

Cochrane Overview

Interventions for Improving Upper Limb Function After Stroke

Alex Pollock, PhD; Sybil E. Farmer, PhD; Marian C. Brady, PhD; Peter Langhorne, PhD;
Gillian E. Mead, MD; Jan Mehrholz, PhD; Frederike van Wijck, PhD

Cochrane Overviews aim to provide a succinct overview of reviews relevant to a specific clinical question. We completed the first stroke-related Cochrane Overview synthesizing systematic reviews of interventions to improve upper limb (UL) function after stroke.¹

Methods

We comprehensively searched Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effects and PROSPERO (Prospective Register of Systematic Reviews) for reviews of randomized controlled trials of stroke patients investigating the effectiveness of UL interventions. Primary outcome: UL function, including measures of arm function (such as ARAT [Action Research Arm Test]) and hand function (such as Jebsen hand function test). Secondary outcomes: motor impairment, activities of daily living. Two reviewers independently applied selection criteria, assessed methodological quality of reviews (using a modified AMSTAR tool), and extracted data. Quality of evidence within reviews was determined using an objective algorithm, developed to apply GRADE [Grading of Recommendations Assessment, Development and Evaluation] levels of evidence, considering participant numbers, trial risk of bias, heterogeneity, and review quality.

Results

Searches identified 1840 records, from which we included 40 reviews (19 Cochrane; 21 non-Cochrane), covering 18 interventions, as well as dose and setting of interventions. The 40 reviews contained 503 studies (18078 participants). We extracted pooled data from 31 reviews related to 127 comparisons.

We judged the quality of evidence to be high for 1 of 127 comparisons, moderate for 49 of 127 comparisons, and low or very low for 77 of 127 comparisons. The high-quality evidence related to the effect of transcranial direct current stimulation, demonstrating no benefit on activities of daily living. There was moderate quality evidence that the following interventions were more beneficial than control interventions for UL function: constraint-induced movement therapy, mental practice, mirror therapy, virtual reality, and a relatively high dose of repetitive task practice, suggesting that these may be effective (see Figure).

Specific recommendations were derived from the current evidence, highlighting where phase III trials, other primary

research, and systematic reviews are required, and the need for improved reporting of trials and reviews.

Conclusions

Large numbers of overlapping reviews relate to interventions to improve UL function after stroke. This overview summarizes current evidence within one accessible, comprehensive document that clearly signposts clinicians and policy makers toward relevant systematic reviews to support decisions.

There is no high-quality evidence for any interventions that are currently routine practice, and evidence is insufficient to enable comparison of the relative effectiveness of interventions. Effective collaboration is urgently needed to support definitive randomized controlled trials of interventions used routinely within clinical practice. Evidence related to dose is particularly needed because this has widespread clinical and research implications.

Acknowledgments

This article is based on a Cochrane Review published in The Cochrane Library 2014, Issue 11 (see www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and The Cochrane Library should be consulted for the most recent version of the review.

Sources of Funding

This review update was supported by a project grant from the Chief Scientist Office (CSO), part of the Scottish Government Health and Social Care Directorate.

Disclosures

Drs Pollock, Farmer, Mehrholz, Langhorne, and van Wijck are authors on reviews/protocols relevant to this overview. The other authors report no conflicts.

Reference

1. Pollock A, Farmer SE, Brady MC, Langhorne P, Mead GE, Mehrholz J, et al. Interventions for improving upper limb function after stroke. *Cochrane Database Syst Rev* 2014;11:CD010820. doi: 10.1002/14651858.CD010820.pub2.

KEY WORDS: activities of daily living ■ arm ■ handreview, systematic ■ stroke ■ upper extremity

Received December 22, 2014; accepted December 22, 2014.

From the Nursing, Midwifery and Allied Health Professions Research Unit (NMAHP RU) (A.P., S.E.F., M.C.B.) and Institute of Applied Health Research (F.v.W.), Glasgow Caledonian University, United Kingdom; Academic Section of Geriatric Medicine, University of Glasgow, United Kingdom (P.L.); Centre for Clinical Brain Sciences, University of Edinburgh, United Kingdom (G.E.M.); and Wissenschaftliches Institut, Klinik Bavaria, Kreischa, Germany (J.M.).

Correspondence to Alex Pollock, PhD, NMAHP RU, Buchanan House, Glasgow Caledonian University, Glasgow G4 0BA, United Kingdom. E-mail alex.pollock@gcu.ac.uk

(*Stroke*. 2015;46:e57-e58. DOI: 10.1161/STROKEAHA.114.008295.)

© 2015 American Heart Association, Inc.

Stroke is available at <http://stroke.ahajournals.org>

DOI: 10.1161/STROKEAHA.114.008295

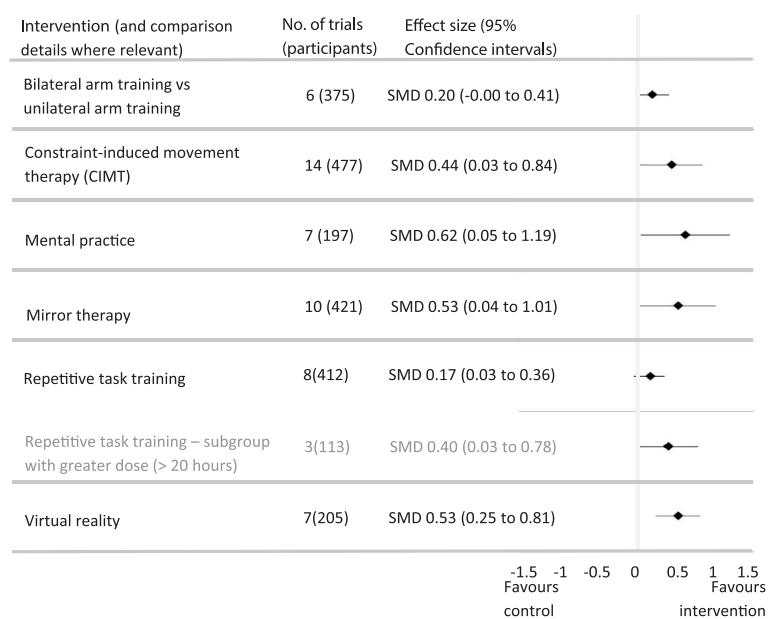


Figure. Effect of interventions on upper limb function for comparisons with moderate quality evidence (for those comparisons reporting standardized mean differences [SMD]). Comparisons are of intervention versus any other control (including no treatment, control, or usual care), unless otherwise stated.