalic transcranial direct current stimulation with gait training and foot drop stimulator (Walkaide orthosis)	Sham transcranial direct current stimulation with gait training and foot drop stimulator												
Botulinum toxin type A injection with functional electrical stimulation and Conventional physiotherapy	Conventional physiotherapy												
Rehabilitation with functional electrical stimulation	rehabilitation with Placebo stimulation												
Interval Cycling with functional electrical stimulation	Linear Cycling with functional electrical stimulation												
Robot-assisted Gait Training with functional electrical stimulation	Gait Training or Robot-assisted Gait Training												
Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Electromechanical gait trainer with Conventional physical therapy												
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Electromechanical gait trainer with Conventional therapy												
Balance Training with functional electrical stimulation	Balance Training or Conventional Care												
Ankle Training with brain-computer interface-based functional electrical stimulation	Ankle Training with functional electrical stimulation												
Functional electrical stimulation with Motor Training on Rocker Board	Conventional Exercises												
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy												
Faradic Electrical Stimulation	Russian Electrical Stimulation												
Faradic electrical stimulation with Task-oriented exercise	Russian electrical stimulation with Task-oriented exercises												
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation with conventional rehabilitation												
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation												
Gait training with transcranial direct current stimulation with conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation												
Ankle foot orthosis with gait training	functional electrical stimulation with gait training												
Core Muscle Training with functional electrical stimulation	Core Muscle Training Alone												
Foot drop stimulator with treadmill training and Basic rehabilitation training	Foot drop stimulator training with Basic rehabilitation training												
Fast speed treadmill training with functional electrical stimulation	Self-Selected Speed Treadmill Training or Fast Speed Treadmill Training												
Modified Dynamic Ankle Foot Orthosis (including functional electrical stimulation) with Conventional physiotherapy	Conventional physiotherapy												
Gait training with functional electrical stimulation and Action observation	Gait training with functional electrical stimulation												

Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Overground gait training												
Gait Trainer GT II (Rehastim) with Functional electrical stimulation and Regular rehabilitation	Gait Trainer GT II (Rehastim) with Regular rehabilitation												
Electromechanical gait trainer with Functional electrical stimulation and Conventional physical therapy	Gait training with Conventional physical therapy												
Electromechanical gait trainer with Functional electrical stimulation and Conventional therapy	Overground gait training with Conventional therapy												
Bicephalic Transcranial direct-current stimulation with Footdrop stimulator and Treadmill gait training	Sham transcranial direct-current stimulation with Footdrop stimulator and treadmill gait training												
Functional electrical stimulation with Proprioceptive Neuromuscular Facilitation	Proprioceptive Neuromuscular Facilitation												
Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation	proprioceptive neuromuscular facilitation trunk pattern												
Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)												
M1 anodal transcranial direct current stimulation with functional electrical stimulation and Conventional care	20min/d functional electrical stimulation with Conventional care or 20min/d functional electrical stimulation and 20min/d conventional care, 5d/wk, for 2wks												
Rehabilitation with electromyography biofeedback	Conventional rehabilitation												
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching												
Over-Ground Gait Training + BWS Treadmill Training + Functional electrical stimulation with intramuscular electrodes	Over-Ground Gait Training + BWS Treadmill Training												

Neuromuscular Electrical Stimulation (NMES) (36 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Cyclic neuromuscular electrical stimulation	Conventional Therapy or Neurodevelopmental Techniques												
Neuromuscular electrical stimulation Therapy	Conventional Therapy												
Electromyography-triggered neuromuscular electrical stimulation	Conventional Therapy												
Contralaterally Controlled neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation or neuromuscular electrical stimulation												
Contralaterally controlled neuromuscular electrical stimulation with conventional therapy	neuromuscular electrical stimulation with conventional therapy												
Conventional rehabilitation with mirror therapy and neuromuscular electrical stimulation	Conventional rehabilitation with mirror therapy												
Neuromuscular electrical stimulation Therapy	Mirror Therapy												

Neuromuscular electrical stimulation with Exercise Therapy	Exercise Therapy												
Neuromuscular electrical stimulation with Passive Ankle Movement Training	neuromuscular electrical stimulation Alone												
Electromyography-triggered Pedaling training	Pedaling training												
Conventional rehabilitation with mirror therapy and neuromuscular electrical stimulation	conventional rehabilitation with Sham mirror therapy												
Neuromuscular electrical stimulation on tibialis anterior with ambulation training	neuromuscular electrical stimulation on medial gastrocnemius with ambulation training												
Interferential Current neuromuscular electrical stimulation with Air-pump Massage	Sham												
Passive Movement Training with cyclic neuromuscular electrical stimulation	Cyclic neuromuscular electrical stimulation												
Passive Movement Training with cyclic neuromuscular electrical stimulation	Passive Movement Training												
Cyclic neuromuscular electrical stimulation	Passive Movement Training												
Sensory threshold neuromuscular electrical stimulation with Conventional therapy	Conventional therapy												
Mirror Therapy with Cyclic neuromuscular electrical stimulation	Conventional Therapy												
Neuromuscular electrical stimulation with Walking Training	Conventional Walking Training with Ankle-Foot Orthosis												
Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles	Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles												
Neuromuscular electrical stimulation Stimulation	Sham Stimulation												
Neuromuscular electrical stimulation (Walkaide) with walking training and conventional therapy	Walking training with ankle-foot-orthosis and conventional therapy												
Mirror therapy with cyclical neuromuscular electrical stimulation and conventional physical therapy	Conventional therapy												
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Conventional rehabilitation												
Electromyography-triggered neuromuscular electrical stimulation with tilt sensor functional electrical stimulation training (combined electrical stimulation) and conventional physiotherapy	Electromyography triggered neuromuscular electrical stimulation training (single electrical stimulation) with conventional physiotherapy												
Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Antagonist and Injected Agonist Muscles	Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Injected Agonist Muscles												
Proprioceptive neuromuscular facilitation trunk pattern with electromyography-triggered functional electrical stimulation	proprioceptive neuromuscular facilitation trunk pattern												
Cyclic neuromuscular electrical stimulation	Trunk/Core Training												
Trunk neuromuscular electrical stimulation with Core muscle training	Trunk neuromuscular electrical stimulation												

Dual-afferent sensory input (electromyography-triggered functional electrical stimulation with Action Observation)	Functional electric stimulation (functional electrical stimulation)												
Tele-supervising rehabilitation (physical therapy with electromyography-neuromuscular electrical stimulation)	Conventional Care												
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	rehabilitation												
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	Neuromuscular Electrical Stimulation with Early Rehabilitation												
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)												
Neuromuscular Electrical Stimulation	Occupational Therapy												
Neuromuscular electrical stimulation (NMES)	Sham NMES												

Transcutaneous Electrical Nerve Stimulation (TENS) (33 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Transcutaneous electrical nerve stimulation Stimulation, Conventional Therapy or No Treatment	Sham Stimulation, Conventional Therapy or No Treatment												
Unilateral transcutaneous electrical nerve stimulation	Bilateral transcutaneous electrical nerve stimulation												
Balance Training with transcutaneous electrical nerve stimulation	Sham transcutaneous electrical nerve stimulation with Balance Training vs Conventional Care												
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Weight-shifting training with Placebo transcutaneous electrical nerve stimulation and Conventional care												
Weight-shifting exercise with transcutaneous electrical nerve stimulation and Conventional care	Conventional care												
Transcutaneous electrical nerve stimulation with rehabilitation	Sham transcutaneous electrical nerve stimulation with rehabilitation												
Transcutaneous electrical nerve stimulation with exercise	Sham transcutaneous electrical nerve stimulation with exercise, transcutaneous electrical nerve stimulation only, or No Treatment												
Transcutaneous electrical nerve stimulation with Exercise	Sham transcutaneous electrical nerve stimulation with Exercise or transcutaneous electrical nerve stimulation												
Transcutaneous electrical nerve stimulation with Exercise	transcutaneous electrical nerve stimulation or Sham transcutaneous electrical nerve stimulation with Exercise												
Transcutaneous electrical nerve stimulation with Task-related Training	Task-related training												
Transcutaneous electrical nerve stimulation (60min) with Task- related training	transcutaneous electrical nerve stimulation (30min) with Task-related training												

Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation												
Transcutaneous electrical nerve stimulation with Task-related training	Placebo transcutaneous electrical nerve stimulation with Task- related training												
Transcutaneous electrical nerve stimulation	Placebo transcutaneous electrical nerve stimulation with Task- related training												
Transcutaneous electrical nerve stimulation with Task-related training	transcutaneous electrical nerve stimulation or Placebo transcutaneous electrical nerve stimulation with Task- related training												
Electroacupuncture and Low Frequency transcutaneous electrical nerve stimulation	High and Low Frequency transcutaneous electrical nerve stimulation												
Transcutaneous electrical nerve stimulation with Heel-raise-lower training	Placebo transcutaneous electrical nerve stimulation with Heel-raise-lower training												
Transcutaneous electrical nerve stimulation with task-oriented balance training and conventional therapy	C: Sham transcutaneous electrical nerve stimulation with task- oriented balance training and conventional therapy												
Transcutaneous electrical nerve stimulation	No treatment												
Transcutaneous electrical nerve stimulation	No active treatment												
Transcutaneous electrical nerve stimulation with Taping and Exercise	transcutaneous electrical nerve stimulation with Exercise												
Instructed sensory training with transcutaneous electrical nerve stimulation	Uninstructed sensory training with transcutaneous electrical nerve stimulation												
Low-dose Botulinum toxin (100U) with transcutaneous electrical nerve stimulation	High-dose Botulinum toxin (400U) with Sham electrical stimulation												
Electroacupuncture	Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation												
Transcutaneous electrical nerve stimulation with Task-related training	Sham transcutaneous electrical nerve stimulation with Task-related training												
Transcutaneous electrical nerve stimulation vs Conventional Therapy	neuromuscular electrical stimulation vs Conventional Therapy												
Transcutaneous Nerve Stimulation (transcutaneous electrical nerve stimulation) with Early Rehabilitation	Neuromuscular Electrical Stimulation with Early Rehabilitation												
Sit-to-stand training with transcutaneous electrical nerve stimulation and conventional therapy	Sit-to-stand training with sham transcutaneous electrical nerve stimulation and conventional therapy												
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy												
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												
Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												
Trunk Training with Balance Training and transcutaneous electrical nerve stimulation	Treadmill Training and Placebo transcutaneous electrical nerve stimulation												

Multi-sensorimotor training (Stabilize-T and Reha bar exercises with transcutaneous electrical nerve stimulation) and Conventional physical therapy	Treadmill training with placedo transcutaneous electrical nerve stimulation and conventional physical therapy												

Muscle Vibration (16 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Whole Body Vibration	Sham Stimulation, No Stimulation, or Conventional Care												
Local Muscle Vibration	Conventional Therapy or Sham Muscle Vibration												
Gastrocnemius vibration with conventional	Tibialis anterior vibration with conventional												
Vibrational and Heated Stone-Needle Therapy with Meridian Dredging Exercise	Meridian Dredging Exercise												
Whole Body Vibration	Musical Exercise Therapy												
Balance Training with Whole Body Vibration	Conventional Rehabilitation												
Whole Body Vibration with Treadmill Training	Treadmill Training												
Comparing Whole-Body Vibration Intensity	Sham with therapy												
High-frequency (26 Hz) Whole-body vibration training with therapy	Low-frequency (13 Hz) Whole-body vibration training with therapy												
High frequency (30Hz) whole body vibration	Low frequency (20Hz) whole body vibration												
Whole Body Vibration	Strength Training												
Vibrosphere (balance training with whole body vibration) and conventional geriatric rehabilitation	Conventional geriatric rehabilitation												
Matrix Rhythm Therapy	Bobath Therapy												
Task-Specific Training with Whole-Body Vibration Treatment (With an increase in frequency, sets, and time)	Task-Specific Training with Sham Vibration												
Vibration on sole of foot	Contact on sole of foot with No vibration												
Neuromuscular Electrical Stimulation	Occupational Therapy												

Additional Afferent and Peripheral Stimulation Methods (10 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Intermittent Pneumatic Compression	Conventional Therapy												
Sensory Training with Trunk Training	Trunk Training Alone												
Transcutaneous Auricular Vagus Nerve Stimulation with or without transcranial direct current stimulation	Conventional Therapy												
Tactile Sensory Stimulation	Conventional Care												
Afferent Electrical Stimulation with Mirror Therapy	Sham												
Laser Photo-biomodulation	Sham												

Instructed Sensory Training with transcutaneous electrical nerve stimulation	Uninstructed Sensory Training with transcutaneous electrical nerve stimulation												
Tactile stimulation and mobilization + task specific gait training	task specific gait training + unlimited textured insole wearing												
Sensory Training	Conventional Therapy												
NeuroDevelopmental rehabilitation + Center of pressure movement track in dynamic mode	Neurodevelopmental rehabilitation + Center of pressure movement track training in static mode												

Remote Ischemic Conditioning (1 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Remote Ischemic Conditioning	Sham or Conventional Therapy												

Thermal Stimulation and Cryotherapy (5 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Thermal Stimulation	Sham or No Stimulation												
Robot guided ankle proprioceptive training with Thermal tactile stimulation and Conventional therapy	Conventional Therapy												
Ankle Proprioceptive Training with Thermotherapy	Conventional Therapy												
Cryotherapy	Sham												
Cryotherapy with Physical Therapy with Ankle foot Orthosis	Physical Therapy with Ankle foot Orthosis												

Extracorporeal Shockwave Therapy and Therapeutic Ultrasound (12 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Extracorporeal Shockwave Therapy	Sham or Conventional Therapy												
Therapeutic Ultrasound	Sham or Conventional Therapy												
Radial Extracorpeal Shock Wave Therapy with Visual Feedback Balance Training	Sham with Visual Feedback Balance Training												
Focused Shockwave Therapy	Radial Shockwave Therapy												
Therapeutic ultrasound	Radial extracorporeal shock wave therapy (radial extracorporeal shockwave therapy)												
Double dose extracorporeal shockwave therapy	Single dose extracorpeal shockwave therapy												
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy												
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												

Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												
Extracorpeal shockwave therapy	extracorporeal shockwave therapy with Isokinetic strength training												
Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots)	Sham Extracorporeal Shock-wave Therapy (sound only)												
Extracorporeal Shock-wave Therapy on Muscle Belly (0.068 0.093 mJ/mm², 1,500 shots)	Extracorporeal Shock-wave Therapy on Myotendinous Junction (0												

Repetitive Peripheral Magnetic Stimulation (2 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Repetitive Peripheral Magnetic Stimulation	Sham												
Repetitive Peripheral Magnetic Stimulation	neuromuscular electrical stimulation, Muscle Vibration, and Conventional therapy												

Repetitive Transcranial Magnetic Stimulation (rTMS) (21 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Low frequency (1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation												
Low-frequency repetitive transcranial magnetic stimulation with Conventional rehab	Sham repetitive transcranial magnetic stimulation with Conventional rehab												
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation												
High Frequency (>1Hz) repetitive transcranial magnetic stimulation	Sham Stimulation												
High Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation	Low Frequency repetitive transcranial magnetic stimulation or Sham repetitive transcranial magnetic stimulation												
High frequency repetitive transcranial magnetic stimulation (10Hz) with Conventional therapy	Low frequency repetitive transcranial magnetic stimulation (1Hz) with Conventional therapy												
Ipsilesional repetitive transcranial magnetic stimulation (3Hz) with Physical therapy	Contralesional repetitive transcranial magnetic stimulation (1Hz) with Physical therapy												
Combined High and Low Frequency repetitive transcranial magnetic stimulation	Therapy												
Low Frequency repetitive transcranial magnetic stimulation	transcranial direct current stimulation or Combined repetitive transcranial magnetic stimulation and transcranial direct current stimulation or Sham												

Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy												
High Frequency repetitive transcranial magnetic stimulation Combined with Treadmill Training	Treadmill Training												
High Frequency repetitive transcranial magnetic stimulation with Cathodal transcranial direct current stimulation	repetitive transcranial magnetic stimulation												
Repetitive transcranial magnetic stimulation Combined with Cycling Exercise	Cycling Exercise Alone												
Repetitive transcranial magnetic stimulation Combined with Virtual/Augmented Reality Gait Training	Virtual/Augmented Reality Gait Training Alone												
Repetitive transcranial magnetic stimulation Combined with Motor Relearning	Motor Relearning Alone												
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation												
Ankle Strengthening	repetitive transcranial magnetic stimulation												
Ankle Strengthening with high frequency (10Hz) Repetitive Transcranial Magnetic Stimulation	Ankle Strengthening												
Mirror therapy with Repetitive transcranial magnetic stimulation	Mirror therapy with Sham stimulation												
Low Frequency (1Hz) repetitive transcranial magnetic stimulation	Conventional Therapy												
Low frequency (3Hz) repetitive transcranial magnetic stimulation with conventional care	High frequency (10Hz) repetitive transcranial magnetic stimulation with conventional care												

Theta Burst Stimulation (TBS) (5 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Intermittent Theta Burst Stimulation	Sham Stimulation												
Intermittent theta burst stimulation to M1 with Conventional physiotherapy	intermittent theta burst stimulation to contralateral cerebellar hemisphere with Conventional physiotherapy												
Cerebellar Intermittent Theta Burst Stimulation	Sham												
Intermittent theta burst stimulation unilateral cerebellar area (CB Single group)	intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group)												
Peripheral Intermittent Theta Burst Stimulation	Sham												

Transcranial Direct Current Stimulation (tDCS) (45 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Comparison of transcranial direct current stimulation Stimulation Conditions	Sham transcranial direct current stimulation												
Bihemispheric transcranial direct current stimulation with Conventional physical therapy	Unihemispheric transcranial direct current stimulation with Conventional physical therapy												
Dual transcranial direct current stimulation with Conventional therapy	Anodal transcranial direct current stimulation with Conventional therapy												
Dual transcranial direct current stimulation with Conventional therapy	Cathodal transcranial direct current stimulation with Conventional therapy												
Transcranial direct current stimulation with Robot-assisted Gait Training	Sham transcranial direct current stimulation with Robot-assisted gait training												
Dual transcranial direct current stimulation with Task-oriented training	Sham transcranial direct current stimulation with Task-oriented training												
Transcranial direct current stimulation with Ankle Motor Tracking and High-intensity speed-based treadmill training	High-intensity speed-based treadmill training												
Transcranial direct current stimulation priming only (Transcranial Direct Current Stimulation with High-intensity speed-based treadmill training)	AMT priming only (Ankle motor tracking with Sham Transcranial Direct Current Stimulation, High-intensity speed-based treadmill training) or transcranial direct current stimulation & AMT priming (Transcranial Direct Current Stimulation, Ankle motor tracking and High-intensity speed-based treadmill training)												
Transcranial direct current stimulation with Body weight supported treadmill training	transcranial direct current stimulation with Body weight supported treadmill training												
Transcranial direct current stimulation Combined with High or Low Frequency repetitive transcranial magnetic stimulation	repetitive transcranial magnetic stimulation or Sham												
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Cathodal transcranial direct current stimulation with repetitive transcranial magnetic stimulation (1Hz), conventional therapy or Anodal transcranial direct current stimulation, repetitive transcranial magnetic stimulation (1Hz) and conventional therapy												
Transcranial direct current stimulation with conventional therapy	Functional electrical stimulation with conventional therapy												
Transcranial direct current stimulation with Gait Training	Sham transcranial direct current stimulation with Gait Training												
Transcranial direct current stimulation with Conventional Therapy	Sham transcranial direct current stimulation with Conventional Therapy												
Transcranial direct current stimulation with Treadmill Training	Sham transcranial direct current stimulation with Treadmill Training												
Bilateral transcranial direct current stimulation and Treadmill	Cathodal transcranial direct current stimulation and Treadmill												
Transcranial direct current stimulation with Individualized Physiotherapy	Sham transcranial direct current stimulation with Individualized Physiotherapy												

Bihemisphere transcranial direct current stimulation with individual physio plan	Unihemisphere transcranial direct current stimulation with individual physio plan												
Transcranial direct current stimulation with Home-Based Exercise	Sham transcranial direct current stimulation with Home-Based Exercise												
Transcutaneous auricular vagus nerve stimulation with dual transcranial direct current stimulation	Neurodevelopmental Bobath supplemented with Occupational Therapy												
Repetitive transcranial magnetic stimulation (1Hz) with conventional therapy	Sham repetitive transcranial magnetic stimulation												
Dual-mode transcranial direct current stimulation (2mA) with repetitive transcranial magnetic stimulation (10Hz)	repetitive transcranial magnetic stimulation (10Hz)												
Anodal transcranial direct current stimulation (2mA)	Bilateral transcranial direct current stimulation (2mA) or Cathodal transcranial direct current stimulation (2mA)												
Bilateral transcranial direct current stimulation (2mA)	Cathodal transcranial direct current stimulation (2mA)												
Dual transcranial direct current stimulation	Anodal transcranial direct current stimulation or Cathodal transcranial direct current stimulation												
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation and Cathodal transcutaneous spinal direct current stimulation (2												
Robot-assisted gait training (G-EO) with Anodal transcranial direct current stimulation (2mA) and sham transcutaneous spinal direct current stimulation	Robot-assisted gait training (G-EO) with sham transcranial direct current stimulation, Cathodal transcutaneous spinal direct current stimulation (2												
Anodal transcranial direct current stimulation with Robot- assisted gait training	Sham transcranial direct current stimulation with Robot- assisted gait training												
Cerebellar transcranial direct current stimulation with Split-belt treadmill training	Sham cerebellar transcranial direct current stimulation with Split-belt treadmill training												
Transcranial direct current stimulation with Task-related training	Task-related training												
Contralesionally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training	Ipsileisonally cathodal transcranial cerebellar direct current stimulation (2mA) with cathodal transcutaneous spinal direct current stimulation and Robot-assisted gait training												
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation with conventional rehabilitation												
Gait training with functional electrical stimulation with sham transcranial direct current stimulation and conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation												
Gait training with transcranial direct current stimulation with conventional rehabilitation	Gait training with transcranial direct current stimulation and functional electrical stimulation with conventional rehabilitation												
Transcranial direct current stimulation with Trunk Training	Sham transcranial direct current stimulation with Trunk Training												

Trunk-targeted,proprioceptive neuromuscular facilitation with Bihemispheric transcranial direct current stimulation and Conventional physiotherapy	Trunk-targeted,proprioceptive neuromuscular facilitation with sham transcranial direct current stimulation and Conventional physiotherapy												
Transcranial direct current stimulation with Videogame Training	Sham transcranial direct current stimulation with Videogame Training												
Xbox training during anodal transcranial direct current stimulation stimulation to cerebellum	Xbox training during nodal transcranial direct current stimulation stimulation to motor cortex												
Anodal Cerebellar transcranial direct current stimulation with Xbox Kinect games ; E2 Anodal M1 transcranial direct current stimulation and Xbox Kinect games	the other study arms												
Transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training	Sham transcranial direct current stimulation with Foot Drop Stimulator and Treadmill Training												
Cathodal cerebellar stimulation (tcDCS) + cathodal spinal	control												
Anodal transcranial direct current stimulation (2mA) with Conventional care	Cathodal transcranial direct current stimulation (2mA) with Conventional care												
Transcranial Direct Current Stimulation	Functional Electrical Stimulation												
Anodal transcranial direct current stimulation	Dual transcranial direct current stimulation												
Anodal transcranial direct current stimulation with Conventional care	Cathodal transcranial direct current stimulation with Conventional care												

Antidepressants (9 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Fluoxetine	Placebo												
Shu-Gan-Jie-Yu vs Placebo	Fluoxetine vs Placebo												
Escitalopram	Placebo												
Citalopram vs Placebo	Fluoxetine vs Placebo												
20mg/d Citalopram & Physiotherapy	20mg/day Fluoxetine & Physiotherapy												
Shu-Gan-Jie-Yu capsule, 720 mg	Placebo												
Fluoxetine vs Placebo	Maprotiline vs Placebo												
Fluoxetine (20mg/d)	Maprotiline (150mg/d)												
Citalopram	Placebo												

Secondary Prevention Medications (8 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Tirofiban	Placebo												
Olmesartan	Amlodipine												
Naftidrofuryl fumarate	Placebo												

Alteplase	Aspirin												
PF-3049423	Placebo												
Nimodipine	Placebo												
Rivaroxaban	Aspirin												
DLBS1033 (Lumbrokinase)	Conventional Therapy												

Edaravone (2 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Long-term Edaravone (30mg, 2x/d) 10-15 days with Conventional care	the other study arms												
Edaravone Injection	Conventional Treatment												

Stimulants (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Amphetamines	Placebo												
Amphetamine with Intensive Physiotherapy	Amphetamine with Conventional Physiotherapy												
Amphetamine vs Placebo	Levodopa vs Placebo												
Methylphenidate	Placebo												
Methylphenidate vs Placebo	Levodopa vs Placebo												
Methylphenidate (20mg/d) with conventional physiotherapy	Levodopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levodopa and conventional physiotherapy												

Dopamine Agonists (7 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Levadopa or No Medication	Placebo or No Medication												
Levodopa with Stimulants	Placebo with conventional physiotherapy												
Methylphenidate (20mg/d) with conventional physiotherapy	Levadopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levadopa and conventional physiotherapy												
Ropinirole	Placebo												
Amphetamine (10mg/d) with Levodopa (50mg/d)	Amphetamine placebo with Levodopa placebo												
Methylphenidate (20mg/d) with conventional physiotherapy	Placebo with conventional physiotherapy												
Methylphenidate (20mg/d) with conventional physiotherapy	Levodopa (125mg/d) with conventional physiotherapy or Methylphenidate, Levodopa and conventional physiotherapy												

Nerve Block Agents (5 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Tibial nerve block through thermocoagulation with ankle-foot orthosis	Thermocoagulation with Sham ankle-foot orthosis or Sham thermocoagulation, ankle-foot orthosis or Sham thermocoagulation and Sham ankle-foot orthosis												
50% Ethyl alcohol injection (5mL)	5% Phenol injection (5mL)												
Curare Medications	Homeopathic Medications												
Botulinum Toxin A (400 U)	Phenol												
Botulinum Toxin A (400 U)	Tibial nerve blockade (Phenol)												

Botulinum Toxin (38 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Botulinum Toxin A	Placebo												
Botulinum Toxin A with Ankle-foot Orthosis	Conventional rehabilitation												
Botulinum Toxin A with functional electrical stimulation	Botulinum toxin A injection												
Botulinum toxin A (100U) in mid belly of the gastrocnemius with placebo injected in distal of popliteal fossa	Botulinum toxin A (100U) at distal to the popliteal fossa with placebo injected in mid belly												
Dosage of Injection	Placebo												
Ultrasonography guided Botulinum toxin A (1000U)	Electrical stimulation guided Botulinum toxin A (1000U)												
Botulinum Toxin A	Conventional Therapy												
Botulinum Toxin A with Casting or Taping	Botulinum toxin A (75- 100U) with Sham taping and home exercises												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with Taping and stretching and gait training												
Botulinum toxin A (100U) with Serial casting and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Botulinum toxin A (100U) with Taping and stretching and gait training	Botulinum toxin A (100U) with stretching and gait training												
Botulinum Toxin A with Electrical Stimulation	Botox Injections (50U- 120U) with neuromuscular electrical stimulation of Injected Agonist Muscles												
Botulinum Toxin A with transcutaneous electrical nerve stimulation	High-dose Botulinum toxin (400U) with Sham electrical stimulation												
Botulinum toxin (200U)	Neurotomy												
Location of Injection	Distal gastrocnemius Botulinum toxin A injection 200U												
Botulinum toxin A with Conventional Therapy (300U)	Botulinum toxin A with Conventional Therapy (100U)												
Botulinum toxin A (167U)	Botulinum toxin A (540U)												
Botulinum toxin A (322U)	Botulinum toxin A (540U)												

Botulinum Toxin A Injection with Home-based task-oriented rehabilitation and Usual physiotherapy	Botulinum Toxin A Injection												
Botox Combined with Robotics	Botox and Conventional Therapy												
Botulinum Toxin A with electromyography Biofeedback Treatment and Conventional Care	Botulinum Toxin A with Conventional Care												
Botox (200 units of BT- A) Early (140 Days Post Stroke)	Botox (200 units of BT- A) Middle (247 Days Post Stroke) or Botox (200 units of BT- A) Late (537 Days Post Stroke)												
Forward Treadmill Training with Botulinum Toxin	Backward Treadmill Training with Botulinum Toxin												
Backward treadmill training with botulinum toxin type A therapy	forward treadmill training with botulinum toxin type A therapy												
Botulinum toxin A (190-320U) with ankle-foot orthosis	Botulinum toxin A (190-320U)												
Botulinum toxin A (100U) injection into tibialis posterior with ankle-foot adhesive taping	electromyography-guided Botulinum toxin A (190-320U) injection into several calf muscles												
Botox Injections (50U-120U) with Electrical Stimulation of Antagonist and Injected Agonist Muscles	Botox Injections (50U-120U) with Electrical Stimulation of Injected Agonist Muscles												
Botulinum toxin A (500U) with functional electrical stimulation	Botulinum toxin A (500U) with Taping or Botulinum toxin A (500U) and Stretching												
OnabotulinumtoxinA (200U)	OnabotulinumtoxinA (300U)												
Botulinum Toxin A (50-100U) + Isokinetic training	Botulinum Toxin A (50-100U)												
Therapeutic ultrasound with Home exercises & conventional therapy	transcutaneous electrical nerve stimulation with Home exercises & conventional therapy												
Therapeutic ultrasound with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												
Transcutaneous electrical nerve stimulation with Home exercises & conventional therapy	Botulinum toxin A (200U) with Home exercises & conventional therapy												
Botulinum toxin A (200U) by ultrasonography	Botulinum toxin A (200U) by electrical stimulation												
Botulinum toxin A (200U) by ultrasonography	Botulinum toxin A (200U) by palpation												
Botulinum toxin A (200U) by electrical stimulation	Botulinum toxin A (200U) by palpation												
Botulinum Toxin A (400 U)	Phenol												
Botulinum Toxin A (400 U)	Tibial nerve blockade (Phenol)												

Antispastic Drugs (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Intrathecal Baclofen	Placebo												
Tolperisone	Placebo												
Magnesium Sulphate Iontophoresis	Stretching												
Dantrolene	Placebo												
Tizanidine	Placebo												
Tizanidine (8mg, titrated up to max 20mg)	Baclofen (20mg, titrated up to max 50mg)												

Cerebrolysin (1 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Taping	no taping, sham taping, or conventional therapy												

4-Aminopyridine (1 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Dalfampridine	Placebo												

Biologics and Targeted Molecular Therapies (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Ganglioside GM1	Placebo												
Mesenchymal Stem Cell Injection	Placebo or Conventional Therapy												
Neuronal Cell	Conventional Therapy												
Cutamesine	Placebo												
Granulocyte-colony Stimulating Factor	Placebo												
5million implanted human neuronal cells with Conventional rehabilitation	10million implanted human neuronal cells with Conventional rehabilitation												

Anabolic Steroids (1 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Taping	no taping, sham taping, or conventional therapy												

Supplements and Vitamins (8 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Dietary Protein Supplement with Cycle Ergometer	Carbohydrate Supplement with Cycle Ergometer												
Vitamin and comprehensive Dietary Supplementation	regular meds (meds required for their clinical condition) with intensive rehabilitation treatment												
Primary motor area repetitive transcranial magnetic stimulation	Sham repetitive transcranial magnetic stimulation												
Primary motor area repetitive transcranial magnetic stimulation	Supplementary motor area repetitive transcranial magnetic stimulation												
Leucine-enriched Amino Acid Supplementation	Resistance training exercise program												

Soymilk Supplementation	Placebo												
Intermittent theta burst stimulation unilateral cerebellar area (CB Single group)	intermittent theta burst stimulation Cerebellar primary motor cortex area (CB-M1 group) or intermittent theta burst stimulation Cerebellar Supplementary Motor Area (CB-SMA group)												
DLBS1033 supplement (Lumbrokinase) with therapy	therapy												

Acupuncture and Massage (34 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio - ception	Stroke Severity	QoL
Acupuncture Therapy	Conventional Therapy												
Acupuncture	Physiotherapy or Acupuncture with PhysiotherapyNI												
Contra-lateral Needling (acupuncture on unaffected limbs)	Traditional acupuncture												
Acupuncture	Sham												
Channel Palpation Guided Acupuncture	Traditional Acupuncture												
Scalp Acupuncture and Robot Assisted Training	Basic Treatment												
Interactive Dynamic Scalp Acupuncture with lower-limb robot training (SA & LLRT simultaneously) and Basic Treatment	Scalp Acupuncture with lower-limb robot training (LLRT, SA separately) and Basic Treatment												
Scalp Acupuncture	Conventional Therapy or Other Modalities												
Auricular Intradermal Acupuncture	Conventional Therapy												
Acupuncture with Manipulation	Acupuncture												
Multifaceted Alternative Medicine Approaches	Meridian Dredging Exercise												
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration												
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture												
Neuronavigation-assisted aspiration	Electroacupuncture												
Massage and other integrated rehabilitation techniques	Health education program												
Meridian Acupuncture	no Acupuncture												
Electroacupuncture with Conventional therapy	Conventional Therapy												
Electroacupuncture, usual care	Usual care												
Electroacupuncture with Conventional medication	Conventional medication												
Electrical Acupuncture with Conventional Therapy	Conventional therapy												
Dry Needling with Conventional Rehabilitation	Conventional Rehabilitation Alone												
Acupuncture with Robot-Assisted Gait Training	Acupuncture Alone												
Joint mobilization with acupuncture	Conventional rehab												
Joint mobilization with acupuncture	Joint mobilization												

Virtual reality-assisted gait adaptation training with acupuncture and conventional physical therapy	Overground gait adaptation training with acupuncture and conventional physical therapy												
One session daily high intensity Videogame exercises with medical massage	physical therapy with medical massage or 60min/d care and 20min/d massage												
Interferential current therapy (ICT) stimulation of gastrocnemius with air-pump massage and rehabilitation	Placebo-ICT with air-pump massage and rehabilitation												
Electroacupuncture	Low-intensity, high- frequency electrostimulation (80Hz)												
Electroacupuncture	Low-intensity, high-frequency transcutaneous electrical nerve stimulation (2Hz) electrostimulation												
Unani Medicine (Herbal and Massage)	Western Medicine (Piracetam 800mg)												
Acupuncture Treatment	No Treatment												
Whole-body vibration with conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)	Conventional rehab (physiotherapy, neuromuscular electrical stimulation, intermittent pneumatic compression, Bobath treatment, cardiorespiratory training, acupuncture treatment, occupational therapy)												
Eye Acupuncture	Body Acupuncture												
Electroacupuncture	Sham transcutaneous electrical nerve stimulation												

Electroacupuncture and Transcutaneous Electrical Acupoint Stimulation (8 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
Electroacupuncture Therapy	Conventional Therapy												
Neuronavigation-assisted aspiration with electroacupuncture	Conservative therapy												
Neuronavigation-assisted aspiration with electroacupuncture	Neuronavigation-assisted aspiration												
Neuronavigation-assisted aspiration with electroacupuncture	Electroacupuncture												
Neuronavigation-assisted aspiration	Electroacupuncture												
Electroacupuncture or transcutaneous electrical acupoint stimulation	Sham												
Electroacupuncture and Low Frequency transcutaneous electrical nerve stimulation	High and Low Frequency transcutaneous electrical nerve stimulation												
Electroacupuncture	Low-intensity, high- frequency electrostimulation (80Hz)												

Traditional Herbal Medicines (6 conclusions)

Intervention	Compared to	Motor Funct.	Funct. Ambul.	Funct. Mobility	Balance	Gait	ADLs	ROM	Muscle Strength	Spasticity	Proprio-ception	Stroke Severity	QoL
NeuroAid	Placebo												
Other Herbal Medications	Placebo or No Medication												
Qizhitongluo (500mg capsules) taken at breakfast and dinner with Placebo taken after lunch	Naoxintong (400mg capsules) taken after each meal												

Other Herbal Medications	Conventional Therapy												
Other Herbal Medications	Fluoxetine vs Placebo												
Chinese Traditional therapy (Bath in Chinese herbal medicine with Acupuncture with massage) and Conventional care	Conventional care												

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