The effectiveness of physiotherapy and manipulation in patients with tension-type headache: a systematic review

CRD summary
This review assessed the clinical effectiveness of physiotherapy and (spinal) manipulation in patients with tension-type headache. The authors concluded that there is insufficient evidence to assess the effectiveness of physiotherapy and (spinal) manipulation. This was a well-conducted review and the authors’ conclusions correctly reflect the limitations of the evidence.

Authors’ objectives
To assess the clinical effectiveness of physiotherapy and (spinal) manipulation in patients with tension-type headache (TTH).

Searching
MEDLINE and EMBASE (both from inception to January 2003) and the Cochrane Controlled Trials Register (Issue 1, 2003) were searched. The search terms were reported and no language restrictions were applied. In addition, the reference lists of relevant review articles and reviews were checked. Only full reports were included; abstracts, congress reports, summaries and unpublished studies were excluded.

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

Specific interventions included in the review
Studies of physiotherapy or (spinal) manipulation were eligible for inclusion. The included studies used a variety of different types of spinal manipulation (e.g. chiropractic spinal, connective tissue and osteopathic manipulation and CV4 technique) and physiotherapy (e.g. combinations of parafango, massage, ultrasound, relaxation techniques and cryotherapy). The control interventions included acupuncture, deep friction massage plus mobilisation, palpation, rest and placebo (low-power laser light).

Participants included in the review
Studies of adults (aged 18 years or more) with TTH were eligible for inclusion. Studies including patients with TTH and migraine were only included if they reported results separately for patients with TTH. The studies were not required to adhere to a classification system to diagnose TTH, but the diagnosis had to be based on at least some of the distinctive features of the condition.

Outcomes assessed in the review
The studies had to report at least one patient-rated outcome measure. The included studies used a variety of outcome measures, the most common of which were headache frequency, intensity and severity, headache index, use of medicines and electromyographic activity (EMG). The review assessed both short-term outcomes (6 to 8 weeks post-treatment) and long-term outcomes (outcomes reported closest to 16 weeks), as well as side-effects.

How were decisions on the relevance of primary studies made?
Two reviewers independently selected studies from full papers. Any disagreements on inclusions were resolved through discussion or through recourse to a third author, where necessary. The reviewers were not blinded to the authors, journal or institution.
Assessment of study quality
Validity was assessed and scored using the Delphi-list with the addition of one item assessing withdrawal rate. The Delphi-list evaluated treatment allocation, blinding procedures, data presentation and analysis, eligibility of the study population, and the baseline comparability of treatment groups for prognosis. One point was awarded for each of these items met, giving a maximum possible score of 10 points. Two reviewers independently assessed validity. Any disagreements were resolved through discussion or through recourse to a third author, where necessary. Inter-rater agreement was assessed using the kappa (k) score.

Data extraction
One reviewer extracted the data, which were then checked by a second reviewer. Where possible, dichotomous data were expressed as relative risks with 95% confidence intervals (CIs) and continuous data expressed as weighted mean differences with 95% CIs. Quality scores were calculated as a percentage of the maximum possible score.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative that took the ‘best-evidence synthesis’, as described by Smidt et al. (see Other Publications of Related Interest), into account.

How were differences between studies investigated?
Differences between the studies were discussed in the body of the text. The results were reported separately according to trial quality.

Results of the review
Eight RCTs (n=466) published in 12 reports were included.

Inter-rater agreement for the quality assessment was high (k=0.85). The studies were generally of a poor quality (median quality score 4, range: 1 to 8); 2 studies were classified as high quality.

High-quality studies.
The 2 high-quality studies compared chiropractic spinal manipulation with other treatments. One RCT found chiropractic spinal manipulation and amitriptyline both improved TTH at 6 weeks but found no statistically or clinically significant differences between treatments. The authors of the primary study reported that spinal manipulation significantly improved all four major outcomes 4 weeks post-treatment; however, there were insufficient data presented for the reviewers to verify this. The other RCT found no statistically significant difference between spinal manipulation and placebo laser therapy in headache hours.

Low-quality studies.
Two of 3 studies comparing physiotherapy with acupuncture found that physiotherapy reduced headache intensity and frequency compared with control, although these differences were not statistically significant. The third study reported that physiotherapy and acupuncture resulted in similar reductions in pain and surface EMG activity. Other studies found no significant difference between the CV4 technique and either rest or no treatment (1 study); that palpatory examination plus manipulation was significantly more beneficial than either intervention alone (1 study); and no significant difference between manipulation and physiotherapy (1 study).

Side-effects.
Two studies reported side-effects. In one study, approximately 4% of patients receiving spinal manipulation reported short-term neck soreness and stiffness after the first treatment, and more than 50% of patients reported drowsiness, dry mouth or weight gain with amitriptyline. The other study reported a slight vasovagal reaction in a few patients with the first treatment of acupuncture.
Authors' conclusions
There is insufficient evidence to assess the effectiveness of physiotherapy and (spinal) manipulation in patients with TTH.

CRD commentary
The review addressed a clear question in terms of the participants, intervention and study design. Inclusion criteria for the outcomes were broadly defined but appropriate. Three relevant databases were searched, but the exclusion of unpublished studies raised the possibility of publication bias and this was not assessed by the reviewers. The inclusion of studies reported in any language minimised the possibility of language bias. Two reviewers independently selected studies and assessed validity, thus reducing the potential for bias and errors. Methods were also used to minimise bias in the data extraction process. Validity was assessed using specified established criteria, and the authors discussed the impact of methodological quality on the results of the review. Given the differences between the studies, a narrative synthesis with the focus on higher quality studies was appropriate. The authors' conclusions correctly reflect the limitations of the evidence.

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

Research: The authors stated that well-designed, adequately powered trials with long-term follow-up are required to assess the use of physiotherapy and (spinal) manipulation in patients with TTH. They stated that future studies should assess quality of life, functional health status, patient satisfaction and side-effects.

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Other publications of related interest

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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.