**Effectiveness of acupuncture in the treatment of shoulder pain: A systematic review of published randomised clinical trials**

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Shoulder pain is a leading musculoskeletal pain complaint, and is responsible for high morbidity with marked impact on quality of life. Acupuncture is a modality commonly employed in the treatment of shoulder conditions; however, past systematic reviews investigating its effectiveness have been inconclusive, noting a paucity of good quality research. A new body of research has since been published, and is included within this review. The objective of this systematic review was therefore to investigate the current evidence base for the effectiveness of acupuncture in the treatment of shoulder pain.

Four electronic databases (CINAHL Plus, MEDLINE, Cochrane and Physiotherapy Evidence Database (PEDro)) were searched, from inception to November 2013. Hand search of reference lists and grey literature was completed. Search terms included acupuncture, electroacupuncture, dry needling, shoulder pain, subacromial, frozen shoulder, rotator cuff, randomised controlled trial, controlled clinical trial, and placebo. Included studies were published English language randomised controlled trials of insertional acupuncture treatment for persistent shoulder pain in adults. Predefined data extraction criteria were used. Quality review was completed independently by two authors. Narrative analysis was conducted.

Twenty randomised controlled trials were included with a total of 1951 participants. There was variability in methodological rigour, with thirteen studies having high methodological quality, but only four having low risk of bias. Acupuncture is more effective in the short-term for patients with all shoulder pain conditions than a waiting list control group, mock or placebo treatment. Acupuncture was more effective in the short-term (high quality study) and medium-term (low quality study) than physiotherapy and exercise for frozen shoulder. Acupuncture combined with physiotherapy or exercise was found in two studies (one high quality, one low quality) to be more effective for frozen shoulder than physiotherapy or exercise alone in the short and medium term. Two low quality studies found that conventional acupuncture was less effective for frozen shoulder in the short-term than acupuncture with additional stimulation.  It was equally as effective for rotator cuff dysfunction as ultrasound and corticosteroid injection in two separate high quality studies. For non-specific shoulder pain a low quality study found acupuncture equally as effective as manual therapy, and a high quality study found it more effective than physiotherapy in the medium term. Adverse effects are temporary and mild.

This systematic review suggests that acupuncture can be a safe and effective treatment for shoulder pain, when used alongside other management strategies as part of a multi-modal treatment package. The benefits and costs of using acupuncture as a stand-alone treatment for shoulder pain as compared to a different active treatment cannot be justified based on these results. Unfortunately the impact of individual study results is lessened by deficiencies in methodological quality, threatening the robustness of evidence in this area.

The decision to use acupuncture as a treatment for shoulder pain should include consideration of patient choice, the other treatment methods employed, and the costs and resources involved in using acupuncture. Therapists, commissioners of musculoskeletal healthcare services, and patients, all have great interest in successful treatment options for shoulder pain, given its prevalence and impact on morbidity.  This review has demonstrated the need for improved heterogeneity in future research on the use of acupuncture for shoulder pain, in particular regarding the use of standardised outcome measures of both pain and function; and the need for improvements in methodological quality of trials, especially in relation to comparator interventions and the credibility of blinding.