Section Editor: Peter A.G. Sandercock, MA, DM, FRCPE

# Interventions for Preventing Falls in People After Stroke

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Falls are a common consequence after stroke and may lead to fear of falling and reduced activity, which in turn results in an increased risk of further comorbidities. A fall is also a recognized predictor of future falls. This review[1] is an update of our review published in 2013.

## Objectives

To update the effectiveness of interventions impacting on rate of falls and number of fallers. Secondary outcomes were number of fall-related fractures and hospital admission, near-fall events, economic evaluation, effect on quality of life, and adverse effects of the interventions.

## Methods

We searched the Cochrane Stroke Group Trials Register (September 2017), MEDLINE, Embase, CINAHL, and 5 other databases as well as gray literature. Randomized controlled trials were included where the primary or secondary aim was to prevent falls in people with stroke. Two review authors (S. Denissen and W. Staring) independently selected trials, extracted data, and evaluated risk of bias, with a third author (G. Verheyden) moderating disagreements if required.

## Main Results

A total of 14 trials (1358 participants) were included in this review; 8 from our original review and 6 newly identified trials. We used the GRADE (Grading of Recommendations, Assessment, Development and Evaluation) approach to assess the quality of the evidence and categorized results as very low–quality evidence to low-quality evidence due to heterogeneity for intervention and control groups, general lack of blinding of falls outcome, and because some comparisons only include 1 trial.

### Primary Outcomes

Pooling the results of 8 trials with exercise provided either as single or part of a multiple/multifactorial intervention showed a significant reduction in rate of falls (rate ratio, 0.72 [95% CI, 0.54–0.94] 765 participants, low-quality evidence; Figure), but no significant effect on number of fallers (risk ratio, 1.03 [95% CI, 0.9–1.19] 10 trials, 969 participants, very low–quality evidence). Sensitivity analysis with exercise delivered as a single intervention continued to show a significant reduction in rate of falls (rate ratio, 0.66 [95% CI, 0.5–0.87] 7 trials, 626 participants).

Environmental/assistive technologies were investigated as intervention in 3 trials; predischarge home visits for hospitalized patients, the provision of single-lens distance vision glasses instead of multifocal glasses, and providing a servo-assisted rollator. Neither of these interventions resulted in a significant effect on rate of falls or number of fallers.

One trial examined the effect of transcranial direct current stimulation, a form of noninvasive brain stimulation, and reported a significant reduction in number of fallers (risk ratio, 0.3 [95% CI, 0.14–0.63] 60 participants, low-quality evidence). However, this study needs replication before consideration in clinical practice.

### Secondary Outcomes

Quality of life was investigated in the majority of trials but with nearly as many different outcome measures, preventing pooling of results but noting that the majority of those trials did not report significant between-group differences. Information concerning fall-related fractures and hospital admissions, near-fall events, economic evaluation, and adverse effects are only reported in a small number of trials, not allowing for pooling of results and indicating that future fall research should adhere to methodological gold standards.

## Implications for Practice

Our results indicate that exercise may be beneficial for preventing rate of falls in people with stroke, but not number of fallers. Clinical services should include fall screening and follow-up, as well as intervention programs comprising exercise therapy as part of patient-centered care.

## Acknowledgments

This article is based on a Cochrane Review published in The Cochrane Library 2019, Issue 10 (see www.thecochranelibrary.com

Received October 28, 2019; final revision received October 28, 2019; accepted November 5, 2019.

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**(*Stroke*. 2020;51:e47-e48. DOI: 10.1161/STROKEAHA.119.028157.)**

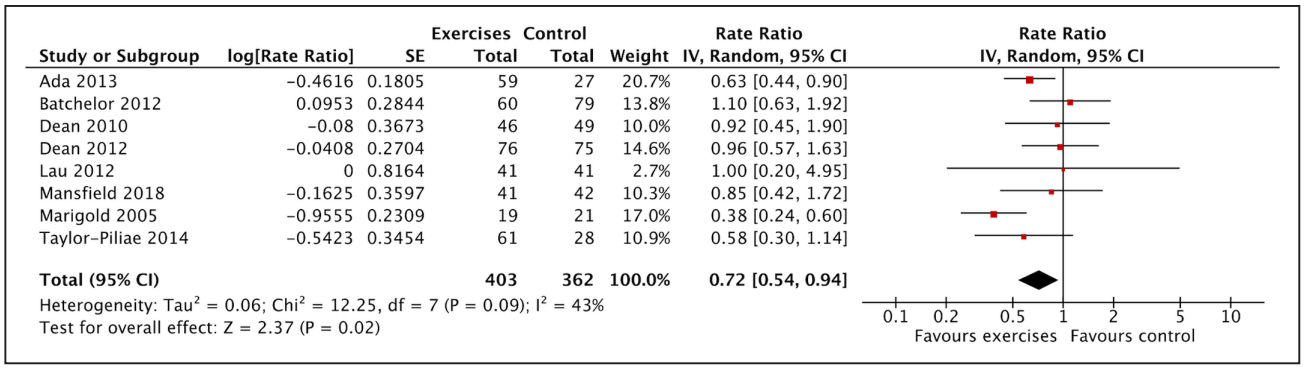


**Figure.** Exercise interventions for preventing rate of falls vs control therapy.

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

Dr Weerdesteyn reported funding from the Dutch Research Council.

## Disclosures

Dr Weerdesteyn reported funding from the Dutch Research Council. Alexander Geurts reported unrestricted research grants from Ipsen Pharma and Merz Pharma. The other authors report no conflicts.

## Reference

1. Denissen S, Staring W, Kunkel D, Pickering RM, Lennon S, Geurts ACH, et al. Interventions for preventing falls in people after stroke. *Cochrane Database Syst Rev*. 2019 :CD008728. doi: 10.1002/14651858.CD008728.pub3

KEY WORDS: exercise ■ falls ■ quality of life ■ systematic review