

ACUPUNCTURE – THE EVIDENCE

SUMMARY OF THE CURRENT EVIDENCE ON ACUPUNCTURE FOR MUSCULOSKELETAL CONDITIONS

Summary

In this Summary we present an overview that includes the most recent evidence on acupuncture for musculo-skeletal conditions gathered from clinical trials, systematic reviews and meta-analyses of randomised controlled trials. We first present evidence that acupuncture is more than a placebo. Second we present evidence that acupuncture is cost-effective. Third we report on the recent NICE review that recommends acupuncture for low back pain. Fourth we set out a case study of a trial of acupuncture for low back pain that was conducted in York, in part at the York Clinic, in collaboration with 39 York-based GPs. And finally we present the current evidence on treatment effects in patients with chronic musculoskeletal conditions, taking the common conditions one by one. The overall conclusion from this evidence summary is that acupuncture is an appropriate treatment option to be included for consideration by patients with musculo-skeletal conditions.

The evidence that acupuncture is more effective than a placebo

Seven systematic reviews with statistical analyses of pooled data were identified with relevant evidence. When comparing acupuncture vs. sham acupuncture for reduction in pain in the short-term, the pooled analyses found acupuncture to be significantly superior to sham comparators in back pain(1;2), knee pain (3-5) and neck pain(6). For longer term outcomes at 6-12 months, acupuncture was significantly more effective than sham comparators for knee pain(4;5), but inconclusive for back pain.(1;2)

The evidence that acupuncture is cost-effective

Only a few studies have evaluated the cost-effectiveness of acupuncture for musculo-skeletal conditions. Three of these studies have been conducted in Germany, where they provided results in terms of costs per QALY gained, where a QALY is a “quality of life year”. The results from these German trials showed that acupuncture for chronic low back pain was associated with a cost per QALY gained of 10,000 Euros(7), for chronic neck pain, 12,000 Euros(8), and for osteoarthritis of the knee, 18,000 Euros.(9) More relevant is the one cost-effectiveness analysis of musculoskeletal conditions in the UK, namely a trial of acupuncture for low back pain which was conducted in York(10), which found the cost per QALY gained was only £4,000.(11) This level is well below the threshold set by NICE, which recommends treatments when the cost per QALY gained is less than £20,000.

The evidence from current NICE guidance on acupuncture for persistent low back pain.

The current NICE Guideline (<http://guidance.nice.org.uk/CG88>) on early management of persistent non-specific low back pain was released on 13th May 2009.(12) This guideline recommended as a key priorities to provide people with advice and information to

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promote self-management of their low back pain. NICE also recommended the offer one of the following treatment options, taking into account patient preference: an exercise programme, a course of manual therapy or a course of acupuncture. The NICE guideline also recommended the offer of another of these options if the chosen treatment does not result in satisfactory improvement. NICE guideline recommended that acupuncture be offered in the form of a course comprising up to a maximum of 10 sessions over a period of up to 12 weeks. According to NHS Evidence, “As indicated by NICE, it is now time to start routine use of acupuncture for back pain in the NHS accompanied by further evaluative research to guide maximising benefits for patients and cost utility for the tax payer.” (<http://www.library.nhs.uk/CAM/ViewResource.aspx?resID=328888>)

The evidence from a case study: the York Acupuncture for Low Back Pain Trial.

In a trial funded by the Health technology Assessment Programme, we conducted a pragmatic trial of acupuncture for chronic low back pain in York. We recruited 39 GPs in the York area, who referred 241 patients into the trial between 1999 and 2001. We randomised 160 patients into the acupuncture group (who also continued to receive usual GP care) and 81 into the group receiving usual GP care alone. We provided up to 10 sessions of acupuncture over a 12-week period. We monitored Differences in pain scores between groups at 3, 12 and 24 months after randomisation. Our primary outcome was the SF-36 Bodily Pain scale that ranged from 0 (severe pain) to 100 (no pain). The results, that were published in the British Medical Journal(10), showed a small yet clinically significant reduction of pain of 5.6 points in the acupuncture group at 12 months. By 24 months this difference was statistically significant, having grown to 8.0 points. In parallel we evaluated the cost effectiveness, and as discussed above found the cost per QALY gained at £4,000(11), well below the NICE threshold of £20,000. This trial was central to the decision by NICE to recommend acupuncture for persistent low back pain.(13)

Condition-by-condition evidence

In this section we list the key evidence sources for considering treatment on a condition-by-condition basis. While a detailed description of the evidence for each condition is beyond the scope of this Summary, the sources of evidence that can be used to inform decision-making by patients are listed below.

Arm pain

- Goldman RH, Stason WB, Park SK, et al. Acupuncture for treatment of persistent arm pain due to repetitive use: a randomized controlled clinical trial. *The Clinical Journal of Pain*. 2008;24(3):211–218.

Carpal tunnel syndrome

- Banner R, Hudson EW. Case report: acupuncture for carpal tunnel syndrome. *Can Fam Physician*. 2001;47:547-549.

ACUPUNCTURE – THE EVIDENCE

- Muller M, Tsui D, Schnurr R, et al. Effectiveness of hand therapy interventions in primary management of carpal tunnel syndrome: a systematic review. *Journal of Hand Therapy*. 2004;17(2):210–228.
- Napadow V, Liu J, Li M, Kettner N, Ryan A, Kwong KK, et al. Somatosensory cortical plasticity in carpal tunnel syndrome treated by acupuncture. *Hum Brain Mapp* 2007 Mar;28(3):159-71.
- Yang CP, Hsieh CL, Wang NH, Li TC, Hwang KL, Yu SC, Chang MH. Acupuncture in patients with carpal tunnel syndrome: A randomized controlled trial. Department of Neurology, Kuang Tien General Hospital, Taiwan. *Clin J Pain*. 2009 May;25(4):327-33.

Elbow pain

- Bisset L, Paungmali A, Vicenzino B, et al. A systematic review and meta-analysis of clinical trials on physical interventions for lateral epicondylalgia. *British Journal of Sports Medicine*. 2005;39(7):411–422.
- Green S, Buchbinder R, Barnsley L, et al. Acupuncture for lateral elbow pain. *Cochrane Database of Systematic Reviews*. 2002;(1):CD003527.
- Trinh KV, Phillips SD, Ho E, et al. Acupuncture for the alleviation of lateral epicondyle pain: a systematic review. *Rheumatology (Oxford)*. 2004;43(9):1085–1090.
- Trudel D, Duley J, Zastrow I, et al. Rehabilitation for patients with lateral epicondylitis: a systematic review. *Journal of Hand Therapy: Official Journal of the American Society of Hand Therapists*. 2004;17(2):243–266.

Fibromyalgia

- Agency for Healthcare Research and Quality. *Technology Assessment: Acupuncture for Fibromyalgia*. Rockville, MD: Agency for Healthcare Research and Quality; 2003.
- Assefi NP, Sherman KJ, Jacobsen C, et al. A randomized clinical trial of acupuncture compared with sham acupuncture in fibromyalgia. *Annals of Internal Medicine*. 2005;143(1):10–21.
- Harris RE, Gracely RH, McLean SA, et al. Comparison of clinical and evoked pain measures in fibromyalgia. *The Journal of Pain: Official Journal of the American Pain Society*. 2006;7(7):521–527.
- Harris RE, Tian X, Williams DA, et al. Treatment of fibromyalgia with formula acupuncture: investigation of needle placement, needle stimulation, and treatment frequency. *Journal of Alternative and Complementary Medicine*. 2005;11(4):663–671.
- Mayhew E, Ernst E. Acupuncture for fibromyalgia—a systematic review of randomized clinical trials. *Rheumatology (Oxford)*. 2007;46(5):801–804.
- Targino RA, Imamura M, Kaziyama HH, Souza LP, Hsing WT, Furlan AD, Imamura ST, Azevedo Neto RS. A randomized controlled trial of acupuncture added to usual treatment for fibromyalgia. *J Rehabil Med*. 2008;40(7):582-8.

ACUPUNCTURE – THE EVIDENCE

Low back pain

- Chou R, Qaseem A, Snow V, et al. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. *Annals of Internal Medicine*. 2007;147(7):478–491.
- Ee CC, Manheimer E, Pirotta MV, et al. Acupuncture for pelvic and back pain in pregnancy: a systematic review. *American Journal of Obstetrics and Gynecology*. 2008;198(3):254–259.
- Eisenberg DM, Post DE, Davis RB, et al. Addition of choice of complementary therapies to usual care for acute low back pain: a randomized controlled trial. *Spine*. 2007;32(2):151–158.
- Furlan AD, van Tulder M, Cherkin D, et al. Acupuncture and dry-needling for low back pain: an updated systematic review within the framework of the Cochrane collaboration. *Spine*. 2005;30(8):944–963.
- Manheimer E, White A, Berman B, et al. Meta-analysis: acupuncture for low back pain. *Annals of Internal Medicine*. 2005;142(8):651–663.
- NICE guideline. Low back pain. London, UK: National Institute for Health and Clinical Excellence; 2009 May 27.
- Ratcliffe J, Thomas KJ, MacPherson H, Brazier J. A randomised controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis. *BMJ* 2006 Sep 23;333(7569):626-8.
- Thomas KJ, MacPherson H, Thorpe L, Brazier J, Fitter M, Campbell MJ, et al. Randomised controlled trial of a short course of traditional acupuncture compared with usual care for persistent non-specific low back pain. *BMJ* 2006 Sep 23;333(7569):623-6.
- Witt CM, Jena S, Selim D, Brinkhaus B, Reinhold T, Wruck K, et al. Pragmatic randomized trial evaluating the clinical and economic effectiveness of acupuncture for chronic low back pain. *Am J Epidemiol* 2006 Sep 1;164(5):487-96.

Myofascial pain

- Acupuncture and sham acupuncture reduce muscle pain in myofascial pain patients. Goddard Greg ; Karibe Hiroyuki ; Mcneill Charles ; Villafuerte Ernesto ; *Journal of Orofacial pain* 2002, vol. 16, n°1, pp. 71-76
- Birch S, Jamison RN. Controlled trial of Japanese acupuncture for chronic myofascial neck pain: assessment of specific and nonspecific effects of treatment. *Clin J Pain*. Sep 1998;14(3):248-55.
- Cummings TM, White AR. Needling therapies in the management of myofascial trigger point pain: a systematic review. *Archives of Physical Medicine and Rehabilitation*. 2001;82(7):986–992.
- Ma C, Wu S, Li G, et al. Comparison of miniscalpel-needle release, acupuncture needling, and stretching exercise to trigger point in myofascial pain syndrome. *Clin J Pain*. Mar-Apr 2010;26(3):251-7.

Neck pain

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- Trinh KV, Graham N, Gross AR, et al. Cervical Overview Group. Acupuncture for neck disorders. *Cochrane Database of Systematic Reviews*. 2006;3:CD004870.
- Willich SN, Reinhold T, Selim D, Jena S, Brinkhaus B, Witt CM. Cost-effectiveness of acupuncture treatment in patients with chronic neck pain. *Pain* 2006 Jul 12;125:107-13.

Osteoarthritis of hip

- Kwon YD, Pittler MH, Ernst E. Acupuncture for peripheral joint osteoarthritis: a systematic review and meta-analysis. *Rheumatology (Oxford)* 2006 Nov;45(11):1331-7.
- Reinhold T, Witt CM, Jena S, Brinkhaus B, Willich SN. Quality of life and cost-effectiveness of acupuncture treatment in patients with osteoarthritis pain. *Eur J Health Econ* 2008;9:209-19.
- Witt CM, Jena S, Brinkhaus B, Liecker B, Wegscheider K, Willich SN. Acupuncture in patients with osteoarthritis of the knee or hip: a randomized, controlled trial with an additional nonrandomized arm. *Arthritis Rheum* 2006 Nov;54(11):3485-93..

Osteoarthritis of knee

- Agency for Healthcare Research and Quality. *Technology Assessment: Acupuncture for Osteoarthritis*. Rockville, MD: Agency for Healthcare Research and Quality; 2003.
- Berman BM, Lao L, Langenberg P, et al. Effectiveness of acupuncture as adjunctive therapy in osteoarthritis of the knee: a randomized, controlled trial. *Annals of Internal Medicine*. 2004;141(12):901–910.
- Bjordal JM, Johnson MI, Lopes-Martins RA, et al. Short-term efficacy of physical interventions in osteoarthritic knee pain. A systematic review and meta-analysis of randomised placebo-controlled trials. *BMC Musculoskeletal Disorders [online journal]*. 2007; 8:51. Accessed at <http://www.biomedcentral.com/1471-2474/8/51> on July 30, 2008.
- Foster NE, Thomas E, Barlas P, et al. Acupuncture as an adjunct to exercise based physiotherapy for osteoarthritis of the knee: randomised controlled trial. *BMJ [online journal]*. 2007;335(7617):436. Accessed at <http://www.bmj.com/cgi/content/full/335/7617/436> on July 30, 2008.
- Kwon YD, Pittler MH, Ernst E. Acupuncture for peripheral joint osteoarthritis: a systematic review and meta-analysis. *Rheumatology (Oxford)*. 2006;45(11):1331–1337.
- Manheimer E, Linde K, Lao L, et al. Meta-analysis: acupuncture for osteoarthritis of the knee. *Annals of Internal Medicine*. 2007;146(12):868–877.
- Scharf H-P, Mansmann U, Streitberger K, et al. Acupuncture and knee osteoarthritis: a three-armed randomized trial. *Annals of Internal Medicine*. 2006;145(1):12–20.

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- White A, Foster NE, Cummings M, et al. Acupuncture treatment for chronic knee pain: a systematic review. *Rheumatology (Oxford)*. 2007;46(3):384–390.

Shoulder pain

- Green S, Buchbinder R, Hetrick SE. Acupuncture for shoulder pain. *Cochrane Database of Systematic Reviews* 2005, Issue 2. Art. No.: CD005319. DOI: 10.1002/14651858.CD005319.
- Juan Antonio Guerra de Hoyos, Maria del Carmen Andr+ns Mart+;n, Elena B, Miguel VL, Teresa Molina L, Francisco A, V, et al. Randomised trial of long term effect of acupuncture for shoulder pain. *Pain* 112[3], 289-298. 1-12-2004.
- Julia K, Konrad S, Jurgen W, Albert G, Georg M, Eike M. Randomised clinical trial comparing the effects of acupuncture and a newly designed placebo needle in rotator cuff tendinitis. *Pain* 83[2], 235-241. 1-11-1999.

Temporomandibular joint dysfunction

- Bergström I, List T, Magnusson T. A follow-up study of subjective symptoms of temporomandibular disorders in patients who received acupuncture and/or interocclusal appliance therapy 18-20 years earlier. *Acta Odontol Scand*. 2008 Apr;66(2):88-92.
- Ernst E, White AR. Acupuncture as a treatment for temporomandibular joint dysfunction: a systematic review of randomized trials. *Archives of Otolaryngology—Head & Neck Surgery*. 1999;125(3):269–272.
- Rosted R. Practical recommendations for the use of acupuncture in the treatment of temporomandibular disorders based on the outcome of published controlled studies. *Oral Dis*. 2000;7:109-115.

Conclusions

Based on the results of high quality randomised controlled trials, systematic reviews and meta-analyses, there is a growing evidence base that acupuncture works for a range of common conditions. There is also a consistent trend towards statistically significant differences between acupuncture and sham acupuncture. The cost effectiveness data presented above shows that the cost per QALY gained from acupuncture is well below the NICE threshold for those conditions that have been evaluated, and therefore sufficiently cost-effective to be recommended as a referral pathway. Acupuncture has been recommended by NICE as a treatment option in primary care for persistent low back pain. Many York GP practices have been involved in referral of patients to the York Clinic for acupuncture trials, starting with the York Acupuncture for Back Pain trial 10 years ago.

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Reference List

- (1) Manheimer E, White A, Berman B, Forys K, Ernst E. Meta-analysis: acupuncture for low back pain. *Ann Intern Med* 2005;142(8):651-63.
- (2) Furlan AD, van Tulder MW, Cherkin D, Tsukayama H, Lao L, Koes B, et al. Acupuncture and dry-needling for low back pain: an updated systematic review within the framework of the Cochrane Collaboration. *Spine* 2005 Apr 15;30(8):944-63.
- (3) Kwon YD, Pittler MH, Ernst E. Acupuncture for peripheral joint osteoarthritis: a systematic review and meta-analysis. *Rheumatology (Oxford)* 2006 Nov;45(11):1331-7.
- (4) Manheimer E, Linde K, Lao L, Bouter LM, Berman BM. Meta-analysis: acupuncture for osteoarthritis of the knee. *Ann Intern Med* 2007 Jun 19;146(12):868-77.
- (5) White A, Foster NE, Cummings M, Barlas P. Acupuncture treatment for chronic knee pain: a systematic review. *Rheumatology (Oxford)* 2007 Mar;46(3):384-90.
- (6) Trinh K, Graham N, Gross A, Goldsmith CH, Wang E, Cameron ID, et al. Acupuncture for neck disorders. 2006. Issue 3. Art. No.: CD004870. DOI: 10.1002/14651858.CD004870.pub3. *Cochrane Database of Systematic Reviews*; 2006.
- (7) Witt CM, Jena S, Selim D, Brinkhaus B, Reinhold T, Wruck K, et al. Pragmatic randomized trial evaluating the clinical and economic effectiveness of acupuncture for chronic low back pain. *Am J Epidemiol* 2006 Sep 1;164(5):487-96.
- (8) Willich SN, Reinhold T, Selim D, Jena S, Brinkhaus B, Witt CM. Cost-effectiveness of acupuncture treatment in patients with chronic neck pain. *Pain* 2006 Jul 12;125:107-13.
- (9) Reinhold T, Witt CM, Jena S, Brinkhaus B, Willich SN. Quality of life and cost-effectiveness of acupuncture treatment in patients with osteoarthritis pain. *Eur J Health Econ* 2008;9:209-19.
- (10) Thomas KJ, MacPherson H, Thorpe L, Brazier J, Fitter M, Campbell MJ, et al. Randomised controlled trial of a short course of traditional acupuncture compared with usual care for persistent non-specific low back pain. *BMJ* 2006 Sep 23;333(7569):623-6.
- (11) Ratcliffe J, Thomas KJ, MacPherson H, Brazier J. A randomised controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis. *BMJ* 2006 Sep 23;333(7569):626-8.

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- (12) Low back pain: NICE guideline. London, UK: National Institute for Health and Clinical Excellence; 2009 May 27.
- (13) Low back pain: NICE guideline. London, UK: National Institute for Health and Clinical Excellence; 2009 May 27.