

Ernst E, Lee MS, Choi T-Y. Acupuncture: Does it alleviate pain and are there serious risks? A review of reviews. Pain 2011;152:755-764.

Design: Systematic review of systematic reviews

Methods and quality assessment:

- 57 systematic reviews of the effectiveness of any type of acupuncture for chronic pain were identified
- Literature searches were done in January 2010 in MEDLINE, EMBASE, AMED, CINAHL, the Cochrane Library, and 6 Korean and Chinese databases combining terms for acupuncture and pain with “systematic review” or “meta-analysis”
- No language restrictions were applied; the third author did the data extraction for Chinese literature
- A second search was done for occurrence of serious adverse events with acupuncture in October 2009
 - o EMBASE, MEDLINE, CINAHL, AMED, and Cochrane library were searched without language restrictions
 - o Departmental files and bibliographies were hand searched
 - o All case reports and case series relating to events that needed medical/surgical attention, or events that led to death, were included
 - o Reports of adverse effects due to injecting drugs into acupuncture points were excluded
- Predefined criteria from a 1991 article on systematic reviews were used to evaluate the quality of the systematic reviews
 - o Were the search methods reported?
 - o Was the search comprehensive?
 - o Were the inclusion criteria reported?
 - o Was selection bias avoided?
 - o Were the validity criteria reported
 - o Was validity assessed appropriately/
 - o Were the methods used to combine studies reported?
 - o Were the findings combined appropriately?
 - o Were the conclusions supported by the reported data?
 - o What was the overall scientific quality of the review?

Results:

- Of the 57 systematic reviews (SR) included in the study, only 4 were judged to be excellent
 - o One SR of 13 RCTs on any kind of pain concluded that there was a small analgesic effect of acupuncture that seems to lack clinical relevance
 - o One SR of 22 RCTs on migraine prophylaxis concluded no evidence for an effect of true over sham acupuncture
 - o One SR of 16 RCTs on peripheral joint osteoarthritis showed statistically significant benefit of acupuncture

- One SR of 11 RCTs of tension-type headaches concluded that acupuncture could be a valuable intervention
- 5 SRs reviewed acupuncture for low back pain and were of “good” quality
 - One concluded limited evidence to support acupuncture use
 - One concluded strong evidence that acupuncture can be a useful supplement to other forms of therapy
 - One concluded that the data allowed no firm conclusions
 - One concluded that acupuncture effectively relieves back pain
 - One concluded that acupuncture was superior to various control interventions, but with insufficient evidence that acupuncture was better than placebo
- 2 “good” SRs reviewed acupuncture for neck pain
 - One confirmed short-term effectiveness and efficacy
 - One concluded moderate evidence that acupuncture relieves pain better than some sham treatments
- 4 “good” SRs reviewed osteoarthritis
 - One concluded that sham-controlled trials show clinically irrelevant short-term benefits
 - One concluded that acupuncture was significantly superior to sham, one concluded that acupuncture was an option worthy of consideration, and one concluded that acupuncture may play a role in treatment
- 95 cases of serious adverse effects were found and grouped into 3 main categories: infection, trauma, and other adverse effects
- 38 cases of infection were found, which required and responded to antibiotic treatment
- 42 cases of organ trauma emerged; pneumothorax was the most common, and most recovered, but 4 resulted in death
- A wide variety of other adverse effects were reported; these included dermatitis, CSF fistula, and granuloma; most patients made a full recovery

Authors’ conclusions:

- There are many contradictions and doubts in the acupuncture literature
- There is no plausible reason why acupuncture should reduce pain in some conditions while failing to work in many others
- The majority of the high-quality SRs were positive for low back pain and osteoarthritis
- For migraine, rheumatoid arthritis, cancer pain, shoulder pain, and surgical pain, the reviews failed to show effectiveness
- For fibromyalgia, herpes zoster, frozen shoulder, lumbar intervertebral disc herniation, sciatica, and other conditions, definitive conclusions were prevented by the paucity or poor quality of the primary studies and reviews
- Acupuncture is likely to derive its effectiveness from nonspecific factors, such as patient expectation and provider communication style

- Serious complications occur, but are not intrinsic to acupuncture; most arise from malpractice of acupuncturists, and are not common with adequately trained therapists
- In order to minimize the risks of acupuncture, all acupuncturists should be trained adequately

Comments:

- While the criteria for judging SR quality were made available, it was not clear what satisfied the criteria
 - o For example, it was not clear how many databases needed to be searched in order for the search to qualify as comprehensive
- The conclusion that there is no plausible reason for acupuncture to be effective in some conditions and not in others is not elaborated upon
 - o This presents a conceptual problem only under an assumed “panacea” model for acupuncture; it is difficult to think of *any* scientifically sound intervention which works for all conditions
- The precaution that acupuncturists must be well trained is important, since fatal complications must not be tolerated for interventions of uncertain effectiveness
- One of the “excellent” SRs (of all pain) reviewed 13 trials which compared three treatment arms: one true acupuncture, one sham acupuncture, and one no acupuncture arm
 - o The standardized mean difference between acupuncture and placebo acupuncture was -0.17 SD in favor of acupuncture (95% confidence interval from -0.26 to -0.08); this is generally considered to be below the minimal clinically important difference
 - o The SMD for the difference between sham acupuncture and no acupuncture was -0.42 SD in favor of sham acupuncture (95% CI, -0.60 to -0.23); this is generally considered to be a moderate effect size which can be clinically important
 - o Many “sham” acupuncture studies involve the placement of needles by trained acupuncturists, and the small difference between true and sham acupuncture may arise from the comparison of two active interventions, not an active and an inert intervention
 - o That is, if sham acupuncture involves, hypothetically, the gate control mechanism of analgesia, and if true acupuncture involved a different mechanism of pain relief (for example, one involving nitric oxide synthase), the effectiveness of true acupuncture could be obscured by the comparisons of two active treatments^o

Assessment; Adequate for good evidence that acupuncture is useful in the treatment of back pain, neck pain, and joint osteoarthritis and for good evidence that acupuncturists must be properly trained in aseptic technique