Does targeting manual therapy and/or exercise improve patient outcomes in nonspecific low back pain? A systematic review

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CRD summary
The review concluded that statistically significant effects for targeted treatment of patients with non-specific low back pain were rare and when present were only for short-term outcomes. The authors’ conclusions reflect the evidence presented, but potential for language and publication bias should be borne in mind.

Authors’ objectives
To determine the efficacy of targeted versus non-targeted manual therapy and/or exercise on pain and activity limitation in adults with non-specific low back pain.

Searching
MEDLINE, EMBASE, Current Contents, AMED and Cochrane Central Register of Controlled Trials (CENTRAL) were searched from inception to February 2009 for studies published in English, Danish or Norwegian. Reference lists and citation tracking of included studies were scanned for additional articles. Search terms were not reported, but were available from the authors.

Study selection
Randomised controlled trials (RCTs) that compared targeted manual therapy and/or exercise to non-targeted interventions for non-specific low back pain in adults were eligible for inclusion. Included RCTs were required to be either a two-group plus subgroup covariate RCT or a multi-arm subgroup system RCT. Studies that included participants with both low back pain and leg pain were eligible for inclusion if at least 85% had no symptoms or signs of neuro-compression or sciatica. Trials had to provide robust data on targeted treatment for outcomes of activity limitation and self-reported pain so that the effect size attributable to the targeted therapy and measures of variability could be determined. Trials that used post hoc analysis to identify responders to the intervention were excluded.

Targeted manual therapy included mobilisation, manipulation and exercise. Non-targeted treatment included mobilisation, manipulation, exercise and sham mobilisation. Clinical prediction rules used to evaluate effectiveness were Delitto treatment based classification, Flynn manipulation prediction rule and McKenzie directional preference-based exercise. Activity limitation was measured by either the Oswestry Disability Index or Roland-Morris Disability Questionnaire. Pain was measured by visual analogue scale or numerical rating scale. Collectively the included studies covered all three pain categories: acute (less than six weeks), sub-acute (six to 12 weeks), and chronic (over 12 weeks). Follow-up included short term (less than three months), intermediate term (three months to one year), and long term (over one year).

Two reviewers independently selected studies for inclusion; disagreements were resolved through discussion and recourse to a third reviewer when required.

Assessment of study quality
Methodological quality was assessed using criteria based on those recommended by the Cochrane Back Review Group. Criteria included assessment of randomisation, allocation concealment, similarity of groups at baseline, blinding, reporting of co-interventions, compliance, drop-out rate, timing of outcome assessment and intention-to-treat analysis. A high-quality trial was defined as a trial which obtained a minimum of a "yes" score for randomisation, allocation concealment, outcome assessor blinding and any three other method quality criteria.

Two reviewers independently assessed validity; disagreements were resolved through discussion or recourse to a third reviewer.
**Data extraction**
Means and standard deviations were extracted for all outcome measures. All pain, activity limitation and patient satisfaction scores were converted to a zero to 100 scale and used to calculate mean effect (mean difference) and 95% confidence intervals (CIs) for each outcome measure. Where the outcomes of two treatment groups were combined to create a comparison treatment, n-weighted mean and standard deviation was calculated.

Two reviewers independently extracted data; disagreements were resolved through discussion or recourse to a third reviewer.

**Methods of synthesis**
Data were combined in a narrative synthesis due to the differences between studies.

**Results of the review**
Four RCTs were included in the review. The median validity score was 8 points (range 7 to 10 points). All were considered high-quality trials.

McKenzie directional preference-based exercise reported statistically significant effects for short-term activity (mean effect 16.95, 95% CI 8.74 to 25.16; one RCT) and short-term pain (mean effect 19.80, 95% CI 14.34 to 25.26; one RCT) compared to non-directional preference exercises for chronic pain.

There were no statistically significant sort-term or long-term differences in activity limitation using the Delitto treatment based classification rule (one RCT) between targeted treatment and control groups for sub-acute pain.

There were no statistically significant differences using the Flynn manipulation prediction rule between targeted treatment and control groups for short-term activity limitation (two RCTs), short-term pain (one RCT) and intermediate-term pain (one RCT) for acute pain. One of two RCTs that assessed intermediate-term activity limitation for acute pain reported a statistically significant effect in favour of the control group (mean effect -10.30, 95% CI -20.80 to 0.20; one RCT); the other RCT reported no statistically significant difference.

**Authors' conclusions**
The results found that statistically significant effects for targeted treatment of patients with non-specific low back pain were rare and when present were only for short-term outcomes.

**CRD commentary**
The review question was clear with appropriate inclusion criteria. Several relevant sources were searched. Some efforts were made to reduce language bias; potential for language and publication bias may have remained. Search terms were available via study authors only, so it was not possible to verify the search strategy. Validity was assessed using an appropriate tool and some details of the assessment were reported. Appropriate methods were used to reduce reviewer error and bias in the selection of studies, assessment of validity and extraction of data. A narrative synthesis was appropriate given the differences between studies.

The authors' conclusions reflected the evidence presented, but the potential for language and publication bias should be borne in mind.

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

**Practice:** The authors stated that there was cautious evidence to support the notion that treatment targeted to subgroups of patients with non-specific low back pain may improve patient outcomes, but results were too patchy, inconsistent and investigated in samples too small for recommendations.

**Research:** The authors stated that adequately powered RCTs that used study designs that provided robust information on targeted treatment of patients with non-specific low back pain were required.
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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.