Are physiotherapy exercises effective in reducing chronic low back pain?
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CRD summary
This review concluded that physiotherapy exercise programmes were effective in reducing chronic low back pain, but that there was no consensus for the superiority of any specific technique or exercise format. Lack study details and effect sizes limited interpretation of the results presented, so the authors' conclusions might not be reliable.

Authors' objectives
To determine the effectiveness of physiotherapy exercises in reducing chronic low back pain.

Searching
MEDLINE, EMBASE, CINAHL, Cochrane Central Register of Controlled Trials, PEDro and Web of Science were searched up to the end of May 2006. Search terms were reported. Reference lists of relevant articles were also searched. Only papers published in English were included.

Study selection
Randomised controlled trials (RCTs) of physiotherapy prescribed exercises for chronic low back pain (defined as pain greater than 12 weeks of duration) in adults aged 18 to 65 years that reported at least one outcome measure of back pain were eligible for inclusion. Included symptoms were located 'below the level of the scapulas and above the cleft of the buttocks, with or without radiation to the lower extremities, including nerve root pain or sciatica'. Individuals with spinal pathologies of an inflammatory or infectious nature, pregnancy or other concurrent conditions receiving physiotherapy were excluded. Eligible participants were considered to be otherwise healthy and there was no discrimination in terms of socioeconomic status or compensability (private, public or work cover).

Studies in which at least one intervention was a programme of physiotherapy prescribed exercises were included in the review. Where there was more than one intervention, the exercise program had to be evaluated independently. Included interventions were grouped into three broad categories: functional restoration and back care or rehabilitation programmes; lumbar stabilisation exercise programmes; other exercise programmes (including hydrotherapy, yoga, fitness circuits, strengthening exercises and back school). Participants were recruited from a number of sources: referrals to physiotherapy out-patient departments; an occupational health centre; referrals from general practitioners; specialists, out-patient departments or insurance companies; advertisement; self-referral to a spine programme; letter drop to potentially eligible people; private practice; medical and pain management clinics; hospital and multicentre orthopaedic clinics or rehab centres. A variety of pain and functioning measures were included (further details are reported in the review).

Two reviewers assessed the full copies of potentially suitable studies for inclusion in the review. Any disagreements were resolved by consensus. The authors did not report how the initial yield of potentially suitable studies was selected or how many reviewers performed the selection.

Assessment of study quality
Two reviewers independently assessed the quality of the included studies using a ten-point checklist based on the physiotherapy evidence database (PEDro) with the following criteria: random allocation, concealed allocation, baseline comparability, patient blinding, therapist blinding, assessor blinding, at least 85% follow-up, use of intention-to-treat (ITT) analysis, between group statistical analysis, point measures and measures of variability. Due to difficulties in blinding (physiotherapist), the highest possible score on the PEDro was actually nine. In addition, studies were also scored for reported eligibility criteria. A pilot test of the methodological quality assessment was carried out.

Data extraction
Quantitative data on pain outcomes were collected in all studies. Two reviewers independently extracted data using a customised data extraction form. Disagreements were resolved by consensus or by the decision of a third reviewer.
Methods of synthesis
Studies were combined in a narrative synthesis grouped by type of exercise programme.

Results of the review
Fifteen studies were included in the review (1,695 participants) comprising six RCTs on functional restoration or back rehabilitation, five lumbar spine stabilisation programmes, and four fitness programmes (one study was a follow-up of an included study in the same set). Total quality scores ranged from 4 to 8 (mean score 6). Trial sizes ranged from 41 to 349 participants (median 80).

Functional restoration or back care rehabilitation programmes (where reported, control groups included surgical lumbar spinal fusion and a passive control treatment group): Two studies looked at full-time functional restoration programmes. Both studies found improvement in pain scores. Four studies looked at part-time active rehabilitation programmes with interventions based on functional capacity. Participants attended structured sessions one to two times a week for one to two hours duration. An improvement in pain and functional scores was found in three studies in favour of exercise programmes. In two of these studies improvements were found to be maintained at one year follow-up.

Lumbar stabilisation exercise programmes: All five trials ran programmes over an eight to 10 week period. Comparison interventions included manual therapy, education with active participation in a back school programme, general exercise programmes (including walking, swimming and gym) and no intervention. Two studies found a significant improvement in pain scores in favour of the spinal stabilisation group compared to the comparator and two studies found no between group differences, although both intervention and comparator groups were reported to demonstrate significant effects. One study found a significant improvement in pain intensity in the stabilisation group over the course of treatment. No statistically significant improvement was found for the comparator group.

Other exercise programmes: One study found a significant improvement on the Oswestry disability scale (ODS), pain and self-efficacy reports for the exercise programme compared to a back education programme. Improvements were still observed at two year follow-up. Significant improvements in function were found for hydrotherapy compared to controls but no statistically significant between group differences were found for outcome measures of pain, light touch, reflexes, strength and active movements of the lumbar spine. No statistically significant between group differences were found when yoga was compared with a self-care book.

Authors' conclusions
Overall, physiotherapy prescribed exercise programmes were found to be effective in reducing pain in patients with chronic low back pain. Results were inconclusive for the superiority of any specific technique or exercise format.

CRD commentary
The review question was supported by clear inclusion and exclusion criteria. Several sources were searched to locate relevant studies for inclusion in the review. However, the search strategy was restricted by language and the authors did not appear to have searched for unpublished studies, so there may have been some risk of publication and language bias. Steps were taken to reduce the risk of reviewer error and bias in the study selection, data extraction and validity assessment.

Study quality was assessed and results reported. Results for a table reported to give patient characteristics, duration of symptoms, interventions and outcome measures was missing. Lack of reported detail for study characteristics, as well as effect sizes for each study included, limits interpretation of the results. A narrative synthesis appeared appropriate given the clinical and methodological differences between studies.

Lack study details seriously limits interpretation of the results presented and the authors' conclusions might not be reliable.

Implications of the review for practice and research
Practice: the authors stated that physiotherapists should individually assess patients and prescribe exercises tailored to their needs.

Research: the authors stated that further research was needed in the assessment of functional spinal instabilities and
effects of exercise therapy for specific pathologies.

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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.