Comparative effectiveness of exercise, acupuncture, and spinal manipulation for low back pain

CRD summary
This review concluded that structured exercise and spinal manipulation appeared to offer equivalent benefits for adults with chronic low back pain. This conclusion does not reflect the limited and contradictory evidence presented and is unlikely to be reliable.

Authors' objectives
To determine the relative effectiveness of structured exercise, spinal manipulation and acupuncture for the treatment of chronic low back pain.

Searching
The authors searched MEDLINE and The Cochrane Library to December 2010. Search terms were not reported. The search was limited to studies published in English. The reference lists of key articles were checked to identify additional studies.

Study selection
Randomised controlled trials (RCTs) involving adults with chronic low back pain (with or without radiating pain) that had lasted at least three months, were eligible for the review. Trials had to directly compare two of the three interventions (structured exercise, spinal manipulation and acupuncture). Trials evaluating combined interventions were excluded, as were trials where the inclusion criteria were considered to be subjective or too strict to be generalisable.

One of the included trials compared exercise (general or motor control) with manipulation, while the other compared a school for back pain (including exercise) with manipulation. Treatment lasted between three and eight weeks. Both trials reported on pain (visual analogue scale) and disability (Roland-Morris scale). The baseline pain scores ranged from 6.2 to 6.5 in one trial and from 2.0 to 2.2 in the other. The baseline disability scores ranged from 12.4 to 14.1 in one trial and from 8.4 to 9.5 in the other.

Two reviewers independently selected trials based on their titles and abstracts. Final decisions on inclusion were made by consensus among all four reviewers.

Assessment of study quality
Trials were assigned a level of evidence by two independent reviewers. The authors stated that the assessment included criteria for methodological quality, but no further details were reported.

Data extraction
Data were extracted to calculate mean differences between the groups for pain and disability scores after treatment and their associated standard deviations. The authors did not state how many reviewers extracted the data.

Methods of synthesis
Pooled standardised mean differences were calculated, using both fixed-effect and random-effects models. Planned subgroup analyses were not possible because of the small number of included trials.

Results of the review
Two RCTs, with 240 and 137 patients, comparing manipulation and exercise, were included. Both trials had follow-up at 12 months.

There were statistically significant differences favouring exercise for disability in one trial, and favouring manipulation for both pain and disability in the other. The pooled results (random-effects model) showed no statistically significant difference between groups (SMD 2.52, 95% CI -2.95 to 8.0 for pain; and SMD 0.12, 95% CI -4.18 to 4.43 for...
disability).

**Authors' conclusions**
Structured exercise and spinal manipulation appeared to offer equivalent benefits that were evident within eight weeks of starting treatment, but the level of evidence was low. There was insufficient evidence on acupuncture.

**CRD commentary**
The review question and inclusion criteria were clearly stated, but potentially subjective. Two relevant databases were searched, but limiting this to articles in English means that some relevant trials could have been missed. Trials indexed in specialist databases were not sought; the search was not comprehensive. The risk of publication bias was not assessed and there was no search for unpublished trials.

Measures were taken to minimise error and bias in study selection, but it was unclear if this was the case for data extraction. It appears that study quality was assessed when assigning a level of evidence, but no details were reported and the risk of bias in the included trials was unclear. Statistical heterogeneity in the meta-analysis was not reported, but the patients in the two trials had markedly different levels of pain and disability, so pooling the data in a meta-analysis was probably not appropriate.

The authors' conclusion that exercise and manipulation appeared to be equivalent does not reflect the limited and heterogeneous evidence presented and is unlikely to be reliable.

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

**Practice**: The authors stated that if no clinical benefit was observed after eight weeks of exercise or manipulation, the treatment approach might need to be modified.

**Research**: The authors stated that data comparing exercise, spinal manipulation and acupuncture were required, from both broad population registries and well-conducted clinical trials. Further detailed recommendations were reported.

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