Exercise therapy for patients with rheumatoid arthritis: safety of intensive programmes and effects upon bone mineral density and disease activity. A literature review

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CRD summary
The author concluded that aerobic and muscle strengthening programmes are safe and effective in patients with rheumatoid arthritis. Given the methodological weaknesses of this review, the reliability of the author's conclusions is unknown.

Authors' objectives
To evaluate the efficacy and safety of intensive exercise programmes on bone mineral density, disease activity and radiological damage in patients with rheumatoid arthritis.

Searching
MEDLINE, AMED, CINAHL, the Cochrane Library, Biomedical Reference Collection and Web of Science were searched; the search terms were reported. The search was restricted to articles published from 1999 to 2004 because of a published Cochrane review covering research in the field published up to 1998. The reference lists of retrieved articles were screened.

Study selection
Studies of exercise interventions designed to improve aerobic activity and muscle strength were eligible for inclusion. The included studies evaluated either an intensive exercise programme of isometric and isokinetic muscle strength and bicycle training or the RAPIT programme: a 1-hour biweekly session comprising of bicycle training, exercise circuit and a sporting activity. The control groups received usual care (i.e. from a physiotherapist) or a conservative range of motion and isometric exercises. The studies ranged in length from 24 weeks to 2 years. Studies of participants with a clear diagnosis of rheumatoid arthritis were eligible for inclusion, whereas those of patients with osteoarthritis were excluded. The included studies were of participants with functional limitation ranging from class I to class III. Sixty-nine per cent of the patients were female. Inclusion criteria for the outcomes were not clearly defined. The outcomes reported in the review were disease activity, bone density and radiological damage to the small joints of the hands and feet. The disease activity score is a composite score measuring the number of swollen joints, number of tender joints, erythrocyte sedimentation rate and patients' global assessment of the disease. Bone density was measured by a dual-energy X-ray absorptiometry scan of the hip region and lumbar spine. Randomised controlled trials with a low risk of bias were eligible for inclusion.

The author did not state how the studies were selected for the review, or how many reviewers performed the study selection.

Assessment of study quality
Methodological quality was assessed according to the criteria published in the Cochrane Reviewers' Handbook. These criteria relate to selection, attrition, performance and detection biases, which were used to determine the overall risk of bias for each study.

The author did not state how many reviewers performed the validity assessment.

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

Methods of synthesis
The studies were combined in a narrative. Further information was evident from the tables. Differences between the...
studies were evident from the tables and text.

**Results of the review**

Two studies, reported in four publications, were included in the review (n=373).

All of the studies demonstrated an adequate description of patient selection, generation of the allocation sequence by an independent person, allocation of patients by an independent person, and sample size calculations.

One study reported a decrease in disease activity over 24 weeks of intensive exercise: the mean change in disease activity score was -1.4 in the intervention group compared with -0.7 in the usual care group (no p-values reported). The other study that evaluated the RAPIT programme observed a small, gradual decline in disease activity over 2 years (no statistical data provided).

One study evaluated bone mineral density. This study found that the mean rate of decrease of hip bone mineral density was smaller in those patients who received the RAPIT programme than in those who received usual care (no statistical comparisons provided).

Radiological damage was significantly less in the RAPIT group than in the usual care group: the mean increase in radiological damage was 3.5 in the intervention group compared with 5.7 in the usual care group (no p-values provided).

**Authors’ conclusions**

There is evidence that aerobic and muscle strengthening programmes slow down loss of bone mineral in the hip, are safe to use in patients with rheumatoid arthritis, and do not increase disease activity.

**CRD commentary**

The review addressed a clear question. Several relevant databases were searched, but the authors do not appear to have sought unpublished data, thus introducing the risk of publication bias. It is also unclear whether language restrictions were applied to the search, therefore language bias might also have been introduced and relevant studies omitted. There is insufficient information to rule out the possibility of error and bias in the review process. A validity assessment was carried out and only high-quality studies were included, but only limited information on the validity assessment was provided. The decision to combine the studies in a narrative was appropriate given the diversity of the outcomes assessed. However, the reporting of statistical data was limited, making it difficult to assess the clinical or statistical significance of the outcomes. Given the methodological weaknesses of this review (e.g. the small number of included studies, limited reporting of results, and the likelihood of error and bias in the review process), the reliability of the author's conclusions is unknown.

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

Practice: The author stated that exercise programmes for patients with rheumatoid arthritis should include an aerobic component at 50 to 70% of maximum predicted heart rate and strengthening exercises of moderate loads (70% repetition maximum).

Research: The author stated that further high-quality research, including studies of patients with active disease, is required. In addition, research is needed to identify differences in response across disease stage and degree of functional limitation. Research into the cost-effectiveness of exercise programmes in rheumatoid arthritis is also advocated.

**Funding**

Not stated.

**Bibliographic details**

Indexing Status
Subject indexing assigned by CRD

MeSH
Arthritis, Rheumatoid /rehabilitation; Bone Density; Combined Modality Therapy; Exercise; Exercise Therapy
/methods; Physical Therapy Modalities; Range of Motion, Articular

AccessionNumber
12006008572

Date bibliographic record published
13/12/2007

Date abstract record published
30/09/2008

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.