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 is an update of our review published in 2013.1

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 five other databases as well as grey literature. Randomized controlled trials were included where the primary or secondary aim was to prevent falls in people with stroke. Two review authors (S.D. and W.S.) independently selected trials, extracted data and evaluated risk of bias, with a third author (G.V.) moderating disagreements if required.

Main Results

A total of 14 trials (1358 participants) were included in this review; eight from our original review and six newly identified trials. We used the GRADE approach to assess the quality of the evidence and categorized results as very low 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 one trial. Primary outcomes: Pooling the results of eight 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% confidence interval, 0.54-0.94; 765 participants, low quality evidence; Figure), but no significant effect on number of fallers (risk ratio, 1.03; 95% confidence interval, 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% confidence interval, 0.5-0.87; 7 trials, 626 participants).

Environmental/assistive technologies were investigated as intervention in three 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 non-invasive brain stimulation, and reported a significant reduction in number of fallers (risk ratio, 0.3; 95% confidence interval, 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.

Legend

Figure. Exercise interventions for preventing rate of falls versus control therapy. CI=confidence interval.

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Reference

1. Denissen S, Staring W, Kunkel D, Pickering RM, Lennon S, Geurts ACH, Weerdesteyn V, Verheyden GSAF. Interventions for preventing falls in people after stroke. Cochrane Database of Systematic Reviews 2019, Issue 10. Art. No.: CD008728. DOI: [10.1002/14651858.CD008728.pub3](https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD008728.pub3/full).

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