CRD summary

This review concluded that aerobic walking programmes resulted in clinically-important improvements in pain relief, functional status, and quality of life in adults with knee osteoarthritis, although there was variation between included trials. Considering the uncertainty about the risk of bias in the included trials, the authors' conclusions and recommendations may be viewed as being too strong.

Authors' objectives

To evaluate aerobic walking programmes for the management of osteoarthritis of the knee.

Searching

PubMed, EMBASE, CINAHL, PEDro, SCOPUS, BioMed, SUMSearch and The Cochrane Library were searched up to February 2011 for studies in English or French. The search strategy was reported as an appendix.

Study selection

Controlled studies of aerobic walking training in patients with knee osteoarthritis were eligible for inclusion. Patients had to be at least 40 years old and have a healthy body mass index (BMI) of below 25 kg/m². Exercise interventions had to last for at least one month. A wide range of outcomes were eligible (listed in the paper).

In most included studies patients performed supervised exercise. Some of the interventions also included multi-component exercises or strength training. Most interventions were given two or three times a week for three months. Most of the control group treatments incorporated educational sessions. All studies included patients who satisfied radiographic or clinical criteria for their diagnosis. Mean ages of participants ranged from 56 to 76 years.

Two reviewers selected studies, with disagreements resolved by a third reviewer.

Assessment of study quality

Two reviewers assessed study quality using the Jadad scale, resulting in a quality score between 0 and 5 points. Strength of evidence was graded using the Appraisal of Guidelines Research and Evaluation criteria.

Data extraction

Change from baseline data were extracted to calculate standardised mean differences with 95% confidence intervals. Two reviewers independently extracted data.

Methods of synthesis

Studies were pooled using meta-analysis. The authors did not provide specific details about the type of model used to combine studies. Heterogeneity was assessed using I². For continuous outcomes, a relative improvement of 15% was deemed a clinical improvement.

Results of the review

Nine studies (10 full-text articles) were included in the review; eight were randomised trials and one was a controlled clinical trial. The total sample size was unclear. Three studies were deemed to be of poor quality (under 3 points) and five were deemed high quality (by scoring 3 points). Blinding of patients and the trial staff providing the interventions was not possible.

Patients who received walking programmes had significantly less pain than those in control groups (SMD -0.47, 95% CI -0.71 to -0.23; three trials; P=0%), better endurance assessed using a five-minute or six-minute walk test (SMD -0.68, 95% CI -0.96 to -0.41; two trials; P=46%), and improved aerobic capacity at three months (difference in change from baseline 19.8%, one trial). No clinically-relevant difference was found at nine months for aerobic capacity (one
Positive recommendations were made for the effect of specific walking interventions on pain, quality of life, and functional status (further details were reported in the paper).

**Authors’ conclusions**

Aerobic walking combined with stretching and strengthening exercises, education, and/or behaviour programmes resulted in clinically-important improvements in pain relief, functional status, and quality of life in adults with knee osteoarthritis. However the trials were heterogeneous.

**CRD commentary**

The review addressed a clear question and was supported by reproducible eligibility criteria. Several relevant databases were searched, although the restriction to searching only for studies in English or French meant that some relevant studies may have been missed. Suitable methods were used to reduce the risks of reviewer error and bias throughout the review.

Study quality was assessed using the Jadad scale, which had limitations: evaluations of allocation concealment methods (a particularly important potential source of bias) were not included, and only the reporting of withdrawals and drop-outs was assessed, rather than whether such attrition may bias trial results. Although the authors did briefly discuss allocation concealment and withdrawals/drop-outs, this did not result in a clearly reported evaluation of selection and attrition bias. The possible value of outcome assessor blinding was not discussed (nor was it assessed using the Jadad scale).

Limited details were provided about how studies were pooled. Outcome data for individual trials were sparsely reported. The authors acknowledged that most trials only evaluated effects in the short-term, and that in restricting their review eligibility criteria by excluding studies of obese or overweight patients, the review results had only limited generalisability. Considering the uncertainty around the risk of bias in the included trials, the review conclusions and recommendations may be viewed as being too strong.

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

**Practice:** Positive recommendations were made for the effect of specific walking interventions on pain, quality of life, and functional status (further recommendations and details were reported in the paper).

**Research:** The authors recommended a similar review in overweight and obese populations should be performed, and that Cochrane risk of bias assessments should be used in future reviews. They also stated a need for longer-term trials and trials in patients with hip osteoarthritis.

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