The McKenzie method for low back pain: a systematic review of the literature with a meta-analysis approach

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CRD summary
This review assessed the effectiveness of the McKenzie method (mechanical diagnosis and therapy) in patients with low back pain (LBP). The authors concluded that the McKenzie method does not produce clinically significant changes in pain and disability compared with passive therapy and advice to stay active in patients with acute LBP. Overall, the authors' conclusions appear reliable.

Authors' objectives
To evaluate the effectiveness of the McKenzie method for treating low back pain (LBP).

Searching
MEDLINE, EMBASE, PEDro and LILACS were searched up to August 2003 for studies published in English, Portuguese and Spanish; the search strategy was reported. The reference lists of systematic reviews and relevant trials were screened, as was the reference list of the McKenzie International Institute. In addition, subject experts were contacted.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) were eligible for the review.

Specific interventions included in the review
Studies of the McKenzie method (also known as mechanical diagnosis and therapy) and of interventions that followed the same principles without naming the method were eligible for inclusion. Studies of dynamic strengthening exercises were excluded. The interventions were defined as 'classification-based McKenzie' if McKenzie's method of classifying patients was followed, and 'generic McKenzie' if the intervention was applied to patients of unknown classification. Studies with cointerventions were eligible. The main comparator interventions were passive therapy (including educational booklets, bed rest, ice packs and massage) and advice to stay active. Some studies compared different types of McKenzie intervention and some used passive or active cointerventions.

Participants included in the review
Studies of patients with non-specific LBP of any duration were eligible. The review defined LBP as 'pain extending between the lower rib cage and gluteal folds with or without radiation'. The majority of the included studies reported on patients with acute LBP (less than 6 weeks' duration) or on mixed populations. The age of the patients, where reported, ranged from 14 to 73 years.

Outcomes assessed in the review
The studies were required to report a measure of pain, disability, quality of life, return to work or sick leave, or recurrence. Most of the included studies reported on pain or disability.

How were decisions on the relevance of primary studies made?
Two reviewers independently assessed studies for relevance. Any disagreements were resolved by consensus, with reference to a third reviewer if necessary.

Assessment of study quality
Validity was assessed using the PEDro scale, an 11-item checklist which awarded a quality score of between 0 and 10.
If a study already had a score listed on the Physiotherapy Evidence Database, this score was used; other studies were assessed by two independent reviewers and any disagreements were resolved by consensus, with reference to a third reviewer if necessary. Studies scoring 5 points or more were considered high quality.

**Data extraction**
Two reviewers independently extracted the data using a standardised form. Any disagreements were resolved by consensus, with reference to a third reviewer if necessary. For continuous outcomes, means and standard deviations for between-group differences in end points or change scores were used to calculate weighted mean differences (WMDs) and associated 95% confidence intervals (CIs). The data were converted to a 0- to 100-point scale to analyse the effect of treatment on similar outcomes measured on different scales. Relative risks (RRs) and 95% CIs were calculated for dichotomous outcomes.

**Methods of synthesis**

**How were the studies combined?**
The studies were pooled by meta-analysis using a random-effects model. Pooling was not attempted if statistical or clinical heterogeneity was present, in which case the studies were combined narratively by comparator intervention.

**How were differences between studies investigated?**
Heterogeneity was assessed using a chi-squared test. When the number of studies was not sufficient to use the chi-squared test, tree plots of trial outcomes were inspected to make a decision on whether relevant heterogeneity was present. A sensitivity analysis was used to investigate the effect of excluding studies in which the intervention was a 'generic McKenzie' approach. Other differences between the studies were discussed in the text.

**Results of the review**
Eleven RCTs (n=1,245) were included.

The quality scores ranged from 3 out of 10 to 8 out of 10. Eight studies were considered high quality.

**McKenzie versus passive therapy.**
The meta-analysis indicated a significant decrease in pain (WMD -4.16, 95% CI: -7.12, -1.20; based on 2 studies) and disability (WMD -5.22, 95% CI: -8.28, -2.16; based on 2 studies) favouring McKenzie at the 1-week follow-up, but there was no difference in disability at 4 weeks.

**McKenzie versus advice to stay active.**
There was no significant difference in pain at 12 weeks' follow-up, but disability scores favoured the advice group at 12 weeks (WMD 3.85, 95% CI: 0.30, 7.39; based on 2 studies).

**McKenzie versus flexion exercises.**
Individual studies reported that McKenzie was as effective as flexion for chronic pain at 2 weeks (1 study) and marginally better for acute pain at 8 weeks (1 study). Another study reported a large effect on acute disability (WMD -22, 95% CI: -26, -18) favouring McKenzie over flexion exercises at 5 days' follow-up.

**Other comparisons.**
Three trials comparing McKenzie with spinal manipulation therapy gave contradictory results. One study compared McKenzie with back school (lesson on back care and avoidance of inactivity) and found a higher return to work rate in the McKenzie group (RR 2.05, 95% CI: 1.43, 2.95). One trial compared McKenzie with strengthening exercises and found no significant differences in pain or disability at 8, 10 and 32 weeks.

**Sensitivity analysis.**
A pooled analysis could not be performed. Single studies indicated that classification-based McKenzie was as effective as an educational booklet, advice to stay active and strengthening exercises, and more effective than flexion exercises and spinal manipulative therapy.

Authors' conclusions
The McKenzie method does not produce clinically significant changes in pain and disability compared with passive therapy and advice to stay active in patients with acute LBP.

CRD commentary
The review addressed a clear question and the inclusion criteria were clear. The search was adequate, although some language restrictions were applied, making it possible that relevant studies could have been missed. The risk of publication bias was not assessed. Validity was assessed using a checklist but few details were reported; this makes it difficult to assess the authors' findings regarding study quality. Appropriate methods were used to reduce the risk of errors and bias during the review process.

Adequate details of the primary studies were presented, although the results were not reported in detail. The synthesis was mainly narrative and the meta-analysis was restricted to a few homogeneous comparisons, which seems appropriate in view of the heterogeneity of the interventions, comparators and outcome measures in the review. Overall, the authors' conclusions regarding the McKenzie method for patients with acute LBP are in line with the evidence presented and appear reliable.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that future studies of the McKenzie method should classify patients before assigning them to treatment. There is also a need to compare the Mackenzie method as a classification-based treatment with generic MacKenzie methods.

Bibliographic details

PubMedID
16641766

DOI
10.1097/01.brs.0000214884.18502.93

Indexing Status
Subject indexing assigned by NLM

MeSH
Acute Disease; Chronic Disease; Databases, Bibliographic; Humans; Low Back Pain /diagnosis /physiopathology /rehabilitation; Pain Measurement; Physical Therapy Modalities; Randomized Controlled Trials as Topic

AccessionNumber
12006003430

Date bibliographic record published
30/09/2007
Date abstract record published
30/09/2007

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.