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Repetitive Task Training for Improving Functional Ability After Stroke

Beverley French, PhD; Lois H. Thomas, PhD; Michael J. Leathley, PhD; Christopher J. Sutton, PhD, CStat; Joanna McAdam, BA; Anne Forster, PhD; Peter Langhorne, PhD; Christopher I.M. Price, PhD; Andrew Walker, PhD; Caroline L. Watkins, PhD

The inclusion of active practice of task-specific motor activities is popular in therapy approaches to stroke rehabilitation.

Objectives

The objective of this review was to determine if repetitive task training after stroke improves global, upper, or lower limb function and if treatment effects are influenced by the amount, type, or timing of practice.

Search Strategy

We searched the Cochrane Stroke Trials Register (to October 2006); The Cochrane Library, MEDLINE, EMBASE, CINAHL, AMED, SportDiscus, Science Citation Index, Index to Theses, ZETOC, PEDro, and OT Seeker (all to September 2006); and OT search (to March 2006). We also searched for unpublished/non-English language trials; combed conference proceedings and reference lists; requested information on bulletin boards; and contacted trial authors.

Selection Criteria

Selection criteria included randomized/quasirandomized trials in adults after stroke, of interventions that included an active motor sequence performed repetitively within a single training session, a clear functional goal, and a quantifiable level of practice.

Data Collection and Analysis

Two authors independently screened abstracts, extracted data, and appraised trial quality. Further information was obtained from study authors. Results from individual trials

were combined using meta-analytic techniques appropriate to the data extracted and the level of between-trial heterogeneity.

Main Results

Fourteen trials with 17 intervention-control pairs and 659 participants were included. Primary outcomes showed that treatment effects were statistically significant for walking distance (see the Figure); walking speed (standardized mean difference, 0.29; 95% CI, 0.04 to 0.53); and sit-to-stand (standardized effect estimate, 0.35; 95% CI, 0.13 to 0.56). Treatment effects were of borderline statistical significance for functional ambulation (standardized mean difference, 0.25; 95% CI, 0.00 to 0.51) and global motor function (standardized mean difference, 0.32; 95% CI, -0.01 to 0.66). There were no statistically significant differences for hand/arm function or sitting balance/reach. Secondary outcomes showed that treatment effects were statistically significant for activities of daily living (standardized mean difference, 0.29; 95% CI, 0.07 to 0.51), but not for health-related quality of life or impairment measures. There was no evidence of adverse effects.

Follow-up measures were not significant for any outcome at 6 or 12 months. Treatment effects were not modified by intervention amount or timing, but were modified by intervention type for lower limbs.

Implications for Practice

The review supports the principle that repetitive, task-specific training for lower limbs can result in functional gain when compared against usual care or attention control.

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The views and opinions expressed here are those of the authors and do not necessarily reflect those of the Department of Health.

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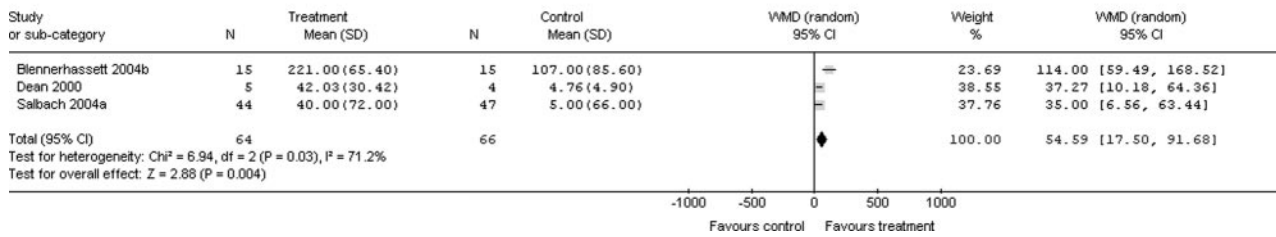
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Review: Repetitive task training for improving functional ability after stroke
 Comparison: 04 Lower limb function: post treatment
 Outcome: 01 Walking distance: change from baseline



Although functional gain is modest, impact does appear to be of a clinically meaningful magnitude. However, there is limited evidence that improvements are sustained once training has ended. Few trials reported adverse effects as an outcome; these should therefore be monitored in practice.

There is insufficient evidence to make any recommendations for upper limb interventions in practice, but repetitive task training showed no significant advantage in the trials included in this review.

Implications for Research

Further research should focus on the type and amount of training for both upper and lower limbs and how to maintain functional gain. There are a number of ongoing trials in this area, and the review authors would be grateful to receive information on these.

Note: The full text of this review should be cited as: French B, Thomas LH, Leathley MJ, Sutton CJ, McAdam J,

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Disclosures

None.

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