Cochrane Corner

Section Editor: Peter Sandercock, MA, DM, FRCPE, FMedSci

Constraint-Induced Movement Therapy for Upper Extremities in People With Stroke

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Despite preserved or recovered movement ability after stroke, often people do not fully realize this ability in their everyday activities. Constraint-induced movement therapy (CIMT) is an approach to stroke rehabilitation that involves the forced use of the affected arm by restraining the less affected arm combined to several hours of exercise. Modified forms of CIMT exist, reducing the training during the period of restraint, or concentrating only on the use of restraint.

Objective

We assessed the efficacy of CIMT and its modified forms for arm management in people with hemiparesis after stroke.1

Methods

In January 2015, we searched multiple databases, ongoing trials registers and reference lists of relevant papers. We included randomized controlled trials comparing CIMT or its modified forms with other rehabilitative techniques, or none. Primary outcome was disability; secondary outcomes were arm motor function, perceived arm motor function, motor impairment, quality of life, and dexterity. Reviewers extracted data and assessed risk of bias of included randomized controlled trials.

Main Results

Forty-two randomized controlled trials (1453 participants) are included in the review. The trials included participants who had some residual motor power of the paretic arm, the potential for further motor recovery and with limited pain or spasticity, but tended to use the arm little, if at all. Eleven trials (344 participants) assessed disability immediately after the intervention, indicating a nonsignificant standard mean difference 0.24 (95% confidence interval, −0.05 to 0.52). Three of these studies (125 participants) explored disability after a few months of follow-up and found no significant difference, standard mean difference −0.10 (95% confidence interval, −0.57 to 0.37). For the most frequently reported outcome, arm function, 28 studies (858 participants) showed a significant standard mean difference 0.34 (95% confidence interval, 0.12–0.55) in favor of CIMT (P=0.004). Sixteen studies (372 participants) assessed arm motor impairment, indicating a significant standard mean difference 0.82 (95% confidence interval, 0.31–1.34) in favor of CIMT (P=0.0017; Figure).

Conclusions

CIMT is a multifaceted intervention where restriction of the less affected arm is accompanied by increased exercise tailored to the person’s capacity. We found that CIMT was associated with limited improvements in motor impairment and motor function, but that these benefits did not convincingly reduce disability. Information about the long-term effects of CIMT is scarce. CIMT trials do not make it clear which people might most benefit from this treatment. Researchers involved in future studies should analyze the correlation between participant characteristics and outcome improvements to identify responders to CIMT. In this way, clinicians would have the possibility to detect the patients to which propose a tailored program of CIMT.

Acknowledgments

We would like to thank the Cochrane Stroke Group Editorial Team, especially Hazel Fraser for constant help and assistance in the development of the review. This article is based on a Cochrane Review published in The Cochrane Library 2015, Issue 10 (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 study was supported by Cochrane Incentive Award funding, National Institute for Health Research, United Kingdom.

Disclosures

None.

References


Key Words: meta-analysis • stroke • upper extremity
**Figure.** Effect of constraint-induced movement therapy and its modified forms (constraint) versus other rehabilitative techniques or none (control). SMD indicates standardized mean difference.
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Stroke. 2016;47:e205-e206; originally published online June 7, 2016;
doi: 10.1161/STROKEAHA.116.013281
Stroke is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231
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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:
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