

# Acupuncture in the Treatment of Non-Specific Low Back Pain in an Adult Population: A Review of the Evidence

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## Abstract

Low back pain is one of the most common reasons adults seek medical treatment. Approximately 70-85% of adults will suffer with low back pain at some time in their life. The socioeconomic impact due to lost work days and productivity, along with the strong psychosocial impact make low back pain a particularly important condition to treat. Unfortunately, conventional methods are not always successful at treating low back pain, leaving patients frustrated and suffering.

Acupuncture, as an alternative treatment, is an option. With its roots in eastern medicine, acupuncture is a treatment designed to allow healing through the redistribution of energy. Acupuncture has been studied in the literature, but until recently findings were inconclusive, often times causing clinicians to use it as a last resort. Recent studies, however, are finding acupuncture to be an efficacious treatment option, particularly when combined with conventional methods.

## INTRODUCTION AND CLINICAL OVERVIEW

Low back pain (LBP) is a common problem among adults. Approximately 70-85% of the adult population experiences this painful complaint at some point in their lives, making LBP the second most common reason for a visit to a clinician<sup>1,2,3</sup>. Despite the frequency of this diagnosis, conventional treatment does not always provide patients the desired results of reduced pain and return of normal function. For these patients, alternative modalities are available to assist in the control of pain. These options include chiropractic care, physical therapy, massage therapy, and modalities that fall under the auspices of complimentary and alternative medicine (CAM), such as acupuncture. Unfortunately, evidence for efficacy of these treatments is equivocal at best. This article will examine the existing evidence, past and current, regarding the use of acupuncture in the treatment of non-specific low back pain in an effort to aid clinicians in selecting best practice for patient care.

As a major cause of disability among working adults, LBP is responsible for approximately 149 million lost work days<sup>4</sup>. Effective treatment, therefore, is important not only from a quality of life perspective for the patient, but from a societal perspective as well. In order to effectively treat LBP, the clinician must understand the etiology of the complaint since treatment modalities vary based upon the presence or absence of precipitating injuries or functional impairment.

The pain is generally classified as acute or chronic, and specific or non-specific low back pain. Acute LBP is pain that has been present for three months or less, while chronic LBP is pain that has been present for greater than three months<sup>2</sup>. Specific low back pain is attributed to a structural problem, such as a herniated nucleus pulposi, fracture, arthritis, tumor, or infection. Patients with complaints of specific LBP typically present with signs suggestive of the underlying structural issue. These signs might include axial pain, radiculopathy, or an abnormal neurologic exam. Non-specific LBP is associated with vague and diffuse complaints of pain, and neurologic examinations are generally normal<sup>5</sup>. Non-specific LBP is generally intermittent and recurrent, with approximately 90% of the cases classified as nonspecific in nature<sup>2,5</sup>. This diagnosis is often one of exclusion. Since treatment recommendations vary based upon the diagnosis, these are important distinctions<sup>5</sup>.

Low back pain is generally a self-limiting condition, but has the potential to significantly impact the quality of life in a patient, and therefore reduction of pain and return of normal function are the goals of care<sup>6</sup>. Initially, treatment may consist of medications, such as nonsteroidal anti-inflammatory agents (NSAIDS), mild analgesics, and muscle relaxers, as a means to reduce pain<sup>3</sup>. Additional recommendations include avoidance of bed rest and maintenance of activity levels as tolerated. But when

conventional treatments do not produce the desired results of reduced pain and return of function, alternative modalities such as acupuncture may be helpful. Historically, however, traditional randomized control trials have provided inconsistent evidence in support of this type of therapy. Only recently has acupuncture gained support in the literature.

## **ACUPUNCTURE AND RESEARCH**

Acupuncture is based upon the concepts of traditional Chinese medicine (TCM) which view disease as an imbalance of energy <sup>6</sup>. According to this philosophy, acupuncture is the attempt to move energy within the body in an effort to restore balance. Needles are inserted at specific points along meridians, also referred to as channels, which then allows energy to be redirected. Once the balance has been restored, healing can take place, and the overall outcome is restoration of health <sup>7</sup>. Many variations to traditional acupuncture exist, and the specific technique is dependent upon the practitioner. Nontraditional acupuncture may include additional needling points which are not associated with meridians, along with the use of needle stimulation. This stimulation may occur in the form of electric stimulation, injection of herbs, or burning an herb at the end of the needle, known as moxibustion <sup>6</sup>. Dry-needling is another variation which uses needles to treat myofascial pain, such as occurs in the case of non-specific low back pain. With dry-needling, needles are inserted into trigger points and removed once the trigger point is inactivated <sup>6</sup>. The needles used are not specific to acupuncture, but can be any type of needle.

Many theories exist to explain the reason for the success of acupuncture, but assessing its effectiveness in a traditional western fashion with randomized control trials has proven difficult <sup>8</sup>. Early studies demonstrated a lack of standardization in clinical trials, which hindered reproducibility and generalized comparisons <sup>9</sup>. In 2001, recommendations for standardization of interventions in acupuncture [STRICTA, STandards for Reporting Interventions in Controlled Trials of Acupuncture] were published in an attempt to improve the body of research supporting the use of acupuncture <sup>9</sup>. While these guidelines have been helpful, systematic reviews and meta-analyses still found reduced quality of evidence due to poor methodologies and operationalization of controls in many of the studies published. Since randomized control trials also require appropriate placebos for comparison, finding a suitable technique for use in an invasive treatment has

proven difficult <sup>6</sup>.

Sham acupuncture is a type of control used in most studies. Its purpose is to make the patient believe they are receiving a traditional treatment, and there are a variety of ways in which sham acupuncture can be performed. For example, sham acupuncture could consist of any of the following techniques: 1) using points other than traditional acupuncture points; 2) using points that are not related to the pathology being treated; 3) using a needle that will not actually puncture the skin [Streitberger needle]; or 4) using a blunt object that makes the patient believe a needle has been placed <sup>2</sup>. It is understandable, then, to see the difficulty in comparisons amongst trials if differing forms of sham acupuncture, or controls, are used.

## **HISTORICAL EVIDENCE**

Inconsistent findings regarding the effectiveness of acupuncture in controlling pain are noted throughout the literature. An early Cochrane Database Systematic Review by van Tulder, Cherkin, Berman, Lao and Koes was unable to conclude acupuncture was an effective treatment for low back pain <sup>10</sup>. A second study by Birch, Hesselink, Jonkman, Hekker and Bos agreed with these findings, stating that the evidence from clinical research indicated the use of acupuncture as an effective treatment was inconclusive and difficult to interpret <sup>11</sup>. But a meta-analysis by Manheimer, White, Berman, Forsys and Ernst concluded differently <sup>1</sup>. Using 22 randomized clinical trials, these authors found evidence to suggest acupuncture was an effective treatment for chronic low back pain. Little homogeneity was found amongst the studies, making generalized conclusions difficult to draw <sup>1</sup>. Furlan and colleagues also looked at acupuncture and dry-needling in the treatment of low back pain in a systematic analysis <sup>6</sup>. The results, after review of 35 randomized trials, found that acupuncture was seen as effective for pain relief and provided functional improvement for chronic LBP, but was not more effective than conventional methods <sup>6</sup>. The authors commented that overall methodology was of poor quality.

In addition to clinical efficacy, clinicians must consider cost of treatment. Eisenberg and colleagues found that offering a patient the choice between conventional methods plus acupuncture, chiropractic, or massage therapy did yield a significant cost difference <sup>3</sup>. While the patients receiving alternative therapies reported greater satisfaction with the care received, the net increase in cost was approximately

\$244 per patient, compared to those who received conventional treatment alone<sup>3</sup>. From a clinical standpoint, the availability of this modality may be limited based on financial benefits.

## RECENT EVIDENCE

Previous systematic reviews have left practitioners with conflicting evidence. More recent individual studies, however, are finding positive results when acupuncture is used as a treatment option, particularly with chronic non-specific pain. Thomas, MacPherson, Thorpe, Brazier, Fitter, Campbell, Roman, Walters and Nicholl looked at the effects of a short course of acupuncture on non-specific LBP<sup>12</sup>. In this trial, 241 patients were randomized to usual care or usual care plus traditional acupuncture treatment. Usual care consisted of physiotherapy, medications and exercise. The acupuncture consisted of ten individualized treatments. Outcomes measured were bodily pain, use of analgesics, scores on the Oswestry pain disability index, safety and patient satisfaction. Measurements were reported at 12 and 24 months post intervention. Actual study outcomes revealed evidence of a positive effect of acupuncture on low back pain at 12 months, with a greater effect at 24 months<sup>12</sup>. The study also reports patient perceptions were positive in the group treated with acupuncture.

Haake and colleagues found the effectiveness of acupuncture to be almost twice that of conventional treatment in the German Acupuncture Trials (GERAC)<sup>13</sup>. This randomized, multicenter, blinded study compared traditional acupuncture (verum), sham acupuncture, and conventional care in the treatment of chronic LBP. The study population consisted of adults with a history of chronic LBP. Excluded were those with previous history of acupuncture, fractures or tumors of the spine, bone disorders, or drug abuse. Verum acupuncture and sham acupuncture were appropriately differentiated with strong guidelines regarding chosen needling points. Findings showed a statistically significant difference between both forms of acupuncture and conventional therapy<sup>13</sup>. Interestingly, a significant difference was not found in pain control for those experiencing verum, or traditional acupuncture, as compared to sham acupuncture. The authors suggested this may be due to as yet unknown effects of any type of acupuncture, or that specific acupuncture techniques may actually carry a small specific effect overlaid by nonspecific effects. In any case, the results of this study clearly support acupuncture as an effective therapy as compared to conventional therapy.

Vas et al. conducted a multi-center study on the efficacy and safety of acupuncture in the treatment of non-specific acute LBP<sup>2</sup>. Patient recruitment for this study began in 2006, with follow up scheduled to end in 2008. In this double-blind study, participants were randomized to one of four groups comparing semi-standardized acupuncture, sham acupuncture, placebo acupuncture and conventional treatment in a 1:1:1:1 fashion<sup>2</sup>. Study participants consisted of working adults with a new episode of acute non-specific LBP. Exclusion criteria included the presence of neurologic symptoms, infection, congenital deformities, fractures, spondylolisthesis or spondylolysis. Acupuncture treatments were standardized to include basic points, specific points, and individualized points, with control for the sham acupuncture and the placebo maintained by using standardized points. The primary outcome measure was an improvement of 35% or more as reported in the Roland-Morris Questionnaire, a fully validated psychometric instrument used to measure disability associated with back pain<sup>14</sup>. Results were measured at weeks 3, 12, and 48; however this study will not end until 2008<sup>2</sup>. While the methodology in this study appears to be sound, findings will be limited to acute non-specific low back pain.

## CONCLUSION

Clearly, the evidence for the use of acupuncture in the treatment of non-specific low back pain is equivocal. Systematic reviews and meta-analyses cite poor methodology as a primary cause for inconclusive findings<sup>1,6</sup>. In looking closely at randomized clinical trials, often times a lack of distinction between acute and chronic pain exists. This lack is problematic, as these types of pain are two distinct processes with two distinct treatment plans. In order to address the question of efficacy more appropriately, acute and chronic LBP must be studied independently.

While acupuncture may not always demonstrate measurable efficacy, several studies support improved patient satisfaction when it is utilized in treatment of their painful complaints<sup>1,12,15</sup>. In addition, effect size is difficult to measure, as many studies do not compare treatment with absence of treatment<sup>16</sup>. Safety of acupuncture is also a concern, although in recent reports serious adverse events are rare occurrences and typically occur as a result of an unskilled practitioner<sup>11</sup>. Common adverse reactions consist of pain at the needling site, mild inflammatory reaction, bruising, localized bleeding, fainting, or light-headedness<sup>11</sup>.

A reasonable clinical posture, then, would be to consider the individual patient. The research demonstrates a higher success rate for chronic non-specific LBP, as opposed to acute. Since acute LBP has been shown to be a self-limiting condition, patients should expect improvement within a reasonable timeframe. If no improvement occurs, then use of acupuncture should be considered as it carries little risk and recent evidence supports its efficacy. Acupuncture will increase the cost of care, however, as few insurance programs cover this procedure. For many, however, the hope of pain relief is worth the possible risks and additional cost. When a referral is requested, clinicians should refer to reputable acupuncturists, and patients should be cautioned to seek treatment from known practitioners.

Acupuncture is a therapy whose use has provided many with relief from painful complaints. While westernized randomized clinical trials have not provided unequivocal evidence of its success, this does not rule out the efficacy of the treatment. Perhaps acupuncture is a therapy that simply is not amenable to the parameters that determine success in western medicine<sup>17</sup>. For a distinct patient population, acupuncture has proven to be efficacious. Use should remain a clinical decision based upon the individual patient.

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