

Article review: effectiveness of acupuncture for lower back pain



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Three Article title and source being reviewed:

1. Lee, J., Choi, T., Lee, S., Shin, C., Lee, H. Acupuncture for acute low back pain: a systematic review (2013) *Clinical Journal of Pain* . Feb; 29(2): 172-85. doi: 10. 1097/AJP. 0b013e31824909f9.
2. Hopton, A., Thomas, K., MacPherson, H. (2013) The Acceptability of Acupuncture for Low Back Pain: A Qualitative Study of Patient's Experiences Nested within a Randomised Controlled Trial. *PLoS ONE* 8(2): e56806. doi: 10. 1371/journal. pone. 0056806
3. Lam, M., Galvin, R., Curry, P. (2013) Effectiveness of Acupuncture for Nonspecific Chronic Low Back Pain. *A Systematic Review and Meta-analysis. Spine* Nov 15; 38 (24): 2124-38. doi: 10. 1097/01. brs. 0000435025. 65564. b7.

Level of evidence:

1. Level I, high, this review summarised the outcome of the healthcare studies, which are carefully designed and provides a higher level of evidence on the effectiveness of these healthcare treatments (Pham, B et al, 2005).
2. Level II, Randomised control trials, which include a randomized group of patients are split into both an experimental and a control group. The outcomes are then analysed and acted upon. (Moher et al, 1995).
3. Level I, high, systematic review, where the authors have analysed, and summarised the article. A meta-analysis is a systematic review, showing quantitative data about the said review (Pham, B et al, 2005).

Introduction:

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Low back pain, which is called lumbago often refers to spinal symptoms located at the lumbosacral region (Lee, et al, 2013). Low back pain can be classified as acute if the symptoms appeared less than four weeks, or even less than three months, if grouped with subacute lower back pain (Atlas, D., 2011). If lower back pain persists over twelve weeks, the condition would then be classified chronic (Chou, Huffman, 2007).

Lower back pain is a very common disorder that affects the musculoskeletal system among adults (Lam, M., Galvin, R., 2013). According to statistics, low back pain affects every one in four individuals, thus seeking medical treatments within six months (Kennedy, 2008). It is estimated that 16 % of Australian suffers from back-related problems by Australian Nation Health Survey (NHS), published in year 2005 ([https://www. abs. gov. au/ausstats/abs@. nsf/mf/4823. 0. 55. 001](https://www.abs.gov.au/ausstats/abs@.nsf/mf/4823.0.55.001)).

Low back pain is one the most common reason beside other orthopaedic problems for visiting a doctor. (Brian et al, 2010). Approximately 90% of all acute episodes would be resolved within six weeks (Furlan et al, 2005). However, over a quarter of patients do experience recurrent pain in the following year, which up to 7 % can develop into chronic lower back pain (Brian et al, 2010). The aetiology of the back pain has not been fully understood, however it is increasingly recognised to be complex and multi-factorial (Vickers et al, 2012), (Manheimer et al, 2005).

For around 85% cases, when the underlying reason for back pain is unknown, this condition is referred to as ‘ non-specific’ or ‘ idiopathic’ chronic low back pain (Deyo, 2001). It should be noted that any disorders in the spine,

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including fractures, disk herniation and spinal stenosis can develop low back pain, and such could be account for 10-15% of the cases (Chou, 2007).

Inflammatory disorders and cancer could also contribute, but can only be accounted for less 1% of cases (Croft et al, 1998).

Low back pain could contribute to substantial morbidity if not treated properly as some use of medications only offer effective short term relief with only small to moderate benefits. The study also discover fair evidence that systemic corticosteroids have been ineffective. However, the study also acknowledge that the study was too short term to be conclusive. (Chou, 2007). The functional limitation and disability can also generate a serious economic burden on the country as a whole. Statistics suggest that around 6. 8 millions of adults in the United States of America experienced back pain-associated physical disability in 1999 (Luo et al, 2004). Health care expenses are estimated to be more than \$90 billion every year, for treating patients with low back pain, and an additional \$50 billion including indirect costs related to losing in productivity and disability welfare benefits (Cherkin et al, 2003).

Research question: Effectiveness of acupuncture treatment in low back pain.

What needs to be known?

1) In the systematic review conducted by Lee et al, (2013), the goal was to critically evaluate the evidence for and against acupuncture, in treating acute low back pain. This review included a total of eleven randomized controlled trials (n= 1139). Acupuncture treatment demonstrated better improvement in acute back pain symptoms, compared to non-steroidal anti-
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inflammatory drugs, a common treatment pain relieve. In the same study, it show that acupuncture was more effective in relieving pain, compared to sham acupuncture.

2) This qualitative study combined with randomised control trials conducted by Hopton et al, (2013) was to learn the level of acceptability for acupuncture among the patient cohort. Indeed, although acupuncture is recommended by the National Institute for Health and Clinical Excellence guidelines as an effective treatment for chronic back pain (Craig, et al, 2008), it was not sufficiently known any contributing factors of the patients' experiences and why they would accept acupuncture treatments. Thus the main objective of this review was to fill up these gaps, with semi-structured interviews. Twelve patients were being interviewed as a sub-study in combination with a randomised controlled trial using acupuncture treatment. As a result of the analysis, three over-arching topics were revealed. Firstly, facilitators of acceptability was subdivided into five subtopics, (1) pain relief experience, (2) physical activity improvement, (3) psychological benefit, (4) relaxation and (5) reduced medication usage. The second over-arching topic identified barriers towards accepting acupuncture as a treatment option, including discomfort related to needle-sue and temporary pain-relieve. The last third topic defines why patients'acceptability of acupuncture, which is subdivided into pre-treatment defined as their previous experience expectation from acupuncture, followed by treatment-related factors, including working with other different therapists or doctors, positive lifestyle advice and finally patients involving in positive activities during their rehabilitation process. The above three factors would assist in addressing

the perception of patients on using acupuncture for lower back pain treatment.

3) A meta-analysis and systematic review conducted by Lam et al (2013) seek to evaluate the effectiveness of acupuncture in patients with non-specific chronic low back pain. Thirty-two studies were conducted where only twenty-five studies gave relevant data from the meta-analysis. Results from the acupuncture treatment significantly reduced pain levels and improved function among the intervened patient cohort, compared to sham treatment and non-treated cohorts.

Gap in knowledge:

1. The systematic review by Lee et al. (2013) suggest that data may be not relevant. However, the included studies are inconsistent in the treatment approach used, thus the drawn conclusion may require further support. The review included six acupuncture studies, four of which used a treatment rationale based on Traditional Chinese Medicine, while another two were based on the Western medical acupuncture. A clear difference between traditional Chinese and Western acupuncture methods was discussed by He et al. (2015). The Eastern acupuncture is philosophy based-relying on two concepts fundamental to Chinese medicine, such as yin and yang. The concept is based on vital Qi energy, which is believed to circulate through channels connected to organs and how they would function (Yuan, 2008). However, the Western model uses physiology, anatomy and current medical models (Van Tulder et al, 1999), (Vas et al, 2006).

2. Hopton et al. (2013) conducted a randomised control trial study involving twelve interviewed participants. Choosing an appropriate sample size is particularly important for any clinical study. It should be noted that a different statistical outcome can be derived from studies from a small sample size compared to a larger sample pool, thus affecting clinical decisions made on the basis of the data (Faber, 2014). An ideal sample size should be large enough to control individual participant differences to have sufficient confidence on statistical outcome.

3. Lam et al.(2013) perform a systemic and meta-analysis review on the effectiveness of acupuncture on non specific chronic low back pain) , which they conclude that acupuncture has significantly reduced pain and reported improved functionality. However, due to differences in the treatment types delivered to lower back pain patients, the conclusion may require further assessment. For example, four studies involved electric-stimulation acupuncture, one used electro auricular acupuncture, while auricular acupuncture was used in another study. Sator-Katzenschlager et al.(2003) showed that electro auricular acupuncture is more effective for reducing the neck pain compared to manual auricular acupuncture (Tsukayama, 2002). Another data discrepancy is the duration of intervention differs among the studies analysed, ranging from one day to twelve weeks. However, an increased number of sessions appear to associate with better treatments results (Langevin, 2011), (MacPherson et al. (2013). This substantial heterogeneity in the study characteristics makes it difficult to reach any strong conclusions.

Conclusion and recommendations:

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To summarise all the above studies, it appeared that acupuncture is an effective and safe method for patients suffering from both acute and chronic low back pain, for pain relief and functional improvement. However, the three articles discussed appeared to use data from studies with substantial differences in the control groups, methodologies, types of acupuncture used, duration of treatment and outcome measures. This heterogeneity present makes it challenging for direct comparison thus impede the reach of a strong conclusion. Future studies should focus on the standardize the outcome measures, as well as the duration of the treatment used in research trials. Furthermore, it is important for further future research to examine the outcome of including acupuncture as an adjuvant to routine treatments to determine the potential benefits (Sherman et al, 2004). Moreover, the examination of the specific techniques such as needle placement, needle insertion depth and stimulation should be considered. The long term benefit of acupuncture as a sole or adjuvant treatment for lower back pain is yet to be determine.

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