The treatment effect of exercise programmes for chronic low back pain

Smith C, Grimmer-Somers K

CRD summary
The authors concluded that exercise programmes were effective for chronic low back pain up to six months after treatment cessation as shown by reductions in pain scores and recurrence rates. A lack of reporting of review methods, uncertainty about the appropriateness of pooling data and use of active control interventions mean that the conclusions should be interpreted with caution.

Authors' objectives
To evaluate recent evidence on the long-term effectiveness of physiotherapy exercise programmes for patients with chronic low back pain.

Searching
Academic Search Elite, AMED, AMI, AUSThealth, BioMed Central, Blackwell Synergy, CINAHL, The Cochrane Library, Digital Dissertations Online, EBSCO, HighWire, IngentaConnect, PubMed, NLM Gateway, PEDro, Social Services Abstracts, PsycARTICLES, PsycINFO and Web of Science were searched from 2001 to April 2007 for peer-reviewed published studies. Search terms were reported.

Study selection
Parallel randomised controlled trials (RCTs) that compared the effects of a physiotherapy exercise programme as the primary intervention with a control intervention in adults with chronic low back pain were eligible for inclusion. Studies could report any outcome measured at any follow-up period post-treatment that was related to chronic low back pain. The review assessed pain scales and recurrence of low back pain.

The included studies evaluated various physiotherapy exercise programmes for intervention and control groups (details reported). Outcomes assessed included pain (such as remission of pain and intensity), disability, function, quality of life, cognitive status and psychological disturbance. Studies used various measures to assess outcomes (such as visual analogue scales for pain and disability questionnaires).

The authors did not state how many reviewers selected studies.

Assessment of study quality
Validity was assessed using the 11-point PEDro scale.

The authors did not state how many reviewers assessed validity.

Data extraction
For each follow-up period, weighted mean differences (WMDs) with 95% confidence intervals (CI) were extracted or calculated for continuous data. Relative risks (RR) and absolute risk reductions were calculated for dichotomous data.

The authors did not state how many reviewers extracted data.

Methods of synthesis
Where studies reported similar data at the same time interval, pooled standardised mean differences (SMDs) and pooled relative risks with 95% CIs were calculated. The number needed to treat (NNT) was calculated where appropriate.

Results of the review
Fifteen RCTs were included (sample sizes not reported). Studies were considered to be of moderate quality with PEDro scores that ranged from 5 to 10 out of 11 (mean 7.7). Flaws included lack of blinding, lack of reporting of intention-to-
treat analysis and high drop-out rates and losses to follow-up. Follow-up was reported at 12 months in 12 studies and at two or more years in three studies.

**Pain:** Compared against control interventions, physiotherapy exercise programmes were associated with a significant reduction in pain scores at six months follow-up (SMD -0.57, 95% CI -0.75 to -0.39; six studies, 555 patients) and a non-significant reduction in pain scores at 12 months (SMD -0.25, 95% CI -0.44 to 0.06; 434 patients). There was no significant difference between intervention groups after 12-month follow-up (three studies).

**Recurrence of low back pain:** Compared against control interventions, physiotherapy exercise programmes were associated with a significant reduction in the proportion of patients with recurrence of low back pain at six months (RR 1.74, 95% CI 1.33 to 2.27, NNT=3; six studies, 296 patients). There was no significant difference between intervention groups at 12-month follow-up (seven studies, 472 patients).

**Authors' conclusions**
Exercise programmes were effective for chronic low back pain up to six months after treatment cessation, as shown by reductions in pain scores and recurrence rates.

**CRD commentary**
The review question was clearly stated. Inclusion criteria were appropriately defined. Several relevant sources were searched. Only peer-reviewed published studies were eligible. It was unclear whether attempts were made to minimise language bias. Study validity was assessed and the most common methodological flaws were reported. Some additional information about individual studies may have been useful; details such as sample size and attrition rates were reported as high for some studies. Methods used to select studies, assess validity and extract data were not described and so it was unclear whether efforts were made to minimise reviewer error and bias. Data were pooled using meta-analysis. Statistical heterogeneity was not assessed and so it was impossible to judge whether pooling data was appropriate. The authors did not report whether fixed-effect or random-effects models were used for the meta-analyses. The authors acknowledged that differences in interventions among studies made it difficult to identify effective components. Control groups also tended to receive some form of intervention and this increased the difficulty of interpreting results.

The authors’ conclusions appeared to reflect the evidence, but a lack of reporting of review methods, uncertainty about the appropriateness of pooling data and use of active control interventions mean that the conclusions should be interpreted with caution.

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

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that there was a need for studies to evaluate standard exercise programmes and assess short- and long-term outcomes that reflect the patient’s response to treatment.

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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.