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Metropolitan  
University**

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Longley, V ORCID logoORCID: <https://orcid.org/0000-0002-5492-8344>,  
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## **Title: Interventions for spatial neglect after stroke or non-progressive brain injury: a Cochrane systematic review**

### **3-5 key words:**

Stroke, neglect, inattention, rehabilitation

### **Authors:**

Verity Longley (PhD)<sup>1</sup>

Christine Hazelton (PhD)<sup>2</sup>

Calvin Heal (MSc)<sup>3</sup>

Claire Mitchell (PhD)<sup>4</sup>

Gorana Pobric (PhD)<sup>5</sup>

Alex Pollock (PhD)<sup>2</sup>

Andy Vail (MSc)<sup>3</sup>

Kate Woodward-Nutt (MSc)<sup>6</sup>

Audrey Bowen (PhD)<sup>5</sup>

1. Faculty of Health, Psychology and Social Care, Manchester Metropolitan University, Manchester, UK
2. Nursing, Midwifery and Allied Health Professions Research Unit, Glasgow Caledonian University, Glasgow, UK
3. Centre For Biostatistics, University of Manchester, Manchester Academic Health Science Centre
4. Division of Human Communication, Development & Hearing, School of Health Sciences, FBMH, University of Manchester, UK
5. Geoffrey Jefferson Brain Research Centre, The Manchester Academic Health Science Centre, Northern Care Alliance & University of Manchester, Manchester, UK
6. Research & Innovation, Northern Care Alliance NHS Group, Salford, UK

Corresponding author: Audrey Bowen, [audrey.bowen@manchester.ac.uk](mailto:audrey.bowen@manchester.ac.uk).

### **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 any type of non-pharmacological intervention.

### **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.  $\geq$ 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' trials and no adequately powered definitive trials. No trials

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 trials (n=398). No evidence of effect on ADL from visual interventions (two trials, 55 participants) (SMD -0.04, 95% CI -0.57 to 0.49).
- Non-invasive brain stimulation: 17 trials (n=467). No evidence of effect on ADL from non-invasive brain stimulation (three trials, 92 participants) (SMD 0.35, 95% CI -0.08 to 0.77).
- Body awareness (increasing awareness of affected side): 12 trials (n=447). Very low certainty evidence suggesting possible benefit on ADL from body awareness interventions (five trials, 125 participants) (SMD 0.61, 95% CI 0.24 to 0.97).
- Prism adaptation training: Eight trials (n=257). No evidence of effect on ADL from prism adaptation (two trials, 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 trials (n=270); Mental function (increasing mental processing skills): seven trials (n=170); Movement (of the arm/body): six trials (n=220); Acupuncture: two trials (n=104).

### **Discussion:**

Despite 65 trials including 1951 participants, 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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### **Reference**

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