Biofeedback – Lower Extremity

Author, Year PEDro Score, Country	Sample size	Intervention	Outcome and significance: (+) significant (-) not significant
Basmajian et al. 1975 PEDro score: 5	5	Therapeutic therapy vs. therapeutic therapy combined with biofeedback training	(+) Range of motion (+) Stance symmetry
Bradley et al. 1998 PEDro score: 6 (awaiting peer review)	6	EMG feedback in conjunction with standard physiotherapy vs. standard physiotherapy (control)	Mild EMG vs. severe EMG: (+) Modified Bobath Scale (active movement) (+) Modified Ashworth Scale (MAS) (muscle tone) (-) Sensation (light touch) and Proprioception (passive movement) (-) 10-m Walk Test (-) Stride width (-) Step Length (-) Foot Angle (+) Rivermead Mobility Index (RMI) (+) Nottingham Extended ADL Psychological Measures: (-) Mental Status Questionnaire (orientation andmemory) (-) National Adult Reading Test (NART) WAIS-R iqs (-) Ravens Coloured Progressive Matrices WAIS-R iqs (-) Rey Auditory Verbal Learning Test (ALVT) (-) Rey Osterrieth Figure Copying Test (-) Token Test Mild Control vs. Sever Control: (+) Modified Bobath Scale (active movement) (+) Modified Ashworth Scale (MAS)(muscle tone)

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			(-) Sensation (light touch) and Proprioception (passive movement) (-) 10-m Walking Test (-) Stride Width (-) Step Length (-) Foot Angle (+) Rivermead Mobility Index (RMI) (+) Nottingham Extended ADL Psychological Measures: (-) Mental Status Questionnaires (orientation and memory) (-) National Adult Reading Test (NART) WAIS-R iqs (-) Raven Coloured Progressive Matrice WAIS-R iqs (-) Rey Auditory Verbal Learning Test (ALVT) (-) Rey Osterrieth Figure Copying Test (-) Token Test Mild EMG vs. Mild Control: (-) Modified Bobath Scale (active movement) (-) Modified Ashworth Scale (MAS)(muscle tone) (-) Sensation (light touch) and Proprioception (passive movement) (-) 10-m Walk Test (-) Stride Width (-) Step Length (-) Foot Angle (-) Rivermead Mobility Index (RMI) (-) Nottingham Extended ADL

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			Psychological Measures: (-) MentalStatus Questionnaire (orientation and memory) (-) National Adult Reading Test (NART) WAIS-R iqs (-) Ravens Coloured Progressive Matrices WAIS-R iqs (+) Rey Auditory Verbal Learning Test (ALVT) (+) Rey Osterrieth Figure Copying Test (+) Token Test Severe EMG vs. Severe Control: (-) Modified Bobath Scale (active movement) (-) Modified Ashworth Scale (MAS) (muscle tone) (-) Sensation (light touch) and Proprioception (passive movement) (-) 10-m Walking Test (-) Stride Width (-) Step length (-) Foot Angle (-) Rivermead Mobility Index (RMI) (-) Nottingham Extended ADL Psychological Measures: (-) Mental Status Questionnaire (orientation and memory) (-) National Adult Reading Test (NART) WAIS-R iqs (+) Ravens Auditory Verbal Learning Test (ALVT) (+) Rey Osterrieth Figure Copying Test (+) Token Test

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Burnside et al. 1982 PEDro score: 6	6	Exercise therapy vs. exercise therapy combined with EMG biofeedback	(+)Medical Research Council (MRC) Scale (muscle strength) (+) Range of motion (ROM) of the foot (+) Basmajian Rating Scale (gait evaluation)
Cozean et al. 1988 PEDro score: 6	6	Standard physical therapy vs. electromyographic (EMG) biofeedback vs. functional electrical stimulation (FES) vs. combined therapy of biofeedback and FES	(+) Knee flexion and ankle dorsiflexion (+) Stride length (+) Gait cycle
Engardt et al. 1993 PEDro score:	5	No feedback vs. ground reaction force feedback	Body-weight distribution measurements (vertical floor reaction forces): (+) Rising (+) Sitting Down (-) Barthel Index (+) Motor Assessment Scale (motor function) (+) Fugl-Meyer Assessment (motor function)
Heller et al. 2005 PEDro score: 4	5	Standing balance training with biofeedback vs. conventional therapy	(-) Fugl-Meyer (-) Walking speed (-) Gait pattern (-) Gait spatio-temporal parameters (-) Ashworth Scale (-) Postural Assessment Scale for Stroke (-) FIM (-) Functional Ambulation Categories (-) Single stance on paretic limb (+) Reception double stance on paretic limb
Intiso et al. 1994 PEDro score: 6	6	EMG biofeedback alone vs. standard physical therapy versus combined EMG feedback and physical therapy	(-) Ashworth Scale (-) Barthel Index

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			(-) Canadian Neurological Scale (stroke deficit) (+) Adams Scale (stroke deficit) (+) Basmajian Scale Gait Analysis (kinesiological evaluation): (-) Step length (-) Gait velocity (-) Recovery of ankle (heel strike) (+) Recovery of ankle (swing phase)
Mandel et al. 1990 PEDro score: 4	4	No treatment control vs. only EMG biofeedback vs. half-therapy EMG biofeedback and half-therapy rhythmic positional	EMG biofeedback vs. control: (-) Active ankle plantar flexion ROM (-) Walking speed (-) Borg Scale (perceived exertion) EMG biofeedback with rhythmic positional therapy vs. control: (-) Active ankle plantar flexion ROM (+) Walking speed (-) Berg Scale (perceived exertion) EMG biofeedback vs. EMG biofeedback with rhythemic positional therapy: (-) Active ankle plantar flexion ROM (-) Walking speed (-) Berg Scale (perceived exertion)
Morris et al. 1992 PEDro score:	6	Electrogoniometric feedback as an adjunct to physical therapy vs. standard physical therapy	(+) Gait recovery (-) Gait velocity (-) Gait asymmetry (+) Knee hyperextension

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Wong et al. 1997 PEDro score: 5	5	(1) Standing training table (STT): height-adjustable worktable, a pelvic belt and a suspension system to help the client maintain symmetry in an upright stance, while performing a task of pushing and pulling a load by means of resistive movements of the upper limb versus (2) Standing biofeedback training device (SBT): modification of STT with a real-time visual weight bearing biofeedback displays with numerical light-emitting diodes and balance scale and auditory alarm system.	(+) Ability to maintain stance (+) Stance symmetry