The effects of fall prevention trials on depressive symptoms and fear of falling among the aged: a systematic review
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CRD summary
Programmes for fall prevention appeared to reduce fears of falling in community-dwelling elderly populations. The authors’ conclusions reflect the evidence presented, but the basic synthesis and limited reporting of study quality assessments and review processes mean that the results should be interpreted with caution.

Authors’ objectives
To investigate whether depressive symptoms and fear of falling have been used as outcome measures in fall prevention trials and determine the effects of fall prevention strategies on these outcomes.

Searching
MEDLINE (from 1966) and CINAHL (from 1982) were searched to April 2006 for relevant studies; some search terms were reported. Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews, DARE and ACP Journal club were checked for relevant studies. Abstracts of trials included in a previous systematic review published in 2003 were checked for eligibility for inclusion. Reference lists of retrieved articles were checked to identify additional references. Authors of the included studies were contacted in an attempt to identify further unpublished studies. There were no language restrictions.

Study selection
Randomised controlled trials (RCT) on interventions designed to reduce known risk factors in falling in adults aged 65 years or older were eligible for inclusion if clinical depression, depressive symptoms or fear of falling were defined as primary or secondary outcome measures. Studies that assessed physical exercise programmes on depression without evaluating fall prevention were excluded.

The included patients lived in residential care facilities or independently at home and in residential units. Patient age ranged from 65 to 97 years. Intervention duration ranged from four weeks to two years and included: Tai Chi, training in strength and balance training; guidance on medication and self management; and home-based programmes that incorporated exercise, nutrition counselling and environmental hazards management. Comparator treatments included usual care, no activity and activities such as ball games, memory tasks, board games and calisthenics. Various questionnaires and scales were used to measure outcomes.

Study selection was performed by one reviewer.

Assessment of study quality
Methodological quality of the included studies was assessed by one reviewer who used slightly modified guidelines of Glasziou. Quality items assessed were blinding of outcome assessment, length of follow-up and use of intention-to-treat analyses. If there were any uncertainties, the trial was discussed with other reviewers.

Data extraction
Data were extracted on whether the results were statistically significant or otherwise (including p values) and classed as being positive or negative results.

The authors did not state how many reviewers performed data extraction.

Methods of synthesis
Results were summarised in a narrative synthesis because of clinical heterogeneity of populations, interventions, outcome measures and a paucity of studies. Results were grouped according to residential type (community-dwelling or
in an institution) and by intervention types (described as single-exercise focused, multifactorial or multifactorial assessment).

**Results of the review**

Twenty-four studies (n=3,415 participants) were included in the review. Eight studies evaluated depression or depressive symptoms (n=713). Twenty-one studies assessed outcomes in terms of fear of falling (n=3,101). Follow-up information was provided for 15 studies and ranged from four weeks to two years. Randomisation of patients in most studies was performed blind. Blinded outcome assessment was performed in 18 studies. Intention-to-treat analyses were performed in 19 studies. The overall quality of the studies was regarded as good.

Eight studies examined depressive symptoms in community-dwelling populations. Significant reductions in depressive symptoms were observed in one study (n=45) after an eight-week fall prevention programme (p=0.016). No significant differences were found between treatments in seven trials.

Eleven trials evaluated fear of falling in community-dwelling aged populations and used single-exercise focused interventions. Three trials found Tai Chi to be an effective strategy for eliciting reductions in fears of falling. Tai Chi courses ranged from 15 weeks to 12 months. Other effective strategies included use of physiotherapist home visits to implement exercise programmes (one study, n=233). One study found that education and activity programmes were significantly reduced fears of falling with no differences between groups (p=0.005, n=38).

Seven studies assessed fear of falling in community-dwelling aged populations and used multifactorial intervention programmes. Significant improvements were observed in six studies compared to control, usual treatment and no activity. In one study (n=301) mean scores of the Falls Efficacy Scale were improved significantly at one year of follow-up after a programme of medication adjustment exercise, behavioural training and environmental change (p=0.02).

Three studies assessed fear of falling outcomes in populations in institutions. One study reported reductions in falling fears after a three-month ankle strengthening programme (n=16). One study of balance training with visual feedback on a force platform produced a significant reduction in fear of falling compared to no activities.

There were no studies identified that evaluated the effect of programmes on depression or depressive symptoms in patients who lived in institutions.

**Authors' conclusions**

Multifactorial approaches appeared to be the most effective methods of reducing fears of falling in elderly populations. Tai Chi also appeared to be effective. There was little evidence of the effects of fall prevention strategies on depression or depressive symptoms.

**CRD commentary**

The review addressed a clear question. Criteria were stipulated for the inclusion of studies. Appropriate databases were searched. Attempts were made to identify unpublished literature. There were no language restrictions. Few steps were taken to minimise reviewer errors and biases during the review process. For example, no independent duplicate study selection methods were used. This made it difficult to adequately verify the reliability of the data and the review may have been subject to biases. The authors' decision to summarise the results in a narrative synthesis appeared justified given the clinical heterogeneity of the included studies. The narrative was principally based on numbers of significant results without reference to their importance or weighting. Some of the studies with positive results were small and were likely to be underpowered.

The authors' conclusions reflect the evidence presented, but the inclusion of small studies and potential for biases in the review process mean that the results should be interpreted with some caution.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that since depression or a high number of depressive symptoms were known risk factors...
for falls, more fall prevention studies were required in populations of elderly patients with depression. The effects of multifactorial programmes should be tested in elderly populations in institutions.

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