The effects of physical exercise on depressive symptoms among the aged: a systematic review

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CRD summary
Physical exercise may be effective in reducing clinical depression and depressive symptoms in the short term among elderly participants. However, because of differences between the studies and a lack of good-quality evidence, no firm conclusions can be drawn. Given the poor reporting of the review process and the potential for missed studies, the reliability of the conclusions is uncertain.

Authors' objectives
To evaluate the effects of physical exercise on depression or depressive symptoms in older populations.

Searching
MEDLINE (from 1966), CINAHL (from 1982), PsycARTICLES (from 1985) and PsycINFO (1985) were searched to April 2005; the search terms were reported. In addition, the Cochrane CENTRAL Register and PubMed Clinical Queries were searched, several relevant journals were handsearched (from January 2004 to April 2005), and the reference lists of identified articles were screened. No language restrictions were applied.

Study selection
Randomised controlled trials (RCTs) of studies evaluating the effects of physical exercise on participants aged 60 years or older, or defined as 'older' or 'elderly', and either non-depressed or depressed at baseline were eligible for inclusion. Studies evaluating the effects of exercise directly after training, or examining the effects of multi-dimensional rehabilitation programmes, were excluded from the review. A range of supervised interventions were evaluated in comparison with no intervention, education, medication or exercise. The duration of treatment ranged from 6 weeks to 18 months. One of three diagnostic criteria had to be used (defined in paper), and the severity of depression suffered by the participants varied across studies. The mean age of the participants ranged from 56.2 to 83 years.

The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
Validity was assessed on the basis of allocation concealment, blinding, length of follow-up, and intention-to-treat analysis using a published check list.

The authors did not state how the validity assessment was performed.

Data extraction
Data were extracted on the proportion of patients achieving a response to the intervention.

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

Methods of synthesis
The studies were combined in a narrative because of differences between them. The studies were described in the text, with additional information tabulated, and stratified according to the baseline depression status of participants. The effectiveness of the intervention was classified as positive, negative or no effect, dependent upon whether a significant difference in depression or depressive symptoms was found between groups in at least one outcome measure.

Results of the review
Thirteen RCTs (n approximately 1,264) were included in the review.

All 13 studies reported using random allocation but only six described the method of allocation concealment. Only 5
studies reported blinding of the outcome assessment. Four studies described adequately both allocation concealment and blinding. Intention-to-treat analysis was only explicitly stated in four.

Non-depressed elderly (5 studies): only one of the 5 studies reported a significant benefit of exercise; the exercise was aerobic and the benefit was only seen in men.

Depressed elderly (5 studies): aerobic exercise was reported to reduce self and therapist-reported depressive symptoms (1 study) and somatic symptoms (1 study). Benefits were reported in relation to the response rate for the Hamilton Rating Scale-D (1 study), responses in patients that had not responded to medication (1 study), and responses were shown to be comparable to medication (1 study). T'ai chi gave positive results in depressed or dysthymic out-patients (1 study).

Mixed elderly populations (3 studies): all 3 studies reported positive results in relation to depressive symptoms for exercise groups compared with controls.

**Authors' conclusions**

Physical exercise may be effective in reducing clinical depression and depressive symptoms in the short term among elderly participants with depression or a high amount of depressive symptoms.

**CRD commentary**

Inclusion criteria were clearly defined in terms of the study design, participants and intervention, but were not specified for the outcomes. Several relevant sources were searched and attempts were made to reduce language bias. However, unpublished studies were not specifically sought, therefore publication bias cannot be ruled out. The methods used to select the studies, assess validity and extract the data were not described, so it is not known whether any efforts were made to reduce reviewer error and bias. Validity was assessed using specified established criteria and the results reported for each criterion. Long-term results were reported; however, it was difficult to associate these with the original studies. The narrative synthesis was appropriate given the differences between the studies. The lack of reporting of the review process and the potential for missed studies mean that the reliability of the conclusions is uncertain.

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

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

Research: The authors stated that further RCTs of good methodological quality are needed. In addition, future research should evaluate different clinical subgroups (minor, moderate, major depression) to compare the effectiveness of different types of exercise and to clarify the appropriate dose and intensity of exercise.

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