Integrated exercise and self-management programmes in osteoarthritis of the hip and knee: a systematic review of effectiveness

Walsh N E, Mitchell H L, Reeves B C, Hurley M V

CRD summary
The authors concluded that combined exercise and self-management programmes reduce pain and increase function in community-based patients with knee and hip osteoarthritis. However, the studies were methodologically weak. This was a well-conducted review and the authors' cautious conclusions appear reliable given the limitations of the evidence.

Authors' objectives
To evaluate the impact of exercise and self-management programmes on pain and function in patients with hip and knee osteoarthritis, and to determine the cost-effectiveness of these programmes.

Searching
MEDLINE, EMBASE, AMED, CINAHL and PsycINFO were searched from inception to December 2005 for English language publications. The Cochrane Library, National Research Register, DARE, PEDro, National Institute for Clinical Excellence and HTA databases were also searched. The search terms were reported and an age filter of over 45 years was used. Weekly Zetoc alerts were also checked for newly published research until March 2006. The reference lists of selected articles were screened.

Study selection
Studies of combined exercise and self-management programmes were eligible for inclusion. Studies were excluded if the self-management regime consisted of written instruction alone and was non-participative. The exercise regimes in the studies included walking only or a combination of lower limb strengthening, mobilising, stretching or balance exercises. Self-management regimes generally included advice and education on osteoarthritis, healthy living, pain management techniques and exercise adherence strategies. Two studies used the Arthritis Self-Management Programme. The majority of included studies were group interventions; one study was an individual intervention and another was a home-based intervention. Where stated, the interventions ranged from 30 minutes to 1 hour for both exercise and self-management components, at a frequency of 1 to 3 times weekly. The duration of the exercise intervention ranged from 6 to 12 weeks in the majority of studies; in one the intervention continued for 18 months. The duration of the self-management component ranged from a single session to 15 months. Interventions were delivered in community, clinic or hospital settings. Studies of patients with knee or hip osteoarthritis were eligible for inclusion. Studies in which joint pathology resulted from inflammatory or systemic disorders were excluded. The majority of studies included patients with knee pain only. The mean age of the participants ranged from 65 to 75 years. Studies measuring pain, function or cost-effectiveness were eligible for inclusion. Pain was evaluated using a visual analogue scale, McGill pain questionnaire, AIMS pain subscale, Short Form 36 (SF-36) bodily pain scale or WOMAC pain subscale. Function was evaluated using the WOMAC function subscale, the AIMS function subscale, a modified Bandis incapacity score, the SF-36 function subscale, or non-standardised tests of function, walking distance and activities of daily living. The duration of follow-up ranged from 2 to 18 months. Randomised controlled trials (RCTs) were eligible for inclusion.

Three reviewers, blinded to the journal title, institution and author details, independently screened abstracts for inclusion in the review. Any disagreements were resolved by discussion.

Assessment of study quality
Validity was assessed using a version of the PEDro quality criteria, modified for this review. This covered 10 criteria measuring primary hypothesis, primary outcome, sample size, randomisation, allocation concealment, blinding and success of blinding, reporting of missing data and intention-to-treat analysis.

Three reviewers independently assessed methodological quality, with any disagreements resolved by discussion.
Data extraction
Three reviewers independently extracted the data, with any disagreements resolved by discussion. The authors of primary studies were contacted and invited to provide any additional details of their studies that they considered pertinent.

Methods of synthesis
The results were presented in a narrative synthesis.

Results of the review
Ten RCTs (n=1,584) were included. Seven studies reported appropriate randomisation methods, three reported an a priori hypothesis, four reported allocation concealment and six were blinded. All of the included studies reported missing data, but only four used intention-to-treat analysis. The majority of the included studies were under-powered or included an unjustified sample size.

Eight of the 10 studies reported a significant improvement in pain in the intervention groups compared with the control groups (p-values ranged from p<0.05 to p<0.001). Seven of the 10 studies reported a significant benefit of the intervention on function (p-values ranged from p<0.05 to p<0.001).

Cost information
No studies were found that evaluated cost-effectiveness.

Authors’ conclusions
The data suggest that combined exercise and self-management programmes reduce pain and increase function in community-based patients with knee and hip osteoarthritis. However, many of the included studies had methodological weaknesses.

CRD commentary
The review addressed a clear research question. Several relevant databases were searched but only published studies were included, thus potentially introducing publication bias. In addition, the restriction to articles reported in English introduces the risk of language bias and the possibility that important data were omitted. Appropriate steps were taken in the review process to minimise the risk of bias and error. A validity assessment was conducted. The decision to combine the results in a narrative was appropriate given the clinical heterogeneity between the studies. However, the absence of statistical data other than p-values makes it difficult to determine the clinical significance of the findings. This was a well conducted review and the authors’ cautious conclusions are reliable given the methodological weaknesses of the evidence.

Implications of the review for practice and research
Practice: The authors stated that the intensive and prolonged nature of some of the interventions renders them clinically impracticable.

Research: The authors stated that further rigorously designed studies are needed to evaluate the short- and long-term clinical and cost-effectiveness of practicable interventions.

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Record Status
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.