Exercise in migraine therapy. Is there any evidence for efficacy: a critical review
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CRD summary
The authors concluded that there was insufficient evidence to support recommendation for exercise in migraine and that further research was required. Evidence appeared to support the authors' conclusions, but the limited search and lack of reporting of review methods and assessment of study quality made it difficult to assess their reliability.

Authors' objectives
To examine the evidence supporting exercise for patients with migraine.

Searching
PubMed and Current Contents were searched from 1962 to July 2007 using reported search terms; abstract books and supplements were included in the search. In addition, "current and well-established" international textbooks were screened.

Study selection
Studies and case reports that evaluated exercise and endurance sports for patients with migraine were eligible for inclusion. Studies evaluating physical treatment, massage, chiropractic therapy, manipulation or multidisciplinary interventions were excluded. Inclusion criteria were not specified for outcomes.

Randomised controlled trials (RCTs), quasi-experimental studies and case series were included. All of the studies evaluated aerobic endurance training programmes with sessions of 20 to 60 minutes two or three times per week over six to 26 weeks. Exercise was mostly performed at home. The review evaluated a wide range of outcomes including headache frequency, pain intensity, duration of headache, use of medication, level of fitness and various psychometric outcomes. Most participants were women.

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

Assessment of study quality
The authors assigned studies to a hierarchy of evidence, but made no further attempts to assess validity.

Data extraction
The authors did not state how data were extracted for the review, or how many reviewers performed the data extraction.

Methods of synthesis
The studies were grouped by outcome and combined in a narrative synthesis.

Results of the review
Eight studies were included (n=156). These comprised two RCTs (n= 34), one quasi-experimental quasi-randomised study (n=40) and five case series (n=82).

Only three studies used the International Classification of Headache Disorders to classify patients.

Headache frequency: Five of eight studies reported no significant change in headache frequency in exercise groups. One study reported a significant reduction in the exercise group and two reported a decrease from baseline.

Pain intensity: Six studies reported a reduction in pain intensity in exercise groups; most did not report the level of statistical significance.

Headache duration: Two of four studies reported a significant reduction in headache duration. The two other studies
reported no change.

Medication use: Two of three studies reported no significant change in medication use in exercise groups. One study reported a "certain reduction" in medication use (the level of statistical significance was not reported).

Fitness: Two of four studies reported an increase in measures of fitness level in exercise groups and two reported no change.

Psychometric data: Two of three studies reported no change in psychometric outcomes. A third study reported an improvement in one of three measures (pain severity) in the exercise group.

Authors' conclusions
There was insufficient evidence to support recommendation for exercise in migraine. Further research was required.

CRD commentary
The review question was clearly stated. Inclusion criteria were defined for the intervention. Criteria for study design and participants were broad. No criteria were defined for outcomes. Several relevant sources were searched, but no attempts to minimise publication or language bias were reported. Searching only two databases may have resulted in omission of relevant studies. Methods used to select studies and extract data were not described, so it was unknown whether efforts were made to reduce reviewer errors and bias. Study validity was not assessed in full and so results from these studies and any synthesis may not be reliable. In view of the diversity among studies, a narrative synthesis was appropriate. However, this did not take any account of study design or any other aspect of study quality. Evidence appeared to support the authors' conclusions, but the limited search and lack of reporting of review methods and assessment of study quality made it difficult to assess their reliability.

Implications of the review for practice and research
Practice: The authors stated that the risk of cardiovascular events and musculoskeletal injuries should be taken into account when considering exercise for migraine.

Research: The authors stated that adequately powered RCTs (preferably crossover RCTs) were required to evaluate the effect of exercise on pain in patients with migraine. Studies should classify patients according to the International Classification of Headache Disorders and assess outcomes using standardised measures of headache. Training interventions should be monitored and supervised, sports-induced headache attacks should be assessed and studies should be controlled for hypoglycaemia and loss of weight or dehydration.

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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.