

Supplementary material 20: Characteristics of studies awaiting classification

Characteristics of studies awaiting classification [ordered by study ID]	
Chiu 2020 ¹	
Methods	Pilot RCT
Participants	n=24 The inclusion criteria were following: (1) diagnosis of stroke; (2) age above 20; (3) score of 3-4 on the modified Rankin Scale; (4) able to understand instructions and follow them; and (5) willing to participate in the study. Exclusion criteria were as follows: (1) orthopedic disorder (e.g., joint deformation) (2) progressive disease (e.g., dementia and Parkinsonism); and (3) peripheral nerve injury. T
Interventions	ADL training vs traditional rehabilitation
Outcomes	Mini Mental State Examination (MMSE), Test of Visual Perceptual Skills-Third Edition (TVPS-3).
Notes	Unsure if participants have a perceptual disorder; no reply to email contact 2021
Kim 2016 ²	
Methods	Controlled Clinical trial
Participants	10 patients with Pusher Syndrome
Interventions	Robot assisted gait training vs control
Outcomes	Scale for contraversive pushing (SCP), Berg balance scale (BBS), falling index (FI), Timed up and go test (TUG)
Notes	While the study has two groups it does not state that participants were randomised; there has been no reply to email communication to clarify this.
Kim 2020 ³	
Methods	RCT
Participants	n=30 Inclusion criterion

	<ul style="list-style-type: none"> - a stroke at least 6 months ago - impairment of the affected upper limb - without cognitive impairment - without orthopaedic injuries - manual muscle test / extension within appropriate levels
Interventions	sensory motor stimulation training vs conservative treatment
Outcomes	upper limb range of movement, Jebsen-Taylor test, Stroop test, Trail making test,
Notes	It was not clear if participants had a perceptual disorder; there was no response to email communication to clarify 2021
Kitisomprayoonkul 2012 ⁴	
Methods	RCT
Participants	Inclusion Criteria: Ischaemic stroke Exclusion Criteria: none listed
Interventions	Anodal transcranial direct current stimulation (tDCS) vs Sham
Outcomes	Hand sensation tests, Moberg recognition test and Semmes-Weinstein monofilament
Notes	It was not clear from the published abstract if/how patients were diagnosed with a perceptual disorder, nor the method of randomisation, and there was no response to email communication to clarify in 2021
Koval'chuk 2011 ⁵	
Methods	unclear
Participants	stroke patients with push syndrome
Interventions	mexidol (drug)
Outcomes	presence/absence of pusher syndrome, balance
Notes	The method used is not clear; we have not received a reply to email communication
Leer 1984 ⁶	

Methods	Not yet known
Participants	Stroke patients with visual perceptual problems
Interventions	Not yet known
Outcomes	Not yet known
Notes	Student thesis from 26 years ago difficult to obtain Still not able to access in October 2021
Lin 2020⁷	
Methods	single-blind randomized comparative efficacy study
Participants	<p>Inclusion Criteria:</p> <ul style="list-style-type: none"> The inclusion criteria are age between 20 and 75 years old, more than 3 months after the onset of a first unilateral ischemic or hemorrhagic stroke, moderate to severe UE motor impairment (i.e., total UE score of the Fugl-Meyer Assessment [FMA] score between 18 and 56), no severe spasticity in any joints of the affected arm (modified Ashworth Scale score <3 in any of the affected shoulder, elbow, wrist, and fingers), able to follow instructions (Mini-Mental State Examination total score >24), no UE fractures in the past 3 months, and not simultaneously participating in other medication or rehabilitation studies. <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> The exclusion criteria are other neurologic, neuromuscular, or orthopedic disease, such as epilepsy, or severe health or physical conditions that might impede participation in this study.
Interventions	robotic training for 45 minutes and impairment-oriented training for 45 minutes
Outcomes	<ol style="list-style-type: none"> Fugl-Meyer Assessment Medical Research Council Scale The Revised Nottingham Sensory Assessment The Wolf Motor Function Test. The 10-Meter Walk Test The Myoton PRO Digital Palpation Device The Actigraphy The Functional Independence Measure Motor Scale

	<p>9. The Functional Independence Measure Cognitive Scale</p> <p>10. The Motor Activity Log</p> <p>11. The ABILHAND Questionnaire</p> <p>12. The Nottingham Extended Activities of Daily Living Scale</p> <p>13. The Stoke Impact Scale 3.0.</p> <p>14. The Goal Attainment Scale</p> <p>15. The Stroke Self-Efficacy Questionnaire</p>
Notes	It is not clear if participants have a perceptual disorder
Matz 2007 ⁸	
Methods	Pilot randomised trial
Participants	32 people with first acute (within 2 weeks) lacunar stroke and various types of cognitive problems possibly including some with perceptual problems
Interventions	3 months of regular cognitive training by a neuropsychologist versus standard care without cognitive training
Outcomes	An extensive neuropsychological test battery was administered 3 months after baseline assessments, including assessment of visuospatial functions. Physiological measures were also taken but are not relevant to this review
Notes	<p>Unable to obtain confirmation from authors on whether any of the 32 participants met our eligibility criteria</p> <p>Still not able to access in October 2021</p>
Morioka 2003 ⁹	
Methods	RCT
Participants	<p>n=28</p> <p>Inclusion Criteria: Stroke patients with hemiplegia</p> <p>Exclusion Criteria: Higher brain dysfunction and dementia</p>
Interventions	Perceptual learning exercises on hardness discrimination vs ordinary care
Outcomes	Postural Sway via a stabilometer
Notes	Although the presence of a potential perceptual disorder in the study population is noted in the discussion, it is not clear if this was an inclusion criterion. It has not been possible to contact the author to clarify this.

Muffel 2020 ¹⁰	
Methods	standardized, cross-over, double-blind and sham-controlled clinical trial.
Participants	24 patients
Interventions	unilateral (utDCS) and bilateral tDCS (btDCS)
Outcomes	reaching tasks, proprioceptive tasks, bimanual tasks
Notes	it is not clear whether the population has a perceptual disorder, and whether the intervention targeted a perception disorder. No reply to attempted email communication
Weinberg 1982 ¹¹	
Methods	RCT
Participants	<p>Inclusion Criteria: paper states that "patients were selected on the basis of their evidenced deficits in performing complex visuo-cognitive tasks" but it is not clear how this was assessed</p> <p>"RBD stroke patients undergoing active rehabilitation who met the following criteria upon clinical neurological examination were eligible to participate in this study:</p> <ul style="list-style-type: none"> • At least 4 weeks post onset of CVA • At least 45 years of age • To have been rendered RBD secondary to a CVA (excluding aneurysm) with no • No significant local impairment of vision (i.e. --glaucoma, cataracts) • No severe impairment of general mentation. <p>Exclusion Criteria:</p> <ul style="list-style-type: none"> • projected length of stay insufficient to complete 20 hours of training and post psychometric evaluations • scheduled for, but had not yet begun, an unrelated experimental training program • gross unilateral neglect of space on at least one of the screening tasks
Interventions	Training systematic visual organisation vs rehabilitation therapy (occupational therapy)
Outcomes	Perception: Raven's: Perceptual; Raven's: Conceptual; Visual Synthesis; Embedded Figures; Visual Simultaneity; Conditional Cancellation; WAIS

	Performance Scale; Knox Cubes Imitation Test Cognition: WAIS Verbal Scale; Paragraph Titling; Paragraph Titling; MAT (Reading) Comprehension; Digit Span Forward; Digit Span Backward e
Notes	The paper states that "patients were selected on the basis of their evidenced deficits in performing complex visuo-cognitive tasks" but it is not clear how this was assessed. It has not been possible to contact the author to clarify this.

References

1. Chiu E-C, Chi F-C. Effect of Home-Based Activities of Daily Living (ADL) on Cognition and Visual Perception in Patients With Stroke: A Randomized Controlled Pilot Study. *The American Journal of Occupational Therapy* 2020;**74**:1-.
<http://dx.doi.org/ajot.2020.74S1-PO3404>
2. Kim M-S. Effect of Robot Assisted Rehabilitation Based on Visual Feedback in Post Stroke Pusher Syndrome. *Journal of the Korea Academia-Industrial cooperation Society* 2016;**17**:562-8. <http://dx.doi.org/10.5762/kais.2016.17.10.562>
3. Kim DH, Kim K-H, Lee S-M. The effects of Virtual Reality Training with Upper Limb Sensory Exercise Stimulation on the AROM of Upper Limb Joints, Function, and Concentration in Chronic Stroke Patients. *Physikalische Medizin, Rehabilitationsmedizin, Kurortmedizin* 2019;**30**:86-94. <http://dx.doi.org/10.1055/a-0917-4604>
4. Kitisomprayoonkul W. Poster 66 Transcranial Direct Current Stimulation Improves Hand Sensation in Acute Stroke. *Archives of Physical Medicine and Rehabilitation* 2012;**93**:e33. <http://dx.doi.org/10.1016/j.apmr.2012.08.101>
5. Koval'chuk VV. [An influence of mexidol on the restoration of neurological deficit, increase of social adaptation and removal of neglect and push syndromes in stroke patients]. *Zh Nevrol Psikhiatr Im S S Korsakova* 2011;**111**:52-7.
6. Leer WB. *Block Design Training with Stroke Patients: A Study on the Effects of Cognitive Retraining on Improving Certain Activities of Daily Living Skills*. Michigan, USA: Michigan State University; 1984.
7. NCT044446273. *Proximal Priority Versus Distal Priority Robotic Priming Effects in Patients With Chronic Stroke*. 2020. URL: <https://clinicaltrials.gov/ct2/show/NCT044446273> (Accessed 31 March 2022).
8. Matz K, Teuschl Y, Eckhardt R, Herbst A, Dachenhausen A, Brainin M. Cognitive training in patients with first lacunar stroke - a randomized pilot trial for the prevention of post-stroke cognitive decline. *Cerebrovascular Diseases* 2007;**23 Suppl 2**:42-.
9. Morioka S, Yagi F. Effects of perceptual learning exercises on standing balance using a hardness discrimination task in hemiplegic patients following stroke: a randomized controlled pilot trial. *Clin Rehabil* 2003;**17**:600-7.
<http://dx.doi.org/10.1191/0269215503cr654oa>
10. Muffel T, Shih PC, Kalloch B, Sehm B. P187 Costs and benefits: Complex effects of unilateral and bilateral tDCS over M1 on the kinematics of sensorimotor function in chronic stroke. *Clinical neurophysiology*; 2020, abstract no. 15, p. e120-e1.
11. Weinberg J, Piasetsky E, Diller L, Gordon W. Treating perceptual organization deficits in non-neglecting RBD stroke patients. *Journal of Clinical Neuropsychology* 1982;**4**:59.75-59.75.