Systematic review and meta-analysis of the efficacy of tuina for cervical spondylosis
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CRD summary
The review evaluated the effectiveness and safety of tuina (Chinese manipulative therapy) for treating cervical spondylosis, and found that a definitive conclusion remains to be determined. The review had several limitations and this is reflected in the authors' non-committal conclusions.

Authors' objectives
To evaluate the efficacy of tuina (Chinese manipulative therapy) for treating cervical spondylosis.

Searching
MEDLINE, the Cochrane Library, EBM review, ProQuest Medical Bundle, Wangfane and SCOPUS were searched for papers published in English or Chinese between 1996 and 2007. Search terms were reported. Reference lists of included studies and reviews were also searched.

Study selection
Parallel group comparison studies, which used tuina as a stand-alone treatment, and which explicitly presented symptom relief data, were eligible for inclusion. Studies of young patients and studies with fewer than 10 participants in each group were excluded. The main outcomes of interest were systolic and diastolic blood flow velocity.

All included studies were carried out in outpatient settings, with participant ages ranging from 20 to 75 years. Durations of illness ranged from three months to 10 years. Most studies were of patients with the vertebral artery type of cervical spondylosis. Different types of diagnostic criteria were used. The number of tuina treatment sessions given ranged from 10 to 30. Neck traction, Chinese herbs, and tuina using a different technique were the commonest comparator treatments used.

The authors did not state how studies were screened as titles and abstracts, but two reviewers independently assessed identified studies for inclusion.

Assessment of study quality
Two reviewers independently assessed study quality by examining details about randomisation, participation rate, and description of withdrawals and/or drop-outs. Based on this assessment, studies were then rated as being good, fair, or poor. Studies had to have at least a rating of level II (well-designed cohort or case-control studies rated) and be of fair quality to be included in the review.

Data extraction
Post-treatment means (or other data, if means were not presented) were used to calculate standardised mean differences (SMD).

The authors did not state many reviewers performed the data extraction.

Methods of synthesis
Where there were at least three primary studies with suitable data, standardised mean differences were pooled in a meta-analysis using a random-effects model. Effect sizes of 0.2 to 0.5 were defined as being small, 0.51 to 0.8 as being medium, and 0.8 and above as being large. Heterogeneity was assessed by calculating the Q statistic.

Results of the review
Seven studies (1,046 participants) were included and all were reported as being of fair quality. Six studies were reported as being randomised, but no studies reported on participation rates or withdrawals/drop-outs.

Meta-analysis of vertebral artery blood flow velocity (systolic, diastolic, and average) showed a small effect size (SMD 0.25, 95% CI -0.02 to 0.51; seven studies), but there was statistically significant heterogeneity. For basilar artery blood
flow, the corresponding result was a standardised mean difference of -0.05 (95% CI -0.56 to 0.45; seven studies) also with significant heterogeneity. Average vertebral blood flow velocity showed an effect size of 0.25 (95% CI 0.04 to 0.46; three studies) without significant heterogeneity.

Conflicting results for improvement in vertigo were reported, and tuina was found to have no beneficial effect on headache (pooled results were not presented due to statistical heterogeneity).

**Authors' conclusions**
A definitive conclusion regarding the effects of tuina on cervical spondylosis remains to be determined.

**CRD commentary**
The review addressed a clear question, with appropriate inclusion criteria. Although many electronic databases were searched, the restriction to include only relatively recently published studies in English or Chinese meant some relevant studies may have been missed. The use of review methods to reduce the risk of reviewer error and bias (e.g. independent double data extraction) were inconsistently reported, so parts of the review may have been subject to errors and bias. A very basic assessment of study quality was undertaken, with some studies excluded for being of poor quality.

Results of the meta-analyses presented were unclear about the direction of effect, which made them difficult to interpret. The authors were also inconsistent in presenting pooled results when heterogeneity was seen (the headache data suggested possible benefit favouring comparator treatments), although likely reasons for heterogeneity were discussed.

The authors did acknowledge some of the several limitations of their review, which is reflected in their non-committal conclusions.

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

**Research:** The authors appeared to suggest that future randomised studies should include a sham-treated control group, and should select outcome measurements carefully.

**Funding**
Taiwanese Department of Health (DOH96-TD-M-113-020)

**Bibliographic details**

**PubMedID**
18808620

**DOI**
10.1111/j.1365-2702.2008.02446.x

**Original Paper URL**
http://onlinelibrary.wiley.com/journal/121411961/abstract

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Cervical Vertebrae /pathology; Complementary Therapies; Humans; Spinal Osteophytosis /therapy; Treatment Outcome

**AccessionNumber**
12009102331

Date bibliographic record published
22/04/2009

Date abstract record published
24/02/2010

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.