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Cochrane Database of Systematic Reviews 2003, Issue 4. Art. No.: CD000340.
DOI: [10.1002/14651858.CD000340](https://doi.org/10.1002/14651858.CD000340).

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WILEY

[Intervention Review]

Interventions for preventing falls in elderly people

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Editorial group: Cochrane Bone, Joint and Muscle Trauma Group.

Publication status and date: Edited (no change to conclusions), published in Issue 1, 2009.

Citation: Gillespie LD, Gillespie WJ, Robertson MC, Lamb SE, Cumming RG, Rowe BH. Interventions for preventing falls in elderly people. *Cochrane Database of Systematic Reviews* 2003, Issue 4. Art. No.: CD000340. DOI: [10.1002/14651858.CD000340](https://doi.org/10.1002/14651858.CD000340).

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ABSTRACT

Background

Approximately 30 per cent of people over 65 years of age and living in the community fall each year; the number is higher in institutions. Although less than one fall in 10 results in a fracture, a fifth of fall incidents require medical attention.

Objectives

To assess the effects of interventions designed to reduce the incidence of falls in elderly people (living in the community, or in institutional or hospital care).

Search methods

We searched the Cochrane Bone, Joint and Muscle Trauma Group Specialised Register (January 2003), Cochrane Central Register of Controlled Trials (*The Cochrane Library*, Issue 1, 2003), MEDLINE (1966 to February 2003), EMBASE (1988 to 2003 Week 19), CINAHL (1982 to April 2003), The National Research Register, Issue 2, 2003, Current Controlled Trials (www.controlled-trials.com accessed 11 July 2003) and reference lists of articles. No language restrictions were applied. Further trials were identified by contact with researchers in the field.

Selection criteria

Randomised trials of interventions designed to minimise the effect of, or exposure to, risk factors for falling in elderly people. Main outcomes of interest were the number of fallers, or falls. Trials reporting only intermediate outcomes were excluded.

Data collection and analysis

Two reviewers independently assessed trial quality and extracted data. Data were pooled using the fixed effect model where appropriate.

Main results

Sixty two trials involving 21,668 people were included.

Interventions likely to be beneficial:

Multidisciplinary, multifactorial, health/environmental risk factor screening/intervention programmes in the community both for an unselected population of older people (4 trials, 1651 participants, pooled RR 0.73, 95%CI 0.63 to 0.85), and for older people with a history of falling or selected because of known risk factors (5 trials, 1176 participants, pooled RR 0.86, 95%CI 0.76 to 0.98), and in residential care facilities (1 trial, 439 participants, cluster-adjusted incidence rate ratio 0.60, 95%CI 0.50 to 0.73)

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A programme of muscle strengthening and balance retraining, individually prescribed at home by a trained health professional (3 trials, 566 participants, pooled relative risk (RR) 0.80, 95% confidence interval (95%CI) 0.66 to 0.98)
 Home hazard assessment and modification that is professionally prescribed for older people with a history of falling (3 trials, 374 participants, RR 0.66, 95% CI 0.54 to 0.81)
 Withdrawal of psychotropic medication (1 trial, 93 participants, relative hazard 0.34, 95%CI 0.16 to 0.74)
 Cardiac pacing for fallers with cardioinhibitory carotid sinus hypersensitivity (1 trial, 175 participants, WMD -5.20, 95%CI -9.40 to -1.00)
 A 15 week Tai Chi group exercise intervention (1 trial, 200 participants, risk ratio 0.51, 95%CI 0.36 to 0.73).

Interventions of unknown effectiveness:

Group-delivered exercise interventions (9 trials, 1387 participants)
 Individual lower limb strength training (1 trial, 222 participants)
 Nutritional supplementation (1 trial, 46 participants)
 Vitamin D supplementation, with or without calcium (3 trials, 461 participants)
 Home hazard modification in association with advice on optimising medication (1 trial, 658 participants), or in association with an education package on exercise and reducing fall risk (1 trial, 3182 participants)
 Pharmacological therapy (raubasine-dihydroergocristine, 1 trial, 95 participants)
 Interventions using a cognitive/behavioural approach alone (2 trials, 145 participants)
 Home hazard modification for older people without a history of falling (1 trial, 530 participants)
 Hormone replacement therapy (1 trial, 116 participants)
 Correction of visual deficiency (1 trial, 276 participants).

Interventions unlikely to be beneficial:

Brisk walking in women with an upper limb fracture in the previous two years (1 trial, 165 participants).

Authors' conclusions

Interventions to prevent falls that are likely to be effective are now available; less is known about their effectiveness in preventing fall-related injuries. Costs per fall prevented have been established for four of the interventions and careful economic modelling in the context of the local healthcare system is important. Some potential interventions are of unknown effectiveness and further research is indicated.

PLAIN LANGUAGE SUMMARY

Interventions for preventing falls in elderly people

Approximately 30 per cent of people over 65 years and living in the community fall each year; the number is higher in institutions. A fifth of incidents require medical attention. Multidisciplinary interventions targeting multiple risk factors are effective in reducing the incidence of falls, as is muscle strengthening combined with balance retraining, individually prescribed at home by a trained health professional. Tai Chi may also be effective. Home hazard assessment and modification by a health professional may reduce falls, especially in those with a history of falling. Cardiac pacing for fallers with cardioinhibitory carotid sinus hypersensitivity is likely to be beneficial, as is withdrawal of psychotropic medication. Individually tailored interventions delivered by a health professional are more effective than standard or group delivered programmes.