A systematic review to determine the effectiveness of Tai Chi in reducing falls and fear of falling in older adults

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CRD summary
This review concluded that Tai Chi was an effective method of reducing fear of falling and incidence of falls in older adults. Given the considerable variation between included trials in terms of their participants, interventions and outcome measures, and that not all trials presented statistically significant findings, the authors' conclusion should be treated with caution.

Authors' objectives
To evaluate the effectiveness of Tai Chi for the reduction of falls and fear of falling in older adults.

Searching
PubMed, AMED, CINAHL, Cochrane Central Register of Controlled Trials (CENTRAL), PEDro and Scirus were searched. Search terms were provided but search dates were not. Reference lists of articles and relevant reviews were handsearched for additional references. Articles written in languages other than English were excluded.

Study selection
To be eligible for inclusion, studies had to be randomised controlled trials (RCTs) of Tai Chi in adults, aged 60 years or older (of either sex), living in the community or in care. Trials focusing on intermediate outcomes that did not report any fall-related findings were excluded. Trials that focused on a population with a specific disease or condition were also excluded.

The main outcomes were number of falls and fear of falling.

Most of the included trials were of participants living in the community; the remainder were conducted in long-term care or independent care facilities. The mean age of participants across included trials was 78 years; the overall percentage of females was higher. The mean percentage of participants with a history of one or more falls in the past year was 55% (range 26 to 100). The mean percentage of participants with fear of falling ranged from 14 to 85%. Most of the trials had Tai Chi as the main intervention. Not all trials specified the type of Tai Chi; regimes varied across the trials. The mean number of Tai Chi sessions per week was three (range one to seven). The mean intervention duration was 36 weeks (range eight to 104 weeks). The mean total intervention contact was 54 hours (range 27 to 96 hours). Comparison groups received: no treatment; stretching control; exercises (such as ball games); progressive strength training and computerised balance training; and advice and education. Definitions of falls and fear of falling varied across the trials.

The authors did not state how many reviewers selected studies for the review.

Assessment of study quality
Two reviewers independently rated trial quality using the Delphi List, scoring trials from 0 to 9. High quality was defined as a score of 6 or more out of 9.

Data extraction
The authors did not state how data were extracted for the review.

Methods of synthesis
Trials were summarised in a narrative synthesis. The strength of evidence was graded as strong (75% or more of trials reporting statistically significant and clinically relevant findings favouring the same intervention), weak (75% or more of trials reporting statistically significant or clinically relevant findings) or insufficient (75% or more of trials having no statistically significant or clinically relevant results).
Results of the review
Seven RCTs were included in the review (n=1,146 participants). Trials met either 6 or 7 out of 9 quality criteria and were all rated "high quality". The main criteria missing related to blinding of patients or care providers, or lack of intention-to-treat analysis. Drop-out rate ranged from 4 to 60% across the trials; in all but one trial, drop-out rates were less than 30%.

Incidence of falling (six trials): Three trials demonstrated statistically significant reductions in the rate of falls in the Tai Chi groups. Two trials gave non significant results that were deemed "clinically relevant". One trial, with a drop-out rate of 60%, had results that were not statistically significant. The three trials demonstrating significant reductions in the incidence of falls in Tai Chi groups were those with the lowest percentage of participants with a recent history of falls.

Fear of falling (six trials): Five trials demonstrated statistically significant reductions in the fear of falling in the Tai Chi groups, whilst one trial did not. The trial that did not find a significant reduction in fear of falling had the lowest percentage of participants with a fear of falling at baseline (14%).

Authors' conclusions
There was strong evidence supporting Tai Chi in reducing the fear of falling and weak evidence supporting its use for reducing the incidence of falls in older people.

CRD commentary
This review was underpinned by inclusion criteria relating to participants, interventions, outcomes and study designs. Although the search included a range of sources, it was possible that studies in languages other than English (particularly Chinese) were missed. It was unclear if the processes of study selection and data extraction involved more than one reviewer to help to minimise error and bias.

Trial quality was assessed. Given the heterogeneity between the trials, a narrative synthesis appeared to be appropriate. The authors' conclusions should be treated with caution given that not all trials presented statistically significant findings and there was great diversity in the participants, interventions and outcome measures of included trials. The recommendation for further well-conducted, targeted trials appears to be appropriate.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that future research should focus on targeting defined clinical subpopulations with high quality well-designed RCTs of sufficient size and with long term follow up.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.