Interventions for spatial neglect after stroke or nonprogressive brain injury: a Cochrane Systematic Review
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Title: Interventions for spatial neglect after stroke or non-progressive brain injury: a Cochrane systematic review

Introduction:
People with spatial neglect have difficulty attending to one side of space, which can affect their ability to carry out many everyday tasks and reduce independence. We examined the evidence for eight types of non-pharmacological interventions.

Methods:
We searched for randomised controlled trials (RCTs) of any non-pharmacological intervention versus any control specifically aimed at spatial neglect, searching 6 databases including MEDLINE, Embase, CINAHL, and international trials registers in October 2020. Review authors independently assessed risk of bias of included trials and extracted data, and assessed the quality of evidence for each outcome using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach. We categorised interventions into eight broad types through iterative discussion. Our primary outcome was longer term functional ability in activities of daily living (ADL) i.e. ≥one month after the end of intervention.

Main results:
We included 65 small RCTs (1951 participants); 43 provided data for meta-analyses. All included people with stroke, one included three participants with non-stroke brain injury, and only seven
included participants with left brain damage. All evidence is very low quality, with very low certainty. There were only two ‘low risk of bias’ studies and no definitive trials. No studies reported patient involvement in design or reporting. Outcome measurement focused on cognitive tests and short-term effects; 58/65 trials measured ADL using different methods and 16 measured it longer term. Other meaningful outcomes were rarely reported.

Four intervention types measured our primary outcome:

- Visual interventions (training eye movements or scanning): 17 studies (n=398). No evidence of ADL benefit/detriment of visual interventions (two studies, 55 participants) (SMD -0.04, 95% CI -0.57 to 0.49).
- Non-invasive brain stimulation: 17 studies (n=467). No evidence of ADL benefit/detriment from non-invasive brain stimulation (three studies, 92 participants) (SMD 0.35, 95% CI -0.08 to 0.77).
- Body awareness (increasing awareness of affected side): 12 studies (n=447). Evidence suggesting possible benefit from body awareness interventions (five studies, 125 participants) (SMD 0.61, 95% CI 0.24 to 0.97) with very low certainty.
- Prism adaptation training: Eight studies (n=257). No evidence of benefit/detriment of prism adaptation (two studies, 39 participants) (SMD -0.29, 95% CI -0.93 to 0.35).

Four intervention types did not provide data on longer term ADL: Electrical stimulation: eight studies (n=270); Mental function (increasing mental processing skills): seven studies (n=170); Movement (of the arm/body): six studies (n=220); Acupuncture: two studies (n=104).

**Discussion:**
Despite 65 studies, evidence of benefit/risk of non-pharmacological intervention to improve longer term functional ability remains very uncertain due to study quality. No rehabilitation approach can be supported or refuted over any other based on current evidence.

**Implications for clinical practice and future research:**
No strategy for neglect rehabilitation has been researched through fully powered RCTs. One way to improve the quality of research is by involving patients in trial design and management. Clinicians should continue to follow national clinical guidelines and are strongly encouraged to participate in trials.

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