Mirror Therapy for Improving Motor Function After Stroke

Holm Thieme, DrPH; Jan Mehrholz, DrPH; Marcus Pohl, MD; Johann Behrens, PhD; Christian Dohle, MD, MPH

Mirror therapy is used to improve motor function after stroke. During mirror therapy, a mirror is placed in the patient’s midsagittal plane, thus reflecting movements of the nonparetic side as if it were the affected side.

Objectives
This systematic review summarizes the effectiveness of mirror therapy for improving motor function, activities of daily living, pain, and visuospatial neglect in patients after stroke.

Methods
We searched the Cochrane Stroke Group’s Trials Register (June 2011), the Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library 2011, Issue 2), MEDLINE (1950 to June 2011), EMBASE (1980 to June 2011), CINAHL (1982 to June 2011), AMED (1985 to June 2011), PsycINFO (1806 to June 2011), and PEDro (June 2011). We also handsearched relevant conference proceedings, trials, and research registers; checked reference lists; and contacted trialists, researchers, and experts in our field of study. We included randomized controlled trials and randomized crossover trials comparing mirror therapy with any control intervention for patients after stroke. Two review authors independently selected trials based on the inclusion criteria, documented the methodological quality of studies, and extracted data. The primary outcome was motor function. We analyzed the results as standardized mean differences (SMDs) for continuous variables.

Results
We included 14 studies with a total of 567 participants, which compared mirror therapy with other interventions. When compared with all other interventions, mirror therapy was found to have a significant effect on motor function (postintervention data: SMD 0.61; 95% CI 0.22 to 1.0; P=0.02). We found a significant positive effect on pain (SMD −1.10; 95% CI −2.10 to −0.09; P=0.03), which is influenced by patient population. We found limited evidence for improving visuospatial neglect (SMD 1.22; 95% CI 0.24 to 2.19; P=0.01). The effects on motor function were stable at follow-up assessment after 6 months.

Implications for Practice
This review indicates that mirror therapy could be applied at least as an additional intervention in the rehabilitation of patients after stroke, but no clear conclusion can be drawn if mirror therapy should replace other interventions for improving motor function. Furthermore, mirror therapy may improve activities of daily living, but the results must be interpreted with caution because they are based on only four studies. For patients with a complex regional pain syndrome following stroke, mirror therapy seems to be an effective intervention, both for improving motor function and reducing pain. Mirror therapy seems not to influence pain in unselected stroke patients.

Implications for Research
Further studies should compare mirror therapy with other conventionally applied or newly developed and effective therapies. Additionally, future studies should address specific questions due to the optimal dose, frequency, and duration of mirror therapy; should focus on outcomes in activities of daily living; and should also answer questions about the effects of mirror therapy according to the extent of motor impairment or time since stroke.

This article is based on a Cochrane Review published in The Cochrane Library 2012, Issue 3 (see http://www.thecochranelibrary.com for information). Cochrane Reviews are regularly updated as new evidence emerges and in response to feedback, and therefore The Cochrane Library should be consulted for the most recent version of the review.1
Disclosure

Dr Thieme is the principal investigator of a trial that may be relevant for the update of this review. He has received and will receive honorarium for presentations and seminars on mirror therapy.

Dr Dohle is the first author of one of the included studies on the effect of mirror therapy after stroke. He was not involved in checking this trial for eligibility, extracting data, and assessing the methodological quality of the study. He has received and will receive honorarium for presentations and seminars on mirror therapy and is coauthor of a corresponding therapy manual.

Source of Funding

The research was funded by the Bundesministerium für Bildung und Forschung (BMBF), Germany (01KG1025).

Reference

Mirror Therapy for Improving Motor Function After Stroke
Holm Thieme, Jan Mehrholz, Marcus Pohl, Johann Behrens and Christian Dohle

Stroke. published online October 23, 2012;
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
Copyright © 2012 American Heart Association, Inc. All rights reserved.
Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/early/2012/10/22/STROKEAHA.112.673087.citation

Permissions: Requests for permissions to reproduce figures, tables, or portions of articles originally published in Stroke can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the Permissions and Rights Question and Answer document.

Reprints: Information about reprints can be found online at:
http://www.lww.com/reprints

Subscriptions: Information about subscribing to Stroke is online at:
http://stroke.ahajournals.org/subscriptions/