

PUBMED	(Humans[mh] OR Adult[mh] OR Nervous System Diseases[mh] OR Gait Disorders, Neurologic[mh] AND (Neurofeedback[mh] OR Feedback,Sensory[mh] OR feedback[tiab] OR Biofeedback[tiab] OR Cues[mh] OR Physical Therapy modalities[mh] OR Rehabilitation[mh] OR Rehab*[tiab] OR Conservative treatment[mh] OR Training[tiab] OR Exercise*[tiab]) AND (Wearable Electronic Devices[mh] OR wearable[tiab] OR Device[tiab] OR Accelerometry[mh] OR Acceleromet*[tiab] OR gyroscope*[tiab] OR sensor*[tiab] OR shoe*[tiab] OR Insole*[tiab]) AND (Walking[mh] OR Walk*[tiab] OR Ambulation[tiab] OR Gait[mh] OR Gait[tiab] OR Postural Balance[mh] OR Balance[tiab] OR Equilibrium[tiab] OR Recovery of function[mh] OR Motor Activity[mh]) AND (Randomized controlled trial[pt] OR randomized controlled trials as topic[mh] OR random*[tiab])
COCHRANE	(Humans OR Adult OR Nervous System Diseases OR Gait Disorders) AND (Neurofeedback OR Feedback OR Biofeedback OR Cues OR Physical Therapy OR Rehabilitation OR Conservative treatment OR Training OR Exercise) AND (Wearable Electronic Devices OR Device OR Accelerometry OR gyroscope OR sensor OR shoe OR Insole) AND (Walking OR Walk* OR Ambulation OR Gait OR Postural Balance OR Balance OR Equilibrium OR Recovery of function OR Motor Activity)
WEB OF SCIENCE – All Databases - (MEDLINE, Web of science Core Collection) – Document Type “Clinical Trial”	(Humans OR Adult OR Nervous System Diseases OR Gait Disorders) AND (Neurofeedback OR Feedback OR Biofeedback OR Cues OR Physical Therapy OR Rehabilitation OR Conservative treatment OR Training OR Exercise) AND (Wearable Electronic Devices OR Device OR Accelerometry OR gyroscope OR sensor OR shoe OR Insole) AND (Walking OR Walk* OR Ambulation OR Gait OR Postural Balance OR Balance OR Equilibrium OR Recovery of function OR Motor Activity)
PEDRO: Simple search Title, Abstract – Filtro “clinical trials”	Neurologic, Feedback, Device, Accelerometry, Gyroscope, Sensor, Balance, Gait

Table S1 – Search strategies

First Author[Ref]	WDBR intervention	Control intervention	Outcome	Level of significance between groups (p-value)
Ginis et al. ³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	2MWT	no significant differences
Byl et al. ³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	5TSS	no significant differences
Byl et al. ³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	6MWT	no significant differences
Carpinella et al. ³⁷	EG: balance and gait functional tailored exercises using Gamepad System	CG: personalized balance and gait exercises defined by the clinical staff	ABC	no significant differences
Intiso et al. ⁴⁶	EG: EMG Biofeedback and Physical Therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	CG: Physical therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	ankle angle (heel contact)	no significant differences
Cozean et al. ⁴⁵	EG1: EMG biofeedback during static and dynamic activities EG2: FES during static and dynamic activities EG3: EMG biofeedback+FES during static and dynamic activities	CG: conventional physical therapy	ankle angle (swing phase)	significant differences (p = 0.02) in favour of EG3
Intiso et al. ⁴⁶	EG: EMG Biofeedback and Physical Therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	CG: Physical therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	ankle angle (swing phase)	significant differences (p < 0.02) in favour of experimental group
Jonsdottir et al. ⁴⁷	EG=Task oriented Gait Training with EMG-BFB device	CG= conventional physical therapy (at least 15 minutes of gait training in each session)	ankle power peak at push-off	significant differences (p = 0.16) in favour of experimental group

Intiso et al.⁴⁶	EG: EMG Biofeedback and Physical Therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	CG: Physical therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	Basmajian scale	significant differences ($p < 0.01$) in favour of experimental group
Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	BBS	no significant differences
van den Heuvel et al.⁴⁰	EG: interactive balance games with explicit augmented visual feedback	CG: conventional balance training recommended by the guidelines for physical therapy.	BBS	no significant differences
Azerpaikan et al.³⁵	EG: Neurofeedback training with EEG generator	CG: Sham Neuro Feedback Training using sham EEG generator	BBS	significant differences ($p = 0.00$) in favour of experimental group
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	cadence	significant differences ($p < 0.05$) in favour of experimental group
El-Tamawy et al.³⁸	EG: Individually designed physiotherapy and traditional gait training plus treadmill training with vibratory stimuli	CG: individually designed physiotherapy traditional gait training including instructions to walk with long steps.	cadence	significant differences ($p = 0.001$) in favour of experimental group
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM area EC	no significant differences
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM area EO	significant differences ($p = 0.04$) in favour of experimental group
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM sway AP-EC	no significant differences
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM sway AP-EO	significant differences ($p = 0.02$) in favour of experimental group
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM sway ML-EC	no significant differences
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	CoM sway ML-EO	significant differences ($p = 0.04$) in favour of experimental group
Carpinella et al.³⁷	EG: balance and gait functional tailored exercises using Gamepad System	CG: personalized balance and gait exercises defined by the clinical staff	COP AP sway	no significant differences

Carpinella et al.³⁷	EG: balance and gait functional tailored exercises using Gamepad System	CG: personalized balance and gait exercises defined by the clinical staff	COP ML sway	significant differences ($p = 0.003$) in favour of experimental group
Choi et al.⁴⁴	EG: gait intervention with auditory feedback	CG= general gait intervention	COP lenght EC	significant differences ($p < 0.05$) in favour of experimental group
Cha et al.⁴²	EG1: gait training with active weight bearing on the paretic heel with auditory feedback EG2: gait training with auditory feedback from paretic metatarsals	CG: gait intervention	COP lenght EC	no significant differences
Choi et al.⁴⁴	EG: gait intervention with auditory feedback	CG= general gait intervention	COP lenght EO	significant differences ($p < 0.05$) in favour of experimental group
Cha et al.⁴²	EG1: gait training with active weight bearing on the paretic heel with auditory feedback EG2: gait training with auditory feedback from paretic metatarsals	CG: gait intervention	COP lenght EO	significant differences ($p < 0.017$) in favour of experimental groups compared to control
Lupo et al.⁵¹	EG: balance training with RIABLO biofeedback system using a video interface.	CG: conventional balance training without the use of the RIABLO biofeedback system	COP length EC	significant differences ($p = 0.0002$) in favour of experimental group
Lupo et al.⁵¹	EG: balance training with RIABLO biofeedback system using a video interface.	CG: conventional balance training without the use of the RIABLO biofeedback system	COP length EO	significant differences ($p < 0.0001$) in favour of experimental group
Cha et al.⁴²	EG1: gait training with active weight bearing on the paretic heel with auditory feedback EG2: gait training with auditory feedback from paretic metatarsals	CG: gait intervention	COP velocity EC	no significant differences
Cha et al.⁴²	EG1: gait training with active weight bearing on the paretic heel with auditory feedback EG2: gait training with auditory feedback from paretic metatarsals	CG: gait intervention	COP velocity EO	significant differences ($p < 0.017$) in favour of experimental groups compared to control
Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	DGI	no significant differences

Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	double support time	no significant differences
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	double support time - DT	no significant differences
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	FES-I	no significant differences
Schwenk et al.⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training;	FES-I	significant differences (p = 0.02) in favour of experimental group
van den Heuvel et al.⁴⁰	EG: interactive balance games with explicit augmented visual feedback	CG: conventional balance training recommended by the guidelines for physical therapy.	FES-I	no significant differences
Cha et al.⁴²	EG1: gait training with active weight bearing on the paretic heel with auditory feedback EG2: gait training with auditory feedback from paretic metatarsals	CG: gait intervention	FGA	significant differences (p < 0.017) in favour of EG2 compared to control
Choi et al.⁴⁴	EG: gait intervention with auditory feedback	CG= general gait intervention	FGA	significant differences (p < 0.05) in favour of experimental group
Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	FOG-Q	no significant differences
Carpinella et al.³⁷	EG: balance and gait functional tailored exercises using Gamepad System	CG: personalized balance and gait exercises defined by the clinical staff	FOG-Q	no significant differences
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	FSST	no significant differences

Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	gait speed	no significant differences
Cho et al.⁴³	EG: visual biofeedback tracking training	CG: not Reported	gait speed	no significant differences
Cozean et al.⁴⁵	EG1: EMG biofeedback during static and dynamic activities EG2: FES during static and dynamic activities EG3: EMG biofeedback+FES during static and dynamic activities	CG: conventional physical therapy	gait speed	significant differences (p = 0.04) in favour of EG3
El-Tamawy et al.³⁸	EG: Individually designed physiotherapy and traditional gait training plus treadmill training with vibratory stimuly	CG: individually designed physiotherapy traditional gait training including instructions to walk with long steps.	gait speed	significant differences (p = 0.001) in favour of experimental group
Jonsdottir et al.⁴⁷	EG=Task oriented Gait Training with EMG-BFB device	CG= conventional physical therapy (at least 15 minutes of gait training in each session)	gait speed	significant differences (p = 0.004) in favour of experimental group
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	gait speed	significant differences (p < 0.05) in favour of experimental group
Mandel et al.⁵²	EG1:EMG biofeedback training EG2: EMG biofeedback followed by rhythmic positional biofeedback	CG: nothing	gait speed	significant differences (p = 0.02) in favour of EG2
van den Heuvel et al.⁴⁰	EG: interactive balance games with explicit augmented visual feedback	CG: conventional balance training recommended by the guidelins for physical therapy.	gait speed	no significant differences
Intiso et al.⁴⁶	EG: EMG Biofeedback and Physical Therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	CG: Physical therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	gait speed	no significant differences
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	gait speed - DT	no significant differences

Schwenk et al. ⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training	gait speed-fast	no significant differences
Schwenk et al. ⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training	gait speed-normal	no significant differences
Schwenk et al. ⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training	gait stride time variability-fast	no significant differences
Schwenk et al. ⁵⁴	EG: postural balance exercises during standing using biofeedback training	CG: No training	gait stride time variability-normal	no significant differences
Cozean et al. ⁴⁵	EG1: EMG biofeedback during static and dynamic activities EG2: FES during static and dynamic activities EG3: EMG biofeedback+FES during static and dynamic activities	CG: conventional physical therapy	knee angle (swing phase)	significant differences (p = 0.05) in favour of EG3
Jonsdottir et al. ⁴⁷	EG=Task oriented Gait Training with EMG-BFB device	CG= conventional physical therapy (at least 15 minutes of gait training in each session)	knee flexion peak	no significant differences
Azerpaikan et al. ³⁵	EG: Neurofeedback training with EEG generator	CG: Sham Neuro Feedback Training using sham EEG generator	limit of stability	significant differences (p = 0.00) in favour of experimental group
Sungkarat, 2011	EG: conventional rehabilitation and gait training with I-ShoWS set-up	CG: conventional rehabilitation and gait training without I-ShoWS set-up	load on paretic leg during stance (% body weight)	significant differences (p = 0.004) in favour of experimental group
Ginis et al. ³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	MinibestTEST	significant differences (p = 0.04) in favour of experimental group
Cho et al. ⁴³	EG: visual biofeedback tracking training	CG: not Reported	Modified Motor Assessment Scale (walking item only)	no significant differences
Cho et al. ⁴³	EG: visual biofeedback tracking training	CG: not Reported	Motoricity Index	no significant differences
Ginis et al. ³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	NFOG-Q	no significant differences

Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	PASE	no significant differences
Jung et al.⁴⁸	EG: gait training with auditory feedback	CG: gait training without auditory feedback	peak force cane	significant differences (p = 0.01) in favour of experimental group
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	plantar foot pressure (entire foot-during dual task activity)	significant differences (p < 0.01) in favour of experimental group
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	plantar foot pressure (forefoot- during dual task activity)	significant differences (p < 0.05) in favour of experimental group
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	plantar foot pressure (hindfoot-during dual task activity)	no significant differences
Lupo et al.⁵¹	EG: balance training with RIABLO biofeedback system using a video interface.	CG: conventional balance training without the use of the RIABLO biofeedback system	RMI	no significant differences
Mandel et al.⁵²	EG1: EMG biofeedback training EG2: EMG biofeedback followed by rhythmic positional biofeedback	CG: nothing	ROM (Plantar Flexion)	significant differences (p = 0.01) in favour of EG1
Jung et al.⁴⁸	EG: gait training with auditory feedback	CG: gait training without auditory feedback	single leg stance (affected side)	significant differences (p = 0.03) in favour of experimental group
van den Heuvel et al.⁴⁰	EG: interactive balance games with explicit augmented visual feedback	CG: conventional balance training recommended by the guidelines for physical therapy.	single leg stance test	no significant differences
Ki et al.⁴⁹	EG: neuro-developmental treatment with auditory feedback	CG: neuro-developmental treatment	single limb stance (affected side)	no significant differences
Jung et al.⁴⁸	EG: gait training with auditory feedback	CG: gait training without auditory feedback	single support time	significant differences (p = 0.02) in favour of experimental group
Sunkarat, 2011	EG: conventional rehabilitation and gait training with I-ShoWS set-up	CG: conventional rehabilitation and gait training without I-ShoWS set-up	single support time asymmetry ratio	significant differences (p = 0.03) in favour of experimental group

Ki et al.⁴⁹	EG: neuro-developmental treatment with auditory feedback	CG: neuro-developmental treatment	stance phase duration	no significant differences
Lee et al.⁵⁰	EG: neurofeedback training	CG: pseudo-neurofeedback training (sham neurofeedback)	stance phase percentage (during dual task activity)	no significant differences
Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	step length	no significant differences
Intiso et al.⁴⁶	EG: EMG Biofeedback and Physical Therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	CG: Physical therapy (standard exercise bobath, facilitation and inhibition techniques, neurofacilitatory techniques)	step length	no significant differences
Sungkarat, 2011	EG: conventional rehabilitation and gait training with I-ShoWS set-up	CG: conventional rehabilitation and gait training without I-ShoWS set-up	step length asymmetry ratio	significant differences (p = 0.03) in favour of experimental group
Aruin et al.⁴¹	EG: Conventional balance and gait therapy combined with auditory biofeedback	CG: Conventional balance and gait therapy during which patients occasionally received verbal information about BOS	step width	significant differences (p<0.05) in favour of experimental group
El-Tamawy et al.³⁸	EG: Individually designed physiotherapy and traditional gait training plus treadmill training with vibratory stimulus	CG: individually designed physiotherapy traditional gait training including instructions to walk with long steps.	stride length	significant differences (p = 0.001) in favour of experimental group
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	stride length	no significant differences
Jonsdottir et al.⁴⁷	EG=Task oriented Gait Training with EMG-BFB device	CG= conventional physical therapy (at least 15 minutes of gait training in each session)	stride length	significant differences (p = 0.001) in favour of experimental group
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	stride length - DT	no significant differences

Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	TBS	no significant differences
Byl et al.³⁶	EG: visual kinematic feedback on the computer screen during progressive and task oriented balance and gait training activities	CG: balance and gait training activities	TUG	no significant differences
Ki et al.⁴⁹	EG: neuro-developmental treatment with auditory feedback	CG: neuro-developmental treatment	TUG	significant differences ($p < 0.01$) in favour of experimental group
Carpinella et al.³⁷	EG: balance and gait functional tailored exercises using Gamepad System	CG: personalized balance and gait exercises defined by the clinical staff	UPDRSIII	no significant differences
Ginis et al.³⁹	EG: received weekly home visit and patients were instructed to walk with the CUPID system	CG: received weekly home visit by the researcher who gave advice on gait and freezing and patients were instructed to walk without using the CUPID system	UPDRSIII	no significant differences
van den Heuvel et al.⁴⁰	EG: interactive balance games with explicit augmented visual feedback	CG: conventional balance training recommended by the guidelines for physical therapy.	UPDRSIII	significant differences ($p = 0.02$) in favour of experimental group
El-Tamawy et al.³⁸	EG: Individually designed physiotherapy and traditional gait training plus treadmill training with vibratory stimuli	CG: individually designed physiotherapy traditional gait training including instructions to walk with long steps.	walking distance (treadmill)	significant differences ($p = 0.001$) in favour of experimental group

Table S2 – Qualitative Synthesis