The Effectiveness of Acupuncture in Treating Low Back Pain

Low back pain affects 60 to 85% of the population at least once in their life. Of these, 10–20% develop chronic low back pain, which is defined as continuous pain for more than three months. In 1995, occupational low back pain remained a major problem in the U.S.: an estimated $8.8 billion was spent on low back pain claims, and the rate of filing low back pain claims was 1.8 per 100 workers. Nachemson stated that disability from back pain clearly is a significant problem in many countries, but his report indicates that it is greater in Canada, Great Britain, The Netherlands, and Sweden. In Canada, 2% of the work force is disabled because of low back pain, accounting for 20 days absent (per patient per year). Because of the magnitude of the disorder, a wide variety of treatments have been used in the management of low back pain.

Acupuncture is an ancient therapeutic modality with its basis in traditional Chinese medicine, using the concept of vital energy circulating throughout the body, along pathways which are called meridians. Acupuncture consists of the insertion of needles at specific skin points to restore normal body function. These points can also be stimulated using various other techniques. The mechanisms of acupuncture analgesia are partially explained by conventional physiological models. Needling creates electrical impulses that inhibit pain through connections between the spinal cord and midbrain. It also

The purpose of Linkages is to critically review the best available evidence in the literature in the area of soft-tissue injury and to disseminate these reviews to clinicians, labour, management, government, policy makers and the insurance industry. Articles reviewed in Linkages will be topical English-language articles in the area of soft-tissue injuries whose findings, we believe, will be useful and relevant to our stakeholders.
stimulates the release of endogenous opioids and neurotransmitters such as serotonin, by the central nerve system.\textsuperscript{5}

The NIH consensus group in 1997\textsuperscript{6} found weak evidence to support the use of acupuncture for low back pain and stated that a more definite recommendation should await the results of a Cochrane systematic review. This has now been published\textsuperscript{7} and is reviewed in this issue of Linkages. Another review\textsuperscript{8} was published around the same time, and although the authors included almost the same studies, they arrived at the opposite conclusion. There are two major differences between these two reviews, which led to our choice of van Tulder’s review for discussion. First, different methods of assessing methodological quality were used, resulting in Ernst & White assigning significantly higher ratings to most of the trials than van Tulder. Van Tulder used a scale which was more comprehensive and therefore identified more flaws in the trials. Second, the two groups used different methods to summarize the results. Ernst & White used a statistical approach (meta-analysis). Van Tulder refrained from statistical pooling, choosing instead to complete a qualitative analysis which take into account the levels of evidence. The latter approach is more appropriate, given the poor quality of studies included and the clinical heterogeneity of subjects. Both set of authors acknowledge that it is problematic to form a firm judgement based on the available evidence, and recommend further studies. In spite of this stated caution, Ernst & White quantitatively pooled the results from these trials and concluded in favour of acupuncture.

\textbf{ARTICLE REVIEWED}

Tulder MW van, Cherkin DC, Berman B, Lao L, Koes B. \textit{The effectiveness of}

**Objective** To assess the effects of acupuncture for the treatment of non-specific low back pain.

**Data Sources** They searched the Cochrane Trials Register, Medline, Embase, Science Citation Index and the reference lists of articles.

**Study Selection** Types of participants: subjects with non-specific low back pain were included, either acute or chronic. Types of intervention: only needling acupuncture either traditional (classic meridian points) or contemporary acupuncture (non-meridian or trigger points). Types of outcome measures: at least one of: pain intensity, a global measure, functional status or return to work. Types of studies: only randomized controlled trials (RCTs).

Methodological quality of the studies was independently assessed by two reviewers, blinded with respect to authors, institution and journal, using the criteria recommended in the method guidelines for systematic reviews by the Cochrane Back Review Group.

**Analysis** The authors decided not to pool the data statistically, instead they chose to perform a qualitative review by assessing the methodological quality and the outcome of the original studies and attributing levels of evidence to the effectiveness of acupuncture. They used the following categories: Strong evidence: consistent findings in multiple higher quality trials. Moderate evidence: consistent findings in one higher quality trial and one or more lower quality trial. Limited evidence: consistent findings in one or more lower quality trial. No evidence: if there were no trial or if the results were conflicting. A trial was considered to be of higher quality if more than 5 of the 10 validity items scored positively.

**Results** Eleven trials were included in this systematic review. Only two were of high quality. In eight of the eleven trials, the individual authors had concluded that acupuncture was better than the control group (including the two high quality trials). In the remaining three trials they had concluded that acupuncture was similar to the control group.

However, van Tulder and his reviewers disagree with the original authors’ conclusions in seven of the eleven studies. According to van Tulder, there was no difference between acupuncture and control in seven trials; acupuncture was superior in only two trials (one high and one low quality); and the results were unclear in the remaining two trials.

In these 11 trials, acupuncture was compared to three major control groups: no treatment, other treatments and placebo (or sham) acupuncture. Van Tulder and his reviewers were not able to draw conclusions about the effectiveness of acupuncture over no treatment because the trials provided conflicting evidence and were of low methodological quality. They found moderate evidence that acupuncture is not more effective than trigger point injection or Transcutaneous Electrical Nerve Stimulation (TENS). And finally, they found limited evidence that acupuncture is not more effective than placebo (or sham) acupuncture for the management of chronic low back pain.

**Conclusions** Because this systematic review could not clearly conclude that acupuncture is effective in the management of back pain, van Tulder and his reviewers would not recommend acupuncture as a regular treatment for patients with low back pain. There clearly is a need for more high-quality randomized controlled trials.

**WHAT DOES THIS MEAN?**
The effectiveness of acupuncture for the treatment of low back pain is still under question. There is no clear rigorous evidence to support its use as a regular treatment for low back pain, although practitioners and patients may elect a short course to assess individual response.

**QUESTIONS ABOUT LINKAGES?**
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Van Tulder’s review was conducted according to high methodological standards. Despite a thorough literature search, the majority of individual trials found and included in this review were judged to be of low quality. In addition to the methodological problems, it was noted that some trials did not use a valid acupuncture treatment and that patients were heterogeneous across trials. For all these reasons Van Tulder concluded, and we concur with him, that statistical pooling across trials could be misleading, and that subgroup analyses such as: acute versus chronic pain or presence versus absence of radiating pain were inappropriate. On the basis of the evidence gathered, van Tulder et al. concluded that the effectiveness of acupuncture for low back pain remains unclear, and therefore they did not recommend it as a regular treatment for this condition. We agree with this statement, and concur that additional RCTs (using high-quality methods and ensuring that a valid acupuncture treatment is used) are needed in order to make an evidence-based judgement on the effectiveness of acupuncture for low back pain.

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When a review of a treatment, such as acupuncture, yields insufficient evidence, we must ask how the results can translate into clinical practice beyond the authors’ statement that they would not recommend acupuncture as a regular treatment for patients with low back pain because the results did not clearly indicate that acupuncture is effective. Considering safety, cost and basic science can provide more information. Acupuncture is generally safe, therefore some may wish to try it although benefit for low back pain is not proven. Furthermore, documentation of a possible cumulative effect of acupuncture for pain relief, raises a question regarding whether a minimum number of treatments are necessary to detect benefit. The most extensive work on this topic suggests somewhere around six to ten treatments. What then can I, as a practitioner, say to patients interested in acupuncture for low back pain? “It is safe, although not proven to be effective. If you decide to try it, you are likely to know within 6–10 sessions if it is helpful.”

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Analysing any treatment for “low back pain,” the definition of which is problematic, is not easy, but it is important to critically appraise acupuncture, a low risk treatment with significant benefit. However, the decision to critique the qualitative systematic review of the effectiveness of acupuncture for low back pain by van Tulder et al., rather than the quantitative review by Ernst et al., is puzzling. While both reviewed virtually the same RCTs, Ernst’s more rigorous analysis showed that the odds ratio of improvement with acupuncture compared with control interventions was 2.3. For sham-controlled, evaluator-blinded studies, the odds ratio was 1.37. From an experienced clinician’s perspective, van Tulder’s review offers no valid information that would discourage the use of acupuncture for low back pain. Prospective RCTs, using consistent and appropriate methodology and experienced practitioners are clearly needed.

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Feedback on infocus

Future issues of infocus... will provide insight into contemporary issues of workplace safety and health as they relate to our audience. Along with healthcare providers, we will focus on researchers and policy makers, as well as employers, employees and other workplace parties.

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Sources
10. See Note 6.
16. See Note 8.
17. Ibid.