Acupuncture and dry-needling for low back pain (Review)

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[Intervention Review]

Acupuncture and dry-needling for low back pain

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ABSTRACT

Background

Although low-back pain is usually a self-limiting and benign disease that tends to improve spontaneously over time, a large variety of therapeutic interventions are available for its treatment.

Objectives

To assess the effects of acupuncture for the treatment of non-specific low-back pain and dry-needling for myofascial pain syndrome in the low-back region.

Search methods

We updated the searches from 1996 to February 2003 in CENTRAL, MEDLINE, and EMBASE. We also searched the Chinese Cochrane Centre database of clinical trials and Japanese databases to February 2003.

Selection criteria

Randomized trials of acupuncture (that involves needling) for adults with non-specific (sub)acute or chronic low-back pain, or dry-needling for myofascial pain syndrome in the low-back region.

Data collection and analysis

Two authors independently assessed methodological quality (using the criteria recommended by the Cochrane Back Review Group) and extracted data. The trials were combined using meta-analyses methods or levels of evidence when the data reported did not allow statistical pooling.

Main results

Thirty-five RCTs were included; 20 were published in English, seven in Japanese, five in Chinese and one each in Norwegian, Polish and German. There were only three trials of acupuncture for acute low-back pain. They did not justify firm conclusions, because of small sample sizes and low methodological quality of the studies. For chronic low-back pain there is evidence of pain relief and functional improvement for acupuncture, compared to no treatment or sham therapy. These effects were only observed immediately

after the end of the sessions and at short-term follow-up. There is evidence that acupuncture, added to other conventional therapies, relieves pain and improves function better than the conventional therapies alone. However, effects are only small. Dry-needling appears to be a useful adjunct to other therapies for chronic low-back pain. No clear recommendations could be made about the most effective acupuncture technique.

Authors' conclusions

The data do not allow firm conclusions about the effectiveness of acupuncture for acute low-back pain. For chronic low-back pain, acupuncture is more effective for pain relief and functional improvement than no treatment or sham treatment immediately after treatment and in the short-term only. Acupuncture is not more effective than other conventional and "alternative" treatments. The data suggest that acupuncture and dry-needling may be useful adjuncts to other therapies for chronic low-back pain. Because most of the studies were of lower methodological quality, there certainly is a further need for higher quality trials in this area.

PLAIN LANGUAGE SUMMARY

Acupuncture and dry-needling for low back pain

Thirty-five RCTs covering 2861 patients were included in this systematic review. There is insufficient evidence to make any recommendations about acupuncture or dry-needling for acute low-back pain. For chronic low-back pain, results show that acupuncture is more effective for pain relief than no treatment or sham treatment, in measurements taken up to three months. The results also show that for chronic low-back pain, acupuncture is more effective for improving function than no treatment, in the short-term. Acupuncture is not more effective than other conventional and "alternative" treatments. When acupuncture is added to other conventional therapies, it relieves pain and improves function better than the conventional therapies alone. However, effects are only small. Dry-needling appears to be a useful adjunct to other therapies for chronic low-back pain.

BACKGROUND

Low-back pain is a major health problem among western industrialized countries, and a major cause of medical expenses, absenteeism and disablement (van Tulder 1995). People with acute low-back pain usually experience improvements in pain, disability, and return to work within one month, further but smaller improvements occur up to three months, after which, pain and disability levels remain almost constant and most people will have at least one recurrence within 12 months (Pengel 2003). Although low-back pain is usually a self-limiting and benign disease (Waddell 1987), a large variety of therapeutic interventions are available to treat it (van Tulder 1997). However, the effectiveness of most of these interventions has not been convincingly demonstrated and consequently, the therapeutic management of low-back pain varies widely.

Acupuncture is one of the oldest forms of therapy and has its roots in ancient Chinese philosophy. Traditional acupuncture is based on a number of philosophical concepts, one of which postulates that any manifestation of disease is considered a sign of imbalance between the Yin and Yang forces within the body. In classical acupuncture theory, it is believed that all disorders are reflected at specific points, either on the skin surface or just below it. Vital energy circulates throughout the body along the so-called meridians, which have either Yin or Yang characteristics. An appropriate choice of the 361 classical acupuncture points located on these meridians for needling is believed to restore the balance in the body. When the needles have been placed successfully, the patient is supposed to experience a sensation known as Teh Chi (in some schools of traditional acupuncture). Teh Chi has been defined as a subjective feeling of fullness, numbness, tingling, and warmth, with some local soreness and a feeling of distension around the acupuncture point. There is no consensus among acupuncturists about the necessity of reaching Teh Chi for acupuncture to be effective.

Since acupuncture disseminated to the west several hundred years ago, many different styles of acupuncture have developed, including Japanese Meridian Therapy, French Energetic Acupuncture, Korean Constitutional Acupuncture and Lemington 5 Element Acupuncture. While these are similar to traditional acupuncture, they each have distinct characteristics. In recent decades, new forms of acupuncture have developed, such as ear (auricular) acupuncture, head (scalp) acupuncture, hand acupuncture and foot acupuncture (Lao 1996). Modern acupuncturists use not only

traditional meridian acupuncture points, but also non-meridian or extra-meridian acupuncture points, which are fixed points not necessarily associated with meridians. Acupuncture commonly includes manual stimulation of the needles, but various adjuncts are often used, including electrical acupuncture (in which an electrical stimulator is connected to the acupuncture needle), injection acupuncture (herbal extracts injected into acupuncture points), heat lamps, and acupuncture with moxibustion (the moxa herb, Artemisia vulgaris, is burned at the end of the needle) (Lao 1996).

Dry-needling is a technique that uses needles to treat myofascial pain in any body part, including the low-back region. Myofascial pain syndrome is a disease of muscle that produces local and referred pain. It is characterized by a motor abnormality (a hard band within the muscle) and by sensory abnormalities (tenderness and referred pain). It is classified as a musculoskeletal pain syndrome that can be acute or chronic, regional or generalized. It can be a primary disorder causing local or regional pain syndromes, or a secondary disorder that occurs as a consequence of some other condition (Gerwin 2001). In 1983, Travel and Simons published the book *Myofascial Pain and Dysfunction - the Trigger Point Manual* (Travell 1983), which shows the pain pattern of trigger points in every muscle of the body. Myofascial trigger points, once carefully identified, can be inactivated by various methods including systemic muscle relaxants, botulinum toxin, antidepressants, deep muscle massage (for example: Shiatsu), local injection of substances such as steroids or lidocaine, and dry-needling. Dry-needling involves the insertion of a needle (it can be an acupuncture needle or any other injection needle without injecting any liquid) at these trigger points. The needles are not left in situ, they are removed once the trigger point is inactivated. The inactivation of the trigger point should be followed by exercises (usually stretching) or ergonomic adjustments with the purpose to re-establish a painless, full range of motion, and avoid recurrences.

It is still unclear what exact mechanisms underlying the action of acupuncture or dry-needling. Western scientific research has proposed mechanisms for the effect of acupuncture on pain relief. It has been suggested that acupuncture might act by principles of the gate control theory of pain. One type of sensory input (low-back pain) could be inhibited in the central nervous system by another type of input (needling). Another theory, the diffuse noxious inhibitory control (DNIC), implies that noxious stimulation of heterotopic body areas modulates the pain sensation originating in areas where a subject feels pain. There is also some evidence that acupuncture may stimulate the production of endorphins, serotonin and acetylcholine within the central nervous system, enhancing analgesia (Chu 1979; Stux 2003).

The effectiveness of acupuncture in the treatment of low-back pain has been systematically reviewed before (van Tulder 1999 (a); van Tulder 1999 (b)) with inconclusive results due to the low methodological quality of the included studies. This is an updated review of all available scientific evidence, including evidence from Chinese and Japanese trials, on the effectiveness of acupuncture for both acute and chronic low-back pain, and dry-needling for myofascial pain syndrome in the low-back region.

OBJECTIVES

The objectives of this systematic review were to determine the effects of acupuncture for (sub)acute and chronic non-specific low-back pain, and dry-needling for myofascial pain syndrome in the low-back region, compared to no treatment, sham therapies, other therapies, and the addition of acupuncture to other therapies.

METHODS

Criteria for considering studies for this review

Types of studies

Only randomised controlled trials (RCTs), with no language restriction, were included in this systematic review.

Types of participants

Adults (>18 years) with non-specific low-back pain and myofascial pain syndrome in the low-back region were included. RCTs that included subjects with low-back pain caused by specific pathological entities such as infection, metastatic diseases, neoplasm, osteoarthritis, rheumatoid arthritis or fractures were excluded. Low-back pain associated with sciatica as the major symptom, pregnancy and post-partum were also excluded. Although some studies did not exclusively limit the study population to patients with non-specific symptoms, studies were included if the majority of the patients had non-specific low-back pain according to the predefined criteria. Patients with (sub)acute (12 weeks or less) or chronic low-back pain (more than 12 weeks), were included.

Types of interventions

Articles evaluating acupuncture or dry-needling treatments that involve needling were included in this review. Acupuncture was defined as "the diagnosis was made using traditional acupuncture theory and the needles were inserted in classical meridian points, extra points or ah-shi points (painful points)'. Dry-needling was defined as "the cause of pain was diagnosed as "Myofascial Pain Syndrome", the points were chosen by palpation in the muscle, and the needles were inserted into these myofascial trigger points'. Studies were included regardless of the source of stimulation (e.g., hand or electrical stimulation). Studies in which the acupuncture treatment did not involve needling, such as acupressure or laser

acupuncture were excluded. The control interventions were no treatment, placebo/sham acupuncture or other sham procedure, and other therapeutic interventions. Trials comparing two techniques of acupuncture or dry-needling were included, but analysed separately.

Types of outcome measures

RCTs were included that used at least one of the four outcome measures considered to be important in the field of low-back pain: pain intensity (e.g., visual analog scale (VAS)), a global measure (e.g., overall improvement, proportion of patients recovered, subjective improvement of symptoms), back specific functional status (e.g., Roland Disability Scale, Oswestry Scale) and return to work (e.g., return to work status, number of days off work). The primary outcomes for this review were pain and functional status. Physiological outcomes of physical examination (e.g., range of motion, spinal flexibility, degrees of straight leg raising or muscle strength), generic health status (e.g., SF-36, Nottingham Health Profile, Sickness Impact Profile) and other symptoms, such as medication use and side effects were considered secondary outcomes.

Search methods for identification of studies

The previous review had searched the literature from 1966 until 1996. The following search strategies were used for this updated review:

1. CENTRAL, The Cochrane Library 2003, Issue 1;
2. MEDLINE (OVID) from 1996 to February 2003 (see Appendix 1 for strategy);
3. EMBASE (OVID) from 1996 to February 2003 (see Appendix 2 for strategy);
4. The Cochrane Back Review Group Trials Registry;
5. The Chinese Cochrane Centre Trials Registry;
6. A database search of controlled clinical trials published in Japan, using "Igaku Chuo Zasshi" (Japana Centra Revuo Medicina) web version (between 1987 - 2003);
7. Reference lists in review articles and trials retrieved;
8. Personal communication with experts in the field.

Data collection and analysis

Study selection

For this updated review, one author (ADF) generated the electronic search strategies in CENTRAL, MEDLINE, and EMBASE and downloaded the citations into Reference Manager 9.0 Two authors (MvT and BK) then independently reviewed the information to identify trials that could potentially meet the inclusion criteria. Full articles describing these trials were obtained and the same two authors independently applied the selection criteria to the studies. Consensus was used to solve disagreements concerning the final inclusion of RCTs and a third author was consulted if disagreements persisted. One author (HT) searched and selected the studies from the Japanese databases. The Chinese Cochrane Centre generated the searches in their Trials Register and one author (LXL) selected the studies. The authors of recent original studies were contacted to obtain more information when needed.

Methodological quality assessment

The methodological quality of each RCT was independently assessed by two authors (not always the same pair of authors). Review authors were not blinded with respect to authors, institution and journal because they were familiar with the literature. Consensus was used to resolve disagreements and a third author was consulted if disagreements persisted.

The methodological quality of the RCTs was assessed by using the criteria list recommended in the Updated Method Guidelines for systematic reviews in the Cochrane Back Review Group (van Tulder 2003) (Table 1). Each item was scored as "yes", "no" or "don't know" according to the definitions of the criteria (Table 1). The methodological quality assessment of the studies was used for two purposes: First, to exclude studies with fatal flaws (such as drop-out rate higher than 50%, statistically significant and clinically important baseline differences that were not accounted in the analyses). Studies that passed the first screening for fatal flaws were classified into lower or higher quality: Higher quality was defined as a trial fulfilling six or more of the 11 methodological quality criteria and not having a fatal flaw. Lower quality trials were defined as fulfilling fewer than six criteria and not having a fatal flaw. The classification into higher/lower quality was used to grade the strength of the evidence.

Data extraction

Two authors independently extracted the data on the study characteristics, funding, ethics, study population, interventions, analyses and outcomes. The authors of recent studies (published in the past five years) were contacted to obtain more information when needed.

Adequacy of treatment

Three authors, who are experienced acupuncturists (AF, LXL and HT), judged the adequacy of treatment. The data extraction included four questions about the adequacy of treatment, which were derived from the STRICTA recommendations (MacPherson 2002): 1) Choice of acupoints, 2) Number of sessions, 3) Needling technique and 4) Acupuncturist experience. The control groups were also judged as 1) appropriateness of sham/placebo intervention and 2) adequate number of sessions/dose. In addition, a panel

of experts in acupuncture treatment for low-back pain was consulted in a three-hour session in which each study was presented for discussion (only the population and interventions were presented, so the panel was blinded to authors, journal, year, country, outcomes and results). The panel consisted of six physicians trained in a variety of acupuncture methods (Traditional Chinese medicine, Ryodoraku, dry-needling, trigger point injections and scalp needling) who work at a multidisciplinary pain clinic in Sao Paulo, Brazil. The panel also classified each study as acupuncture or dry-needling.

Clinical Relevance

The two authors who extracted the data also judged the clinical relevance of each trial using the five questions recommended by Shekelle et al (Shekelle 1994) and the Updated Method Guidelines(van Tulder 2003):

1. Are the patients described in detail so that you can decide whether they are comparable to those that you see in your practice?
2. Are the interventions and treatment settings described well enough so that you can provide the same for your patients?
3. Were all clinically relevant outcomes measured and reported?
4. Is the size of the effect clinically important?
5. Are the likely treatment benefits worth the potential harms?

Analysis

The primary analyses, decided a priori, were:

- acupuncture compared to no treatment, placebo or sham therapy
- acupuncture compared to another intervention
- acupuncture added to an intervention compared to the intervention without acupuncture.

Any other comparisons were considered secondary analysis.
The results of each RCT were plotted as point estimates, i.e., relative risks (RR) with corresponding 95% confidence interval (95% CI) for dichotomous outcomes, mean and standard deviation (SD) for continuous outcomes, or other data types as reported by the authors of the studies. When the results could not be plotted, they were described in the table of included studies or the data were entered into "other data tables". For continuous measures, preference was given to analyse the results with weighted mean differences (WMD) because these results are easier to interpret for clinicians and other readers. If this was not possible, then standardized mean differences (SMD) or effect sizes were used. The studies were first assessed for clinical homogeneity with respect to the duration of the disorder, types of acupuncture, control group and the outcomes. Clinically heterogeneous studies were not combined in the analysis, but separately described. For studies judged as clinically homogeneous, statistical heterogeneity was tested by Q test (chi-square) and I^2. Clinically and statistically homogeneous studies were pooled using the fixed effect model. Clinically homogeneous and statistically heterogeneous studies were pooled using the random effects model. Funnel plots were constructed when at least 10 studies were available for the meta-analysis (Sutton 2000).
When the data could not be entered in the meta-analysis because of the way the authors of the trials reported the results (for example: no information about standard deviation of the means) we performed a qualitative analysis by attributing various levels of evidence to the effectiveness of acupuncture, taking into account the methodological quality and the outcome of the original studies (van Tulder 2003):

- *Strong evidence**-consistent** findings among multiple higher quality RCTs
- *Moderate evidence*-consistent findings among multiple lower quality RCTs and/or one higher quality RCT
- *Limited evidence*-one lower quality RCT
- *Conflicting evidence*-inconsistent findings among multiple trials (RCTs)
- *No evidence*-no RCTs

* There is consensus among the Editorial Board of the Back Review Group that strong evidence can only be provided by multiple higher quality trials that replicate findings of other researchers in other settings.
** When >75% of the trials report the same findings.

The results were grouped according to the following study characteristics:

1) Type of acupuncture:

Two subgroups were analysed separately:
a. acupuncture in which the points were chosen by the meridian theory
b. dry-needling in which needles were inserted in trigger points

2) Duration of pain:

Three subgroups were analysed separately:
a. acute and subacute pain (duration 12 weeks or less)
b. chronic (duration more than 12 weeks)
c. unknown or mixed duration

3) Control group:

a. no treatment
b. placebo or sham acupuncture
c. other interventions or acupuncture in addition to other interventions
d. two different techniques of acupuncture

4) Outcome measures:

a. Pain
b. Global measure
c. Functional status
d. Physical examination
e. Return to work
f. Complications

5) Timing of follow-up:

a. immediately after the end of the sessions - up to one week after the end of the sessions
b. short-term follow-up - between one week and three months after the end of the sessions
c. intermediate-term follow-up - between three months and one year after the end of the sessions
d. long-term follow-up - one year or longer after the end of the sessions

RESULTS

Description of studies

See: Characteristics of included studies; Characteristics of excluded studies; Characteristics of ongoing studies.

The review published in 1999 included 11 studies (van Tulder 1999 (a)). This updated review includes 35 studies and 2861 patients. Twenty were published in English, seven in Japanese (Araki 2001; Inoue 2000; Inoue 2001; Kurosu 1979(a); Sakai 1998; Sakai 2001; Takeda 2001), five in Chinese,(Ding 1998; He 1997; Li 1997; Wang 1996; Wu 1991), one in Norwegian (Kittang 2001), one in Polish (Lopacz 1979), and one in German (Von Mencke 1988). The majority of the population included in these trials had chronic low-back pain (24 studies, 1718 patients). The control groups were the following: no treatment, sham acupuncture, sham transcutaneous electrical nerve stimulation (TENS), Chinese herbal medicine, education, exercise, massage, moxibustion, non-steroidal anti-inflammatory drugs, physiotherapy, spinal manipulation, TENS, trigger point injections, and usual treatment by a general practitioner. Six studies compared the effectiveness of two different acupuncture techniques.

Risk of bias in included studies

The results of the methodological quality assessment are shown in Additional Table 2. There were two studies with fatal flaws: Giles & Muller 1999 had a 52% dropout during treatment period in the acupuncture group and Grant 1999 had clinically important differences in the main outcome measures at baseline. Therefore, these two trials are not included in the analyses or used to draw conclusions. Of the remaining 33 trials, 14 were judged to be of higher (Araki 2001; Carlsson 2001; Ceccherelli 2002; Cherkin 2001; Garvey 1989; Inoue 2000; Inoue 2001; Kittang 2001; Leibing 2002; Meng 2003; Sakai 2001; Molsberger 2002; Tsukayama 2002; Yeung 2003) and 19 to be of lower methodological quality (Coan 1980; Ding 1998; Edelist 1976; Giles & Muller 2003; Gunn 1980; He 1997; Kerr 2003; Kurosu 1979(a); Kurosu 1979(b); Li 1997; Lehmann 1986; Lopacz 1979; MacDonald 1983; Mendelson 1983; Sakai 1998; Takeda 2001; Thomas 1994; Von Mencke 1988; Wang 1996; Wu 1991). In none of the 35 trials was the care provider blinded; in 28 trials, the timing of the outcome assessment was similar in all groups. The biggest problem was the quality of reporting, which did not allow us to judge the following items: method of randomisation (15 trials), concealment of allocation (16 trials), baseline differences (18 trials), co-interventions (18 trials) and compliance (17 trials). Of the seven trials published in Japanese, four were of higher (Araki 2001; Inoue 2000; Inoue 2001; Sakai 2001) and three were of lower methodological quality. All five trials published in Chinese were of lower methodological quality.

Effects of interventions

Study Selection

Our searches resulted in the identification of 68 in CENTRAL, 49 reports in MEDLINE, and 85 in EMBASE. We obtained hard copies of 40 articles, but excluded 17 because they did not meet our inclusion criteria. In addition, we retrieved 16 hard copies of studies published in Japanese and 11 published in Chinese, but excluded nine and six respectively, because they did not meet our inclusion criteria. Reasons for the exclusion of these studies are explained in the Table of Excluded Studies. We contacted the primary authors of eight trials to obtain additional information that was not reported in the published study. Six responded to our requests - all from the Japanese language trials.

Clinical Relevance

The results of the clinical relevance assessment of each included study are shown in Table 3. It should be noted that there was an enormous variance in the way the authors judged the five items of clinical relevance. This occurred because different pairs of authors assessed the 35 trials and each author has a different background and training. In addition, there were no clear instructions of what should constitute a "yes" or "no" response for each question. As a consequence, the assessment of clinical relevance of each individual trial is subjective and difficult to analyse in the context of this systematic review. Additional Table 4 shows the improvement in pain for each treatment group and for each duration of low-

back pain. The average improvement in pain with acupuncture for acute low-back pain was 52% (based on two studies), 32% for chronic (16 studies) and 51% for unknown or mixed durations of pains (eight studies). The average improvement of pain with no treatment was 6% (six studies). The average improvement of pain with sham or placebo therapies was 22% for acute (one study), 23% for chronic (six studies) and 25% for unknown or mixed durations of pain (three studies).

ADEQUACY OF ACUPUNCTURE

The results are shown in Table 5. In all trials, acupuncture was judged to be adequate for the population they included.

PRIMARY ANALYSES

1. Acupuncture compared to no treatment, placebo or sham therapy

See Figure 1.

Figure 1. Acupuncture compared to no treatment, placebo or sham therapy

	Number of studies (patients)	Pain				Function			
		Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)	Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)
Acute/subacute LBP									
• Acupuncture versus no treatment	0	×	×	×	×	×	×	×	×
• One session of single point (SI 3) acupuncture versus sham therapy	1 (40)	⇔⇔	×	×	×	⇔⇔	×	×	×
• Multiple points, various sessions of acupuncture versus sham therapy	0	×	×	×	×	×	×	×	×
Chronic LBP									
• Acupuncture versus no treatment	2 (90)	×	↑↑ SMD -0.73 (-1.19 to -0.28)	↑	×	×	↑↑ ES 0.63 (0.19 to 1.08)	⇔	×
• Acupuncture versus sham therapy	6 (596)	↑↑↑ WMD -10.21 (-14.99 to -5.44)	↑↑↑ WMD -17.79 (-25.5 to -10.07)	⇔⇔⇔ WMD -5.74 (-14.72 to 3.25)	⇔⇔	⇔⇔	×	⇔⇔	×

Ac: Acupuncture; SMD: Standardized Mean Difference; WMD: Weighted Mean Difference; ES: Effect Size;
(↑) Limited, (↑↑) moderate or (↑↑↑) strong evidence that acupuncture is more effective than the control treatment;
(⇔) Limited, (⇔⇔) moderate or (⇔⇔⇔) strong evidence that there is no difference between acupuncture and the control treatment;
(↓) Limited, (↓↓) moderate or (↓↓↓) strong evidence that acupuncture is less effective than the control treatment;
×: no trial for that comparison was found in this systematic review; ?: contradictory findings

1a. Acupuncture versus no treatment for acute low-back pain:

There is no evidence because we did not find any RCT for this comparison.

1b. Acupuncture versus sham therapy for acute low-back pain:

We found only one RCT and it used only one session of bilateral acupuncture on the SI3 acupoint. Therefore, there is moderate evidence (one higher quality trial, 40 people) (Araki 2001) that there is no difference in pain and function, between one session of acupuncture on the SI3 acupoint bilaterally and sham needling of the same point immediately after the session.

1c. Acupuncture versus no treatment for chronic low-back pain:

The pooled analysis of two lower quality trials (90 people) (Coan 1980; Thomas 1994) shows that acupuncture is more effective than no treatment for patients with chronic low-back pain for short term pain relief, with a SMD of -0.73 (95% CI -1.19 to -0.28) (See comparison 4.1). There is limited evidence (one lower quality trial, 40 people) (Thomas 1994) that acupuncture is also more effective at intermediate follow-up for outcomes of pain. The pooled analysis of two lower quality trials (90 people) (Coan 1980; Thomas 1994) shows that acupuncture is more effective than no treatment for patients with chronic low-back pain in short-term functional improvement, with an effect size of 0.63 (95% CI 0.19 to 1.08) (comparison 4.5). There is limited evidence (one lower quality trial, 40 people) (Thomas 1994) that there is no difference at the intermediate-term follow-up in functional outcome,

between acupuncture and no treatment.

1d. Acupuncture versus sham therapy for chronic low-back pain:

Six trials (three higher and three lower quality) measured pain outcomes (Carlsson 2001; Kerr 2003; Lehmann 1986; Leibing 2002; Mendelson 1983; Molsberger 2002), and one higher and two lower quality trials measured functional outcomes (Lehmann 1986; Leibing 2002; Mendelson 1983). Of five trials that measured pain immediately after the end of the sessions, four trials could be pooled (Mendelson 1983; Leibing 2002; Molsberger 2002; Kerr 2003). The pooled analysis (two higher and two lower quality RCTs, 314 people) shows that acupuncture is more effective than sham therapy with a WMD of -10.21 (95% CI -14.99 to -5.44) (comparison 5.1). The trial not included in the meta-analysis (Lehmann 1986) included 36 people and found a trend that acupuncture was better than sham therapy, but failed to reach statistical significance. This trial could not be pooled with the other studies because of the scale they used to measure pain and the way they analysed the results. For short-term measures of pain, there is strong evidence (two higher quality trials, 138 people) (Carlsson 2001; Molsberger 2002) that acupuncture is more effective than sham therapy for patients with chronic low-back pain, with a WMD of -17.79 (95% CI -25.5 to -10.07) (See comparison 5.1 and other data table 5.9). There are three trials (two higher and one lower quality, 255 people) that assessed intermediate-term pain (Carlsson 2001; Lehmann 1986; Leibing 2002). All three trials found a trend that acupuncture was better than sham therapy, but without statistical significance. It was possible to pool two of these studies, showing a WMD of -5.74 (95% CI -14.72 to 3.25) (See comparison 5.1). The only exception was the analysis adjusted for baseline values conducted by Carlsson and Sjolund (See other data table 06.09.03) that showed a statistically significant effect (p=0.007) in favour of acupuncture over sham therapy. For long-term measures of pain, there is moderate evidence (one higher quality trial, 51 people) (Carlsson 2001) that there is no difference between acupuncture and sham therapy for chronic low-back pain. For measures of function taken immediately after the end of the sessions, there is moderate evidence (one higher and two lower quality trials, 316 people) (Lehmann 1986; Leibing 2002; Mendelson 1983) that there is no difference between acupuncture and sham therapy. For measures of function taken at intermediate-term follow-up, there is moderate evidence (one higher and one lower quality trials, 204 people) (Lehmann 1986; Leibing 2002) that there is no difference between acupuncture and sham therapy for patients with chronic low-back pain. There is no evidence from RCTs on the effectiveness of acupuncture for patients with chronic low-back pain for functional measures at short or long-term follow-ups.

2. Acupuncture compared to another intervention

See Figure 2.

Figure 2. Acupuncture compared to another intervention or added to other interventions

	Number of studies (patients)	Pain				Function			
		Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)	Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)
Acute/subacute LBP									
• Acupuncture versus Naproxen 500mg twice daily for 10 days	1(57)	⇔⇔	⇔⇔	⇔⇔	×	×	×	×	×
• Acupuncture + moxibustion + Chinese herbal medicine versus Chinese herbal medicine alone	1 (100)	×	×	×	↑	×	×	×	↑
Chronic LBP									
• Acupuncture versus spinal manipulation	1 (68)	↓	×	×	×	↓	×	×	×
• Acupuncture versus massage	1(172)	⇔⇔	×	×	↓↓	↓↓	×	×	↓↓
• Acupuncture versus celecoxib, rofecoxib or paracetamol	1 (72)	⇔	×	×	×	⇔	×	×	×
• Acupuncture versus TENS	2 (56)	?	×	⇔	×	⇔⇔	×	⇔	×
• Acupuncture versus self-care education	1 (184)	⇔⇔	×	×	⇔⇔	⇔⇔	×	×	⇔⇔
• Acupuncture + other therapy* versus other therapy alone	4 (289)	↑↑↑ SMD -0.76 (-1.02 to-0.5)	↑↑↑ SMD -1.1 (-1.62 to-0.58)	↑↑↑ SMD -0.76 (-1.14 to-0.38)	×	↑↑↑ SMD -0.95 (-1.27 to-0.63)	↑↑↑ SMD -0.95 (-1.37 to-0.54)	↑↑↑ SMD -0.55 (-0.92 to-0.18)	×

Ac: Acupuncture; **NSAIDS**: non-steroidal anti-inflammatory drugs; *other therapy may include exercises, NSAIDs, aspirin, non-narcotic analgesic, mud packs, infrared heat therapy, back care education, ergonomics or behavioural modification; **SMD**: Standardized Mean Difference;
(↑) Limited, (↑↑) moderate or (↑↑↑) strong evidence that acupuncture is more effective than the control treatment;
(⇔) Limited, (⇔⇔) moderate or (⇔⇔⇔) strong evidence that there is no difference between acupuncture and the control treatment;
(↓) Limited, (↓↓) moderate or (↓↓↓) strong evidence that acupuncture is less effective than the control treatment;
× No trial for that comparison was found in this systematic review;
? Contradictory findings

2a. Acupuncture versus other interventions for acute low-back pain:

There is moderate evidence (one higher quality trial, 57 people) (Kittang 2001) that there is no difference immediately after, at the short-term, or at the intermediate-term follow-ups between acupuncture and Naproxen 500 mg, taken twice daily for 10 days, in measures of pain (VAS).

2b. Acupuncture versus other interventions for chronic low-back pain:

Compared to spinal manipulation, there is limited evidence (one lower quality trial, 68 people) (Giles & Muller 2003) that acupuncture is less effective for measures of pain and function immediately after the end of the sessions. Compared to massage, there is moderate evidence (one higher quality trial, 172 people) (Cherkin 2001) that there is no difference immediately after the sessions in pain between acupuncture and massage, but there is a statistically significant difference in favour of massage at the long-term follow-up. For measures of function, massage was statistically significantly more effective than acupuncture immediately after the end of the sessions, but there was only a marginally statistically significant difference in favour of massage at the long-term follow-up. However, differences in effect were only small (moderate evidence). Compared to celecoxib, rofecoxib or paracetamol, there is limited evidence (one lower quality trial, 72 people) (Giles & Muller 2003) that there is no difference immediately after the end of the sessions in measures of pain and function. There is conflicting evidence (two trials, 56 people) (Tsukayama 2002; Lehmann 1986) on the effectiveness of acupuncture compared to TENS for patients with chronic low-back pain for pain measured immediately after the end of the sessions: one higher quality trial with a small sample size (Tsukayama 2002) found a statistically significant difference in favour of acupuncture over TENS, while one lower quality trial (Lehmann 1986) found no difference. There is limited evidence (one lower quality trial, 36 people) (Lehmann 1986) that there is no difference at the intermediate-term follow-up in pain between acupuncture and TENS for patients with chronic low-back pain. There is moderate evidence (one higher and one lower quality trial, 56 people) (Tsukayama 2002; Lehmann 1986) that there is no difference immediately after the end of the sessions in functional ability, between acupuncture and TENS, and there is limited evidence that there is no difference at the intermediate-term follow-up (Lehmann 1986). Finally, compared to self-care education, there is moderate evidence (one higher quality trial, 184 people) (Cherkin 2001) that there is no difference immediately

after the end of the treatments and at the long-term follow-up in pain and function, between acupuncture and self-care education.

3. Acupuncture added to an intervention compared to the intervention without acupuncture

See Figure 2.

3a. Addition of acupuncture to other interventions for acute low-back pain:

Only one lower quality trial (100 people) (He 1997) showed that there is limited evidence that the addition of acupuncture and moxibustion to Chinese herbal medicine is more effective than Chinese herbal medicine alone for a global measure of pain and function at the long-term follow-up.

3b. Addition of acupuncture to other interventions for chronic low-back pain:

There are four higher-quality trials that assessed the effects of acupuncture added to other therapies and compared it to the other therapy alone (289 people) (Leibing 2002; Meng 2003; Molsberger 2002; Yeung 2003). The other therapies included: exercises, NSAIDs, aspirin, non-narcotic analgesic, mud packs, infrared heat therapy, back care education, ergonomics or behavioural modification. The pooled analysis (comparison 12.1) shows that the addition of acupuncture to other interventions is more effective than the other intervention alone for pain, measured immediately after the end of the sessions (four higher quality trials, 289 people) with a SMD of -0.76 (95% CI -1.02 to-0.5), at the short-term follow-up (three higher quality trials, 182 people) with a SMD of -1.1 (95% CI -1.62 to-0.58), and at the intermediate-term follow-up (two higher quality trials, 115 people) with a SMD of -0.76 (95% CI-1.14 to-0.38). These effects were also observed for functional outcomes (comparison 12.7) immediately after the end of the sessions (three higher quality trials, 173 people) with a SMD of -0.95 (95% CI -1.27 to-0.63), at the short-term follow-up with a SMD of -0.95 (95% CI -1.37 to-0.54), and at the intermediate-term follow-up with a SMD of -0.55 (95% CI-0.92 to-0.18).

SECONDARY ANALYSES

1. Other outcome measures

Other outcome measures were extracted for the purpose of complementing the conclusions based on the primary outcome measures.

1a. Global measures of improvement:

Measures of global improvement included multiple-choice categorical scales (e.g., improved - same - worse) or dichotomous options (e.g., improved - not improved). In the case of multiple-choice categorical scales, we dichotomized the categories according to the principle of "improved" and "not improved". The number of patients improved was divided by the total number of patients in that group (comparison 2.2, 4.2, and 5.2). These results were in agreement with the result of the primary analysis, therefore they do not change the conclusions and will not be discussed in this review.

1b. Measures of work status:

Measures of work status were basically the number of people who returned or had not returned to work at follow-up. The pooled analysis of the two trials (one higher and one lower quality, 58 people) (Carlsson 2001; Lehmann 1986) that compared acupuncture to sham for chronic low-back pain patients failed to show a difference at the intermediate-term follow-up (comparison 5.6). Compared to TENS, there was one lower quality trial (Lehmann 1986) that showed no difference in return-to-work at the intermediate-term follow-up.

1c. Measures of physical examination:

Measures of physical examination basically included range of motion of the lumbar region measured, for example, by the finger-floor distance or Schober tests (Araki 2001; Kerr 2003; Kittang 2001; Lehmann 1986; Leibing 2002; Molsberger 2002; Takeda 2001; Thomas 1994; Von Mencke 1988) and a composite outcome measure based on physical exam (Edelist 1976; Wu 1991; Wang 1996). We compared the agreement between the results of physical examination with the results of pain and function in the trials that reported these data. There were 16 situations in which pain and physical examination were measured (e.g., same trial, same comparison group, same follow-up, etc). There was agreement in 13 situations and disagreement in three. There were nine situations in which functional outcomes and physical examination were measured (e.g., same trial, same comparison group, same follow-up, etc). There were five agreements and four disagreements.

1d. Measures of complications:

Only 14 trials reported any measure of complications or side-effects (Carlsson 2001; Cherkin 2001; Garvey 1989; Giles & Muller 1999; Grant 1999; Kerr 2003; Kittang 2001; Lehmann 1986; Leibing 2002; Meng 2003; Molsberger 2002; Sakai 2001; Tsukayama 2002; Yeung 2003). The results for complications that happened during the treatment period showed that for a total of

245 patients who received acupuncture, there were only 13 minor complications (5%), while for 156 patients who received sham therapy, there were no complications (0%). In the group of 205 patients that received other interventions (e.g., TENS, NSAIDs, etc), there were 21 reports of complications (10%). None of the complications were fatal or so serious that hospitalisation was required.

2. Other comparisons

2a. Efficacy and effectiveness of dry-needling at trigger and motor points:

See Figure 3. There is limited evidence (one lower quality trial, 17 patients) that superficial needling (4 mm) inserted at trigger points is better than placebo TENS (MacDonald 1983). Two randomised trials compared dry-needling with other interventions. There is limited evidence (one lower quality trial, 56 people) (Gunn 1980) that a few sessions of dry-needling, added to a regimen of physiotherapy, occupational therapy and industrial assessments is better than the regimen alone immediately after, at the short and the intermediate-term follow-ups. There is moderate evidence (one higher quality trial, 34 people) (Garvey 1989) that there is no difference in short term global improvement between one session of dry-needling and one session of trigger point injection with lidocaine and steroid, one session of trigger point injection with lidocaine only, or one session of cooling spray over the trigger point area followed by acupressure.

Figure 3. Effects of dry-needling at trigger points

	Number of studies (patients)	Pain				Function or global improvement			
		Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)	Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)
Acute LBP									
• One session of dry-needling versus one session of trigger point injection with lidocaine	1(33)	×	×	×	×	⇔⇔	×	×	×
• One session of dry-needling versus one session of trigger point injection with lidocaine and steroid	1(34)	×	×	×	×	⇔⇔	×	×	×
• One session of dry-needling versus one session of cooling spray over trigger point area followed by acupressure	1(36)	×	×	×	×	⇔⇔	×	×	×
Chronic LBP									
• Superficial needling (4mm) at trigger points versus placebo TENS	1(17)	↑	×	×	×	↑	×	×	×
• Dry-needling added to a regimen of physiotherapy, occupational therapy and industrial assessments versus the regimen alone	1(56)	×	×	×	×	↑	↑	↑	×

Ac: Acupuncture
(↑) Limited, (↑↑) moderate or (↑↑↑) strong evidence that dry-needling is more effective than the control treatment;
(⇔) Limited, (⇔⇔) moderate or (⇔⇔⇔) strong evidence that there is no difference between dry-needling and the control treatment;
(↓) Limited, (↓↓) moderate or (↓↓↓) strong evidence that dry-needling is less effective than the control treatment;
×: no trial for that comparison was found in this systematic review; ?: contradictory findings

2b. Comparison between different techniques of acupuncture:

See Figure 4.

Figure 4. Comparison between two techniques of acupuncture

	Technique 1	Technique 2	Number of studies (patients)	Pain, function or global improvement			
				Immediately after end of all sessions	Short-term < 3 months	Intermediate (3 – 12 months)	Long-term (> 12 months)
For acute low-back pain	One single session of bilateral needling of SI 3	One single session of needling of Yaotongzue (EX 29, EX-UP 7)	1 (150)	↑	×	×	×
For chronic low-back pain	Deep stimulation (1.5 cm)	Superficial stimulation (2 mm)	1(42)	↑↑	↑↑	×	×
For chronic low-back pain	Ancient needling technique	Regular needling technique	1 (54)	↑	×	×	×
For chronic low-back pain	Manual acupressure	Electroacupuncture	1(34)	⇔⇔	⇔⇔	×	×
Low-back pain of any duration	Distal point needling	Lumbar area needling	1(20)	⇔	×	×	×
Low-back pain of any duration	Needle retention for about 10 minutes	Removal immediately after insertion	1(20)	↑	×	×	×
Low-back pain of any duration	Local needling plus cupping	Distal treatment plus electrical stimulation	1 (492)	×	↑	×	×
Low-back pain of any duration	Manual acupuncture plus cupping	Manual acupuncture alone	1(156)	↑	×	×	×

Ac: Acupuncture
(↑) Limited, (↑↑) moderate or (↑↑↑) strong evidence that technique 1 is more effective than the technique 2;
(⇔) Limited, (⇔⇔) moderate or (⇔⇔⇔) strong evidence that there is no difference between technique 1 and the technique 2;
(↓) Limited, (↓↓) moderate or (↓↓↓) strong evidence that technique 1 is less effective than technique 2;
×: no trial for that comparison was found in this systematic review; ?: contradictory findings

i. For acute low-back pain, one single session of bilateral needling of SI3 is better than one single session of needling of Yaotongxue (Extra 29, EX-UE 7) (one lower quality trial, 150 patients) (Wu 1991)

ii. For chronic low-back pain, deep stimulation (1.5 cm in the muscle or in the trigger point) is better than superficial stimulation (2 mm in the subcutaneous tissue) immediately after the sessions and at the short-term follow-up (one higher quality trial, 42 patients) (Ceccherelli 2002)

iii. For chronic low-back pain, the ancient needling technique is better than the regular needling technique at the short-term follow-up (one lower quality trial, 54 patients) (Ding 1998)

iv. For chronic low-back pain, manual acupuncture has the same effects as electroacupuncture, both at the short and long-term follow-ups (one higher quality trial, 34 patients) (Carlsson 2001)

v. For low-back pain of any duration, distal point needling is no different from local lumbar area needling for measures of pain, function and range of motion (one lower quality trial, 20 patients) (Takeda 2001)

vi. For low-back pain of any duration, needle retention for about 10 minutes is better than removal immediately after insertion (one lower quality trial, 20 patients) (Kurosu 1979(b)

vii. For low-back pain of any duration, local needling plus cupping is more effective than distal treatment plus electrical stimulation (one lower quality trial, 492 patients) (Wang 1996)

viii. For low-back pain of any duration, manual acupuncture plus cupping is better than manual acupuncture alone (one lower quality trial, 156 patients) (Li 1997)

In summary, the best technique of acupuncture is still to be determined, but the available high quality randomised trials suggest that the best technique of acupuncture for low-back pain includes deep stimulation (1.5 cm) instead of superficial stimulation (2 mm) and it seems that electrostimulation does not add any benefit to manual stimulation of the needles.

2c. Efficacy and effectiveness of acupuncture for mixed populations of acute/chronic low-back pain:

There were a few trials that did not specify the duration of the low-back pain or that mixed acute with chronic patients (Inoue 2000; Inoue 2001; Von Mencke 1988; Sakai 1998; Kurosu 1979(a)). These trials will not be discussed because they do not change the conclusions of this review.

DISCUSSION

Thirty-five RCTs covering 2861 patients were included in this systematic review. There were only three trials of acupuncture for acute low-back pain that do not justify firm conclusions, because of small sample sizes and low methodological quality of the studies. There is some evidence that acupuncture may be better than no treatment or sham treatment for chronic low-back pain. However, most studies have not found acupuncture to be more effective than other conventional treatments (e.g., analgesics, NSAIDs, TENS and self-care education) or "alternative" treatments (e.g., massage or spinal manipulation). The data suggest that both acupuncture and dry-needling may be useful adjuncts to other therapies for chronic low-back pain.

Although the conclusions showed some positive results of acupuncture, the magnitude of the effects were generally small. The average pain reduction (measured by continuous scales such as the VAS) in the group that received acupuncture for chronic low-back pain was 32% compared to 23% in those who received sham therapies and 6% in those who received no treatment. Furthermore, the terms used to express the strength of the evidence (strong, moderate and limited), as is standard in many systematic reviews, might be misinterpreted. These are relative terms and are often used to apply to a small number of "higher" quality studies. This may give the false impression that "strong" evidence means "definite" evidence, but this may not be the case.

Although efforts were made to find all published RCTs, some relevant trials might have been missed. Twenty of the 35 included RCTs were published in English, seven in Japanese, five in Chinese and one each in Norwegian, Polish and German. Although no languages were excluded, the number of non-English journals indexed in electronic databases such as MEDLINE and EMBASE is limited. If additional trials are found, this review will be updated.

The methodologic quality of the included RCTs, although improving over the past several years, was poor. There were two studies with fatal flaws, and 14 studies with higher and 19 studies with lower methodological quality. The methodologic quality in the current review was defined by the internal validity criteria, which referred to characteristics of the study that might be related to selection, performance, attrition, and detection bias. It seems reasonable that in the authors' qualitative synthesis, the best evidence would be provided by the higher quality studies, which are less likely to have biased results. Although the levels of evidence in this review may be considered arbitrary, it seems unlikely that a different rating system would have resulted in different conclusions.

The included studies were very heterogeneous in terms of population included, type of acupuncture administered, control groups, outcome measures, timing of follow-up, and presentation of data. Therefore, very few meaningful meta-analyses could be performed and it was difficult to reach conclusions for most types of treatments.

The experience and training of the acupuncturists who gave the treatments were mentioned in a few studies. Some studies used a protocol of a fixed set of points for all patients while others used a flexible protocol where the points were selected for each individual. Both methods are considered to be valid and were analysed together in this systematic review.

No serious adverse events were reported in the trials included in this review. The incidence of minor adverse events was 5% in the patients submitted to acupuncture. In the literature, most of the reports of serious adverse events related to acupuncture are described as case reports. In the past years, various prospective studies were conducted, enabling the estimation of the true incidence of minor and major adverse events.

Melchart and colleagues reported the biggest prospective study, covering over 760,000 treatments delivered by 7,050 German physicians over a 10-month period. They observed 6,936 minor (incidence of 91 per 10,000 treatments) and five major adverse reactions (6 per 1,000,000 treatments), which included: exacerbation of depression (one case), acute hypertensive crisis (one case), vasovagal reaction (one case), asthma attack with hypertension and angina (one case) and two cases of pneumothorax (Melchart 2004).

The other prospective studies did not observe any major adverse reactions. Yamashita and colleagues observed 65,482 treatments delivered by 84 therapists over a six-year period in Japan. There were 94 cases of minor adverse events, with an incidence of 14 per 10,000 treatments, but this incidence was estimated using data from spontaneous reports of adverse event by the practitioner (Yamashita 1999). In another similar study by Yamashita and colleagues, they forced practitioners to detect and report every acupuncture session, whether there were adverse reactions or not. Then, different incident rates of adverse reaction were obtained. A total of 391 patients were treated in 1,441 sessions, involving a total of 30,338 needle insertions. The incidence of recorded systemic reactions in individual patients was: tiredness (8.2%); drowsiness (2.8%); aggravation of pre-existing symptoms (2.8%); itching in the punctured regions (1.0%); dizziness or vertigo (0.8%); feeling of faintness or nausea during treatment (0.8%); headache (0.5%); and chest pain (0.3%) (Yamashita 2000).

MacPherson and colleagues observed 34,407 treatments delivered by 574 Traditional Chinese Acupuncturists in the UK, over a four-week period. There were 43 minor adverse events (incidence of 12.5 per 10,000 treatments) (MacPherson 2001). White and colleagues observed 31,822 treatments delivered by 78 acupuncturists (physicians and physiotherapists) in the UK, over a 21-month period. There were 43 minor adverse reactions (incidence of 13.5 per 10,000 treatments) (White 2001). Odsberg and colleagues observed 9,277 treatments delivered by 187 physiotherapists in Sweden over a four-week period, and recorded 2,108 minor adverse reactions (incidence of 2,272 per 10,000 treatments) (Odsberg 2001). Ernst and colleagues observed 3,535 treatments delivered by 29 acupuncturists in Germany over a 13-month period, and recorded 402 minor adverse reactions (incidence of 1,100 per 10,000 treatments) (Ernst 2003).

The great variation in incidence of minor adverse events is probably due to different definitions of adverse reaction, research designs, or styles of acupuncture in the various studies.

Because serious adverse events are rare, they continue to be reported in the form of case reports. Recently published systematic reviews of case reports showed that these serious complications may include infections (human immunodeficiency virus, hepatitis, bacterial endocarditis) caused by non sterile needles, and fatal tissue trauma (pneumothorax, cardiac tamponade, spinal cord in-

jury) (Cherkin; Chung 2003; Yamashita 2001). Furthermore, we have little information about the safety of acupuncture specifically for low-back pain. We need more information about the safety of acupuncture that focuses on specific conditions.

AUTHORS' CONCLUSIONS

Implications for practice

There were only three heterogeneous trials of acupuncture for acute low-back pain. Therefore we could not reach convincing conclusion and there is a need for future studies to make recommendation in this area.

There is some evidence of the effects of acupuncture for chronic low-back pain. Compared to no treatment, there is evidence for pain relief and functional improvement for acupuncture at shorter-term follow-ups. Compared to sham therapies, there is evidence for pain relief at shorter-term follow-up, but these effects were not maintained at the longer-term follow-ups, nor were they observed for functional outcomes. Compared to other conventional or "alternative" treatments, acupuncture is no better for measures of pain and function. There is evidence that acupuncture, added to other conventional therapies, relieves pain and improves function better than conventional therapies alone. According to these results, acupuncture may be useful as either a unique therapy for chronic low-back pain or as an adjunct therapy to other conventional therapies. Although the conclusions show some positive results of acupuncture, the magnitude of the effects were generally small.

Although dry-needling appears to be a useful adjunct to other therapies for chronic low-back pain, no clear recommendations can be made because of small sample sizes and low methodological quality of the studies.

With respect to the different techniques of acupuncture, most studies were either small, of lower methodological quality, or both, therefore, no clear recommendation could be made.

Implications for research

Because most of the studies were of poor methodological quality, there certainly is a need for future higher-quality RCTs. Also, because many trials were poorly reported, we recommend that authors use the CONSORT statement as a model for reporting RCTs (www.consort-statement.org) and use the STRICTA criteria (MacPherson 2002) to report the interventions. Many trials could not be included in the meta-analyses because of the way the authors reported the results, therefore we suggest that publications of future trials report means with standard deviations for continuous measures, or number of events and total patients analysed for dichotomous measures. Future research should focus on areas where there are few or no trials, for example, acupuncture compared to no treatment, placebo or sham for acute low-back pain. Future studies should also have larger sample sizes, use a valid acupuncture treatment, and have both a short-term and a long-term follow-up (for chronic pain). From the available high quality trials included in this review, deep stimulation seems to be the most promising acupuncture treatment. Future studies are needed that evaluate superior features of acupuncture. We suggest that publications of future trials report the proportion of subjects who obtain a clinically important improvement in the groups being compared to facilitate a judgment about clinically important differences between the groups. Although an evaluation of costs was not the objective of this review, we suggest that future research assesses cost-effectiveness of acupuncture compared to other treatments.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Araki 2001

Methods	-Randomized (draw lots). Used sealed opaque envelopes by the acupuncturist. -Patients and outcome assessors were blinded. -Funding: not reported -Setting: private clinic in Osaka, Japan. -Informed consent obtained orally from patients. -Ethics approval: not described -All patients were followed. -Analysis: Mean difference between before and after. Repeated measure ANOVA for responses
Participants	40 patients with acute low-back pain (less than three days) and no sciatica Diagnoses: lumbar disc herniation, discopathy and lumbago. Mean age: 44 years old 28 males and 7 females. Working status:? Previous treatments:? Co-morbidity:?
Interventions	1) The needles were inserted into SI3 (bilaterally) with Teh Chi sensation, in supine position, and then patients were made to perform back exercise. Needles were left in situ during the back exercise. Insertion depth was 2.5 cm with stainless steel needles (50 mm length, 0.20 mm diameter). Acupuncture treatment was performed once only. Randomized to this group: 20 Acupuncturists' experience: three and six years. 2) Sham needling was performed to SI3 (bilaterally) point in supine position. Acupuncturist mimicked needle insertion: tapped head of needle guide tube and then patients were made to perform back exercise. Gesture of needling was performed during the back exercise. Sham treatment was performed once only. Randomized to this group: 20
Outcomes	1) Pain: Visual Analog Scale (VAS) from 0 to 100 mm; 2) Function: Japan Orthopedic Association (JOA) score, ranges from 0 to 14 (higher is better). Used only the category of restriction of daily activities. 3) Flexion: Finger-to-floor distance All three outcomes were taken before and immediately after the single session Costs: not reported Complications: not reported
Notes	The original study was published in abstract only. We obtained additional information from the authors Language: Japanese For results, see the comparisons: 1.6 1.2 1.3 1.4 1.5 1.6

	Conclusion: "There is no difference between the effect of acupuncture and that of sham acupuncture"

Carlsson (even)

Methods	see Carlsson 2001
Participants	
Interventions	
Outcomes	
Notes	

Carlsson (morn)

Methods	see Carlsson 2001
Participants	
Interventions	
Outcomes	
Notes	

Carlsson 2001

Methods	- Randomized by computer generated list. A secretarial assistant who was not involved in the study performed the assignments. - Patients and outcome assessors were blinded. - Funding: One author is supported by Swedish Medical Research Council. - Setting: Pain clinic (outpatients) in Malmo General Hospital affiliated with University in Sweden. - Informed consent: yes - Ethics approval: yes - Follow-up: 100% at one month, 62% at three months, and 53% at six months. - Analysis: used "last observation carried forward" for missing values. Baseline differences in pain (VAS) were resolved by analysing percent changes at follow-ups. However, for this analysis they used the non-parametric Mann-Whitney test. There is no information about which test they used to analyse the global assessments. But, when we replicate the analysis using RevMan, we get different results from the authors if we use relative risks, but not if we use odds ratios. For sick leave they used Wilcoxon signed ranks test.
Participants	51 patients with low back pain for six months or longer (mean 9.5 years) without radiation below the knee and normal neurological examination Diagnoses: 39 muscular origin, 11 severe structural changes on X-rays Excluded: trauma, systemic disease, pregnancy and history of acupuncture treatment Mean age: 50 years

Carlsson 2001 (*Continued*)

	17 males and 33 females. Working status: 20 on sick leave, 17 retired, 12 full time, one unemployed Previous treatments: corsets, nerve blocks, analgesics, TENS, physiotherapy. Two had undergone surgery
Interventions	1) Manual acupuncture: local points (BL24, BL25, BL26, Ex Jiaji) and distal points (LI11, LI4, BL40, BL57 and BL60). "Teh-Chi" feeling was sought in all instances, mostly at a needle-tip depth of 2 to 3 cm. The needles were stimulated three times during the 20-minute treatment sessions to restore Teh Chi feelings. The needles were disposable, stainless steel, with a diameter between 0.3 and 0.32 mm and a length between 30 and 70 mm. Frequency: once per week for eight weeks; two further treatments were given during the follow-up assessments period of six months or longer. Randomized to this group:16 Acupuncturist' experience: board certified anaesthesiologist with more than 10,000 acupuncture treatments 2) In addition to the needles as in the manual acupuncture group, they performed electrical stimulation of four needles (one pair per side in the low back). Frequency: 2 Hz every 2.5 seconds, interrupted by a 15 Hz train for 2.5 seconds. Randomized to this group: 18 3) Mock transcutaneous electrical nerve stimulation (TENS) given by an impressive, stationary, but disconnected GRASS (gradient-recalled acquisition in a steady state) stimulator attached to two large TENS electrodes. The electrodes were placed on the skin over the most intensely painful area in the low back. During stimulation, flashing lamps were displayed and visible to the patient. This group was seen once per week for 8 weeks. Randomized to this group: 16
Outcomes	1) Pain: Visual Analog Scale (VAS) from 0 to 100 mm; measured in the morning and in the evening. Not clear how many patients filled all pain diaries everyday. 2) Global assessment by physician. Subjective. Improvement is not defined 3) Present work status: number of people on sick leave. 4) Intake of analgesics recorded daily 5) Sleep quality recorded daily Outcomes were taken at 1 month, 3 months and 6 months or longer after the end of the 8 sessions The results of these outcomes at baseline are not reported, except for pain which is slightly different between acupuncture and placebo Costs: not reported Complications: no complications occurred during treatment or follow-up period
Notes	Language: English Publication: full paper Additional information from authors: no The authors pooled groups 1 and 2 and compared with group 3. The results for pain are similar in the morning and evening measurements For results, see the comparisons: 5.1 5.2 5.6 5.8 5.9 (other data table) 5.10 (other data table) 7.2 Conclusion: "The authors demonstrated a long-term pain-relieving effect of needle acupuncture compared with true placebo in some patients with low-back pain"

Ceccherelli 2002

Methods	-Randomized (table of random numbers). No description of allocation concealment. -Outcome assessors were blinded. -Funding: AIRAS (Associazone Italiana per la Ricerca e l'Aggiornamento Scientifico) -Setting: Pain clinic, University of Padova, Italy. -Informed consent and ethics approval not reported -All patients were followed -Analysis: Between groups were initially compared by repeated measurements two-way ANOVA. Post hoc comparison was done by the Bonferroni correction of the unpaired t-test
Participants	42 patients with continuous pain for more than 3 months. Normal neurologic exam. No signs of radicular compression Diagnoses: chronic lumbosacral myofascial pain. Excluded: spinal cord injury, osteoporosis, rheumatic diseases, disk herniation, fibromyalgia, organic diseases, hypertension or obesity Age: between 30-50 years old. Mean 42 years old. 30 males and 12 females Working status: ? Previous treatments: none had been treated with acupuncture Co-morbidity: ?
Interventions	1) Deep acupuncture: 1.5 cm in the muscle or in the trigger point. Needles: disposable Sedatelec 300um diameter of 3 different lengths: 10 mm, 29 mm and 49 mm. Points: Extra 19, VG6. The following were inserted bilaterally: GB34, UB54, UB62. Plus four trigger points or as second choice in the four most painful muscular tender points found in the lumbar area. Total of eight sessions (total 6 weeks), each session lasted for 20 minutes. All needles were stimulated for 1 minute immediately after the insertion and for 20 s. every 5 min at 5, 10 and 15 minutes. The frequency of alternate right and left rotation of the needles was 2 Hz. Randomized to this group: not described Acupuncturist's experience: not described 2) Same as described for acupuncture, but the depth of insertion was only 2 mm in the skin. Randomized to this group: not described
Outcomes	1) Pain: verbally using the McGill Pain Questionnaire. They used the number of words chosen and the pain rating index. The pain rating index is the sum of numerical values that has been assigned to each word used to describe the pain Measured immediately after the end of the sessions and after 3 months Costs: not reported Complications: not reported
Notes	Language: English Publication: full paper Additional information from authors: we contacted authors, but no response was received For results, see the comparisons: 7.1 Conclusions: "Clinical results show that deep stimulation has a better analgesic effect when compared with superficial stimulation"

Cherkin 2001

Methods	-Randomized (computer-generated random sequence). A research assistant confirmed eligibility, collected baseline data and randomised the eligible ones. -Outcome assessors were blinded. -Funding: Group Health Cooperative, The Group Health Foundation (Seattle), Wash and the John E. Fetzer Institute (Kalamazoo) and Agency for Health Care Research and Quality, Rockville. -Setting. Health Maintenance Organization in Washington State, USA -Informed consent: yes -Ethics approval: yes -Follow-up: 95% at 4 weeks, 95% at 10 weeks and 95% at 52 weeks. -Analysis: Intention-to-treat. ANCOVA for continuous variables and Logistic regression for dichotomous variables. Adjustments for baseline values: Roland score, baseline symptom bothersomeness scale score, pain below the knee, more than 90 days of back pain, satisfaction with previous back care, sex and age
Participants	262 patients who visited a primary care physician for low-back pain who had persistent pain for at least 6 weeks Diagnoses: Non-specific low-back pain. Excluded: sciatica, acupuncture or massage for back pain, back care from a specialist or CAM provider, clotting disorders or anticoagulant therapy, cardiac pacemakers, systemic or visceral disease, pregnancy, litigation or compensation, inability to speak English, severe or progressive neurologic deficits, previous lumbar surgery, recent vertebral fracture, serious comorbid conditions and bothersomeness of back pain less than 4 (on a 0 to10 scale) Mean age: 44.9 years old 42% males and 58% females Working status: 84% employed or self-employed Treatments being received at the time of entry in the study: medications (68%), massage (16%), acupuncture (3%), narcotics (10%) Co-morbidity: see exclusion criteria
Interventions	1) Acupuncture: Traditional Chinese Medical acupuncture by licensed acupuncturists with at least 3 years of experience; Basic TCM needling techniques, electrical stimulation and manual manipulation of the needles, indirect moxibustion, infrared heat, cupping, and exercise recommendation. Proscribed: massage including acupressure, herbs and treatments not considered common TCM (Japanese meridian therapy). Number and location of needles were left to the provider. They were allowed up to 10 visits over 10 weeks for each patient. All patients were needled and "teh chi" was reported for 89%. Mean of 12 needles (range 5-16) were inserted in each visit. Acupuncturists recommended exercise for about half of their patients, usually stretching, walking or swimming. Randomized to this group: 94 (88 received acupuncture as randomised) 2) Massage by a licensed therapist with at least 3 years of experience. Manipulation of soft tissue: Swedish (71%) , movement reeducation (70%), deep-tissue (65%), neuromuscular (45%), and trigger and pressure point (48%), moist heat or cold (51%). Prohibited: energy techniques (Reiki, therapeutic touch), meridian therapies (acupressure and shiatsu) and approaches deemed too specialized (craniosacral and Rolfing). Massage therapists recommended exercise. They were allowed up to 10 visits over 10 weeks per patient. Randomized to this group: 78 (74 received massage as randomised) 3) Self-care education: high-quality and inexpensive educational material designed for persons with chronic back pain: a book and 2 professionally produced videotapes. Randomized to this group: 90
Outcomes	1) Pain: bothersomeness of back pain (0 to10), leg pain (0 to10) or numbness or tingling (0 to10). The higher score was used. 2) Function: Roland Disability Scale 3) Disability: National Health Interview Survey 4) Utilization: provider visits, X-rays, operations, hospitalizations, medication use, visits to other massage therapists

Cherkin 2001 (*Continued*)

	or acupuncturists 5) Costs 6) Satisfaction 7) SF-12 Mental and Physical Health summary scales 8) Number of days of exercise Outcomes were measured at baseline, 4, 10 and 52 weeks after randomisation Complications: no serious adverse effects were reported by any study participant
Notes	Language: English Publication: full paper For results, see the comparisons: 6.1 6.2 6.4 However, the results shown in the table of comparisons are the unadjusted analysis. We based our conclusions on the authors analyses. Therefore, the results are presented in the other data table: 6.5 Conclusions: "Massage is an effective short-term treatment for chronic low-back pain, with benefits that persist for at least one year. Self-care educational materials had little early effect, but by one year were almost as effective as massage. If acupuncture has a positive effect, it seems to be concentrated during the first four weeks because there was little improvement thereafter"

Cherkin 2001 (mass)

Methods	See Cherkin 2001
Participants	
Interventions	
Outcomes	
Notes	

Cherkin 2001 (sc)

Methods	See Cherkin 2001
Participants	
Interventions	
Outcomes	
Notes	

Coan 1980

Methods	-Randomization was carried out by having prepared in advance a small box with 50 identically-sized pieces of paper, folded so that they could not be read. 25 had A and 25 had B written on them. The box was shaken and one of the pieces of paper was removed from the box blindly. -Nobody was blinded -Funding: National Health and Medical Research Council of Australia -Setting: Acupuncture Center in Maryland, USA -Informed consent: ? -Ethics approval:? -All patients were followed -Analysis: Adherers (or "per protocol analysis").
Participants	50 patients recruited via newspapers with low-back pain for at least 6 months Diagnoses: Abnormal X-ray (38/43), Sciatica (27/49), Muscle spasm (36/46) Inclusion criteria: no previous acupuncture treatments, no history of diabetes, infection or cancer, and not more than 2 back surgeries Mean age: 47 years old (range 18 to 67) 23 males and 27 females Working status:? Previous treatments: back surgery (4)
Interventions	1) Acupuncture: Classical Oriental meridian theory. Electrical acupuncture in some patients. Selection of acupuncture loci varied. 'Acknowledged acupuncturists'. 10 or more sessions, approximately 10 weeks. Teh chi unclear. Randomized to this group: 25 2) Waiting list, no treatment for 15 weeks. Then they received the same acupuncture treatment as above. Randomized to this group: 25
Outcomes	1) Pain: Mean pain scores (0=no pain and 10=worst pain) 2) Function: Mean limitation of activity (0=none and 3=severe) 3) Mean pain pills per week 4) Global improvement (improved, same, worse) Results after 10 weeks in acupuncture and after 15 weeks in waiting list group Costs: not reported Complications: not reported
Notes	The authors reported a per protocol analysis. However, because there is individual patient data reported in the article, we were able to recalculate using the intention-to-treat principle Language: English Publication: full paper Additional information from authors: no For results, see the comparisons: 4.1 4.2 4.4 4.5 Conclusions: "This study demonstrated that acupuncture was a superior form of treatment for these people with low-back pain, even though they had the condition for an average of 9 years"

Ding 1998

Methods	- Randomized (method not described). No mention of concealment of allocation. -Patients blinded -Funding: not reported -Setting: University in GuangZhou, China -Informed consent: Not reported -Ethics approval: Not reported -All patients were followed -Analysis: chi-squares between groups
Participants	54 patients with chronic low-back pain, frequent recurrence, worse during work and relief with rest Diagnosis: chronic low-back pain. Excluded: specific pathological entities using lab tests and x-rays Mean age: 45 years old in the ancient needling technique and 42 in regular needling technique group (range 19-68) 40 males and 14 females Working status: ? Previous treatments: ?
Interventions	1) Ancient needling technique "The turtle exploring the holes". Major points: GV3, Ashi point(s). Supplement points: BL40. Needles 0.38 mm X 75 mm were used for deeper insertion and to different direction in 45 degree angle. Strong Teh chi sensation was obtained. The needles were retained for 40 to 50 minutes. Treatments were given daily up to 10 treatments. Randomized to this group: 35 2) Regular needling technique. Needles 0.38 mm X 75 mm were used for deeper perpendicular insertion with twirling or rotating technique was used until strong Teh Chi sensation was acquired. Needle retaining was 20 minutes with 3 to 4 times twirling or rotating stimulation in between. Treatments were given daily for up to 10 days. Randomized to this group: 19
Outcomes	1. Pain on a 4-point scale: "cure": no pain for 2 months; "marked effective": pain markedly improved; "improved": pain is somewhat relieved; and "no change". Measured immediately after and 2 months after the end of the sessions Costs: Not reported Complications: Not reported
Notes	Language: Chinese Publication: full paper No additional information from authors For results, see the other data table: 7.3 Conclusions: "An ancient needling technique is better than the regular needling technique in treating chronic low back pain"

Edelist 1976

Methods	- Randomized (method not described). No mention of concealment of allocation. -Outcome assessors blinded -Funding: not reported -Setting: University Hospital in Toronto. Canada -Informed consent: yes -Ethics approval: yes -Not sure if follow-up is complete -Analysis: not reported
Participants	30 patients with low-back pain with no improvement after conventional therapy, including bed rest, analgesics, heat and physiotherapy. Patients were felt to have disc disease, which could not be surgically improved
Interventions	1) Acupuncture: Manual insertion of 4 sterile needles into traditional acupuncture points (BL 60 and BL 25 bilaterally) until reaching Teh Chi, then electroacupuncture at 3-10 Hz. 30 minutes, 3 treatments in maximum 2 weeks. Training & experience of acupuncturists unknown. Randomized to this group: not reported 2) Sham acupuncture, 4 needles placed in areas devoid of classic acupuncture points, no Teh Chi. Randomized to this group: not reported
Outcomes	1) Global assessment: subjective improvement of back/leg pain 2) Global assessment: objective improvement as measured by increased range of spinal movement, improvement in tests for nerve root tension and objective improvement in neurological signs Costs: not reported Complications: not reported
Notes	Number of patients randomised unknown. We only know that 30 were analysed We classified the patients into “chronic low-back pain”. Language: English Publication: full paper No additional information from authors For results, see the comparisons: 5.2 5.5 Conclusions: “There seemed to be no difference in either the subjective or objective changes between the two effects and suggest that much of the improvement in pain syndromes associated with acupuncture may be on the basis of placebo effect”

Garvey 1989

Methods	-Randomized (computer generated four-tier list). No mention of concealment of allocation. -Patients and outcome assessors blinded. Therapists were blinded for content of injections (groups 2 and 3) -Funding: not reported -Setting: Outpatient clinic in a hospital. USA -Informed consent: not reported -Ethics approval: not reported -Follow-up: 51 of 63 randomised (81%) -Analysis: Adherers and intention-to-treat (with worst case scenario). Continuity chi squared, adjusted test
Participants	63 patients with acute non radiating low-back pain, normal neurological examination, absence of tension signs, normal x-ray, persistent pain despite initial treatment of 4 weeks, being able to localize a point of maximum tenderness (trigger point) Age: mean 38 years old Gender: 41 men and 22 women Working status: not reported Previous treatment: non-steroidal anti-inflammatory drugs, hot showers, avoidance of activities that aggravate the pain. No exercise program had been started
Interventions	1) Dry-needling stick with a 21-gauge needle after an isopropyl alcohol wipe. 1 session. Training & experience of therapists unknown Randomized to this group: 20 2) injection with 1.5 ml of 1% lidocaine using a 1.5 inch, 21-gauge needle after an isopropyl alcohol wipe. Randomized to this group: 13 3) injection with 0.75 ml of 1% lidocaine and 0.75 ml of Aristospan (Triamcinolone Hexacetonide) using a 1.5 inch, 21-gauge needle after an isopropyl alcohol wipe. Randomized to this group: 14 4) 10-second ethyl chloride spray from 6 inches away, followed by 20 second acupressure using the plastic needle guard after an isopropyl alcohol wipe. Randomized to this group: 16
Outcomes	1) global improvement: percentage of not improved or improved This outcome was measured at 2 weeks after the interventions Costs: Not reported Complications: Group 1) 1 case of "fever, chills and systemic upset"; 2 cases of increased pain due to intramuscular hematoma. Group 3) "increased pain"
Notes	Intervention is "dry-needling" Language: English Publication: full paper No additional information from authors For results, see the comparisons: 8.1 8.2 Conclusions: "The injected substance apparently is not the critical factor, since direct mechanical stimulus to the trigger-point seems to give symptomatic relief equal to that of treatment with various types of injected medication"

Garvey 1989 (lidoc)

Methods	see Garvey 1989
Participants	
Interventions	
Outcomes	
Notes	

Garvey 1989 (spray)

Methods	see Garvey 1989
Participants	
Interventions	
Outcomes	
Notes	

Garvey 1989(steroid)

Methods	see Garvey 1989
Participants	
Interventions	
Outcomes	
Notes	

Giles 1999

Methods	-Randomized (method not described). Person drew an envelope out of a box with 150 well-shuffled envelopes, each containing one of three colour codes (50 envelopes per intervention) -Outcome assessor and data analyst blinded -Funding: Green Projects Donation fund Limited via the Royal Melbourne Institute of Technology and partly supported by Townsville General Hospital and James Cook University -Setting: Outpatient pain clinic in a hospital setting. Townsville Australia. -Informed written consent was obtained. -Ethical approval by the Northern Regional Health Authority's Townsville General Hospital -Follow up: 77 of 130 randomised (59%) -Analysis: Based on "adherers only principle", i.e.. discarded those who did not comply with the treatment assigned. Checked for possible confounders and interactions by multiple regression and logistic regression
Participants	77 patients with spinal pain for at least 13 weeks (median 6 years) Diagnoses: 82% lower back pain; 42% neck pain and 34% upper back pain Excluded: nerve root involvement, spinal anomalities, pathology other than mild to moderate osteoarthrosis, previous spinal surgery and leg inequality > 9mm Median age: 42 years old 30 males and 47 females Working status: 56% blue collar, 26% white collar, 13% academic, 5% retired Previous treatments: 77% drugs, 42% manipulation, 40% physiotherapy and 6% acupuncture Co-morbidity: not described
Interventions	1) The treating clinician decided which form of acupuncture to use. One of four experienced medical acupuncturists using sterile HWATO Chinese disposable acupuncture guide tube needles 50 mm long with a gauge of 0.25 mm for 20 minutes. An average number of 8 to 10 needles were placed in local tender points and in distant acupuncture points according to the "near and far" technique, depending on the condition being treated. Once patients could satisfactorily tolerate the needles for 20 minutes, low-volt electrical stimulation was applied to the needles. Six treatments were applied in a 3 to to 4-week. Randomized to this group: 46 Drop-outs: 26 (52%). Reasons: unrelated to the outcome 2) Spinal manipulation was performed as judged to be safe and appropriate by the treating chiropractor for the spinal level of involvement only. A high-velocity, low-amplitude spinal manipulation was performed. Six treatments applied in a 3 to to 4-week period. Randomized to this group: 49 Drop-outs: 13 (26%). Reasons: same as in the acupuncture group 3) Medication: tenoxican (20 mg/d) and ranitidine (50 mg x 2/ day). Medication was given to the patients for the defined 3 to 4-week treatment period. Treatment times were standardized by arranging 15 to 20-minute appointments for all visits to eliminate a potential placebo effect originating from different lengths of exposure to the clinician Randomized to this group: 31 Drop-outs: 10 (33%). Reasons: same as in the acupuncture group
Outcomes	1) Pain: Visual Analog Scale (VAS) from 0 to 10 cm 2) Pain frequency on 5-ordered categories: 1/month, 1/week, 1/day, frequent and constant. 3) Function: Oswestry Disability Index 4) Cross over to another intervention after the study period All outcomes were measured immediately after the end of the treatment period Costs: Not reported Complications: No side effects occurred for acupuncture or manipulation. Three medically treated subjects had gastric symptoms

Giles 1999 (*Continued*)

Notes	The results of this study are not used in this review because of the high drop-out rate in the acupuncture group (52%) that might invalidate the results of this trial Language: English Publication: full paper No additional information from authors For results, see the comparisons: 6.1 6.2 6.4 Study conclusions: "the manipulation group displayed the most substantial improvements that were uniformly found to be significant. In the other intervention groups, not a single significant improvement could be found in any of the outcome measures"

Giles 1999 (manip)

Methods	See Giles 1999
Participants	
Interventions	
Outcomes	
Notes	

Giles 1999 (NSAID)

Methods	See Giles 1999
Participants	
Interventions	
Outcomes	
Notes	

Giles 2003

Methods	-Randomized (method not described). Person drew an envelope out of a box with 150 well-shuffled envelopes, each containing one of three colour codes (50 envelopes per intervention) -Data analyst blinded -Funding: Queensland State Government. Partly supported by Townsville General Hospital. -Setting: Outpatient pain clinic in a hospital setting. Townsville Australia. -Informed written consent was obtained. -Ethical approval by the Northern Regional Health Authority's Townsville General Hospital -Follow up: 115 were randomised. Six dropped out before treatment for reasons not related to outcomes. 69/109 (63.3%) were followed. -Analysis: Based on "intention-to-treat analysis". Checked for possible confounders and interactions by multiple regression and logistic regression
Participants	109 patients with uncomplicated spinal pain for a minimum of 13 weeks (average duration was 6.4 years) Diagnosis: mechanical spinal pain Excluded: nerve root involvement, spinal anomalies, pathology other than mild to moderate osteoarthrosis, spondylolisthesis exceeding grade 1, previous spinal surgery and leg length inequality >9 mm Median age: 39 years old 60 males and 49 females Working status: 29% skilled trade, 20% pensioner or unemployed, 20% manager, clerk or sales, 12% professional, 18% other Previous treatments: not described Co-morbidity: not described
Interventions	1) The clinician determined the form of acupuncture technique. The Near and Far technique consists of: needling the trigger point and distal analgesia producing sympatholytic acupuncture points below the elbow or knee. Acupuncture was performed by one of two experienced acupuncturists using sterile disposable acupuncture guide tube needles (length 50 mm, gauge 0.25 mm) during 20-minute appointments. For each patient, 8 to 10 needles were placed in local paraspinal intramuscular maximum pain areas and approximately 5 needles were placed in distal acupuncture point meridians depending on the spinal pain syndrome being treated. Once patients could tolerate the needles, needle agitation was performed by turning or "flicking" the needles at approximately 5-minute intervals for 20 minutes. The needles were inserted to a length of 20 to 50 mm, in the maximum pain area, and up to approximately 5 mm in the distal points. Two treatments per week up to the defined maximum of 9 weeks of treatment. Randomized to this group: 36. Two were lost before treatment, 2 during treatment and 10 changed treatment because of no effect 2) Spinal manipulation. 20-minute appointment. High-velocity, low-amplitude thrust spinal manipulation to a joint was performed as judged to be safe and usual treatment by the treating chiropractor for the spinal level of involvement to mobilize the spinal joints. Two treatments per week up to a maximum of 9 weeks. Randomized to this group: 36. One was lost before treatment, 1 during treatment and 8 changed treatments because of "no effect" 3) A medication could be selected that had not already been tried by a patient randomised into the mediation arm of the study. The patients normally were given Celecoxib (200 to 400 mg/day) unless it had previously been tried. The next drug of choice was Rofecoxib (12.5 to 25 mg/day) followed by paracetamol (up to 4 g/day). Doses, left to the sports physician's discretion, were related particularly to the patient's weight, with the severity of symptoms playing a minor role. The treating sports physician also was allocated 20 minutes for follow-up visits. Randomized to this group: 43. Three were lost before treatment and 18 changed treatment (11 for "no effect" and 8 for "side effects")

Giles 2003 (*Continued*)

Outcomes	1) Pain: Visual Analog Scale (VAS) from 0 to 10 cm 2) Pain frequency on 5-ordered categories: 1/month, 1/week, 1/day, frequent and constant. 3) Function: Oswestry Disability Index 4) Cross over to another intervention after the study period 5) SF-36 Health Survey Questionnaire All outcomes were measured immediately after the end of the treatment period Costs: Not reported Complications: Not reported
Notes	Not sure about proportion of patients with lower back pain. The results might be biased by the high and differential drop out rates Results are presented as medians and 25th and 75th percentiles and were transformed to means and standard deviations Language: English Publication: full paper No additional information from authors For results, see the comparisons: 6.1 6.2 Study results: "Manipulation yielded the best results over all the main outcome measures except the Neck Disability Index, for which acupuncture achieved a better result than manipulation". "All three therapies showed positive response according to the SF-36 general health status questionnaire" Conclusions: "In patients with chronic spinal pain, manipulation, if not contraindicated, results in greater short-term improvement than acupuncture or medication"

Giles 2003 (manip)

Methods	See Giles 2003
Participants	
Interventions	
Outcomes	
Notes	

Giles 2003 (NSAID)

Methods	See Giles 2003
Participants	
Interventions	
Outcomes	
Notes	

Grant 1999

Methods	- Random numbers were used (method not described) to generate a sequence of sealed envelopes containing the treatment code, the next available envelope being opened on the patient's entry into the trial. -Outcome assessors were blinded. -Funding: Grant from the Trustees of the Liberton Hospital Endowment Funds -Setting: Outpatients clinic in the United Kingdom -Informed consent: not reported -The study was approved by the Lothian Research Ethics Committee -Follow-up: 57 out of 60 randomised -Analysis: No intention-to-treat. Mann-Whitney U-tests for between group differences
Participants	60 patients aged 60 years or over, with a complaint of pain of at least 6 months duration Diagnoses: chronic low-back pain. Excluded: treatment with anticoagulants, systemic corticosteroids, dementia, previous treatments with acupuncture or TENS, cardiac pacemaker, other severe concomitant disease, inability of patient or therapist to apply TENS machine Mean age: 73.6 years old 6 males and 54 females Previous treatments: not reported
Interventions	1) Two sessions of manual acupuncture weekly for 4 weeks, i.e. eight sessions in total. The needles were of a standard size (32 gauge, 1.5 inch length with guide tube). Points were chosen for the individual patient as in routine clinical practice, only using points in the back. Six needles were used on average at each treatment with a minimum of two and a maximum of eight. Treatment sessions lasted for 20 minutes. Randomized to this group: 32. Two dropped out during the study. Reasons: influenza and dental problem 2) TENS: Standard machine (TPN 200, Physio-Med-Services) using 50 Hz stimulation with the intensity adjusted to suit the patient, again as a routine clinical practice. The patient was given her/his own machine to use at home, and instructed to use it during the day as required for up to 30 minutes per session to a maximum of 6 hours per day. She/he was also seen for 20 minutes, twice weekly, by the physiotherapist, ensuring the same contact with him. At each visit, symptoms were reviewed, treatment discussed and the optimum use of the TENS machine ensured. Randomized to this group: 28. One dropped out due to acute depression Co-interventions: The patients were advised to continue existing medication but not to commence any new analgesics or any additional physical treatments for the duration of the trial
Outcomes	1) Pain: visual Analog scale (0 to 200 mm). 2) Pain subscale of the 38-item Nottingham Health Profile part 1. 3) Analgesics consumption 4) Spinal flexion These outcomes were taken at baseline, 4 days and 3 months after last treatment session Costs: not reported Complications: 3 acupuncture patients reported dizziness and 3 TENS patients developed skin reactions. (Comparison 07.08)
Notes	The two groups appear different at baseline with respect to the four outcome measures. Patients in the acupuncture group have higher VAS and NHP pain scores, reduced spinal flexion and lower tablet consumption compared to the TENS group Because the authors had not adjusted for baseline values, no conclusions can be made based on this study We could try to obtain raw data from authors and run ANCOVA, but the data is also skewed and transformation is not appropriate Results:

	6.1 6.4 Language: English Publication: full paper No additional information from authors Conclusions: "A 4-week course of either acupuncture or TENS had demonstrable benefits on subjective measures of pain (VAS and NHP score) and allowed them to reduce their consumption of analgesic tablets. The benefits of both treatments remained significant 3 months after completion, with a trend towards further improvement in the acupuncture patients."

Gunn 1980

Methods	-Randomized (randomised blocks, blocks defined by age and operation status; the first subject from each block was assigned to the acupuncture treatment.) -No information about concealment of allocation -Nobody was blinded -Funding: Workers' Compensation board of British Columbia -Setting: Pain Clinic in Richmond, British Columbia, Canada -Informed consent: Yes -Ethics approval: not reported -Follow-up: 56 (100%) at discharge, 53 (95%) at 12 weeks and 44 (78%) at time of writing. -Analysis: Analysis of covariance. No intention-to-treat.
Participants	56 males with chronic low-back pain of at least 12 weeks duration, who had 8 weeks of a standard clinic regimen Diagnoses: disc diseases, low-back strain, spondylitis, spondylolisthesis, radiculopathy, low-back contusion, pseudoarthrosis, disc protrusion, prolapsed disc, lumbar disc syndrome, post-laminectomy syndrome, neuropathy, sciatica, nerve root compression, facet sprain, musculo-ligamentous strain, compression fracture, interspinous ligament strain, Excluded: Psychosomatic backache. Females. Mean age: 40.6 years old (range 20 to 62 years) Working status: all off work. Previous treatments: some had surgery.
Interventions	1) Dry-needling: Standard therapy (physiotherapy, remedial exercises, occupational therapy, industrial assessment) plus dry-needling on muscle motor points (non-meridian), 3 to 5 cm needles, direction of the needle perpendicular to the skin, mechanical stimulation by pecking and twirling, low voltage (9V) electrical stimulation interrupted direct current or phasic current. Maximum of 15 treatments (average 8), once or twice a week. Training & experience unknown. Randomized to this group: 29 2) Standard therapy only (physiotherapy, remedial exercises, occupational therapy, industrial assessment). Randomized to this group: 27
Outcomes	1) Global improvement: 0: no improvement. Still disabled. Unable to return to any form of employment +: Some improvement. Some subjective discomfort. Able to return to lighter employment. ++: Good improvement. Slight subjective discomfort but able to return to work and function at pre-accident employment (or equivalent). +++: Total improvement. No subjective discomfort. Returned to previous (or equivalent) employment The above was measured after discharge, 12 weeks after discharge and at the time of writing of the paper. (all these

Gunn 1980 (*Continued*)

	varied) Costs: not reported Complications: not reported
Notes	Intervention is dry-needling. We dichotomized at 0 versus +/++/+++. Language: English Publication: full paper No additional information from authors For results, see the comparisons: 8.1 Conclusion: "The group that had been treated with needling was found to be clearly and significantly better than the control group with regard to status at discharge, at 12 weeks, and at final follow-up"

He 1997

Methods	-Randomized (method not reported). No information about concealment of allocation -Patients were blinded -Funding: Not reported -Setting: outpatient clinic in a hospital. University Centre in Sichuan Province, China -Informed consent: Not reported -Ethics approval: Not reported -Follow-up: All 100 patients were followed. -Analysis: Not reported
Participants	100 patients with low-back pain (5 days to 6 months duration), with limited range of motion, and symptoms worse in cold and rainy weather Excluded: kidney or bone disease confirmed by urine test and X-ray Age range: 22 to 79 years old 44 males and 56 females Working status: not reported Previous treatments: not reported
Interventions	1) Manual acupuncture with moxibustion plus Chinese herbal medicine. Two groups of points: 1) GV 4, BL 22 , Ashi-points. 2) BL23, GV 3 and Extra 9 (L3-L4). Moxibustion was used 2 to 3 times on the handle of the needles and needles were retained for 30 minutes. Treatments were given daily up to 10 treatments. Teh Chi sensation was obtained. Herbal formula was given daily. Randomized to this group: 50 Experience: unknown 2) Chinese herbal treatment alone. Randomized to this group: 50
Outcomes	1) Overall assessment that includes pain, physical function, sensitivity to weather change and return to work. According to this measure, patients are classified into: a) cured: no pain, return to normal life and work, remains normal at one-year follow-up; b) marked effective: pain is generally gone, but still feels uncomfortable in cold and damp weather; c) improved: pain is markedly relieved, still feels uncomfortable in cold and damp weather, but better than pre-treatment

He 1997 (*Continued*)

	d) no changes: no significant change. The overall assessment was measured one year after the end of the sessions Costs: not reported Complications: not reported
Notes	We classified the duration as acute/subacute. We dichotomized at a/b/c versus d. Language: Chinese Publication: full paper No additional information from authors For results, see the comparisons: 2.2 Conclusion: "Manual acupuncture with moxibustion plus Chinese herbal medicine is better (p<0.01) than Chinese herbal medicine alone for treating low-back pain with cold and dampness, based on TCM diagnosis"

Inoue 2000

Methods	-Randomized (computer generated numbers). Allocation was done by a centralized office using the Internet. -Patients and outcome assessors were blinded. -Funding: Not reported -Setting: University hospital in Kyoto, Japan. -Written informed consent was taken from patients -The Ethics Committee approved this study. -Follow-up: All 27 patients were followed (100%) -Analysis: Mann-Whitney's U test was used for between group analysis
Participants	27 patients with low back pain of unknown duration who attended the outpatient acupuncture clinic Excluded: (1) neurological findings, pain or numbness in lower extremity; (2) malignancy, (3) infection or inflammatory disease; (4) fracture; (5) lumbago due to urological problem, gynaecological problem, digestive problem or cardio-vascular problem; (6) patients who cannot stop other conflicting or ongoing treatments; (7) problem of general condition; (8) dementia; (9) pregnancy Mean age: 59.6 years old Gender: no information Working status: no information Previous treatments: no information.
Interventions	1) Real acupuncture: Two needling points were chosen bilaterally from lumbar area (i.e. 4 points in total): BL52 and extra point (yao-yan: EX-B7). Needles were inserted to a depth of 20 mm, manipulated by sparrow pecking method for 20 seconds, and then removed. One treatment session was performed. Randomized to this group: 15 Acupuncturist had more than 10 years of experience. 2) Sham acupuncture: The same two points were chosen. Acupuncturist mimicked needle insertions: tapped head of needle guide tube, then gesture of needling was performed for 20 seconds. One session. Randomized to this group: 12
Outcomes	1) Pain: visual analog scale (VAS) at the most restricted action immediately after the single session Costs: not reported Complications: not reported

Inoue 2000 (*Continued*)

Notes	Language: Japanese Publication: abstract We obtained additional information from authors. For results, see the comparisons: 9.1 Conclusion: "There was no difference between real needling and sham needling"

Inoue 2001

Methods	-Randomized (computer generated numbers). Allocation was done by a centralized office using the Internet. -Patients and outcome assessors were blinded. -Funding: Not reported -Setting: University hospital in Kyoto, Japan. -Written informed consent was obtained. -The Ethics Committee approved this study. -Follow-up: All 21 patients were followed (100%) -Analysis: Mann-Whitney's U test was used for between group analysis
Participants	21 patients with low-back pain of unknown duration who attended the outpatient acupuncture clinic were included Excluded: (1) neurological findings, pain or numbness in lower extremity; (2) malignancy, (3) infection or inflammatory disease; (4) fracture; (5) lumbago due to urological problem, gynaecological problem, digestive problem or cardio-vascular problem; (6) patients who can not stop other conflicting or ongoing treatments; (7) problem of general condition; (8) dementia; (9) pregnancy Mean age: 55.1 years old Gender: no information Working status: no information Previous treatments: no information.
Interventions	1) Real acupuncture: One needling point was chosen from lumbar area: most painful locus was detected. Needles were inserted and sparrow-picking technique was performed for 20 seconds. One session. Randomized to this group: 10 Experience: not reported 2) Sham acupuncture: One needling point was chosen from lumbar area: most painful locus was detected, same as real acupuncture group. Acupuncturist mimicked needle insertion: tapped head of needle guide tube, then gesture of needling was performed for 20 seconds. One session. Randomized to this group: 11
Outcomes	1) Pain: visual analog scale (VAS) at the most restricted action immediately after the single session Costs: not reported Complications: not reported
Notes	Language: Japanese Publication: abstract We obtained additional information from authors. For results, see the comparisons: 9.1 Conclusion: "Real needling is superior to sham needling".

Kerr 2003

Methods	-Randomized (computer generated numbers). No information about who performed allocation of patients. -Patients and outcome assessors were blinded -Funding: Department of Health and Social Services for Northern Ireland -Setting: outpatient clinic in a hospital -Signed a consent form and were verbally advised as to the nature of the intervention. Patients were informed that they would receive one of 2 different forms of treatment being investigated -Ethics permission was obtained from the University of Ulster's Research Ethical Committee -46 of 60 randomised patients (76%) finished the trial period and 40/60 (66.7%) were followed at 6 months. -Analysis: Only those who completed the study (46/60). T-tests for paired and independent samples
Participants	60 patients with chronic low-back pain (> 6 months) with or without leg pain and with no neurologic deficits. Mean duration of pain was 75.8 months Excluded: age < 18 years old, pregnancy, underlying systemic disorder, rheumatoid arthritis, osteoarthritis of the spine or cancer Mean age: 41 years old 28 males and 32 females Working status: not reported Previous treatments: not reported
Interventions	1) Same set of acupoints for everyone, regardless of the distribution of their symptoms: Bl23, Bl25, GB 30, Bl40, Ki3 (all bilateral) and GV4. Eleven needles were used in each session (Seirin acupuncture needles N8, 0.30 x 50 mm, c-type needle). The needles were inserted until Teh Chi was produced. Position: prone. Duration: 30 minutes. Needles were manually rotated to produce Teh Chi initially and at 10 to 20 minute intervals. Sessions: 6 sessions, over a 6-week period. Patients were also given a leaflet regarding their low-back pain that included standardized advice and exercises. A Chartered Physiotherapist trained in acupuncture carried out all treatments. Randomized to this group: 30 2) Placebo-TENS: Patients were advised that the treatment was relatively novel and that they should not feel any discomfort with the procedure and, in fact, should not be aware of any sensation at all. They were advised that the treatment had an effect on the nerve-endings and that it should relieve their symptoms. Patient lying in the prone position for 30 minutes. A non-functioning TENS machine was attached to 4 electrodes placed over the lumbar spine and the unit was placed in a position to make it difficult to interfere with the apparatus. The investigator monitored the patient's condition after 10 and 20 minutes. Sessions: 6 over a 6-week period. Patients were also given the advice and exercise leaflet and the same principal investigator carried out all treatments. Randomized to this group: 30
Outcomes	1) Pain (VAS) 2) SF-36 3) Physical examination: finger-floor distance. All these outcomes were measured immediately after the end of the 6th session 4) Global improvement measured at 6 months: "Did you experience pain relief? "Yes" or "No". But only 40 (66.7%) patients were followed up to 6 months Costs: not reported Complications: In the acupuncture group there were 2/23 patients who reported side effects and 2/17 in the placebo group
Notes	Language: English Publication: full paper No additional information from authors

	For results, see the comparisons: 5.1 5.2 5.4 5.7 Conclusions: "Although acupuncture showed highly significant differences in all the outcome measures between pre and post-treatment, the differences between the two groups were not statistically significant"

Kittang 2001

Methods	- Randomization in blocks of four patients (method not described). No description of who performed the allocation of patients -Outcome assessor was blinded -Funding: Three governmental, medical association and science council funding sources as well as funding from two pharmaceutical companies -Setting: Private clinic in Flora and Kinn, Norway -Consent not described, ethics approval obtained -57/60 patients were followed -Analysis: t-test & Fishers exact test
Participants	60 patients with acute low-back pain (lasting less than 10 days) Excluded: Neurologic outcomes, rheumatic illness, malign disease, systemic use of anti-inflammatory drugs or steroids before inclusion and use of medicine that may interact with anti-inflammatory drugs Between 18 and 67 years of age Gender: both sexes Working status: 2/3 on sick leave at time of inclusion
Interventions	1) First treatment was needling in "lumbago 1 and 3" with medial lumbago, and in "upper lip" with more lateral pain. Later treatments were 5 needles across at level L2, at "Ashi points" (local pain points) and in both ankles. Analgesia was allowed and sick leave provided when necessary. Four treatments within two weeks. Patients in both groups were given general advise and encouraged to daily physical activity. Randomized to this group: 30 2) Naproxen 500 mg twice daily for ten days Randomized to this group: 30
Outcomes	1) Pain (VAS) measured at baseline, 1 and 2 weeks and 3 and 6 months 2) Use of other analgesics measured at 1 and 2 weeks 3) Number of back pain episodes at 6 and 18 months 4) Side effects at 1 and 2 weeks 5) Stiffness measured at baseline, 1 and 2 weeks and 3 and 6 months 6) Lateral flexion measured at baseline, 1 and 2 weeks and 3 and 6 months Costs: not reported
Notes	Language: Norwegian Publication: full paper Asked authors for additional information: no response. For results, see the comparisons: 2.1

	2.3 2.4 Conclusions: "No difference in reduction of pain or stiffness over a six-month evaluation"

Kurosu 1979(a)

Methods	-Randomized (method not described). No information about concealment of allocation -No information about blinding -Funding: Not reported -Setting: Private clinic in Tokyo, Japan -There is no description about informed consent or ethics approval. -Follow-up: 20 of 20 (100%) -Analysis: Intention-to-treat, used t-test for between group analyses
Participants	20 patients with lumbar or sacral region pain. Most of patients were between 40 and 50 years old. 10 males and 10 females Working status: Not reported Previous treatments: Not reported
Interventions	1) Acupuncture: the needles were inserted, and left in situ for 10 minutes, and then removed. Insertion depth was 2 to 4 cm, depending on one's figure. Acupuncture needles used were stainless steel needles (50 mm length, 0.25 mm diameter). Six to eight points in lumbar part were chosen from BL23, 24, 25, 26, 27, 31, 52 and 3 extra channel points by palpation. Abdominal needling was added: needles were inserted to a depth of 1 to 1.5 cm at CV4,13 and ST25 (bilaterally). Acupuncture treatment was performed more than 4 times. Randomized to this group: 10 Experience: well-known and well-experienced acupuncturist. 2) Garlic moxibustion in lumbar region: Moxa is placed on top of a slice of garlic. Six to eight points in lumbar area were chosen from BL23, 25, 27, 52 and the other points by palpation. Randomized to this group: 10
Outcomes	1) Pain: 10-item questionnaire about the specific actions that caused pain. Possible range of this questionnaire is -10 to 20 (if patient feels pain at all actions) and higher scores are better. It was measured immediately before second and fourth session Costs: not reported Complications: not reported
Notes	Language: Japanese Publication: full paper No additional information from authors. For results, see the comparisons: 10.2 Conclusions: "There is no difference between needle retention technique and garlic moxibustion for low-back pain"

Kurosu 1979(b)

Methods	-Randomized (method not described). No information about concealment of allocation -No information about blinding -Funding: Not reported -Setting: Private clinic in Tokyo, Japan -There is no description about informed consent or ethics approval. -Follow-up: 20 out of 20 (100%) -Analysis: Intention-to-treat, used t-test for between group analyses
Participants	20 patients with lumbar or sacral region pain. Most of patients were between 40 and 50 years old. 11 males and 9 females Working status: Not reported Previous treatments: Not reported
Interventions	1) Acupuncture: the needles were left in situ for 10 minutes, and then removed. Depth was 2 to 4 cm, depending on one's figure. Stainless steel needles (50 mm length, 0.25 mm diameter). Six to eight points in lumbar part were chosen from BL23, 24, 25, 26, 27, 31, 52 and 3 extra channel points by palpation; abdominal needling was added: needles were inserted to a depth of 1 to 1.5 cm at CV4,12 and ST25 (bilaterally). Acupuncture treatment was performed more than 4 times. Experience: well-known and well-experienced acupuncturist. Randomized to this group: 10 2) Other acupuncture technique: needles were removed immediately after insertion. Insertion depth was 2 to 4 cm, depending on one's figure. Stainless steel needles (50 mm length, 0.25 mm diameter). Six to eight points in lumbar part were chosen from BL23, 24, 25, 26, 27, 31, 52 and 3 extra channel points by palpation. Abdominal needling was added: needles were inserted to a depth of 1 to 1.5 cm at CV4,12 and ST25 (bilaterally); needles were left in situ for 10 minutes, and then removed. Acupuncture treatment was performed 3 times. Randomized to this group: 10
Outcomes	1) Pain: 10-item questionnaire about the specific actions that caused pain. Possible range of this questionnaire is -10 to 20 (if patient feels pain at all actions) and higher scores are better. It was measured immediately after the fourth session Costs: not reported Complications: not reported
Notes	Language: Japanese Publication: full paper No additional information from authors. For results, see the comparisons: 11.2 Conclusions: "Results of needle retention technique is superior to that of simple insertion technique for low-back pain"

Lehmann 1986

Methods	-Block randomisation, blocks defined by prior lumbar surgery (method not reported). No information about concealment of allocation. -Therapists were blinded between real TENS and sham TENS, but not between acupuncture and TENS -Funding: NIHR Grant -Setting: Multidisciplinary inpatient clinic in a University of Iowa Hospital, USA. -Informed consent and ethics approval were not reported -Follow-up: 39 of 54 randomised patients (72%) -Analysis: Multivariate analysis of covariance (adjustments for baseline scores and for non-organic signs). No intention-to-treat analysis
Participants	54 patients screened at orthopaedic clinic with chronic (>3 months) disabling low-back pain Excluded: candidates for lumbar surgery, pain less than 3 months, pregnancy, osteomyelitis of the spine, discitis, tumour, ankylosing spondylitis, vertebral fractures and structural scoliosis Diagnoses: chronic disabling (not working) low-back pain. Duration of low-back pain: 48% more than 18 months Mean age: 39 years old (ranged from 20 to 59) Gender: 33% females. 93% married. Working status: 1/54 was working. 51 were receiving compensation. 33% were involved with litigation Previous treatments: some had surgery.
Interventions	1) Electroacupuncture with needles, biphasic wave at 2 to 4 Hz, inner and outer bladder meridian for paravertebral pain. Gall bladder meridian for lateral (sciatic) pain. LI4 points and additional points were stimulated according to the patient's pattern of pain; certified and experienced acupuncturist; twice weekly for 3 weeks. Teh Chi not reported. Randomized to this group: 18 2) Real TENS, pulse width of 250/second at 60 Hz, 15 treatments in 3 weeks, sub-threshold intensity, points of stimulation over the center of pain, experienced physiotherapist. Randomized to this group: 18 3) Sham TENS, same as TENS but dead battery. Randomized to this group: 18
Outcomes	1) Peak pain and average pain (VAS) 2) Activities of daily living: 15 items (yes/no) 3) Physician's perception of improvement 4) Range of motion All these outcomes were measured at baseline, at discharge and between 3 to 6 months after discharge 5) Return to Work after 6 months (from no disability=10 points, to not able to work at all=0 points); Costs: not reported Complications: there were no complications.
Notes	Language: English Publication: full paper No additional information from authors For results, see the comparisons: 5.6 5.8 5.11 (other data table) 6.3 6.4 6.6 (other data table)

Lehmann 1986 (*Continued*)

	Conclusions: "There were no significant differences between treatment groups with respect to their overall rehabilitation". "The electroacupuncture group demonstrated slightly better results than the other groups."

Leibing 2002

Methods	-Computer-based randomisation method. -Patients and outcome assessors were blinded. (Patients were blinded only between two types of acupuncture) -Funding: Ministry of Education, Science, Research and Technology, Federal Republic of Germany. -Setting: Outpatient clinic. Department of Orthopaedics, University Goettingen, Germany -Informed consent and ethics approval were obtained. -Follow-up: 150 patients were randomised. 131 initiated treatment. 114 (76%) were followed at the end of the treatment and 94 (63%) at 9 months. -Analysis: ANOVA with post-hoc comparisons using Tukey studentized range tests when significant overall effects observed. No intention-to-treat analysis, but used last observation carried forward from the 131 patients that initiated treatment
Participants	150 patients with chronic (> 6 months) non-radiating low-back pain Excluded: Abnormal neurological status, concomitant severe disease, psychiatric illness, current psychotherapy, pathological lumbosacral anterior-posterior and lateral X-rays (except for minor degenerative changes), rheumatic inflammatory disease, planned hospitalisation and refusal of participation Mean age: 48.1 years old Gender: 58% female 76% married Mean BMI: 26.3 Working status: 82% employed Current treatments: 8.4% surgery. 50% analgesics
Interventions	1) All patients received standardized active physiotherapy of 26 sessions (each 30 minutes) over 12 weeks. It was performed by trained physiotherapists according to the Bruegger-concept. In addition, 20 sessions (each 30 minutes) by an experienced Taiwanese physician over 12 weeks. In the first 2 weeks, acupuncture was done 5/week, and in the next 10 weeks, 1/week. Combined traditional body and ear acupuncture. Twenty fixed body acupoints (9 bilateral, two single points) and six on the ear (alternately on one ear) were selected according to their function in TCM and were needled in every patient. No diagnostic procedure was done to determine individual acupoints. Body points were manually stimulated until Teh Chi and left in place for 30 minutes: GV3, GV4, BL23, BL25, BL31, BL32, BL40, BL60, GB34, SP6, Yautungdien (extra meridian, at the back of the hand). Ear points (left in for one week): 38, 51, 52, 54, 55, 95 Randomized to this group: 50, but only 40 initiated treatment. Ten were lost before first session. Reasons: withdrew consent=3; exclusion criteria appeared prior to treatment=5; relocated=2 2) No additional treatment. Only active physiotherapy (as described above) Randomized to this group: 50, but only 46 started treatment. Four were lost before first treatment. Reasons: withdrew consent=2; exclusion criteria=2 3) Sham acupuncture plus physiotherapy. Sham acupuncture received 20 sessions (each 30 minutes) of minimal acupuncture by the same physician over 12 weeks. Sham acupuncture was done following the standards of minimal acupuncture. Needles were inserted superficially, 10 to 20 mm distant to the verum-acupoints, outside the meridians, and were not stimulated (no Teh Chi). Randomized to this group: 50, but only 45 started treatment. Reasons: withdrew consent=1; exclusion criteria=4

Leibing 2002 (*Continued*)

Outcomes	1) Pain intensity: 10 cm VAS 2) Pain disability: total score consists of 7 areas of activity (min 0, max 70) O=no disability, and 70=total disability. 3) Psychological distress: Hospital Anxiety and Depression Scale, 14-item instrument for use in non-psychiatric medical patients. Total score (0 to 42) is a measure of psychological distress. 4) Spine flexion, fingertip-to-floor distance (min = 0 cm) Costs: not reported Complications: minor, not serious adverse events occurred in three patients in the acupuncture group
Notes	The use of last observation carried forward usually attenuates the differences between groups Language: English Publication: full paper No additional information from authors For results, see the comparisons: 5.1 5.3 5.8 5.12 5.13 5.15 12.1 12.2 12.3 12.5 12.8 12.9 Conclusions: "Acupuncture plus physiotherapy was superior to physiotherapy alone regarding pain intensity, disability and psychological distress at the end of the treatment. Compared to sham acupuncture plus physiotherapy, acupuncture (plus physiotherapy) reduced psychological distress only. At 9 months, the superiority of acupuncture plus physiotherapy compared to physiotherapy alone became less and acupuncture plus physiotherapy was not different from sham plus physiotherapy"

Li 1997

Methods	-Randomized (method not reported). No mention of concealment of allocation. -Patients were blinded. Comment: since both groups were given active treatments, all the patients should know that they were treated by "real" acupuncture. However, they probably couldn't tell which active treatment group they were in. -Funding: not reported -Setting: Outpatient clinic in a hospital. Hebei Province, China. -Informed consent and ethics approval were not mentioned -Follow-up: all 156 patients were followed. -Analysis: U-test: between groups
Participants	156 patients with low-back pain of varying duration (between 2 days and 8 years) Diagnoses: not reported Excluded: not reported Age between 20 and 71 years old 80 males and 76 females Working status: not reported Previous treatments: not reported

Li 1997 (*Continued*)

Interventions	1) Manual acupuncture plus cupping. Teh Chi sensation was obtained and needles were retained for 20 minutes. Major points: BL23, 40. GV 2, 26, LU5. Supplement points: for coldness and dampness: GV3, BL31, 34. For blood stasis: BL17, 18. For kidney deficiency: GV4 and KI 3. Treatment was given every other day (except for acute back pain, which was treated daily) up to 10 treatments. Randomized to this group: 78 Experience: adequate 2) Manual acupuncture alone. Major points: BL23, 40 and GV2. Supplement points: same as treatment group. Randomized to this group: 78
Outcomes	1) Overall assessment (see description in He 1997). Measured immediately after the end of the sessions Costs: not reported Complications: not reported
Notes	Language: Chinese Publication: full paper No additional information from authors For results, see the comparisons: 11.6 (other data table) Conclusions: "Manual acupuncture plus cupping technique is better than manual acupuncture alone for treating low-back pain"

Lopacz 1979

Methods	- Randomization procedure not described. - Nobody was blinded.
Participants	34 male patients from a neurology department. Inclusion criteria: low-back pain for 1 month or more. Age: mean 42 years old (ranged from 25 to 52).
Interventions	1) Acupuncture: 4 needles close to spine, 10 minutes, 4 treatments, 8 days, plus pharmacotherapy. Teh Chi unclear. Training & experience of acupuncturists unknown. Randomized to this group: 18 2) Placebo, suggestion, new Swedish method for pain relief, same 4 points echo-encephalography, 10 minutes, 4 treatments, 8 days, plus pharmacotherapy. Randomized to this group: 16
Outcomes	1) Global improvement (5-point scale): very good, good, doubtful, unchanged and worsening Measured after first treatment and after 4 treatments Costs: not reported Complications: not reported
Notes	Very short term follow-up only. Small sample size. Authors dichotomized at very good + good versus others. We classified the patients as chronic low-back pain. Language: Polish Publication: full paper No additional information from authors

	For results, see the comparisons: 5.2 Conclusions: "The therapeutic results were better, both immediately and after a series of acupuncture. The difference in the results of treatment was statistically significant in the patients with longest duration of pains (>3 months)"

MacDonald 1983

Methods	-A stratified random process to divide the sexes as equally as possible between the two groups. -Patients and observers were blinded. -Funding: North West Thames Regional Health Authority -Setting: London -Informed consent and ethics approval not reported -Follow-up: not reported -Analysis: Wilcoxon rank sum test.
Participants	17 patients referred from orthopaedic or rheumatological departments. Inclusion criteria: chronic LBP for at least one year, no relief from conventional treatments Diagnoses: spondylitis, ankylosing spondylitis, degenerative disc lesion, idiopathic, non-articular rheumatism, osteoarthritis, prolapsed intervertebral disc, arachnoiditis, ligamentous strain and Scheuermann's osteochondritis Exclusion criteria: not reported Demographics: not reported. But it says "the two groups were comparable in terms of age, duration of pain, mood scores, number of physical signs and severity of pain
Interventions	1) Superficial needling: subcutaneous (4 mm) 30-gauge needle insertion at trigger points. (Number of trigger points unknown). 5 to 20 minutes, maximum of 10 treatments in 10 weeks. Electrical impulses 700μs at 2 Hz if manual stimulation failed. Randomized to this group: 8 Experience: unknown 2) Placebo transcutaneous electrical stimulation: electrodes connected to dummy apparatus, maximum 10 treatments in 10 weeks. Randomized to this group: 9
Outcomes	1) Pain relief: - worse (-1) - no change (0) - minimal improvement (1% to 24%) (1) - moderate improvement (25% to 49%) (2) - good (50% to 74%) (3) - excellent (75% to 99%) (4) - complete resolution (100%) (5) 2) Pain score reduction 3) Activity pain score reduction 4) Physical signs reduction 5) Severity and pain area reduction Costs: not reported Complications: not reported
Notes	Intervention is dry-needling. Very small sample size, number of treatments unknown, and follow-up time unknown

MacDonald 1983 (*Continued*)

	Language: English Publication: full paper No additional information from authors Results: 1) Pain relief: dry-needling: 77.36, placebo: 30.14 (p<0.01); 2) Pain score: dry-needling: 57.15, placebo 22.71 (p:NS); 3) Activity: dry-needling 52.04, placebo 5.83 (p<0.05); 4) Physical signs: dry-needling: 96.78, placebo: 29.17 (p<0.01); 5) Severity and pain area: dry-needling: 73.75, placebo: 18.89 (p<0.01); Conclusions: "Needling achieved better responses than the placebo in all five measures. Four of the five inter-group differences were statistically significant."

Mendelson 1983

Methods	-Randomized (method not described). Unclear about concealment of allocation. Cross-over study. -Patients and outcome assessors were blinded. -Funding: National Health and Medical research Council of Australia. -Setting: Prince Henry's and Alfred Hospitals, Melbourne, Australia. -Informed written consent was obtained. Ethics approval by the Ethics Review Committee. -Follow-up: 77 of the 95 patients randomised (81%). -Analysis: T-tests. No intention to treat analysis.
Participants	95 volunteers with chronic low-back pain, no compensation or litigation pending, no overt psychiatric disease Diagnoses: Osteoarthritis, traumatic spondylopathy, disc lesion, sacroiliac joint disorder and backache not specified Mean age: 54 years old Gender: 37 males and 40 females. Pain duration: 12 years.
Interventions	1) Traditional Chinese acupuncture by a surgeon trained in Peking; points: B23, 25, 36, 40 and 60. If sciatica: GB 30, 34 and 39. Average 8 needles, manual stimulation until reaching Teh Chi, 30 minutes with no further stimulation, twice weekly, 4 weeks. Randomized to this group: don't know. 36 completed the study 2) Sham acupuncture, intradermal injection of 2% lidocaine at non-acupuncture, non-tender sites, then acupuncture needles superficially into the infiltrated areas for 30 minutes without stimulation, twice weekly, 4 weeks. Randomized to this group: don't know. 41 completed the study
Outcomes	1) Pain (VAS) 100-mm scale. 2) Pain relief 3) McGill Pain Questionnaire 4) Disability (method not described) Costs: not reported Complications: not reported
Notes	Language: English Publication: full paper No additional information from authors For results, see the comparisons: 5.1

Mendelson 1983 (*Continued*)

	5.2 Conclusions: "Patients receiving acupuncture had a greater but not significantly different reduction in pain rating scores compared with those receiving placebo. Similarly, no significant difference was found between the two groups based on self-assessment of disability"

Meng 2003

Methods	-Randomized (computer generated random allocation sequence). Serially numbered, sealed, opaque envelopes -No blinding -Funding: New York Chapter of the Arthritis Foundation -Setting: Private surgeries clinics of the Hospital for Special Surgery at the New York Presbyterian Hospital. USA -Written informed consent; approval by Institutional Review Board -Follow-up: 47 of 55 randomised patients (85%) -Analysis: ANOVA for between group differences. Both intention-to-treat and completers only analysis
Participants	55 patients with chronic nonspecific low back pain (>12 weeks) and older than 60 years Excluded: specific cause for low-back pain, prior use of acupuncture, use of corticosteroids, muscle relaxants, narcotics, anticoagulants Mean age: 71 years old Gender: 22 male and 33 female Previous treatments: 27 NSAID, 10 analgesics, 1 muscle relaxant and 2 aspirin Ethnicity: 47 Caucasian, 5 African-American and 3 Hispanic. Charlson Comorbidity Index: 1.7 (+/- 2.0)
Interventions	1) Acupuncture plus standard therapy: Acupuncture twice a week for 5 weeks. Total 10 sessions. 30-gauge needles with electrical stimulation (4 to 6 Hz) with a pulse duration of 0.5 ms. Teh Chi response at all points were verified. Between 10 and 14 needles were used per session. Needle retention was 20 minutes. Fixed acupoints: UB23, 24, 25, 28 (bilateral). Du3 and 4. Supplementary acupoints: maximum 4 additional needles: UB36, 54, 37, 40, GB 30, 31. Two anaesthetists certified in acupuncture. Randomized to this group: 31. Received acupuncture: 28. Completed follow-up: 24 2) Standard therapy: Primary physician for 5-week intervention period: NSAID, aspirin, non-narcotic analgesic. Continue back exercise (physical therapy) or home exercise regimen. Prohibited: narcotics, muscle relaxants, TENS, epidural steroid injections and trigger point injections. Randomized to this group: 24. Received standard therapy: 23. Completed follow-up: 23
Outcomes	1) Back specific functional status (modified Roland Disability Questionnaire) 2) Pain (VAS) These outcomes were measured at 0, 2, 6 and 9 weeks during the trial period, but we only used the measures at 6 weeks (at the end of all sessions) and 9 weeks (3 to 4 weeks after the end of the sessions) Costs: not reported Complications: no difference in adverse effects.
Notes	Language: English Publication: full paper For results, see the comparisons: 12.1 12.2 12.5

	12.7 Conclusions: "Our data indicate that acupuncture plus standard therapy does decrease back pain and disability in older patients compared with standard therapy alone in a clinically and statistically significant manner"

Molsberger 2002

Methods	-Randomized (computer generated) stratified according to pain duration. Central telephone randomisation. -Patients and outcome assessors were blinded. -Funding: Grant from the German Ministry of Education, Science and Research -Setting: Inpatients in the Hospital. Dusseldorf, Germany. -All patients were informed about the trial and written consent was obtained. -Follow-up: 124 of 186 patients randomised (66%) -Analysis: Approximate chi-square or exact Fisher test, non-parametric Mann-Whitney-Wilcoxon rank test. Per protocol analysis (n=174) and intention-to-treat analysis (n=186). Main analysis is adjusted for multiple testing
Participants	186 patients with low-back pain lasting longer than 6 weeks, with average pain scores greater than 50 mm (max 100 mm) during the last week. Aged between 20 and 60 years old, and speak German Excluded: sciatica, neurological disorder, disc or spine surgery, bone or joint disorder, previous treatment with acupuncture, psychiatric illness, pregnancy, regular intake of analgesics, off work longer than 6 months, no litigation Mean age: 50 years old Gender: 97 males and 89 females. Mean duration of pain: 9.9 years. Working status: not reported Previous treatments: not reported
Interventions	1) Verum acupuncture plus conventional orthopedic therapy. Acupuncture: standard points: BL23, 25, 40 and 60 and GB30 and 34. In addition, up to four points of maximum pain "Ah shi points", which were often close but not necessarily identical to BL 54, 31, 32 were needled. Needle insertion ranged from 1 to 10 cm and needle manipulation was mild to strong. A Teh Chi feeling was always achieved. During the acupuncture treatment, no additional treatment was administered. All patients received 12 verum acupuncture treatments, 3/week, each lasting for 30 minutes. Acupuncture was carried out by an experienced medical doctor, who had studied in China (Beijing). Randomized to this group: 65. Drop-outs during treatment: 7. Lost to follow-up: 11 2) Sham acupuncture plus conventional orthopedic therapy. Sham acupuncture received 12 sham acupuncture treatments, 3/week, each lasting 30 minutes. Sham acupuncture was standardized to ten needles applied superficially (depth of needle insertion was less than 1 cm) at defined non-acupuncture points of the lumbar region, and five needles on either side of the back. Randomized to this group: 61. Drop-outs during treatment: 3. Lost to follow-up: 17 3) The conventional orthopedic therapy consisted of: daily physiotherapy, physical exercises, back school, mud packs, infrared heat therapy. On demand they received 50 mg diclofenac up to three times a day. Injections or cortisone application of any kind were not allowed. Randomized to this group: 60. Drop-outs during treatment: 2. Lost to follow-up: 22
Outcomes	1) Pain intensity (VAS) during the last 7 days. 2) At least 50% reduction in pain intensity 3) Effectiveness of treatment: excellent, good, satisfactory and failed. Dichotomized at exc+good versus satisfactory+failed. 4) Schober and finger-to-floor distance.

Molsberger 2002 (*Continued*)

	All outcomes were taken at the end of the treatment period and 3 months later Costs: not reported Complications: no side effects or complications occurred in any treatment group
Notes	Language: English Publication: full paper No additional information from authors For results, see the comparisons: 5.1 5.2 5.14 12.1 12.4 12.6 Conclusions: "Together with conservative orthopedic standard therapy, acupuncture helps to decrease pain intensity directly after treatment, and patients' rating of the acupuncture treatment is significantly better than that of the standard therapy alone. The therapeutic effect lasts for at least 3 months after the end of treatment"

Sakai 1998

Methods	-Randomized (method not described). Sealed envelopes. -Not blinded. -Funding: Grant from the Foundation for Training and Licensure Examination in Anma-Massage-Acupressure, Acupuncture and Moxibustion. -Setting: Outpatients in a University Hospital. Tokyo, Japan. -Informed consent was taken orally. No description of ethics approval. -Follow-up: no information -Analysis: No statistical test.
Participants	26 patients with non-specific low-back pain of variable duration Excluded: (1) osteoarthritis of lumbar spine, osteoporosis, scoliosis, spondylolysis, spondylolisthesis, herniation of lumbar disc, spinal stenosis or fracture; (2) radiculopathy or neuropathy in the lower extremity; (3) urological problem, gynaecological problem, neurological problem, collagen, diabetes or malignancy; (4) increase of CRP or ESR; (5) medication of corticosteroid, immunosuppressant agent, NSAID or muscle relaxant; (6) problem of general condition; (7) dementia; (8) pregnancy; (9) elderly patient; (10) those who were judged to be inappropriate for the trial by the authors Mean age: 51 years old Gender: 7 males and 19 females Working status: not reported Previous treatments: not reported
Interventions	1) Needling points in lumbar area were chosen from BL23, 25, 32, 52 and 2 extra channel points near the spinous process of L4 and L5, and that in lower extremity were chosen from BL37, 40, 57, ST36, GB34 by palpation. Manual acupuncture technique such as needle retention and sparrow pecking technique were performed. Electro-acupuncture was applied in some cases. Other details in technique not reported. Patients were treated twice a week for two weeks, i.e. four sessions in total. Randomized to this group: 14 Experience: unknown

Sakai 1998 (*Continued*)

	2) Oral medication, which includes NSAID and/or kampo medicine (Chinese herbs). Randomized to this group: 12
Outcomes	1) Pain relief (VAS) on average on the pervious day, rated by the patient. Higher values are better. 2) JOA (Japan Orthopaedic Association) Score rated by the physician. Subjective symptoms of back pain and restriction of daily activities. Maximum 17 points. Higher values are better Outcomes were measured Immediately at the end of all sessions Costs: not reported Complications: not reported
Notes	This study reports on two distinct trials, but we used only the data from one trial, which was randomised. The other trial allocated patients using alternation, therefore it was not randomised Language: Japanese Publication: abstract (and unpublished report). We obtained additional information from authors For results, see the comparisons: 10.1 10.4 Conclusions: "Results of acupuncture are the same as those of medication for low-back pain"

Sakai 2001

Methods	-Multicentric study. -An independent controller in central office prepared an allocation table and sealed envelopes. A computer-generated randomised allocation table was used to make a sequence of sealed opaque envelopes containing the code of intervention. The assigned envelope was opened by acupuncturist at the patient's entry into the trial -Outcome assessor was blinded. -Funding: Grant from the Foundation for Training and Licensure Examination in Anma-Massage-Acupressure, Acupuncture and Moxibustion. -Setting: Outpatients in a University Hospital. Tokyo, Osaka, Kyoto and Tsukuba, Japan. -Written informed consent was taken from patients. At two of the four centres, judgement of ethics committee was asked and the committees approved the protocol. The other two centres did not have ethics committees. -Follow-up: 64 of 68 randomised (94%) -Analysis: 95%CI and repeated measures ANOVA.
Participants	68 patients with low-back pain (at least 2 weeks) and age 20 years or older Diagnoses: lumbago (22), lumbar spondylosis (15), discopathy (9), acute low-back pain (3), spondylolysis (3) , spondylolisthesis (1), sacroiliitis (1) and unclassified (10) Excluded: (1) neurological findings, pain or numbness in lower extremity; (2) malignancy, (3) infection or inflammatory disease; (4) fracture; (5) lumbago due to urological problem, gynaecological problem, digestive problem or cardio-vascular problem; (6) patients who can not stop other conflicting or ongoing treatments; (7) problem of general condition; (8) dementia; (9) pregnancy; (10) other patients who were judged to be inappropriate for participating in the trial Mean age: 37 years old Gender: 35 females and 29 males. Working status: not reported Previous treatments: not reported

Sakai 2001 (*Continued*)

Interventions	1) Needling points were chosen by palpation from the part of quadratus lumborum (around BL52) and/or erector spinae (around BL23 and BL26) in the lumbar area. Two points were used bilaterally - in total four points - for each treatment. Patients were treated twice a week for two weeks. Two types of disposable stainless steel needles were used according to patient's stature and fat: 0.20 mm in diameter and 50 mm in length, and 0.24 mm in diameter and 60 mm in length. Needles were inserted into the muscles. Electro-stimulation at frequency of 1 Hz was applied for 15 minutes. The intensity was adjusted to make muscle contraction without pain. Randomized to this group: 32. Drop-outs during treatment: 1. Lost to follow-up: 0 Experience: unknown 2) TENS: Same points as above. Two points were used bilaterally - in total four points - for each treatment. Patients were treated twice a week for two weeks, i.e. four sessions in total. Gel type disposable electrodes of 20 x 30 mm in size were used. Stimulation with the frequency of 1 Hz was applied for 15 minutes Randomized to this group: 36. Drop-outs during treatment: 2. Lost to follow-up: 1
Outcomes	1) JOA (Japan Orthopaedic Association) Score rated by the physician. Subjective symptoms of back pain and restriction of daily activities. Maximum 20 points. Higher values are better. 2) Pain relief (VAS) on average on the pervious day, rated by the patient. Higher values are better These outcomes were taken after the end of the 4 sessions. Costs: not reported Complications: no adverse event was reported in the electroacupuncture group. In the TENS group: 1 itching and 1 dullness after session
Notes	Duration of low-back pain mixed. Language: English and Japanese Publication: full paper We obtained additional information from the authors. For results, see the comparisons: 10.1 10.3 10.4 10.5 Conclusions: "There was no significant difference between groups in any parameter"

Takeda 2001

Methods	-Randomized (using draws). Stratified by pain duration and gender. Using sealed and numbered envelopes, but the person doing the randomisation was not independent. -Patients blinded. -Funding: no funding was received. -Setting: Acupuncture College in Osaka, Japan. -Informed consent was obtained from participants and there was no description of ethics approval. -Follow-up: 18 of 20 patients randomised (90%) -Analysis: Mann-Whitney U test for between group differences. No intention-to-treat analysis
Participants	20 students of acupuncture college who were suffering from lumbago Excluded: sciatica Duration of pain: Mean 40.4 months in distal group and 81.0 months in local group

	Mean age: 26.4 years old in distal group and 35.8 years in local group Gender: 17 males and 3 females Working status: all students. Previous treatments: not described
Interventions	1) Distal point technique: At the acupuncture points in lumber area: BL23, 26 and Yao-yan (extra-point: EX-B7), acupuncturist mimicked needle insertion: tapped head of needle guide tube, then gesture of needling was performed. Acupuncture points in lower extremity: BL37, 40 and 58, were needled by real acupuncture needle (40 mm in length and 0.2 mm in diameter). Insertion depth was 1 to 2 cm. Sparrow-picking technique was performed 5 times, then needles were removed. Participants were treated once a week for 3 weeks. Experience: unknown Randomized to this group: 10. Drop-outs during study: 1. 2) Local points technique: Acupuncture points in lumber area: BL23, 26 and Yo-gan (extra-point: EX-B7), were needled by real acupuncture needle (40 mm in length and 0.2 mm in diameter). Insertion depth was 1 to 2 cm. Sparrow-picking technique was performed 5 times, then needles were removed. At the acupoints in lower extremity: BL37, 40 and 58, acupuncturist mimicked needle insertion: tapped head of needle guide tube, then gesture of needling was performed. Participants were treated once a week for 3 weeks. Experience: unknown Randomized to this group: 10. Drop-out during treatment: 1.
Outcomes	1) Pain (VAS) 2) Function: activity of daily living score. 8 questions about difficulty of specific actions. Maximum 16 points. Higher values are better. 3) Finger-to-floor distance. All these outcomes were measured immediately before and after the treatment Costs: not reported Complications: not reported
Notes	Language: Japanese Publication: abstract only We obtained additional information from authors. For results, see the comparisons: 11.1 11.4 11.5 Conclusions: "There is no difference between the effects of lumbar area needling and that of distal point needling"

Thomas 1994

Methods	- Randomized (method not described). No description of concealment of allocation. - Outcome assessors were independent and not involved in the treatment. - Funding: Karolinksa Institute Foundation, King Gustav Vth 80 year anniversary Fund, Tore Nilssons Foundation for Medical Research, Torsten and Ragnar Soderbergs Foundation and The Swedish Medical Research Council. - Setting: Outpatient clinic at the Karolinska Hospital. Stockholm, Sweden. - Oral informed consent was obtained. No description of ethics approval: - Follow-up: 40 of 43 randomised patients (93%) - Analysis: Student t-test for independent samples and multiple comparisons ANOVA. No intention-to-treat analysis
Participants	43 patients from 2 clinics with nociceptive LBP for 6 months or more, restriction of trunk or hip movement due to pain, restriction of ADL, muscle spasm Excluded: previous surgery, claudication, depression, neurosis, clinical examination not nociceptive Diagnoses: Osteoarthritis, sacroiliac joint, sciatica, intervertebral disc degeneration, disc prolapse, lumbar strain, osteoporosis Demographics and patients characteristics: not reported, but they say there were no significant differences between the groups
Interventions	1) Acupuncture: three different modes of acupuncture: a) manual stimulation, b) low frequency (2 Hz) and c) high frequency (80 Hz) electrical stimulation of needles. Six local points (3 pairs of paraspinal points: UB 23, 25, 26 or 32) and 3 to 4 distal points (SI 6, UB40 or 60, GB 30 or 34 or St36). Insertion 1 to 5 cm, rotation producing Teh Chi, 10 sessions of 30 minutes; 2 registered physiotherapists trained in acupuncture. Randomized to this group: 33 2) Waiting list controls, no treatment. Randomized to this group: 10
Outcomes	1) Pain: number of words from chart of 83 words describing pain intensity 2) Global improvement: 3-point scale (improved, no change, worse) 3) Functional status: VAS on 12 ADL . Results are presented as number of activities that cause less than 50% pain. 4) Mobility: goniometry of the lumbar spine Outcomes were measured after 6 weeks and 6 months. Costs: not reported Complications: not reported
Notes	Randomization only for comparison acupuncture versus WLC, not for different modes of acupuncture Language: English Publication: full paper No additional information from authors Results see comparisons: 4.1 4.3 4.5 The results for global improvement could not be entered in the graphs The authors found significant differences for pain outcomes, however, when we entered this data in RevMan (comparison 05.01) this was not significant. Because we did this based on the data extracted from the figure, we decided to follow the author's conclusions Functional outcomes had to be transformed to effect sizes (comparison 05.07 to be combined with another trial) Conclusions: "After 6 weeks, patients receiving acupuncture were statistically significantly better than the control group on measures of pain, global improvement and mobility. The same results were observed at 6 months, but only for the group that received low frequency electroacupuncture"

Tsukayama 2002

Methods	-Randomized. Computer-generated random number were used to make a sequence of sealed envelopes. An independent person prepared an allocation table and sealed envelopes. -Outcome assessors were blinded. -Funding: Grant from the Foundation for Training and Licensure Examination in Anma-Massage-Acupressure, Acupuncture and Moxibustion" and the Tsukuba College of Technology. -Setting: Private clinic in Tsukuba, Japan. -The study was approved by the Ethics Committee of TCT Clinic. Informed consent was taken from patients according to the ICH/GCP. -Follow-up: 19 of 20 patients (95%) -Analysis: Repeated measures ANOVA. No intention-to-treat analysis
Participants	20 patients with low-back pain of at least 2 weeks and over 20 years old Excluded: radiculopathy or neuropathy, fracture, tumour, infection or internal disease, other general heath problem and conflicting or ongoing treatments Duration of low back pain: acupuncture group=2900 days (+/- 1983) and TENS group=3120 days (+/- 3306) Mean age: 45 years old Gender: 3 males and 16 females. Working status: not described Previous treatments: acupuncture (4)
Interventions	1) Acupuncture: Points selected by tenderness and palpable muscle bands detected on the lower back and the buttock. Four points bilaterally (8 in total) were used for each treatment. Points most frequently used were BL23 and BL26. Two types of disposable stainless steel needles were used, depending on stature and fat: 0.20 mm in diameter and 50 mm in length and 0.24 mm in diameter and 60 mm in length. Needles were inserted into the muscles. The average insertion depth was approximately 20 mm. Electrostimulation was applied to the inserted needles with an electronic stimulator with a frequency of 1 Hz for 15 minutes. Press tack needles were inserted after EA at four of the 8 chosen points and left in situ for several days, they are 1.3 mm long projecting from the sticky side of a small round adhesive dressing. Patients were treated twice a week for 2 weeks, for 4 sessions in total. Randomized to this group: 10. Drop-outs: 1 Experience: unknown 2) TENS: Gel type disposable electrodes of 20x30 mm were used for 8 points. Electro-stimulation was applied in the same manner as in the acupuncture group. The intensity was adjusted to the maximum comfortable level, and muscle contraction was observed. After each session, a poultice containing methyl salicylic acid, menthol and antihistamine was prescribed to be applied to the low-back region, at home, in-between treatments. Patients were treated twice a week for two weeks, in total 4 sessions. Randomized to this group: 10. No drop-outs.
Outcomes	1) Pain (VAS): average pain level on the previous day. 2) JOA score. See description in Sakai 2001 These outcomes were measured 3 days after the last session. Costs: not reported Complications: no adverse events reported by the evaluator. The therapists reported transient aggravation of symptoms in the acupuncture group (1), discomfort due to tack needles (1), pain on needle insertion (1) and small subcutaneous bleeding (1). In the TENS group: transient aggravation (1), transient fatigue (1) and itching (1)
Notes	Language: English Publication: full paper For results, see the comparisons:

Tsukayama 2002 (*Continued*)

	6.4 (other data table) 6.5 6.7 Conclusions: "The results of the present trial showed a significant between-group difference in pain relief in favour of acupuncture"

Von Mencke 1988

Methods	-Randomization procedure not described. -Patient and outcome assessors blinded. -Setting: Secondary care.
Participants	65 patients from an orthopedic clinic with lumbago and/or ischias, no relief after conventional treatment Diagnoses: Lombociatalgia (30), low-back pain (20), LWS Syndrome (10) and Ischialgia (5) Exclusion criteria: neurological problems, scoliosis, concurrent treatment, acute disc prolapse or protrusion, chronic degenerative disorders, infection Age and gender: not described. Heterogeneous population regarding type, location and duration of disorder
Interventions	1) Manual acupuncture, traditional meridian acupuncture or trigger points, rotation, insertion 0.2 to 3 cm, 6 to 12 needles 5 to 20 minutes, 8 treatments. Training & experience of acupuncturists unknown. Points: - Posterior: GV20, BL26, 31,33, 35, 48, 50, 54, 57, 58, 60. - Lateral: GV20, GB 26, 28, 30, 32, 34, 37, 38, 40. BL 26, 31, 33, 48, 60 - Anterior: GV 20, ST 36, 40. BL 31, 33, 48, 60. Randomized to this group: 35 2) Sham acupuncture, no traditional acupuncture nor trigger points. Randomized to this group: 30
Outcomes	1) Pain (VAS) 2) Global improvement 3) Schober's test 4) Lasegue's test
Notes	Language: German Publication: full paper No additional information from authors Results: 1) Improvement in pain at short-term follow-up: acupuncture=55%; sham acupuncture=37%. Long-term: 44% versus 30%. 2) Global improvement: acupuncture=94%, sham acupuncture=50% (Table 10.02). 3) Increase in Shober test: short-term: acupuncture=6.4, sham acupuncture=2.7. Long-term: 7.8 versus -0.9 4) Lasegue: short-term: acupuncture=6.0, sham acupuncture=2.2. Long-term, acupuncture=6.7, sham acupuncture= 0.6 Conclusions: "The difference in improvement between typically and atypically treated patients was highly significant ($p<0.0001$)."

Wang 1996

Methods	-Randomized (method not reported). No description of concealment of allocation. -Patients were blinded. -Funding: not reported -Setting: Not reported. Vanuatu, Southwest Pacific Ocean. -Informed consent and ethics approval: Not mentioned -Follow-up: not described but it seems 100%. -Analysis: U-test. No intention-to-treat analysis
Participants	492 patients with low-back pain of unknown duration. Diagnoses: back pain Exclusion criteria not reported. Mean age: 48% were older than 40 years old. Gender: 231 males and 261 females. Working status: not reported Previous treatments: not reported
Interventions	1) Local treatment plus cupping. Teh Chi sensation was obtained and needles were retained for 20 minutes. Points: BL23, 25 and 32. Treatments were given daily up to 10 treatments. Randomized to this group: 246 Experience: unknown 2) Distal treatment plus electrical stimulation. Points: ST36, GB 39, BL60 and LI4. Randomized to this group: 246 Experience: unknown
Outcomes	1) Overall assessment: a) cure: no pain and normal range of motion, no tenderness upon palpation, and normal life and work status. b) effective: pain is markedly improved, normal lumbar movement, no obvious tenderness upon palpation, and life and work is not affected c) no significant change Measured 3 months after the sessions. Costs: not reported Complications: not reported
Notes	The authors dichotomized at : Cure+effective versus no change Language: Chinese Publication: full paper No additional information from authors For results, see the comparisons: 11.3 Conclusions: “Local acupuncture treatment plus cupping is more effective (p<0.05) than the distal treatment plus electrical stimulation.”

Wu (b) 1991

Methods	See Wu 1991
Participants	
Interventions	
Outcomes	

Notes	

Wu 1991

Methods	-Randomized (based on odd or even number of the date of patient admission). No mention of concealment of allocation -Patients were blinded. -Funding: Not reported -Setting: Outpatients in a hospital. Morocco. -Informed consent and ethics approval not mentioned. -Follow-up: 100% (single session of acupuncture) -Analysis: Not reported
Participants	150 patients with acute low-back pain. Exclusion criteria not described Age between 20 and 55 years old Gender: 105 males and 45 females Working status: not described Previous treatments: not described
Interventions	1) SI3 point treatment Randomized to this group: 75 2) Extra 29 (EX-UE7) treatment Randomized to this group: 75 Manual acupuncture technique (no electro-stimulation) was used. Strong Teh Chi sensation was obtained combined with lumbar spine movement until symptom relieved. No mention of the duration of the treatment
Outcomes	1) Global assessment (pain and range of motion). - cure: no pain and normal range of motion - marked effective: pain is generally gone and ROM marked improved - effective: pain is relieved and ROM is somewhat improved. - no change Costs: not reported Complications: not reported
Notes	The authors dichotomized at: a) cure+marked effective+effective versus no change and b) cure+marked effective versus effective+no change Language: Chinese Publication: full paper No additional information from authors For results, see the comparisons: Dichotomization a) 3.1 Dichotomization b) 3.1 Conclusions: “Acupuncture point SI 3 is more effective than the point Yaotongxue.”

Yeung 2003

Methods	-Randomized in blocks (method not described). Randomization was blinded. -Outcome assessors blinded. -Funding: The Hong Kong Development Fund and Tung Wah Board Fund -Setting: Outpatient clinic in a hospital. Hong Kong. -The aims and procedures of the study were explained before written consent was obtained. Ethical approval from the Ethics Committee of the Hong Kong Hospital Authority and the Human Subject Ethics Subcommittee of the Hong Kong Polytechnic University was obtained prior to the start of the study. -Follow-up: 49 of 52 patients randomised (94%) -Analysis: 2-factor mixed repeated measures ANOVA. Intention-to-treat analysis. Dropping patients for reasons other than the treatment were given baseline values. Dropping patients for reasons related to the treatments were given worst score
Participants	52 patients with chronic low-back pain (>6 months) with or without radiation. Age between 18 and 75 years Diagnoses: non-specific low-back pain. Excluded: 1. Structural deformity (ankylosing spondylitis, scoliosis) 2. Lower limb fracture 3. Tumours 4. Spinal infection 5. Cauda equina syndrome 6. Pregnancy 7. Spinal cord compression 8. Subjects who were unable to keep the appointments 9. Receiving acupuncture treatment within the past 6 months 10. Receiving physiotherapy treatment within the past 3 months Mean age: 53 years old Gender: 9 males and 43 females Working status: not described Previous treatments: tui na, massage, chiropractor, bone setter or corset
Interventions	1) Electro-acupuncture: 3/week for 4 weeks by a physiotherapist certificated in acupuncture. Points were chosen according to the literature: BL23, BL25, BL40 and SP6. Acupuncture was applied to the side on which patients reported pain. If the reported pain was bilateral, EA was applied to the more painful side. Sterilised disposable needles, number 30 (0.3 mm) 40-mm long needles were inserted and manipulated until Teh Chi was obtained. Electrical stimulation on needles at a frequency of 2 Hz for 30 minutes. The intensity of the stimulation was set at the level that the patient could tolerate and often with evoked visible muscle contractions. The current had biphasic waveform to the four selected acupoints in two pairs. In addition, all patients also received exercise therapy, the same as in the control group. Randomized to this group: 26. Lost to follow-up: 1 2) Standard group exercise program led by the same physiotherapist. The program consisted of an hourly session each week for 4 consecutive weeks, and comprised back strengthening and stretching exercises In addition, patients were advised on spinal anatomy and body mechanics, back care and postural correction, lifting and ergonomic advice, and behavioural modification, as well as a series of home exercises (15 min/day). Randomized to this group: 26. Lost to follow-up: 2
Outcomes	1) Pain: Numerical rating scale for "average" and for "worst" pain intensity during the last week, by asking the patient to rate perceived level of pain on a scale from 0 to 10, where 0 represents no pain and 10 represents pain as bad as it could be. 2) Disability: The Aberdeen LBP scale (19-item) was used to measure low-back pain disability, because it is the only LBP-specific functional disability scale validated for Chinese subjects. Responses to the questions were summed and converted to a score percentage between 0 and 100, with 0 representing the least disabled and 100 the most severely disabled These outcomes were measured immediately after, 1 month and 3 months after Costs: not reported Complications: no adverse reaction or complication.

Yeung 2003 (*Continued*)

Notes	Language: English Publication: full paper No additional information from authors For results, see the comparisons: 12.1 12.7 12.9 Conclusions: "Significantly better scores in the NRS and Aberdeen LBP scale were found in the exercise plus EA group immediately after treatment, at 1-month follow-up and at 3-month follow-up"

Key:
CAM = complementary and alternative medicine
ADL = activities of daily living
WLC = waiting list control

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Cai 1996	Sciatica
Duplan 1983	Acute sciatica of disc origin.
Fox 1976	Not randomised
Franke 2000	Acupuncture treatment did not involve needling.
Fujinuki 1989	Lumbar spinal canal stenosis
Galacchi 1981	Percentage of low-back pain unknown
Gallacchi 1983	Percentage of low-back pain unknown
Ghia 1976	Specific causes of low-back pain
Hackett 1988	Acupuncture treatment did not involve needling.
Ishimaru 1993	Not randomised
Junnila 1982	No back pain
Kinoshita 1965	Sciatica
Kinoshita 1971	Sciatica

(*Continued*)

Kinoshita 1981	Sciatica
Koike 1975	Not randomised
Kuramoto 1977	Lumbar disc herniation
Laitinen 1976	Sciatica
Li 1994	Acupuncture treatment did not involve needling.
Megumi 1979	Not randomised
Ren 1996	Not randomised
Shinohara 2000	No mention of low-back pain, only musculoskeletal pain.
Sodipo 1981	Not randomised
Sugiyama 1984	Not randomised
Wang 1997	Not randomised
Wang 2000	Lumbar disc surgery
Wedenberg 2000	Pregnancy
Xingsheng 1998	Sciatica
Xu 1996	Not randomised
Yue 1978	Back (n=15) and neck (n=8) and it is a preliminary report
Zhang 1995	Not randomised
Zhang 1996	Not randomised
Zhi 1995	Not randomised

Characteristics of ongoing studies *[ordered by study ID]*

Cherkin

Trial name or title	Efficacy of Acupuncture for Chronic Low Back Pain
Methods	
Participants	Low Back Pain
Interventions	Acupuncture
Outcomes	
Starting date	Funding: National Center for Complementary and Alternative Medicine (NCCAM)
Contact information	Janet Erro, RN erro.j@ghc.org Study chairs or principal investigators Daniel Cherkin, PhD, Study Director, Group Health Cooperative Center for Health Studies Karen J Sherman, PhD, Principal Investigator, Group Health Cooperative Center for Health Studies Andy Avins, MD, Principal Investigator, Kaiser Foundation Research Institute, Kaiser Permanente Northern California Study ID Numbers R01 AT001110-01 A1 Study Start Date April 2004 Record last reviewed March 2004 NLM Identifier NCT00065585 ClinicalTrials.gov processed this record on 2004-04-16
Notes	Source: www.controlled-trials.com This is a 4-arm multi-site randomised controlled trial to clarify the extent to which various types of acupuncture needling can diminish the effect of chronic low back pain on patient functioning and symptoms. Reviews have noted the poor quality of research in this area and urged that scientifically rigorous studies be conducted. Recent higher quality trials suggest acupuncture is a promising treatment for back pain. This study directly addresses methodological shortcomings that have plagued previous studies. A total of 640 subjects (160 per arm) with low back pain lasting at least 3 months will be recruited from group model HMOs in Seattle, WA and Oakland, CA. They will be randomised to one of three different methods of stimulation of acupuncture or to continue usual medical care. Ten treatments will be provided over 7 weeks. The primary outcomes, dysfunction and bothersomeness of low back pain, will be measured at baseline, and after 8, 26, and 52 weeks by telephone interviewers masked to treatment. Analysis of covariance within an intention-to-treat context will be used to analyse the data. Because chronic back pain is a major public health problem and the top reason patients seek acupuncture treatment, a clear, unambiguous assessment is critical for making informed decisions about whether acupuncture should be included as part of conventional care for back pain or covered by insurance. Results of this study will provide the clearest evidence to date about the value of acupuncture needling as a treatment for chronic low back pain

GerAc

Trial name or title	German Acupuncture Trials
Methods	
Participants	

GerAc (*Continued*)

Interventions	
Outcomes	
Starting date	
Contact information	http://www.gerac.de/index1.html
Notes	

Harvard Med School

Trial name or title	Physical CAM Therapies for Chronic Low Back Pain
Methods	
Participants	Chronic Low Back Pain
Interventions	Procedure: massage therapy Procedure: chiropractic Procedure: acupuncture
Outcomes	Study Design: Treatment, Randomized, Open Label, Active Control, Parallel Assignment
Starting date	Funding: NIH
Contact information	Expected Total Enrollment: 120 Location Information Massachusetts Harvard Vanguard Medical Associates, Boston, Massachusetts, 00000, United States Harvard medical school, Boston, Massachusetts, 00000, United States More Information Study ID Numbers 1 R01 AT00622-01; EisenbergD Study Start Date April 2002; Estimated Completion Date December 2002 Record last reviewed August 2003 NLM Identifier NCT00065975 ClinicalTrials.gov processed this record on 2004-04-16
Notes	Source: www.controlled-trials.com This study compares two approaches to the management of acute low back pain: usual care (standard benefit) vs. the choice of: usual care, chiropractic, acupuncture or massage therapy (expanded benefit). 480 subjects with uncomplicated, acute low back pain will be recruited from a health maintenance organization, and randomised to either usual care (n=160) or choice of expanded benefits (n=320). Patients' preferences for individual therapies and expectations of improvement will be measured at baseline and throughout the study. Subjects randomised to the expanded benefits arm who choose chiropractic, acupuncture or massage will receive up to 10 treatments over a five-week period. Additional treatments will be available after the fifth week but will require a copayment. Treatments will be provided by licensed providers who have met strict credentialing criteria. Chiropractic, acupuncture or massage treatments will begin within 48 hours.

Harvard Med School (*Continued*)

	Chiropractic, acupuncture and massage therapy scope of practice guidelines for the treatment of acute low back pain have been developed as have detailed data tracking procedures to be used at each patient visit. Symptom relief, functional status, restricted activity days, use of health care, and patient and provider satisfaction will be assessed at 2, 5,12, 26 and 52 weeks after initiation of treatment. Primary outcomes will include: 1) change in symptoms; 2) change in functional status; 3) patient satisfaction; and 4) total utilization of services associated with care for low back pain. Medical records and the HMO's cost management information system will identify use of services. It is hypothesized that patients offered their choice of expanded benefits will experience a more rapid improvement in symptoms, a faster return to baseline functional status, a decrease in utilization of conventional medical services, and will be more satisfied with their care. The study is a direct examination of the effectiveness of an insurance eligibility intervention, not a test of the efficacy of specific, non-allopathic treatment regimens. The results of this study will provide valuable information to clinicians, patients and third party payers on the relative benefits and costs of an "expanded benefits" treatment option which incorporates chiropractic, acupuncture and massage services for low back

Kong

Trial name or title	
Methods	
Participants	
Interventions	
Outcomes	
Starting date	
Contact information	
Notes	

Munglani

Trial name or title	Randomised controlled single-blinded trial of deep intra-muscular stimulation in the treatment of chronic mechanical low back pain
Methods	
Participants	Out-patients between 18 and 65 years old
Interventions	
Outcomes	
Starting date	

Munglani (*Continued*)

Contact information	Dr Rajesh Munglani Contact details Box No 215 Pain Clinic Addenbrooke's NHS Trust CB2 2QQ Tel: 2346
Notes	Source: www.controlled-trials.com Deep Intra-Muscular Stimulation is a technique that consists of needling the body of contracted or shortened muscles, and it is claimed to relieve muscle spasm more effectively than other treatments, but no randomised controlled trials have been performed, especially to compare its effects with the effects of other needling techniques such as acupuncture or trigger point needling. As the Pain Clinic is at present able to make use of the services of a highly experienced practitioner of this technique, we are planning to conduct a randomised, controlled, single-blinded trial comparing the benefits of deep Intra-Muscular stimulation with superficial needling of subcutaneous tissues in patients with chronic mechanical low back pain. We wish to asses if the needling of deep muscles specifically produces pain relief over and above that produced by needling of more superficial structures. We plan to treat two groups of 25 patients each, or a total of 50 patients, administering four treatment episodes to each patient. Patients will be asked to turn up for four treatment episodes, and to fill in two self-reporting questionnaires (SCL-90 and Pain VAS) before and at 2, 6 and 26 weeks after treatment

Thomas

Trial name or title	Longer term clinical and economic benefits of offering acupuncture to patients with chronic low back pain
Methods	
Participants	patients with low back pain. Age 20-65 years with low back pain or sciatica, greater than 4 weeks and less than 12-months pain this episode
Interventions	i) traditional Chinese acupuncture, up to 10 treatments ii) standard care offered by GP only
Outcomes	
Starting date	Funding: NHS
Contact information	Ms Kate Thomas Address Medical Care Research Unit University of Sheffield ScHARR Regent Court 30 Regent Street City/town Sheffield Zip/Postcode S1 4DA Country United Kingdom Tel +44 0114 222 0753 Fax +44 0114 272 4095 Email k.j.thomas@shef.ac.uk

Thomas (*Continued*)

	Sponsor NHS Research and Development Health Technology Assessment Programme (HTA)
Notes	Source: www.controlled-trials.com

DATA AND ANALYSES

Comparison 1. acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (VAS) (lower values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 Immediately after end of sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
2 functional status (higher scores are better). Generic instrument	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
3 physical examination: finger-floor distance (lower values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
4 mean difference in pain (final - initial)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
4.1 Immediately after end of sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
5 mean difference in functional status (final - initial) Generic instrument	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
5.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
6 mean difference in physical examination (final - initial): finger-floor distance	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
6.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable

Comparison 2. acupuncture versus other intervention ((Sub)acute LBP: < 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (VAS): lower values are better	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
1.1 Immediately after the end of the sessions	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable

1.3 Intermediate-term follow-up (3 months to 1 year)	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
2 global measure (higher values are better)	1	Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Long-term follow-up (more than 1 year)	1	Risk Ratio (M-H, Random, 95% CI)	Not estimable
3 physical examination (finger floor distance)	1	Mean Difference (IV, Fixed, 95% CI)	Totals not selected
3.1 Immediately after the end of the sessions	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
3.2 Short-term follow-up (up to 3 months after the end of the sessions)	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
3.3 Intermediate-term follow-up (3 months to 1 year)	1	Mean Difference (IV, Fixed, 95% CI)	Not estimable
4 Side effects / Complications	1	Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	1	Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 3. acupuncture versus acupuncture. ((Sub)acute LBP: < 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 global measure	2		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
1.1 Immediately after the end of the sessions	2		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 4. acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (instruments: VAS and number of words)	2		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Short-term follow-up (up to 3 months after the end of the sessions)	2	90	Std. Mean Difference (IV, Random, 95% CI)	-0.73 [-1.19, -0.28]
1.2 Intermediate-term follow-up (3 months to 1 year)	1	40	Std. Mean Difference (IV, Random, 95% CI)	-0.78 [-1.52, -0.04]
2 global measure (improvement)	1		Odds Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Odds Ratio (M-H, Random, 95% CI)	Not estimable
3 functional status (higher values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected

3.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Mean Difference (IV, Random, 95% CI)	Not estimable
3.2 Intermediate-term follow-up (3 months to 1 year)	1		Mean Difference (IV, Random, 95% CI)	Not estimable
4 limitation of activity (higher values are worse)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
4.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
5 functional status (standardized measures)	2		Effect size (Random, 95% CI)	Subtotals only
5.1 Short-term follow-up (up to 3 months after the end of the sessions)	2	90	Effect size (Random, 95% CI)	0.63 [0.19, 1.08]
5.2 Intermediate-term follow-up (3 months to 1 year)	1	40	Effect size (Random, 95% CI)	0.03 [-0.70, 0.76]

Comparison 5. acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (lower values mean better)	5		Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Immediately after the end of the sessions	4	314	Mean Difference (IV, Random, 95% CI)	-10.21 [-14.99, -5.44]
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	2	138	Mean Difference (IV, Random, 95% CI)	-17.79 [-25.50, -10.07]
1.3 Intermediate-term follow-up (3 months to 1 year)	2	96	Mean Difference (IV, Random, 95% CI)	-5.74 [-14.72, 3.25]
1.4 Long-term follow-up (more than 1 year)	1	27	Mean Difference (IV, Random, 95% CI)	-12.0 [-41.83, 17.83]
2 global improvement (higher values are better)	6		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2.1 Immediately after the end of the sessions	3	234	Risk Ratio (M-H, Random, 95% CI)	1.23 [1.04, 1.46]
2.2 Short-term follow-up (up to 3 months after the end of the sessions)	3	171	Risk Ratio (M-H, Random, 95% CI)	1.44 [0.92, 2.24]
2.3 Intermediate-term follow-up (3 months to 1 year)	1	40	Risk Ratio (M-H, Random, 95% CI)	1.19 [0.89, 1.60]
2.4 Long-term follow-up (more than 1 year)	1	50	Risk Ratio (M-H, Random, 95% CI)	3.29 [0.85, 12.80]
3 pain disability index (lower values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable

3.2 Intermediate-term follow-up (3 months to 1 year)	1		Mean Difference (IV, Random, 95% CI)	Not estimable
4 physical examination (fingertips-to-floor distance).(Lower values are better)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
5 improvement in physical examination	1		Odds Ratio (M-H, Random, 95% CI)	Totals not selected
5.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Odds Ratio (M-H, Random, 95% CI)	Not estimable
6 Sick leave (higher values mean worse)	2		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
6.1 Intermediate-term follow-up (3 months to 1 year)	2	58	Risk Ratio (M-H, Random, 95% CI)	0.58 [0.22, 1.54]
7 Well being (SF-36). (Higher values are better)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
7.1 Immediately after the end of the sessions	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
8 Side effects / Complications	3		Risk Difference (M-H, Random, 95% CI)	Totals not selected
8.1 Immediately after the end of the sessions	2		Risk Difference (M-H, Random, 95% CI)	Not estimable
8.2 Intermediate-term follow-up (3 months to 1 year)	2		Risk Difference (M-H, Random, 95% CI)	Not estimable
9 pain (percent of baseline values)			Other data	No numeric data
9.1 Short-term follow-up (up to 3 months after the end of the sessions)			Other data	No numeric data
9.2 Intermediate-term follow-up (3 months to 1 year)			Other data	No numeric data
9.3 Long-term follow-up (more than 1 year)			Other data	No numeric data
10 sick leave			Other data	No numeric data
10.1 Long-term follow-up			Other data	No numeric data
11 general level of pain (0-15 points)(more points mean less pain)			Other data	No numeric data
11.1 Immediately after the end of the sessions			Other data	No numeric data
11.2 Intermediate-term follow-up (3 months to 1 year)			Other data	No numeric data
12 pain: difference between within group changes	1		differences between (Random, 95% CI)	Totals not selected
12.1 Immediately after the end of the sessions	1		differences between (Random, 95% CI)	Not estimable
12.2 Intermediate-term follow-up (3 months to 1 year)	1		differences between (Random, 95% CI)	Not estimable
13 function: difference between within group changes	1		differences between (Random, 95% CI)	Totals not selected

13.1 Immediately after the end of the sessions	1	differences between (Random, 95% CI)	Not estimable
13.2 Intermediate-term follow-up (3 months to 1 year)	1	differences between (Random, 95% CI)	Not estimable
14 Pain: percentage of patients with >50% pain reduction	1	Risk Ratio (M-H, Random, 95% CI)	Totals not selected
14.1 Immediately after the end of the sessions	1	Risk Ratio (M-H, Random, 95% CI)	Not estimable
14.2 Short-term follow-up (up to 3 months after the end of the sessions)	1	Risk Ratio (M-H, Random, 95% CI)	Not estimable
15 spine range of motion: difference between within group changes	1	difference between (Random, 95% CI)	Totals not selected
15.1 Immediately after the end of the sessions	1	difference between (Random, 95% CI)	Not estimable
15.2 Intermediate-term follow-up (3 months to 1 year)	1	difference between (Random, 95% CI)	Not estimable

Comparison 6. acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (lower values are better)	7		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Immediately after the end of the sessions	5	284	Std. Mean Difference (IV, Random, 95% CI)	0.48 [0.21, 0.75]
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	2	356	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-2.74, 2.36]
1.3 Intermediate-term follow-up (3 months to 1 year)	2	356	Std. Mean Difference (IV, Random, 95% CI)	2.48 [1.02, 3.94]
2 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen	6		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Immediately after the end of the sessions	4		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
2.2 Short-term follow-up (up to 3 months after the end of the sessions)	2		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
2.3 Intermediate-term follow-up (3 months to 1 year)	2		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
3 return to work (higher values mean better)	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3.1 Intermediate-term follow-up (3 months to 1 year)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
4 Side effects / Complications	7		Risk Difference (M-H, Random, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	4		Risk Difference (M-H, Random, 95% CI)	Not estimable

4.2 Short-term follow-up (up to 3 months after the end of the sessions)	2	Risk Difference (M-H, Random, 95% CI)	Not estimable
4.3 Intermediate-term follow-up (3 months to 1 year)	3	Risk Difference (M-H, Random, 95% CI)	Not estimable
5 pain and function (adjusted for baseline values)		Other data	No numeric data
5.1 Immediately after the end of the sessions		Other data	No numeric data
5.2 Short-term follow-up (up to 3 months after the end of the sessions)		Other data	No numeric data
5.3 Intermediate-term follow-up (3 months to 1 year)		Other data	No numeric data
6 general level of pain (0-15 points)(more points mean less pain)		Other data	No numeric data
6.1 Immediately after the end of the sessions		Other data	No numeric data
6.2 Intermediate-term follow-up (3 months to 1 year)		Other data	No numeric data
7 pain: difference between within group changes	1	differences between (Random, 95% CI)	Totals not selected
7.1 Immediately after the end of the sessions	1	differences between (Random, 95% CI)	Not estimable

Comparison 7. acupuncture versus acupuncture. (Chronic LBP: > 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (lower values mean better)	1		Mean Difference (IV, Fixed, 95% CI)	Totals not selected
1.1 Immediately after the end of the sessions	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		Mean Difference (IV, Fixed, 95% CI)	Not estimable
2 Improvement (higher values are better)	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
2.2 Intermediate-term follow-up (3 months to 1 year)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
3 improvement			Other data	No numeric data
3.1 Immediately after the end of the sessions			Other data	No numeric data

3.2 Short-term follow-up (up to 3 months after the end of the sessions)	Other data	No numeric data

Comparison 8. dry-needling versus other intervention ((Sub)acute LBP < 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 global measure (higher values are better)	4		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
1.1 Immediately after the end of the sessions	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	4		Risk Ratio (M-H, Random, 95% CI)	Not estimable
1.3 Intermediate-term follow-up (3 months to 1 year)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
2 Side effects / Complications	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 9. acupuncture versus placebo or sham intervention (unknown / mixed duration of low back pain)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (VAS): lower values are better	2		Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 Short term (immediately after end of sessions)	2		Mean Difference (IV, Random, 95% CI)	Not estimable
2 global measure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
2.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable

Comparison 10. acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain score (lower values mean better)	2		Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 Immediately after the end of the sessions	2		Mean Difference (IV, Random, 95% CI)	Not estimable
2 pain recovery: higher values are better	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Immediately after the end of the sessions	1		Std. Mean Difference (IV, Random, 95% CI)	Not estimable
3 global measure (higher values are better)	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3.1 Immediately after the end of the sessions	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
4 back specific functional status (higher scores are better). Ex: Japan Orthopedic Association Score.	2		Mean Difference (IV, Random, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	2		Mean Difference (IV, Random, 95% CI)	Not estimable
5 Side effects / Complications	1		Risk Difference (M-H, Random, 95% CI)	Totals not selected
5.1 Immediately after the end of the sessions	1		Risk Difference (M-H, Random, 95% CI)	Not estimable

Comparison 11. acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (lower values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 Short term (immediately after end of sessions)	1		Mean Difference (IV, Random, 95% CI)	Not estimable
2 pain recovery (higher values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
3 global measure (higher values are better)	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
3.1 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
4 functional status (higher values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable

5 physical examination (finger-floor distance) Higher values are better.	1	Mean Difference (IV, Random, 95% CI)	Totals not selected
5.1 Immediately after the end of the sessions	1	Mean Difference (IV, Random, 95% CI)	Not estimable
6 improvement		Other data	No numeric data
6.1 Long-term follow-up (more than 1 year)		Other data	No numeric data

Comparison 12. acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 pain (lower values are better)	4		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
1.1 Immediately after the end of the sessions	4	289	Std. Mean Difference (IV, Random, 95% CI)	-0.76 [-1.02, -0.50]
1.2 Short-term follow-up (up to 3 months after the end of the sessions)	3	182	Std. Mean Difference (IV, Random, 95% CI)	-1.10 [-1.62, -0.58]
1.3 Intermediate-term follow-up (3 months to 1 year)	2	115	Std. Mean Difference (IV, Random, 95% CI)	-0.76 [-1.14, -0.38]
2 pain: difference between within group changes	2		differences between (Random, 95% CI)	Subtotals only
2.1 Immediately after the end of the sessions	2		differences between (Random, 95% CI)	-1.07 [-2.14, -0.00]
2.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		differences between (Random, 95% CI)	-0.7 [-1.33, -0.07]
2.3 Intermediate-term follow-up (3 months to 1 year)	1		differences between (Random, 95% CI)	-0.8 [-1.80, 0.20]
3 pain disability index (lower values are better)	1		Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Immediately after the end of the sessions	1		Mean Difference (IV, Random, 95% CI)	Not estimable
3.2 Intermediate-term follow-up (3 months to 1 year)	1		Mean Difference (IV, Random, 95% CI)	Not estimable
4 Pain: percentage of patients with >50% pain reduction	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
4.1 Immediately after the end of the sessions	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
4.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
5 function: difference between within group changes	2		differences between (Random, 95% CI)	Subtotals only
5.1 Immediately after the end of the sessions	2		differences between (Random, 95% CI)	-6.51 [-14.99, 1.98]

5.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		differences between (Random, 95% CI)	-3.1 [-5.26, -0.94]
5.3 Intermediate-term follow-up (3 months to 1 year)	1		differences between (Random, 95% CI)	-6.8 [-12.60, 1.00]
6 global measure	1		Risk Ratio (M-H, Random, 95% CI)	Totals not selected
6.1 Immediately after the end of the sessions	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
6.2 Short-term follow-up (up to 3 months after the end of the sessions)	1		Risk Ratio (M-H, Random, 95% CI)	Not estimable
7 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen	3		Std. Mean Difference (IV, Random, 95% CI)	Subtotals only
7.1 Immediately after the end of the sessions	3	173	Std. Mean Difference (IV, Random, 95% CI)	-0.95 [-1.27, -0.63]
7.2 Short-term follow-up (up to 3 months after the end of the sessions)	2	99	Std. Mean Difference (IV, Random, 95% CI)	-0.95 [-1.37, -0.54]
7.3 Intermediate-term follow-up (3 months to 1 year)	2	115	Std. Mean Difference (IV, Random, 95% CI)	-0.55 [-0.92, -0.18]
8 spine range of motion: difference between within group changes	1		difference between (Random, 95% CI)	Totals not selected
8.1 Immediately after the end of the sessions	1		difference between (Random, 95% CI)	Not estimable
8.2 Intermediate-term follow-up (3 months to 1 year)	1		difference between (Random, 95% CI)	Not estimable
9 Side effects / Complications	2		Risk Difference (M-H, Random, 95% CI)	Totals not selected
9.1 Immediately after the end of the sessions	2		Risk Difference (M-H, Random, 95% CI)	Not estimable

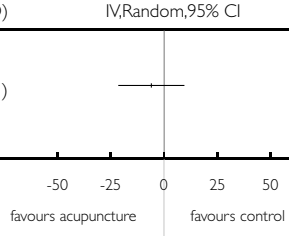
Analysis 1.1. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 1 pain (VAS) (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 1 pain (VAS) (lower values are better)

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after end of sessions						
Araki 2001	20	49.55 (22.63)	20	55.65 (27.41)		-6.10 [-21.68, 9.48]



Analysis 1.2. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 2 functional status (higher scores are better). Generic instrument.

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 2 functional status (higher scores are better). Generic instrument

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Araki 2001	20	6.6 (3.22)	20	6.5 (3.09)		0.10 [-1.86, 2.06]

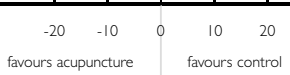
Analysis 1.3. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 3 physical examination: finger-floor distance (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 3 physical examination: finger-floor distance (lower values are better)

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Araki 2001	20	25.25 (18.69)	20	28.78 (19.41)		-3.53 [-15.34, 8.28]



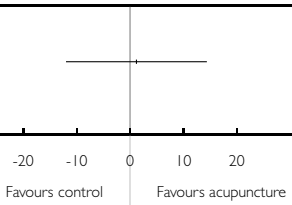
Analysis 1.4. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 4 mean difference in pain (final - initial).

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 4 mean difference in pain (final - initial)

Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after end of sessions						
Araki 2001	20	17.05 (15.74)	20	15.85 (25.5)		1.20 [-11.93, 14.33]



Analysis 1.5. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 5 mean difference in functional status (final - initial) Generic instrument.

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 5 mean difference in functional status (final - initial) Generic instrument

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Araki 2001	20	-2.15 (4.32)	20	-1.15 (2.68)		-1.00 [-3.23, 1.23]

Analysis 1.6. Comparison 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months), Outcome 6 mean difference in physical examination (final - initial): finger-floor distance.

Review: Acupuncture and dry-needling for low back pain

Comparison: 1 acupuncture versus placebo or sham intervention ((Sub)acute LBP: < 3 months)

Outcome: 6 mean difference in physical examination (final - initial): finger-floor distance

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Araki 2001	20	-3.65 (7.62)	20	-0.13 (9.66)		-3.52 [-8.91, 1.87]

Analysis 2.1. Comparison 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months), Outcome 1 pain (VAS): lower values are better.

Review: Acupuncture and dry-needling for low back pain

Comparison: 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months)

Outcome: 1 pain (VAS): lower values are better

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 Immediately after the end of the sessions						
Kittang 2001	28	13 (0)	29	12.9 (0)		0.0 [0.0, 0.0]
2 Short-term follow-up (up to 3 months after the end of the sessions)						
Kittang 2001	28	6.4 (0)	29	8.7 (0)		0.0 [0.0, 0.0]
3 Intermediate-term follow-up (3 months to 1 year)						
Kittang 2001	28	9.6 (0)	29	14.4 (0)		0.0 [0.0, 0.0]

Analysis 2.2. Comparison 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months), Outcome 2 global measure (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months)

Outcome: 2 global measure (higher values are better)

Study or subgroup	Acupuncture n/N	Other intervention n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Long-term follow-up (more than 1 year)				
He 1997	49/50	42/50		1.17 [1.03, 1.33]

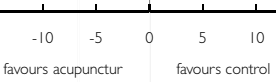
Analysis 2.3. Comparison 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months), Outcome 3 physical examination (finger floor distance).

Review: Acupuncture and dry-needling for low back pain

Comparison: 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months)

Outcome: 3 physical examination (finger floor distance)

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 Immediately after the end of the sessions						
Kittang 2001	28	46 (0)	29	46 (0)		0.0 [0.0, 0.0]
2 Short-term follow-up (up to 3 months after the end of the sessions)						
Kittang 2001	28	46 (0)	29	49 (0)		0.0 [0.0, 0.0]
3 Intermediate-term follow-up (3 months to 1 year)						
Kittang 2001	28	46 (0)	29	47 (0)		0.0 [0.0, 0.0]

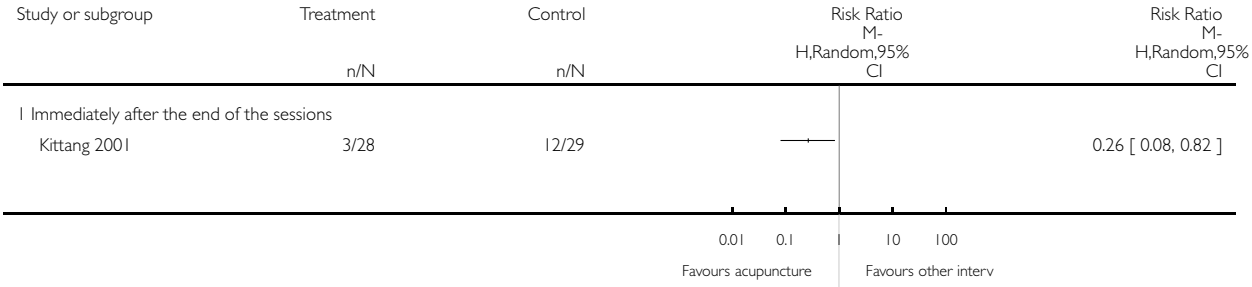


Analysis 2.4. Comparison 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months), Outcome 4 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 2 acupuncture versus other intervention ((Sub)acute LBP: < 3 months)

Outcome: 4 Side effects / Complications

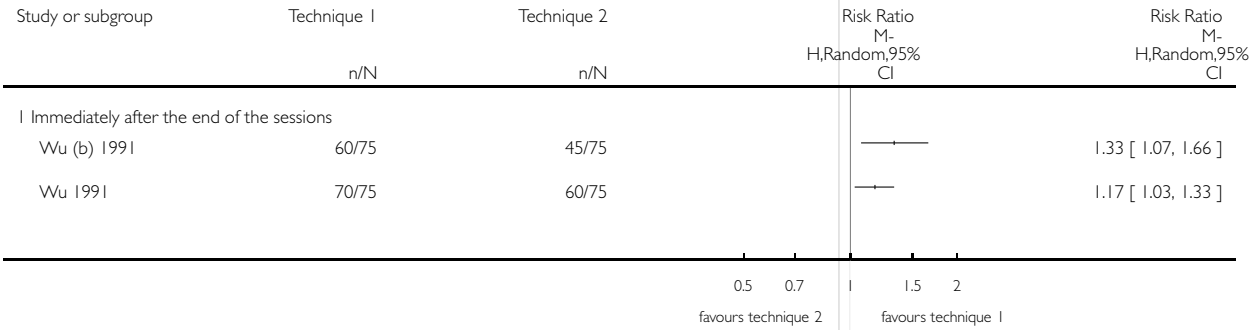


Analysis 3.1. Comparison 3 acupuncture versus acupuncture. ((Sub)acute LBP: < 3 months), Outcome 1 global measure.

Review: Acupuncture and dry-needling for low back pain

Comparison: 3 acupuncture versus acupuncture. ((Sub)acute LBP: < 3 months)

Outcome: 1 global measure



Analysis 4.1. Comparison 4 acupuncture versus no treatment. (Chronic LBP: > 3 months), Outcome 1 pain (instruments: VAS and number of words).

Review: Acupuncture and dry-needling for low back pain

Comparison: 4 acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome: 1 pain (instruments: VAS and number of words)

Study or subgroup	Acupuncture N	Mean(SD)	No treatment N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Short-term follow-up (up to 3 months after the end of the sessions)							
Coan 1980	25	2.84 (2)	25	4.69 (2)		60.5 %	-0.91 [-1.50, -0.33]
Thomas 1994	30	4 (5)	10	6.1 (1.75)		39.5 %	-0.46 [-1.19, 0.26]
Subtotal (95% CI)	**55**		**35**			**100.0 %**	**-0.73 [-1.19, -0.28]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.89, df = 1 (P = 0.35); I?? =0.0%							
Test for overall effect: Z = 3.16 (P = 0.0016)							
2 Intermediate-term follow-up (3 months to 1 year)							
Thomas 1994	30	4 (3)	10	6.2 (1.8)		100.0 %	-0.78 [-1.52, -0.04]
Subtotal (95% CI)	**30**		**10**			**100.0 %**	**-0.78 [-1.52, -0.04]**
Heterogeneity: not applicable							
Test for overall effect: Z = 2.07 (P = 0.038)							

Analysis 4.2. Comparison 4 acupuncture versus no treatment. (Chronic LBP: > 3 months), Outcome 2 global measure (improvement).

Review: Acupuncture and dry-needling for low back pain

Comparison: 4 acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome: 2 global measure (improvement)

Study or subgroup	Acupuncture n/N	No treatment n/N	Odds Ratio M-H,Random,95% CI	Odds Ratio M-H,Random,95% CI
1 Short-term follow-up (up to 3 months after the end of the sessions)				
Coan 1980	19/25	5/25		12.67 [3.31, 48.50]

Analysis 4.3. Comparison 4 acupuncture versus no treatment. (Chronic LBP: > 3 months), Outcome 3 functional status (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 4 acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome: 3 functional status (higher values are better)

Study or subgroup	Acupuncture N	Mean(SD)	No treatment N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Short-term follow-up (up to 3 months after the end of the sessions)						
Thomas 1994	30	8.5 (2.3)	10	7 (2.5)		1.50 [-0.25, 3.25]
2 Intermediate-term follow-up (3 months to 1 year)						
Thomas 1994	30	8.9 (3.1)	10	9 (2.4)		-0.10 [-1.96, 1.76]

Analysis 4.4. Comparison 4 acupuncture versus no treatment. (Chronic LBP: > 3 months), Outcome 4 limitation of activity (higher values are worse).

Review: Acupuncture and dry-needling for low back pain

Comparison: 4 acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome: 4 limitation of activity (higher values are worse)

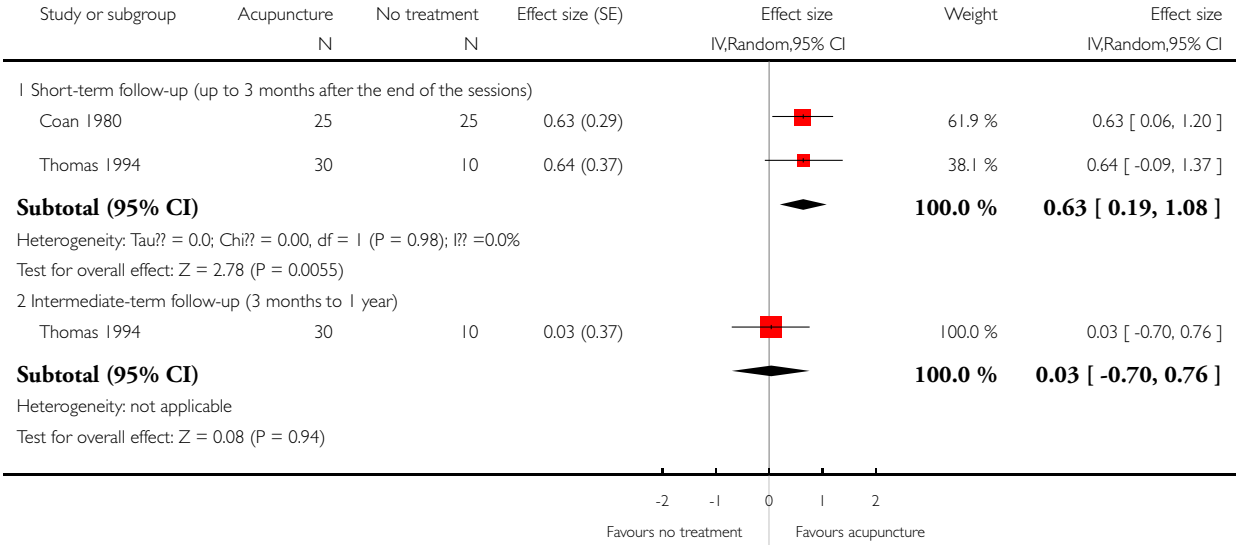
Study or subgroup	Acupuncture N	Mean(SD)	No treatment N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 Short-term follow-up (up to 3 months after the end of the sessions)						
Coan 1980	25	1.33 (0.7)	25	1.77 (0.7)		-0.44 [-0.83, -0.05]

Analysis 4.5. Comparison 4 acupuncture versus no treatment. (Chronic LBP: > 3 months), Outcome 5 functional status (standardized measures).

Review: Acupuncture and dry-needling for low back pain

Comparison: 4 acupuncture versus no treatment. (Chronic LBP: > 3 months)

Outcome: 5 functional status (standardized measures)



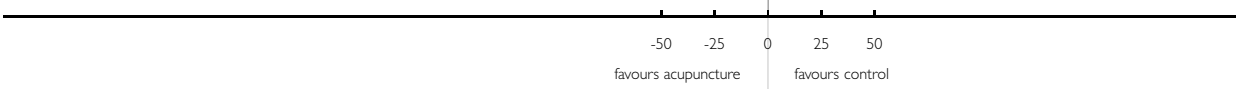
Analysis 5.1. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 1 pain (lower values mean better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 1 pain (lower values mean better)

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Weight	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions							
Kerr 2003	26	51.3 (22.4)	20	61.7 (30.6)		9.0 %	-10.40 [-26.34, 5.54]
Leibing 2002	35	21 (22)	40	32 (22)		22.9 %	-11.00 [-20.98, -1.02]
Mendelson 1983	36	30.2 (18)	41	40 (24.3)		25.3 %	-9.80 [-19.28, -0.32]
Molsberger 2002	58	26 (21)	58	36 (19)		42.9 %	-10.00 [-17.29, -2.71]
Subtotal (95% CI)	**155**		**159**			**100.0 %**	**-10.21 [-14.99, -5.44]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.03, df = 3 (P = 1.00); I?? =0.0%							
Test for overall effect: Z = 4.20 (P = 0.000027)							
2 Short-term follow-up (up to 3 months after the end of the sessions)							
Carlsson (even)	34	52 (24)	16	64 (25)		27.7 %	-12.00 [-26.67, 2.67]
Molsberger 2002	47	23 (20)	41	43 (23)		72.3 %	-20.00 [-29.07, -10.93]
Subtotal (95% CI)	**81**		**57**			**100.0 %**	**-17.79 [-25.50, -10.07]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.83, df = 1 (P = 0.36); I?? =0.0%							
Test for overall effect: Z = 4.52 (P < 0.00001)							
3 Intermediate-term follow-up (3 months to 1 year)							
Carlsson (even)	23	48 (22)	9	62 (30)		17.4 %	-14.00 [-35.56, 7.56]
Leibing 2002	33	31 (18)	31	35 (22)		82.6 %	-4.00 [-13.88, 5.88]
Subtotal (95% CI)	**56**		**40**			**100.0 %**	**-5.74 [-14.72, 3.25]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.68, df = 1 (P = 0.41); I?? =0.0%							
Test for overall effect: Z = 1.25 (P = 0.21)							
4 Long-term follow-up (more than 1 year)							
Carlsson (even)	21	42 (24)	6	54 (35)		100.0 %	-12.00 [-41.83, 17.83]
Subtotal (95% CI)	**21**		**6**			**100.0 %**	**-12.00 [-41.83, 17.83]**
Heterogeneity: not applicable							
Test for overall effect: Z = 0.79 (P = 0.43)							

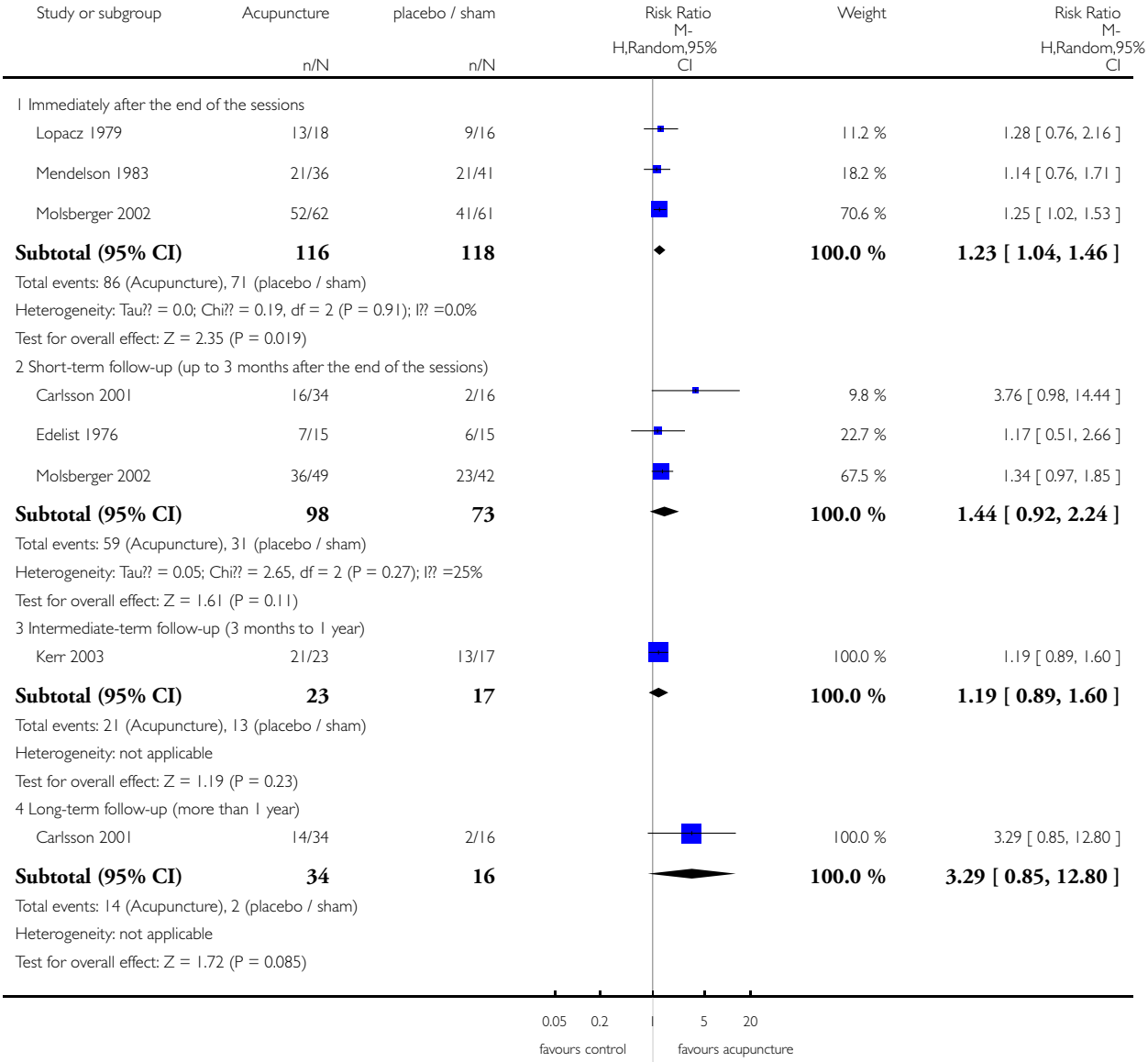


Analysis 5.2. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 2 global improvement (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 2 global improvement (higher values are better)



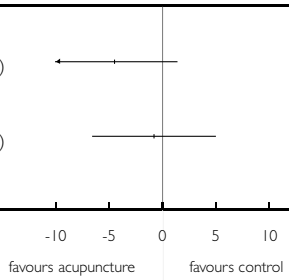
Analysis 5.3. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 3 pain disability index (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 3 pain disability index (lower values are better)

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Leibing 2002	35	11.3 (15)	40	15.8 (10.5)		-4.50 [-10.44, 1.44]
2 Intermediate-term follow-up (3 months to 1 year)						
Leibing 2002	33	16.2 (12.5)	31	17 (11.3)		-0.80 [-6.63, 5.03]



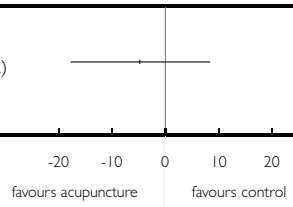
Analysis 5.4. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 4 physical examination (fingertips-to-floor distance).(Lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 4 physical examination (fingertips-to-floor distance).(Lower values are better)

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 Immediately after the end of the sessions						
Kerr 2003	26	23.6 (20)	20	28.4 (24.2)		-4.80 [-17.90, 8.30]

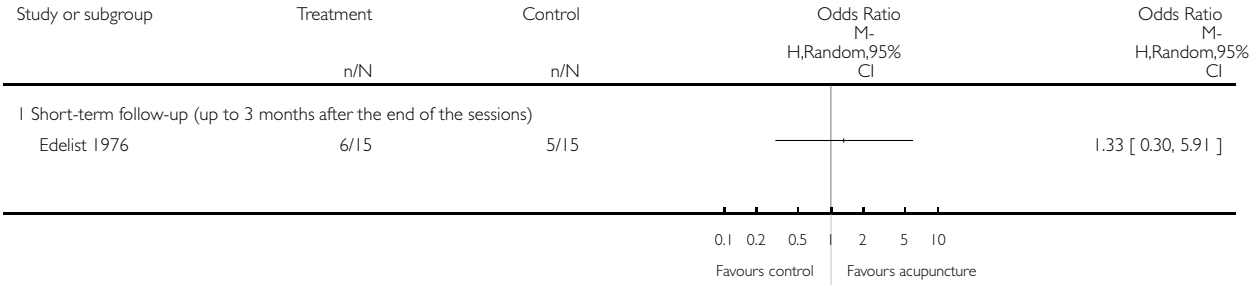


Analysis 5.5. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 5 improvement in physical examination.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 5 improvement in physical examination

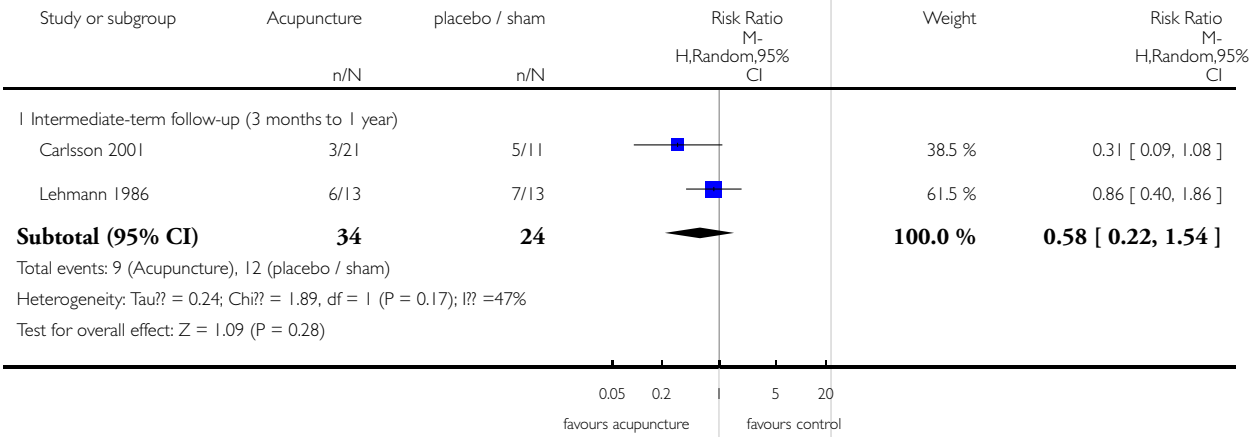


Analysis 5.6. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 6 Sick leave (higher values mean worse).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 6 Sick leave (higher values mean worse)



Analysis 5.7. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 7 Well being (SF-36). (Higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 7 Well being (SF-36). (Higher values are better)

Study or subgroup	Treatment N	Mean(SD)	Control N	Mean(SD)	Mean Difference IV,Fixed,95% CI	Mean Difference IV,Fixed,95% CI
1 Immediately after the end of the sessions						
Kerr 2003	26	63.9 (20.3)	20	57.5 (23.2)		6.40 [-6.42, 19.22]

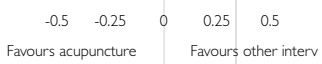
Analysis 5.8. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 8 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 8 Side effects / Complications

Study or subgroup	Treatment n/N	Control n/N	Risk Difference M-H,Random,95% CI	Risk Difference M-H,Random,95% CI
1 Immediately after the end of the sessions				
Carlsson 2001	0/34	0/16		0.0 [-0.09, 0.09]
Leibing 2002	3/35	0/40		0.09 [-0.02, 0.19]
2 Intermediate-term follow-up (3 months to 1 year)				
Carlsson 2001	0/21	0/6		0.0 [-0.20, 0.20]
Lehmann 1986	0/13	0/13		0.0 [-0.14, 0.14]



Analysis 5.9. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 9 pain (percent of baseline values).

pain (percent of baseline values)

Study	Group	Follow-up	Number of patients	Percent of baseline	Standard Deviation	p value
Short-term follow-up (up to 3 months after the end of the sessions)						
Carlsson (even)	Acupuncture	1 month	34	87%	32	0.003
Carlsson (even)	Placebo	1 month	16	123%	46	
Carlsson (morn)	Acupuncture	1 month	34	88%	32	0.000
Carlsson (morn)	Placebo	1 month	16	138%	40	
Intermediate-term follow-up (3 months to 1 year)						
Carlsson (even)	Acupuncture	3 months	23	75%	34	0.007
Carlsson (even)	Placebo	3 months	9	120%	50	
Carlsson (morn)	Acupuncture	3 months	23	76%	37	0.001
Carlsson (morn)	Placebo	3 months	9	130%	39	
Long-term follow-up (more than 1 year)						
Carlsson (even)	Acupuncture	6 months or longer	21	69%	31	0.056
Carlsson (even)	Placebo	6 months or longer	6	100%	48	
Carlsson (morn)	Acupuncture	6 months or longer	21	76%	33	0.128
Carlsson (morn)	Placebo	6 months or longer	6	133%	76	

Analysis 5.10. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 10 sick leave.

sick leave

Study	Group	Time	Full time work	Sick leave part-time	Sick leave full time	p value
Long-term follow-up						
Carlsson 2001	Acupuncture	Baseline	7	6	8	
Carlsson 2001		After 6 months	11	7	3	0.024
Carlsson 2001	Placebo	Baseline	4	2	5	
Carlsson 2001		After 6 months	5	1	5	0.655

Analysis 5.11. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 11 general level of pain (0-15 points)(more points mean less pain).

general level of pain (0-15 points)(more points mean less pain)

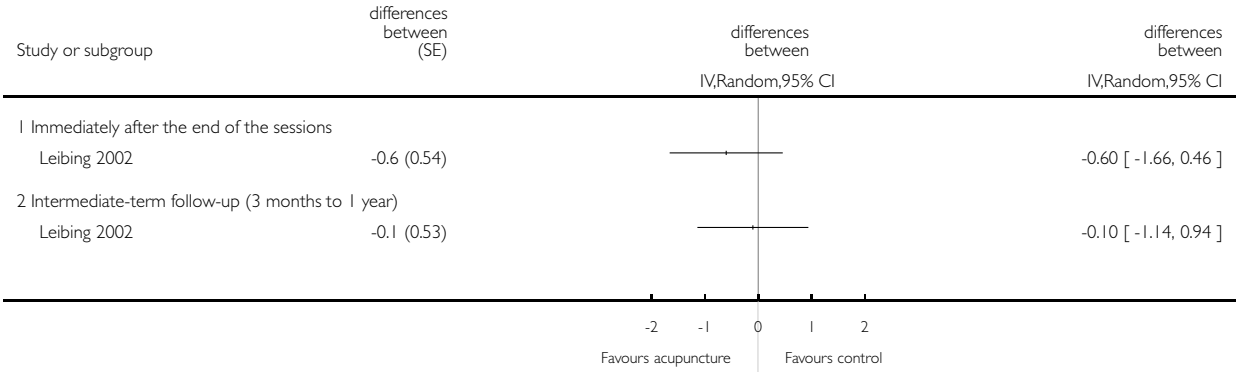
Study	Group	Value	p value
Immediately after the end of the sessions			
Lehmann 1986	Acupuncture	10.59	F 2,50 = 1.66 (p<0.2)
Lehmann 1986	TENS	9.16	
Lehmann 1986	Sham TENS	9.00	
Intermediate-term follow-up (3 months to 1 year)			
Lehmann 1986	Acupuncture	11.08	F 2,41=3.57 p=0.04 (not adjusted for multiple comparisons). p=0.1 (adjusted for multiple comparisons)
Lehmann 1986	TENS	8.28	
Lehmann 1986	Sham TENS	7.94	

Analysis 5.12. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 12 pain: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 12 pain: difference between within group changes

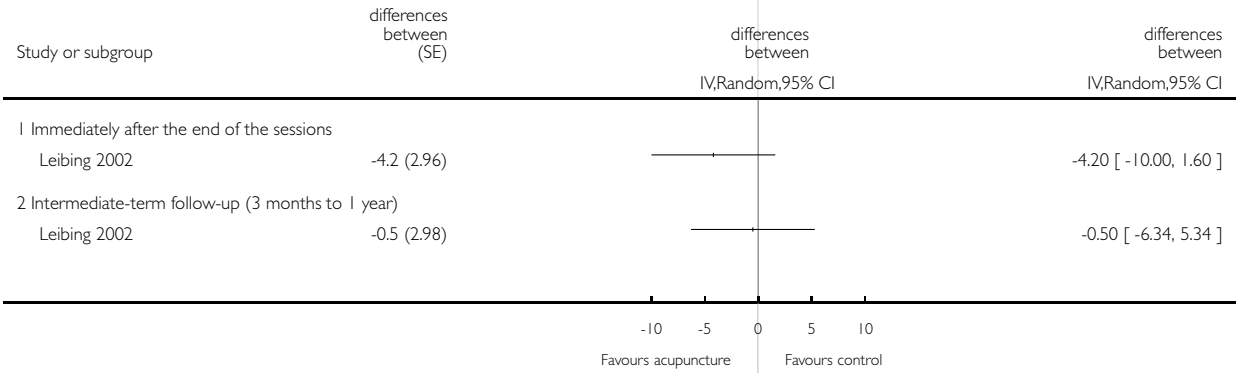


Analysis 5.13. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 13 function: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 13 function: difference between within group changes

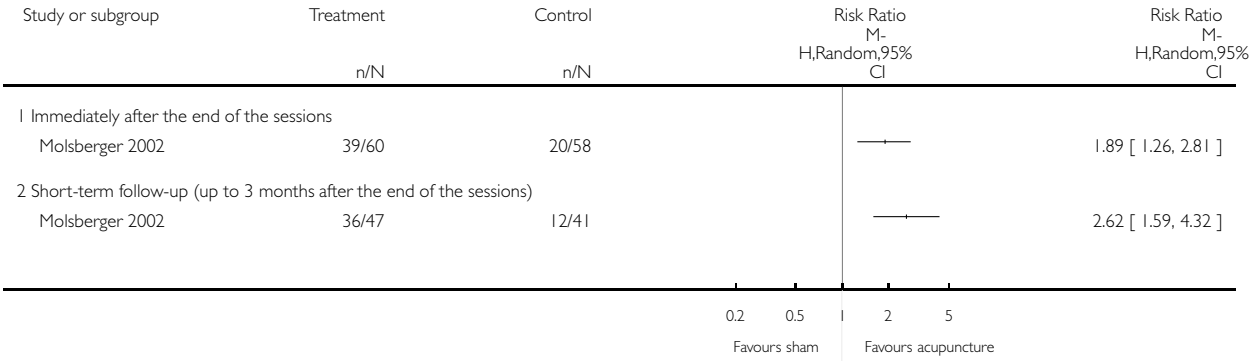


Analysis 5.14. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 14 Pain: percentage of patients with >50% pain reduction.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 14 Pain: percentage of patients with >50% pain reduction

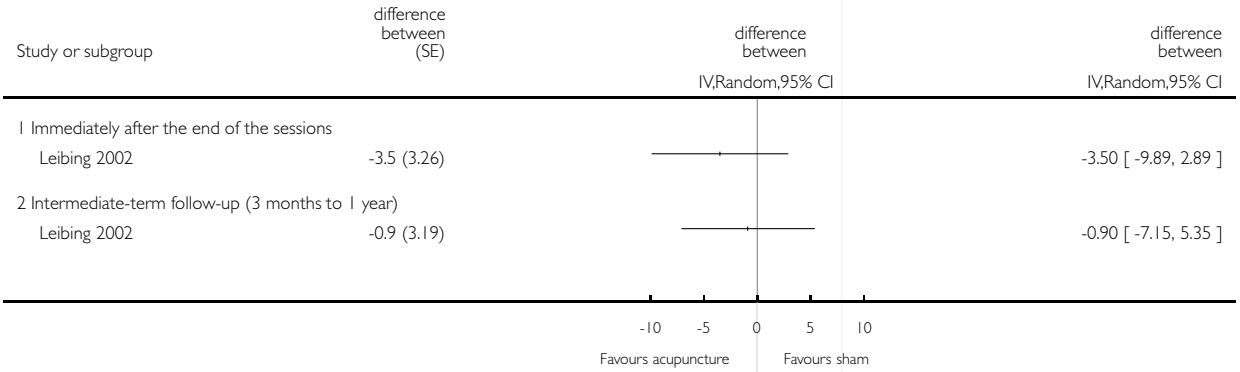


Analysis 5.15. Comparison 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months), Outcome 15 spine range of motion: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 5 acupuncture versus placebo or sham intervention (Chronic LBP: > 3 months)

Outcome: 15 spine range of motion: difference between within group changes



Analysis 6.1. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 1 pain (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 6 acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome: 1 pain (lower values are better)

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Std. Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Giles 1999 (manip)	16	5.1 (7.8)	32	2.5 (6.96)		0.35 [-0.25, 0.96]
Giles 1999 (NSAID)	16	5.1 (7.8)	20	3.8 (4.81)		0.20 [-0.46, 0.86]
Giles 2003 (manip)	33	7 (5.18)	35	3 (5.18)		0.76 [0.27, 1.26]
Giles 2003 (NSAID)	33	7 (5.18)	39	5 (3.7)		0.45 [-0.02, 0.92]
Grant 1999	32	0 (0)	28	0 (0)		0.0 [0.0, 0.0]
Subtotal (95% CI)	**130**		**154**			**0.48 [0.21, 0.75]**
Heterogeneity: Tau?? = 0.0; Chi?? = 2.14, df = 3 (P = 0.54); I?? =0.0%						
Test for overall effect: Z = 3.49 (P = 0.00048)						
2 Short-term follow-up (up to 3 months after the end of the sessions)						
Cherkin 2001 (mass)	94	4 (0.4)	78	3.6 (0.3)		1.11 [0.79, 1.43]
Cherkin 2001 (sc)	94	4 (0.4)	90	4.6 (0.4)		-1.49 [-1.82, -1.17]
Subtotal (95% CI)	**188**		**168**			**-0.19 [-2.74, 2.36]**
Heterogeneity: Tau?? = 3.37; Chi?? = 123.26, df = 1 (P<0.00001); I?? =99%						
Test for overall effect: Z = 0.15 (P = 0.88)						
3 Intermediate-term follow-up (3 months to 1 year)						
Cherkin 2001 (mass)	94	4.5 (0.4)	78	3.2 (0.4)		3.24 [2.78, 3.69]
Cherkin 2001 (sc)	94	4.5 (0.4)	90	3.8 (0.4)		1.74 [1.40, 2.08]
Subtotal (95% CI)	**188**		**168**			**2.48 [1.02, 3.94]**
Heterogeneity: Tau?? = 1.07; Chi?? = 26.28, df = 1 (P<0.00001); I?? =96%						
Test for overall effect: Z = 3.32 (P = 0.00089)						

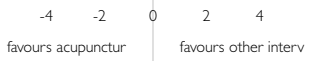
Analysis 6.2. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 2 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen.

Review: Acupuncture and dry-needling for low back pain

Comparison: 6 acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome: 2 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Std. Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Giles 1999 (manip)	16	24.5 (26.6)	32	19.5 (30.74)		0.17 [-0.43, 0.77]
Giles 1999 (NSAID)	16	24.5 (26.6)	20	20 (21.47)		0.18 [-0.47, 0.84]
Giles 2003 (manip)	34	26 (20.7)	35	14 (24.4)		0.52 [0.04, 1.00]
Giles 2003 (NSAID)	34	26 (20.7)	40	32 (23.7)		-0.27 [-0.72, 0.19]
2 Short-term follow-up (up to 3 months after the end of the sessions)						
Cherkin 2001 (mass)	94	7.9 (0.7)	78	6.3 (0.6)		2.43 [2.03, 2.82]
Cherkin 2001 (sc)	94	7.9 (0.7)	90	8.8 (0.7)		-1.28 [-1.60, -0.96]
3 Intermediate-term follow-up (3 months to 1 year)						
Cherkin 2001 (mass)	94	8 (0.7)	78	6.8 (0.7)		1.71 [1.36, 2.06]
Cherkin 2001 (sc)	94	8 (0.7)	90	6.4 (0.7)		2.28 [1.90, 2.65]



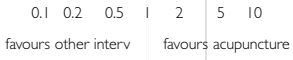
Analysis 6.3. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 3 return to work (higher values mean better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 6 acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome: 3 return to work (higher values mean better)

Study or subgroup	Acupuncture n/N	Other intervention n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Intermediate-term follow-up (3 months to 1 year)				
Lehmann 1986	7/13	8/13		0.88 [0.45, 1.70]

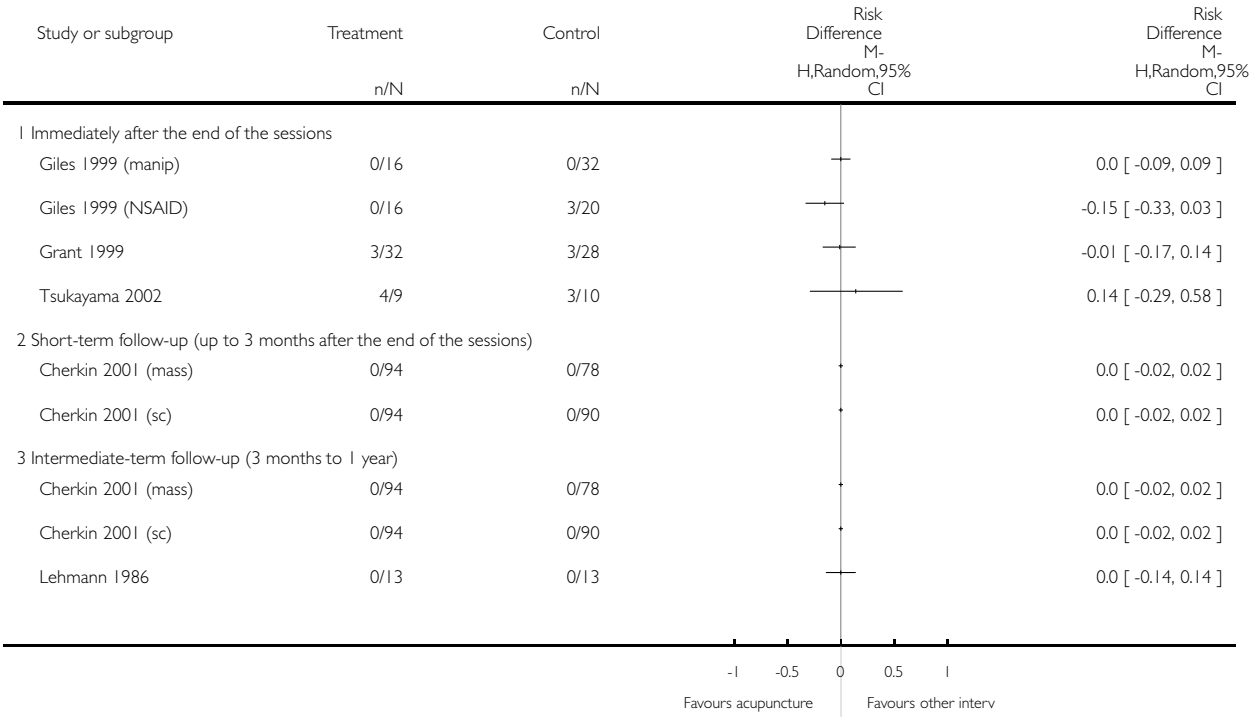


Analysis 6.4. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 4 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 6 acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome: 4 Side effects / Complications



Analysis 6.5. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 5 pain and function (adjusted for baseline values).

pain and function (adjusted for baseline values)

Study	Comparison	Outcome measure	Timing	p value
Immediately after the end of the sessions				
Tsukayama 2002	Acupuncture versus TENS	Functional status (JOA): higher scores are better	Immediately after	0.24
Tsukayama 2002				
Short-term follow-up (up to 3 months after the end of the sessions)				
Cherkin 2001 (mass)	Acupuncture versus massage	Pain	9 weeks	0.23

pain and function (adjusted for baseline values) (*Continued*)

Cherkin 2001 (mass)		Function	9 weeks	0.01 (massage is better)
Cherkin 2001 (sc)	Acupuncture versus self-care education	Pain	9 weeks	0.55
Cherkin 2001 (sc)		Function	9 weeks	0.75
Intermediate-term follow-up (3 months to 1 year)				
Cherkin 2001 (mass)	Acupuncture versus massage	Pain	52 weeks	0.002 (massage is better)
Cherkin 2001 (mass)		Function	52 weeks	0.05 (massage is better)
Cherkin 2001 (sc)	Acupuncture versus self-care education	Pain	52 weeks	0.10
Cherkin 2001 (sc)		Function	52 weeks	0.10

Analysis 6.6. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 6 general level of pain (0-15 points)(more points mean less pain).

general level of pain (0-15 points)(more points mean less pain)

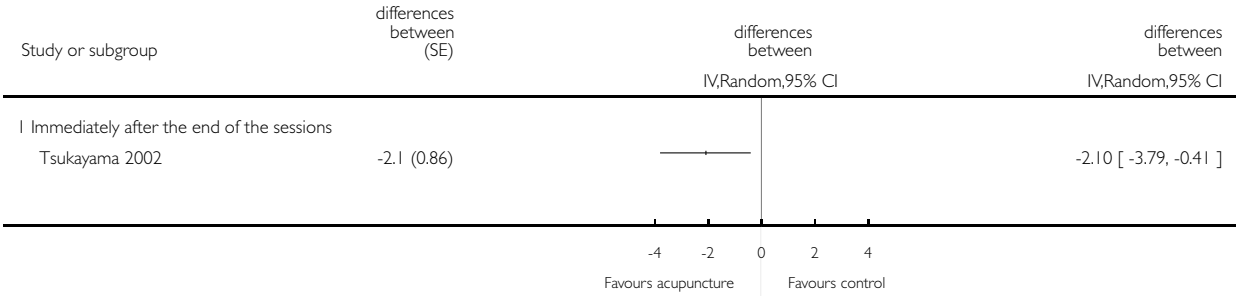
Study	Group	Value	p value
Immediately after the end of the sessions			
Lehmann 1986	Acupuncture	10.59	F 2,50 = 1.66 (p<0.2)
Lehmann 1986	TENS	9.16	
Lehmann 1986	Sham TENS	9.00	
Intermediate-term follow-up (3 months to 1 year)			
Lehmann 1986	Acupuncture	11.08	F 2,41=3.57 p=0.04 (not adjusted for multiple comparisons). p=0.1 (adjusted for multiple comparisons)
Lehmann 1986	TENS	8.28	
Lehmann 1986	Sham TENS	7.94	

Analysis 6.7. Comparison 6 acupuncture versus other intervention. (Chronic LBP: > 3 months), Outcome 7 pain: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 6 acupuncture versus other intervention. (Chronic LBP: > 3 months)

Outcome: 7 pain: difference between within group changes

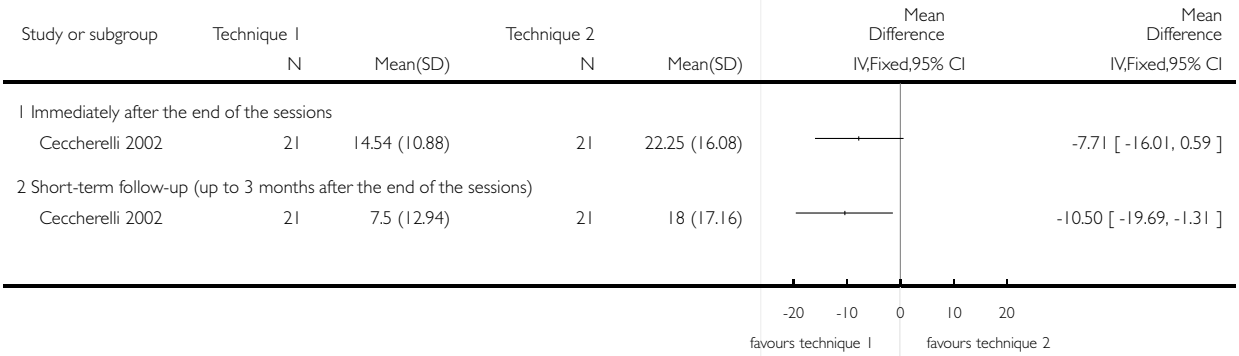


Analysis 7.1. Comparison 7 acupuncture versus acupuncture. (Chronic LBP: > 3 months), Outcome 1 pain (lower values mean better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 7 acupuncture versus acupuncture. (Chronic LBP: > 3 months)

Outcome: 1 pain (lower values mean better)

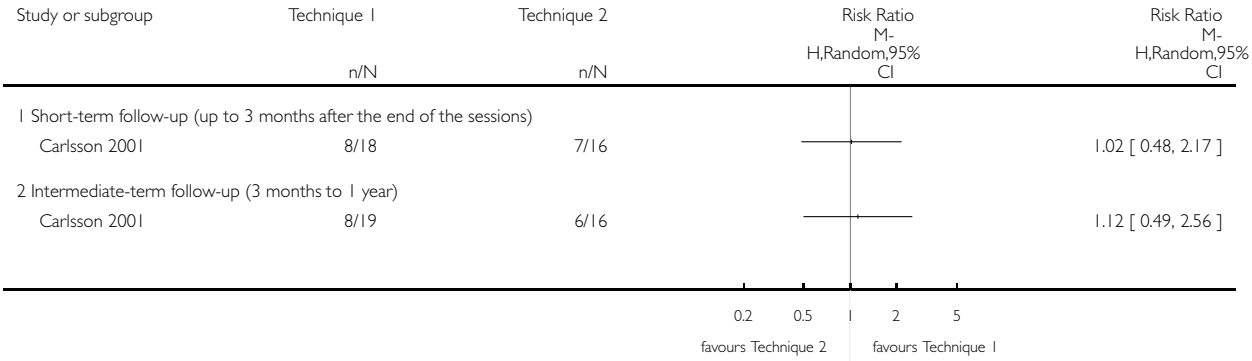


Analysis 7.2. Comparison 7 acupuncture versus acupuncture. (Chronic LBP: > 3 months), Outcome 2 Improvement (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 7 acupuncture versus acupuncture. (Chronic LBP: > 3 months)

Outcome: 2 Improvement (higher values are better)



Analysis 7.3. Comparison 7 acupuncture versus acupuncture. (Chronic LBP: > 3 months), Outcome 3 improvement.

improvement

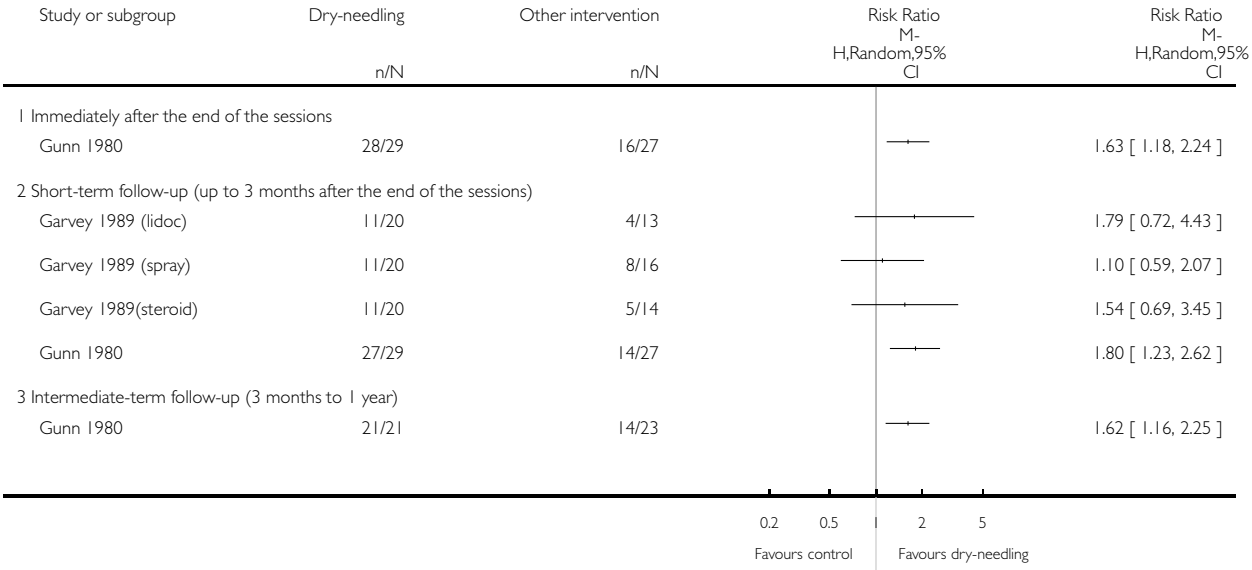
Study	Improvement	Technique 1: Regular	Technique 2: Ancient	p value
Immediately after the end of the sessions				
Ding 1998	Marked effective	4	8	
Ding 1998	Improved	6	3	
Ding 1998	No change	5	2	
Ding 1998				
Short-term follow-up (up to 3 months after the end of the sessions)				
Ding 1998	Cure	4	22	Chi-square=12.44 p<0.01
Ding 1998	Marked effective	4	8	
Ding 1998	Improved	6	3	
Ding 1998	No change	5	2	

Analysis 8.1. Comparison 8 dry-needling versus other intervention ((Sub)acute LBP < 3 months), Outcome 1 global measure (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 8 dry-needling versus other intervention ((Sub)acute LBP < 3 months)

Outcome: 1 global measure (higher values are better)

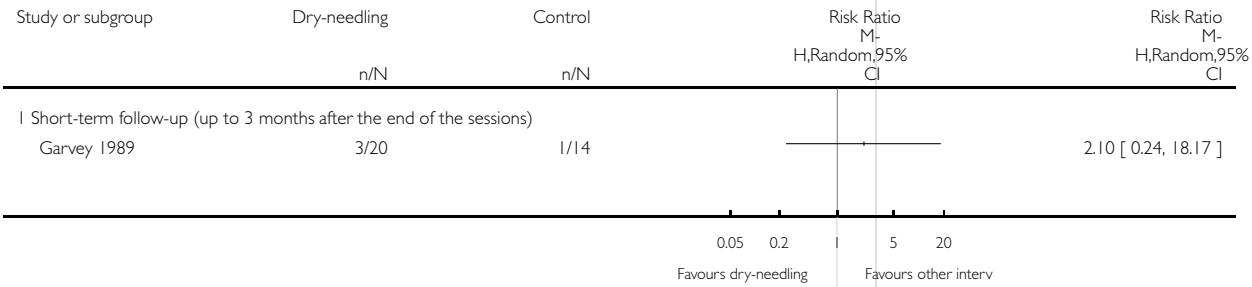


Analysis 8.2. Comparison 8 dry-needling versus other intervention ((Sub)acute LBP < 3 months), Outcome 2 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 8 dry-needling versus other intervention ((Sub)acute LBP < 3 months)

Outcome: 2 Side effects / Complications



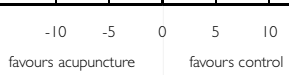
Analysis 9.1. Comparison 9 acupuncture versus placebo or sham intervention (unknown / mixed duration of low back pain), Outcome 1 pain (VAS): lower values are better.

Review: Acupuncture and dry-needling for low back pain

Comparison: 9 acupuncture versus placebo or sham intervention (unknown / mixed duration of low back pain)

Outcome: 1 pain (VAS): lower values are better

Study or subgroup	Acupuncture N	Mean(SD)	placebo / sham N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Short term (immediately after end of sessions)						
Inoue 2000	15	3.9 (2.6)	12	3.6 (2.1)		0.30 [-1.47, 2.07]
Inoue 2001	10	3.73 (2.44)	11	6.41 (1.35)		-2.68 [-4.39, -0.97]



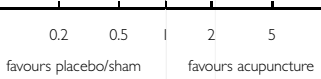
Analysis 9.2. Comparison 9 acupuncture versus placebo or sham intervention (unknown / mixed duration of low back pain), Outcome 2 global measure.

Review: Acupuncture and dry-needling for low back pain

Comparison: 9 acupuncture versus placebo or sham intervention (unknown / mixed duration of low back pain)

Outcome: 2 global measure

Study or subgroup	Acupuncture n/N	placebo / sham n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Short-term follow-up (up to 3 months after the end of the sessions)				
Von Mencke 1988	33/35	15/30		1.89 [1.31, 2.72]



Analysis 10.1. Comparison 10 acupuncture versus other intervention (unknown / mixed duration of low back pain), Outcome 1 pain score (lower values mean better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 10 acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome: 1 pain score (lower values mean better)

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Sakai 1998	14	2.3 (1.5)	12	2.4 (1.5)		-0.10 [-1.26, 1.06]
Sakai 2001	31	5.3 (3)	33	5.9 (3.4)		-0.60 [-2.17, 0.97]

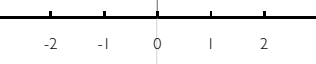
Analysis 10.2. Comparison 10 acupuncture versus other intervention (unknown / mixed duration of low back pain), Outcome 2 pain recovery: higher values are better.

Review: Acupuncture and dry-needling for low back pain

Comparison: 10 acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome: 2 pain recovery: higher values are better

Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Std. Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Kurosu 1979(a)	10	0.86 (0.8)	10	1.18 (0.75)		-0.40 [-1.28, 0.49]



Analysis 10.3. Comparison 10 acupuncture versus other intervention (unknown / mixed duration of low back pain), Outcome 3 global measure (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 10 acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome: 3 global measure (higher values are better)

Study or subgroup	Acupuncture n/N	Other intervention n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Immediately after the end of the sessions				
Sakai 2001	13/31	10/33		1.38 [0.71, 2.69]

Analysis 10.4. Comparison 10 acupuncture versus other intervention (unknown / mixed duration of low back pain), Outcome 4 back specific functional status (higher scores are better). Ex: Japan Orthopedic Association Score..

Review: Acupuncture and dry-needling for low back pain

Comparison: 10 acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome: 4 back specific functional status (higher scores are better). Ex: Japan Orthopedic Association Score.

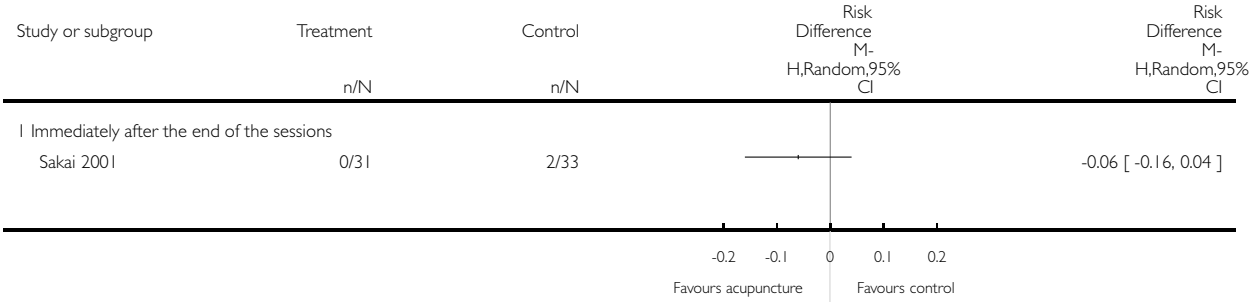
Study or subgroup	Acupuncture N	Mean(SD)	Other intervention N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Sakai 1998	14	12.1 (2)	12	13.3 (0.8)		-1.20 [-2.34, -0.06]
Sakai 2001	31	15.9 (2)	33	15.8 (2.6)		0.10 [-1.03, 1.23]

Analysis 10.5. Comparison 10 acupuncture versus other intervention (unknown / mixed duration of low back pain), Outcome 5 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 10 acupuncture versus other intervention (unknown / mixed duration of low back pain)

Outcome: 5 Side effects / Complications

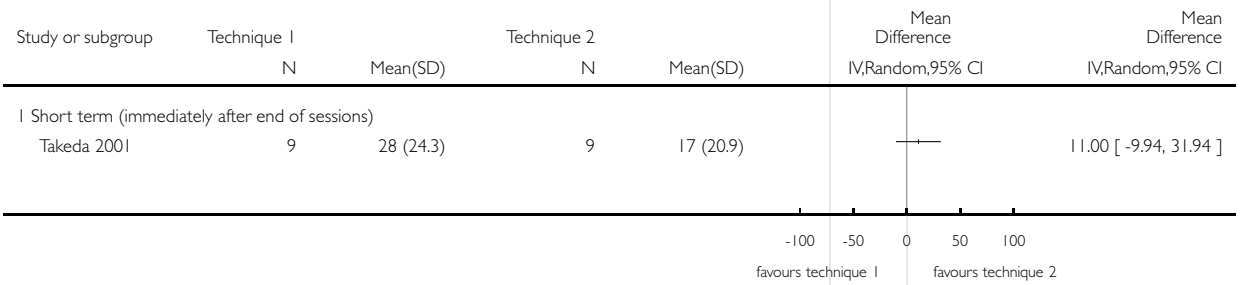


Analysis 11.1. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 1 pain (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome: 1 pain (lower values are better)



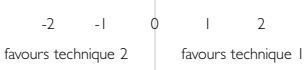
Analysis 11.2. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 2 pain recovery (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome: 2 pain recovery (higher values are better)

Study or subgroup	Techique 1		Technique 2		Mean Difference	Mean Difference
	N	Mean(SD)	N	Mean(SD)	IV,Random,95% CI	IV,Random,95% CI
1 Immediately after the end of the sessions						
Kurosu 1979(b)	10	1.1 (0.83)	10	0.43 (0.39)		0.67 [0.10, 1.24]



Analysis 11.3. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 3 global measure (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome: 3 global measure (higher values are better)

Study or subgroup	Technique 1	Technique 2	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
	n/N	n/N		
1 Short-term follow-up (up to 3 months after the end of the sessions)				
Wang 1996	239/246	175/246		1.37 [1.26, 1.48]

Analysis 11.4. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 4 functional status (higher values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome: 4 functional status (higher values are better)

Study or subgroup	Technique 1 N	Mean(SD)	Technique 2 N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Takeda 2001	9	14.4 (1.6)	9	15 (1.4)		-0.60 [-1.99, 0.79]

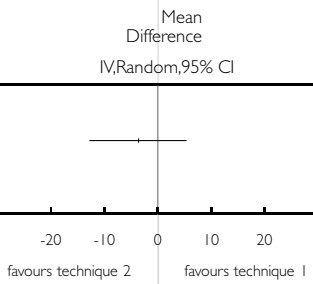
Analysis 11.5. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 5 physical examination (finger-floor distance) Higher values are better..

Review: Acupuncture and dry-needling for low back pain

Comparison: 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain)

Outcome: 5 physical examination (finger-floor distance) Higher values are better.

Study or subgroup	Technique 1 N	Mean(SD)	Technique 2 N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Takeda 2001	9	14.3 (9.9)	9	18 (10)		-3.70 [-12.89, 5.49]



Analysis 11.6. Comparison 11 acupuncture versus acupuncture. (unknown / mixed duration of low back pain), Outcome 6 improvement.

improvement

Study	Improvement	Technique 1: Ac+cupp	Technique 2: Acup	p value
Long-term follow-up (more than 1 year)				
Li 1997	Cure	33	22	<0.01

Li 1997	Marked effective	32	28	
Li 1997	Improved	13	26	
Li 1997	No change	0	2	

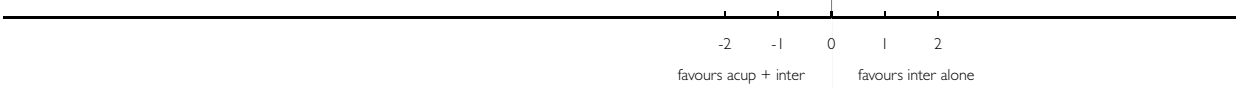
Analysis 12.1. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 1 pain (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 1 pain (lower values are better)

Study or subgroup	Acup + intervention N	Mean(SD)	Intervention alone N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions							
Leibing 2002	35	2.1 (2.2)	39	4.4 (1.7)		24.1 %	-1.17 [-1.66, -0.67]
Meng 2003	24	1.5 (1.2)	23	2.4 (1.3)		17.7 %	-0.71 [-1.30, -0.12]
Molsberger 2002	58	2.6 (2.1)	58	3.9 (2.1)		38.5 %	-0.61 [-0.99, -0.24]
Yeung 2003	26	3.81 (2.1)	26	5.12 (2.18)		19.7 %	-0.60 [-1.16, -0.05]
Subtotal (95% CI)	**143**		**146**			**100.0 %**	**-0.76 [-1.02, -0.50]**
Heterogeneity: Tau?? = 0.01; Chi?? = 3.49, df = 3 (P = 0.32); I?? =14%							
Test for overall effect: Z = 5.69 (P < 0.00001)							
2 Short-term follow-up (up to 3 months after the end of the sessions)							
Meng 2003	24	1.3 (0.8)	23	2.4 (1)		30.3 %	-1.20 [-1.82, -0.57]
Molsberger 2002	47	2.3 (2)	36	5.2 (1.9)		36.4 %	-1.47 [-1.96, -0.98]
Yeung 2003	26	3.77 (2.12)	26	5.19 (2.47)		33.3 %	-0.61 [-1.16, -0.05]
Subtotal (95% CI)	**97**		**85**			**100.0 %**	**-1.10 [-1.62, -0.58]**
Heterogeneity: Tau?? = 0.13; Chi?? = 5.24, df = 2 (P = 0.07); I?? =62%							
Test for overall effect: Z = 4.15 (P = 0.000033)							
3 Intermediate-term follow-up (3 months to 1 year)							
Leibing 2002	33	3.1 (1.8)	30	4.5 (2)		55.1 %	-0.73 [-1.24, -0.22]
Yeung 2003	26	3.46 (2.18)	26	5.27 (2.31)		44.9 %	-0.79 [-1.36, -0.23]
Subtotal (95% CI)	**59**		**56**			**100.0 %**	**-0.76 [-1.14, -0.38]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.03, df = 1 (P = 0.87); I?? =0.0%							
Test for overall effect: Z = 3.91 (P = 0.000091)							

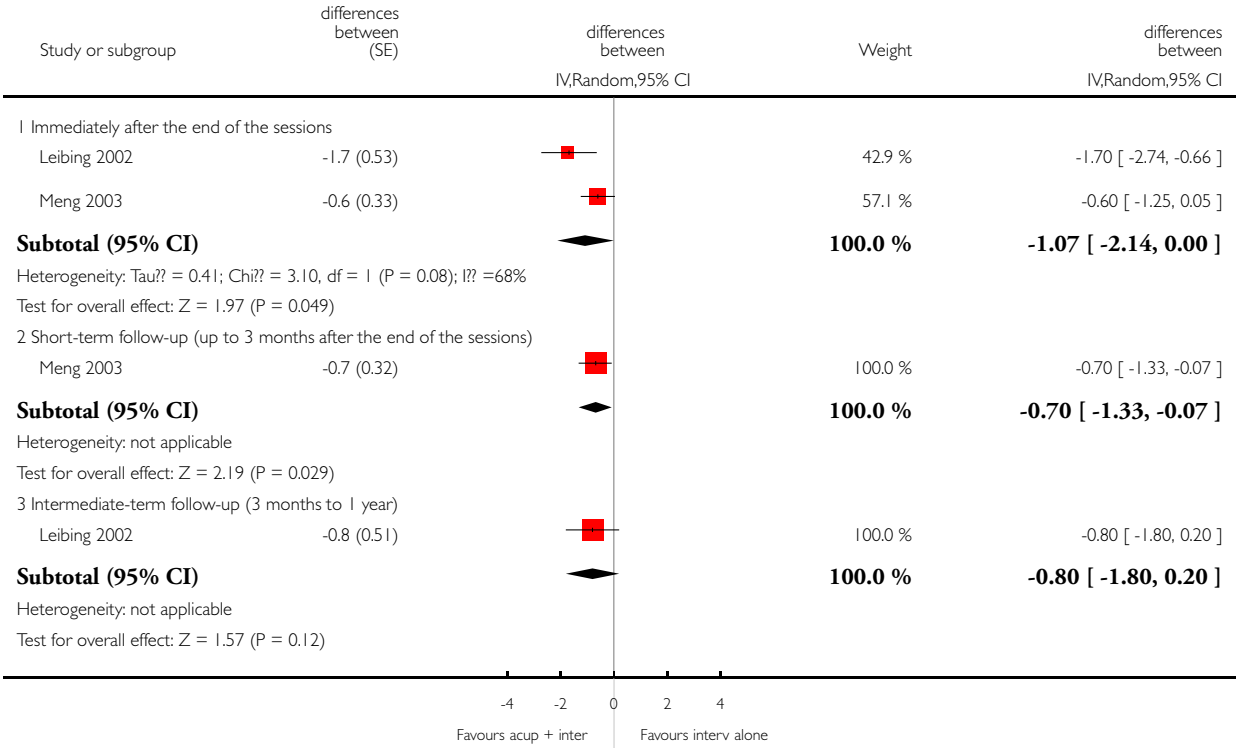


Analysis 12.2. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 2 pain: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 2 pain: difference between within group changes



Analysis 12.3. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 3 pain disability index (lower values are better).

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 3 pain disability index (lower values are better)

Study or subgroup	Acup + interv N	Mean(SD)	Interv alone N	Mean(SD)	Mean Difference IV,Random,95% CI	Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions						
Leibing 2002	40	11.3 (15)	46	22.3 (7.8)		-11.00 [-16.17, -5.83]
2 Intermediate-term follow-up (3 months to 1 year)						
Leibing 2002	40	16.2 (12.5)	46	22.6 (10)		-6.40 [-11.23, -1.57]

Analysis 12.4. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 4 Pain: percentage of patients with >50% pain reduction.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 4 Pain: percentage of patients with >50% pain reduction

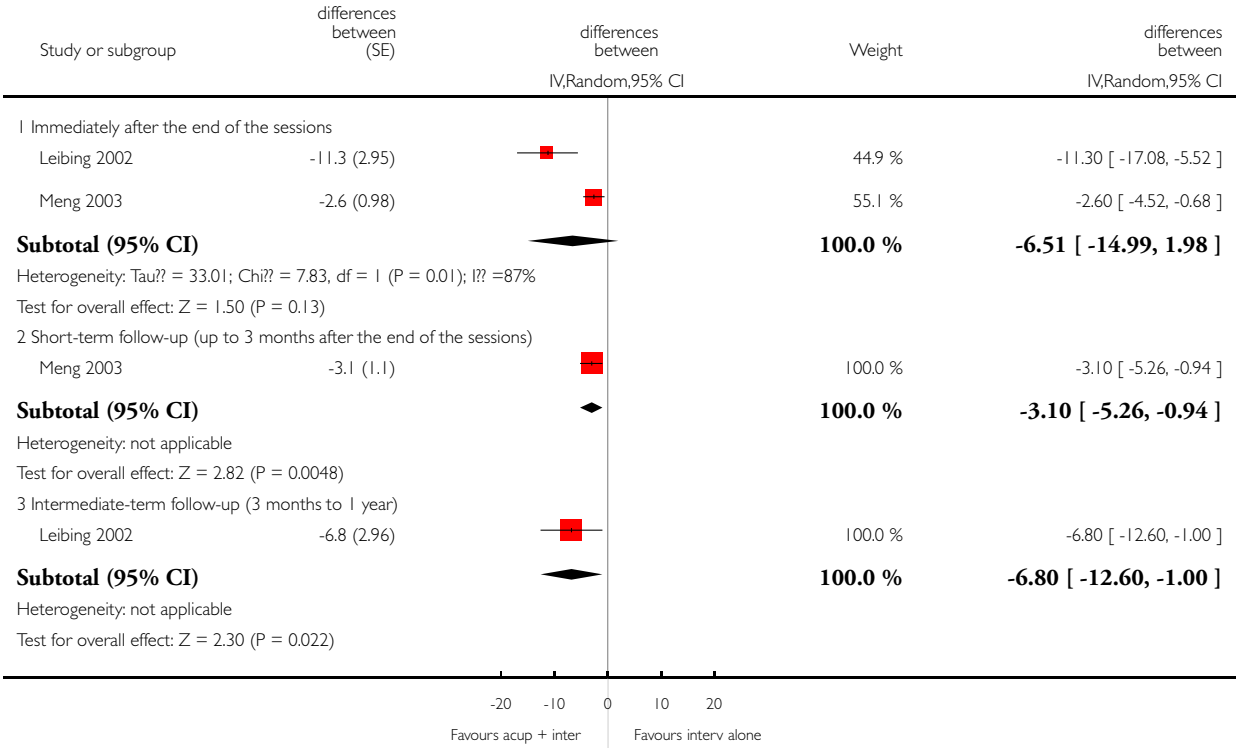
Study or subgroup	Acup + intervention n/N	Intervention alone n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Immediately after the end of the sessions				
Molsberger 2002	39/60	23/53		1.50 [1.05, 2.15]
2 Short-term follow-up (up to 3 months after the end of the sessions)				
Molsberger 2002	36/47	5/36		5.51 [2.41, 12.63]

Analysis 12.5. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 5 function: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 5 function: difference between within group changes



Analysis 12.6. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 6 global measure.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 6 global measure

Study or subgroup	Acup + interv n/N	Intervention alone n/N	Risk Ratio M-H,Random,95% CI	Risk Ratio M-H,Random,95% CI
1 Immediately after the end of the sessions				
Molsberger 2002	52/62	31/55		1.49 [1.15, 1.92]
2 Short-term follow-up (up to 3 months after the end of the sessions)				
Molsberger 2002	36/49	11/37		2.47 [1.46, 4.17]

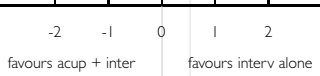
Analysis 12.7. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 7 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

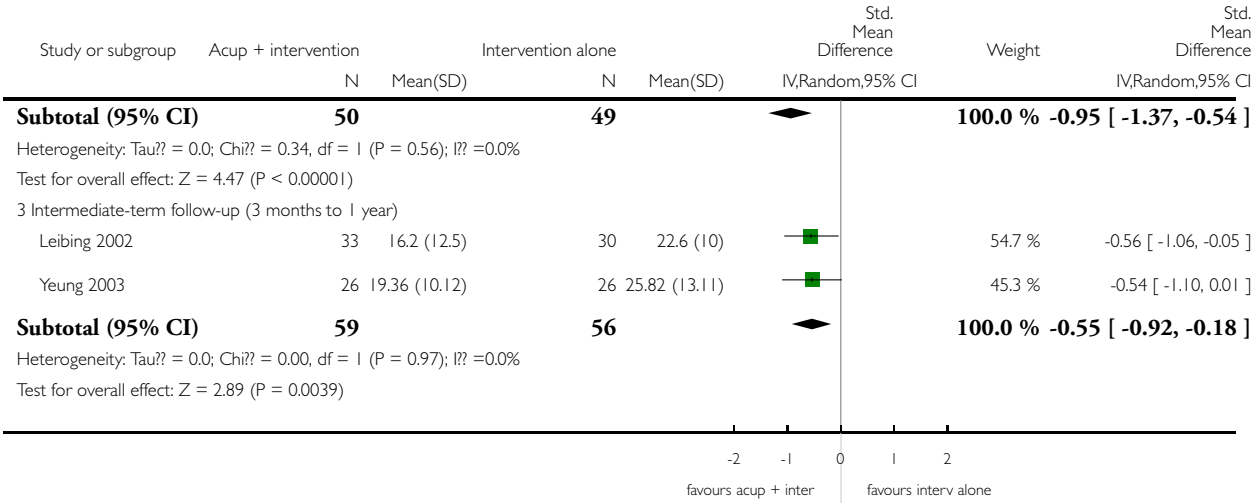
Outcome: 7 back specific functional status (lower scores mean better). Ex: RDQ, Oswestry and Aberdeen

Study or subgroup	Acup + intervention N	Mean(SD)	Intervention alone N	Mean(SD)	Std. Mean Difference IV,Random,95% CI	Weight	Std. Mean Difference IV,Random,95% CI
1 Immediately after the end of the sessions							
Leibing 2002	35	11.3 (15)	39	22.3 (7.8)		43.0 %	-0.93 [-1.41, -0.44]
Meng 2003	24	6.5 (4)	23	11.2 (4.8)		26.5 %	-1.05 [-1.66, -0.43]
Yeung 2003	26	20.02 (10.47)	26	30.82 (13.03)		30.4 %	-0.90 [-1.47, -0.33]
Subtotal (95% CI)	**85**		**88**			**100.0 %**	**-0.95 [-1.27, -0.63]**
Heterogeneity: Tau?? = 0.0; Chi?? = 0.14, df = 2 (P = 0.93); I?? =0.0%							
Test for overall effect: Z = 5.90 (P < 0.00001)							
2 Short-term follow-up (up to 3 months after the end of the sessions)							
Meng 2003	24	6.3 (4.4)	23	11.4 (4.8)		46.0 %	-1.09 [-1.71, -0.47]
Yeung 2003	26	20.36 (13.06)	26	32.48 (15.31)		54.0 %	-0.84 [-1.41, -0.27]



(*Continued* . . .)

(. . . *Continued*)

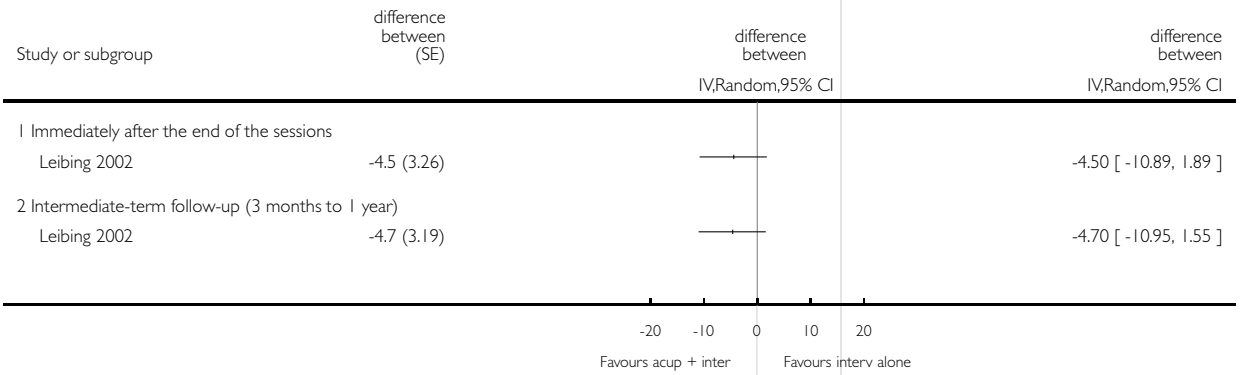


Analysis 12.8. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 8 spine range of motion: difference between within group changes.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 8 spine range of motion: difference between within group changes

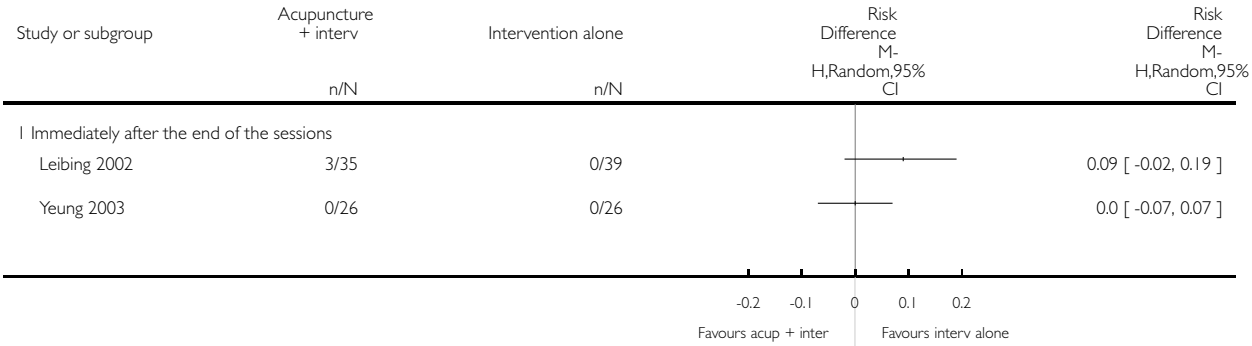


Analysis 12.9. Comparison 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months), Outcome 9 Side effects / Complications.

Review: Acupuncture and dry-needling for low back pain

Comparison: 12 acupuncture plus intervention versus other intervention alone. (Chronic LBP: > 3 months)

Outcome: 9 Side effects / Complications



ADDITIONAL TABLES

Table 1. Criteria for the Risk of Bias Assessment

Criteria	Operationalization
A. Was the method of randomization adequate?	A. A random (unpredictable) assignment sequence. Examples of adequate methods are computer generated random number table and use of sealed opaque envelopes. Methods of allocation using date of birth, date of admission, hospital numbers, or alternation should not be regarded as appropriate
B. Was the treatment allocation concealed?	B. Assignment generated by an independent person not responsible for determining the eligibility of the patients. This person has no information about the persons included in the trial and has no influence on the assignment sequence or on the decision about eligibility of the patient
C. Were the groups similar at baseline regarding the most important prognostic indicators?	C. In order to receive a "yes," groups have to be similar at baseline regarding demographic factors, duration and severity of complaints, percentage of patients with neurologic symptoms, and value of main outcome measure(s)
D. Was the patient blinded to the intervention?	D. The reviewer determines if enough information about the blinding is given in order to score a "yes."
E. Was the care provider blinded to the intervention?	E. The reviewer determines if enough information about the blinding is given in order to score a "yes."

Table 1. Criteria for the Risk of Bias Assessment (*Continued*)

F. Was the outcome assessor blinded to the intervention?	F. The reviewer determines if enough information about the blinding is given in order to score a "yes."
G. Were cointerventions avoided or similar?	G. Cointerventions should either be avoided in the trial design or similar between the index and control groups
H. Was the compliance acceptable in all groups?	H. The reviewer determines if the compliance to the interventions is acceptable, based on the reported intensity, duration, number and frequency of sessions for both the index intervention and control intervention(s)
I. Was the drop-out rate described and acceptable?	I. The number of participants who were included in the study but did not complete the observation period or were not included in the analysis must be described and reasons given. If the percentage of withdrawals and drop-outs does not exceed 20% for immediate and short-term follow-ups, 30% for intermediate and long-term follow-ups and does not lead to substantial bias a "yes" is scored
J. Was the timing of the outcome assessment in all groups similar?	J. Timing of outcome assessment should be identical for all intervention groups and for all important outcome assessments
K. Did the analysis include an intention-to-treat analysis?	K. All randomized patients are reported/analyzed in the group they were allocated to by randomization for the most important moments of effect measurement (minus missing values) irrespective of noncompliance and cointerventions

Table 2. Methodological quality assessment

Study	A and B	C	D, E and F	G	H	I	J	K	Comments, flaws, etc
Araki 2001	Y and Y	Y	Y, N, Y	Y	Y	Y	Y	Y	Score=10 and no serious flaws (High)
Carlsson 2001	Y and Y	DK	Y, N, Y	DK	DK	Y (1 month) ; N (3 and 6 months)	Y	Y	Score=7 at 1 month (follow-up= 100%), Score=6 at 3 and 6 months (follow-up=64% and 54% respectively) (High)
Cec-cherelli 2002	Y and DK	Y	DK, N, Y	DK	DK	Y	Y	Y	Score=6. No serious flaws. (High)
Cherkin 2001	Y and DK	Y	N, N, Y	Y	Y	Y	Y	Y	Score=8. No serious flaws (High)
Coan 1980	Y and Y	DK	N, N, N	DK	N	N	N	N	Score=2 (Low)

Table 2. Methodological quality assessment (*Continued*)

Ding 1998	DK and N	DK	Y, N, N	DK	DK	Y	Y	N	Score=3 (Low). Main outcome is very subjective.
Edelist 1976	DK and DK	DK	Y, N, Y	DK	Y	DK	DK	DK	Score=3 (Low). Main outcome is a subjective measure. Methods poorly described
Garvey 1989	Y and DK	DK	Y, N, Y	Y	Y	Y	Y	Y	Score=8. No serious flaws (High) . Baseline characteristics are not shown. Groups are very different in size
Giles 1999	DK and Y	DK	N, N, Y	DK	N	N	Y	N	Fatal flaw= 52% drop out during treatment period in the acupuncture group
Giles 2003	Y and Y	Y	N, N, DK	Y	DK	N	Y	Y	Score=6. 39% drop out at 9-weeks (Low). No adjustment for multiple comparisons
Grant 1999	Y and Y	N	N, N, Y	Y	DK	Y	Y	N	Fatal flaw= baseline differences in main outcome measures. VAS (range 0-200) at baseline in acup group was 140 and in the TENS group was 101
Gunn 1980	N and DK	DK	N, N, DK	DK	DK	Y	N	N	Score=1 (Low). Allocation by alternation and not concealed. No mention of blinded assessments. We don't have baseline values for pain. Co-interventions were allowed and not standardized or monitored. No ITT: this is not a big problem for the 12-week follow-up, but maybe for the longer term follow-up
He 1997	DK and N	Y	Y, N, N	DK	DK	N	Y	DK	Score=3 (Low). No information about allocation of patients. No description of lost patients
Inoue 2000	Y and Y	DK	Y,N, Y	Y	Y	Y	Y	Y	Score=9 (High). We believe there were no losses because the follow-up was shortly after the single session
Inoue 2001	Y and Y	DK	Y,N,Y	Y	Y	Y	Y	Y	Score=9 (High). We believe there were no losses because the follow-up was shortly after the single ses-

Table 2. Methodological quality assessment (*Continued*)

									sion
Kerr 2003	Y and DK	DK	Y,N,Y	DK	DK	N	Y	N	Score=4 (Low). Co-interventions might have influenced the results. Patients followed: 76% in the short and 66.7% in the intermediate follow-ups
Kittang 2001	N and DK	N	DK,DK,Y	Y	Y	Y	Y	Y	Score=6. No serious flaws (High). Baseline differences in three factors (days of sick leave previous year, previous attendance at back schools and use of pain killers)
Kurosu 1979(a); Kurosu 1979(b)	DK and DK	DK	N, N, DK	DK	Y	DK	Y	DK	Score=2 (Low)
Lehmann 1986	DK and DK	DK	N, N, N	Y	DK	N	Y	N	Score=2 (Low). Follow-up: 77% immediately after and 61% after 6 months
Leibing 2002	Y and Y	Y	Y,N, Y	Y	DK	N	Y	DK	Score=7 (High) However, drop-out rate: 24% in the short and 37% in the long-term
Li 1997	DK and N	DK	Y, N, N	DK	DK	N	Y	DK	Score=2 (Low) No information about allocation of patients. No description of lost patients
Lopacz 1979	DK and DK	DK	N, N, N	Y	DK	Y	Y	Y	Score=4 (Low). No information about randomisation and not blinded
MacDonald 1983	DK and DK	Y	Y, N, DK	DK	DK	Y	DK	Y	Score=4 (Low). No information about randomisation and timing of follow-up measures
Mendelson 1983	DK and DK	Y	Y, N, Y	DK	DK	Y	Y	N	Score=5 (Low). Cross over study.
Meng 2003	Y and Y	Y (pain); N (Roland)	N, N, N	Y	DK	Y	Y	Y	Score=7 (small difference in baseline in pain outcomes). Score= 6 (important baseline difference in RDQ (acupuncture group: 9.8 and control group: 11.8). (High)

Table 2. Methodological quality assessment (*Continued*)

Mols-berger 2002	Y and Y	Y	Y, N, Y	DK	Y	Y (immed), N (short)	Y	Y	Score=9 (immediately after) and Score=8 (short-term: drop-out rate at 3 months was 34%) (High). Blinding was between verum and sham acupuncture, but not between verum and nothing
Sakai 1998	DK and DK	N	N,N,DK	DK	DK	N	N	DK	Score=0 (Low). Methods poorly described. A statistically significant difference was observed in disability score at baseline. ADL was 7.6 in acupuncture group and 10.3 in medication group. Other parameters such as subjective symptom of pain, JOA score, duration of pain, gender were not statistically different at baseline
Sakai 2001	Y and Y	Y	N,N, Y	Y	Y	Y	Y	N	Score=8. No serious flaws (High)
Takeda 2001	Y and DK	DK	Y,N,N	DK	Y	Y	Y	DK	Score=5 (Low)
Thomas 1994	DK and DK	Y	N,N, DK	N	Y	DK	Y	Y	Score=4 (Low). We get different results when we re-analysed using the data from the figures
Tsukayama 2002	Y and Y	Y	N, N, Y	Y	Y	Y	Y	Y	Score=9. No serious flaws (High). Outcome assessor was blinded, but patient was not. So it is possible that the blindness was broken, especially because the outcomes are subjective
Von Mencke 1988	DK and DK	DK	Y, N, Y	N	N	N	N	N	Score=2 (Low)
Wang 1996	DK and N	DK	Y, N, N	DK	N	N	DK	DK	Score=1 (Low). Not adequately randomised. Doubts about reliability of outcome measures
Wu 1991	N and N	DK	Y,N,N	DK	Y	N	Y	DK	Score=3 (Low). Not adequately randomised. Doubts about reliability of outcome measures
Yeung 2003	DK and Y	Y	N, N, Y	Y	Y	Y	Y	Y	Score=8. No serious flaws (High). Outcome assessor was blinded, but

Table 2. Methodological quality assessment (*Continued*)

									patient was not. So it is possible that the blindness was broken, especially because the outcomes are subjective. One of the few studies that adjusted for confounders in the analysis, but small sample size and did not account for attention effects
Total "Yes"	17 14	14	18, 0, 19	15	15	20	28	16	
Total "No"	3 5	3	15, 34, 10	2	3	12	4	10	
Total "DK"	15 16	18	2, 1, 6	18	17	3	3	9	

Table 3. Clinical relevance assessment

Study	Patients	Interventions	Relevant outcomes	Size of effect	Benefits and harms	Serious deficiencies?
Araki 2001	N	Y	Y	DK	DK	Population is poorly described. Power to detect a difference (alpha 0.05, 2-tailed) in pain is 12% and in function is 5.1%
Carlsson 2001	Y	Y	Y	Y	Y	
Ceccherelli 2002	Y	Y	N	DK	DK	
Cherkin 2001	Y	N	Y	DK	Y	Intervention is individualized to each patient. Pragmatic trial
Coan 1980	Y	N	Y	Y	DK	Intervention is poorly described
Ding 1998	Y	N	Y	Y	Y	The strong and deep needling technique may not be practical for all acupuncture settings
Edelist 1976	N	Y	N	N	DK	Irrelevant outcomes.
Garvey 1989	N	Y	N	Y	N	Benefists do not seem to be worth the harms

Table 3. Clinical relevance assessment (*Continued*)

Giles 1999	N	N	Y	Y	DK	Patients and interventions are poorly described
Giles 2003	N	Y	Y	DK	DK	Difficult to interpret results due to nature of data presentation. No follow-up beyond 9 weeks
Grant 1999	N	N	Y	N	N	Population and interventions are poorly described
Gunn 1980	Y	N	N	Y	DK	We don't know how co-interventions were applied. We don't have a separate measure for pain
He 1997	Y	N	Y	Y	DK	No description of acupuncture points used. Not sure about validity/reliability of outcome measure
Inoue 2000	N	Y	DK	N	DK	
Inoue 2001	N	Y	DK	Y	Y	
Kerr 2003	N	Y	Y	N	DK	No clinically important effects detected in this study
Kittang 2001	Y	N	Y	N	DK	
Kurosu 1979(a); Kurosu 1979(b)	N	Y	N	DK	DK	
Li 1997	Y	N	Y	Y	DK	No description of acupuncture points used. Not sure about validity/reliability of outcome measure
Lehmann 1986	N	N	N	DK	Y	No description of acupuncture points used. Teh Chi unclear.

Table 3. Clinical relevance assessment (*Continued*)

Leibing 2002	Y	Y	Y	DK	N	
Lopacz 1979	N	N	N	DK	DK	Poor description of patients and interventions.
MacDonald 1983	Y	Y	Y	Y	DK	It is not meridian acupuncture and the depth is too superficial. Very small sample size
Mendelson 1983	Y	Y	Y	N	DK	
Meng 2003	Y	Y	Y	DK	DK	Size of effect might be biased by small sample size. Harms were assessed, but should be evaluated in larger sample
Molsberger 2002	Y	Y	Y	Y	DK	
Sakai 1998	Y	N	Y	DK	DK	Not sure about validity of JOA score. Number of points and sessions too small
Sakai 2001	Y	Y	Y	N	DK	Not sure about validity of JOA score. Number of points and sessions too small
Takeda 2001	N	Y	Y	N	DK	
Thomas 1994	N	Y	Y	N	DK	
Tsukayama 2002	Y	Y	Y	DK	N	
Von Mencke 1988	Y	Y	Y	Y	DK	Teh Chi unclear.
Wang 1996	Y	Y	Y	Y	Y	
Wu 1991	Y	Y	Y	Y	Y	
Yeung 2003	Y	Y	Y	Y	Y	

Table 4. Improvement in pain

Comparison group		Acute	Chronic	Unknown / Mixed
Acupuncture	Number of studies	2	16	8
	Average improvement	52%	32%	51%
	Standard deviation	39%	24%	19%
	Minimum	25%	-17%	22%
	Maximum	80%	62%	77%
No treatment	Number of studies		6	
	Average improvement		6%	
	Standard deviation		25%	
	Minimum		-33%	
	Maximum		42%	
Sham / placebo	Number of studies	1	6	3
	Average improvement	22%	23%	25%
	Standard deviation		22%	17%
	Minimum		-19%	6%
	Maximum		44%	37%
Other treatments	Number of studies	1	6	3
	Average improvement	79%	25%	99%
	Standard deviation		19%	73%
	Minimum		0%	41%
	Maximum		50%	181%

Table 5. Adequacy of acupuncture

Study	Choice of acupoints	Number of sessions	Needling technique	Experience	Control group	Comments
Araki 2001	Adequate because this is acute low-back pain	Adequate because it is acute low-back pain	Adequate	Adequate	Appropriate sham acupuncture	But there is no description about credibility of sham acupuncture
Carlsson 2001	Adequate	Adequate	Adequate	Adequate	Adequate sham TENS	The authors also compared needle acupuncture with electroacupuncture
Ceccherelli 2002	Adequate	Adequate	Adequate for the purpose of the study, which was to compare two techniques of acupuncture	Not reported	Other acupuncture technique	
Cherkin 2001	Individualized points.	Adequate	TCM typically with Teh Chi	Adequate	Other common therapies.	
Coan 1980	Not reported	Adequate	Not reported	Not reported	Waiting list. No treatment	Poorly reported, but seems OK (published in 1980).
Ding 1998	Adequate	Adequate	Adequate	Adequate	Other acupuncture technique	
Edelist 1976	Adequate	Few sessions	Adequate	Not reported	Sham acupuncture (but may have some analgesic effect)	The control group used needles placed in areas devoid of classic acupuncture points
Garvey 1989 (dry needling)	Adequate (dry-needling)	Adequate	Not reported	Not reported	Three common treatments	
Giles 1999	Not reported	Adequate	Not reported.	Adequate	Two common treatments: manipulation and drugs	

Table 5. Adequacy of acupuncture (*Continued*)

Giles 2003	Not reported	Adequate	Not reported.	Adequate	Two common treatments: manipulation and drugs	
Grant 1999	Individualized points.	Adequate	Not reported.	Not reported	Another common treatment: TENS	
Gunn 1980 (dry needling)	Muscle motor points. Not adequate for dry needling.	Adequate	Adequate	Not reported	Standar therapy: physiotherapy, remedial exercises, occupational therapy, industrial assessment	
He 1997	Adequate	Adequate	Adequate	Not reported	Chinese herbs.	No information about which herbs were used.
Inoue 2000	Adequate	Adequate for the purpose of the study.	Not reported	Adequate	Sham acupuncture	But there is no description about credibility of sham acupuncture
Inoue 2001	Adequate (non meridian)	Adequate for the purpose of the study	Not reported	Not reported	Sham acupuncture	But there is no description about credibility of sham acupuncture
Kerr 2003	Adequate	Adequate	Adequate	Not reported	Sham TENS	
Kittang 2001	Seems adequate	Not reported	Not reported	Not reported	Naproxen: adequate dose and duration of treatment	
Kurosu 1979(a)	Adequate	Adequate for the purpose of the study.	Adequate	Not reported	Garlic moxibustion may be adequate treatment for LBP in some cases	
Kurosu 1979(b)	Adequate	Adequate for the purpose of the study.	Adequate	Not reported	Other acupuncture technique (needle insertion and no retention)	

Table 5. Adequacy of acupuncture (*Continued*)

Lehmann 1986	Choice of meridians is OK	Adequate	Adequate	Adequate	Sham TENS	
Leibing 2002	Adequate	Adequate	Adequate	Adequate	Sham acupuncture	
Li 1997	Adequate	Adequate	Adequate	Not reported	Manual acupuncture without cupping.	
Lopacz 1979	Not reported	Adequate	Not reported	Not reported	Placebo: to control for attention effect.	
MacDonald 1983	Adequate (not meridian)	Adequate	Adequate for the purpose of the study	Not reported	Sham TENS.	It is easy for patients to perceive that they were receiving different treatments
Mendelson 1983	Adequate	Adequate	Adequate	Adequate	Maybe not adequate placebo. May have some analgesic effect.	
Meng 2003	Adequate	Adequate	Adequate	Adequate	Standard therapy	
Molsberger 2002	Adequate	Adequate	Adequate	Adequate	Sham acupuncture: good placebo.	
Sakai 1998	Adequate	Adequate for the purpose of the study	Not reported	Not reported	Medication	
Sakai 2001	Adequate (not meridian)	Adequate for the purpose of the study	Not reported	Not reported	TENS: seems adequate.	But number of sessions too small.
Takeda 2001	Adequate for the purpose of the study	Adequate	Not reported	Not reported	Other acupuncture technique: local versus distal points.	But there is no description about credibility of sham acupuncture
Thomas 1994	Adequate	Adequate	Adequate	Adequate	No treatment	

Table 5. Adequacy of acupuncture (*Continued*)

Tsukayama 2002	Adequate	Adequate for the purpose of the study	Adequate	Not reported	TENS	but number of sessions too small.
Von Mencke 1988	Adequate	Adequate	Adequate	Not reported	Sham acupuncture	
Wang 1996	Adequate	Adequate	Adequate	Adequate	Active acupuncture: distal points	
Wu 1991	Adequate (for acute LBP)	Adequate (single session for acute LBP)	Adequate	Adequate	Another active acupuncture treatment	
Yeung 2003	Adequate	Adequate for the purpose of the study	Adequate	Adequate	Physiotherapy (standard exercises)	Patients in the exercise group did not receive the same attention as in the acupuncture group

APPENDICES

Appendix 1. MEDLINE search strategy

1 randomized controlled trial.pt. (72769)
2 controlled clinical trial.pt. (16977)
3 Randomized Controlled Trials/ (17706)
4 Random Allocation/ (11879)
5 Double-Blind Method/ (26902)
6 Single-Blind Method/ (4389)
7 or/1-6 (120640)
8 Animal/ not Human/ (583159)
9 7 not 8 (112795)
10 clinical trial.pt. (144571)
11 exp Clinical Trials/ (45063)
12 ((singl$ or doubl$ or trebl$ or tripl$) adj (mask$ or blind$)).tw. (24652)
13 Placebos/ (4548)
14 placebo$.tw. (30921)
15 random$.tw. (123481)
16 Research Design/ (12824)
17 (latin adj square).tw. (663)
18 (clinic$ adj25 trial$).tw. (43883)
19 or/10-18 (275600)

20 19 not 8 (256926)
21 20 not 9 (147773)
22 Comparative Study/ (298320)
23 exp Evaluation Studies/ (155611)
24 Follow-Up Studies/ (95462)
25 Prospective Studies/ (77754)
26 (control$ or prospective$ or volunteer$).tw. (521438)
27 Cross-Over Studies/ (9791)
28 or/22-27 (917800)
29 28 not 8 (737443)
30 29 not (9 or 21) (559548)
31 9 or 21 or 30 (820116)
32 Intervertebral disk/ (1230)
33 Lumbar vertebrae/ (6673)
34 Low-back pain/ (3418)
35 Sciatica/ (544)
36 low back pain.tw. (2796)
37 backache.tw. (276)
38 lumbago.tw. (174)
39 or/32-38 (11150)
40 ACUPUNCTURE/ (114)
41 exp ACUPUNCTURE ANALGESIA/ (185)
42 exp ACUPUNCTURE, EAR/ (31)
43 exp ACUPUNCTURE POINTS/ (403)
44 exp ACUPUNCTURE THERAPY/ (1918)
45 acupuncture.tw. (1655)
46 electro-acupuncture.tw. (62)
47 acupressure.tw. (84)
48 or/40-47 (2324)
49 31 and 39 and 48 (49)

Appendix 2. EMBASE search strategy

1 clinical article/ (299265)
2 clinical study/ (2230)
3 clinical trial/ (184343)
4 controlled study/ (953915)
5 randomized controlled trial/ (58211)
6 major clinical study/ (352156)
7 double blind procedure/ (27710)
8 multicenter study/ (19950)
9 single blind procedure/ (3090)
10 crossover procedure/ (9288)
11 placebo/ (23129)
12 or/1-11 (1350338)
13 allocat$.ti,ab. (10381)
14 assign$.ti,ab. (34017)
15 blind$.ti,ab. (39706)
16 (clinic$ adj25 (study or trial)).ti,ab. (103723)
17 compar$.ti,ab. (592128)
18 control$.ti,ab. (435060)
19 cross?over.ti,ab. (7854)

20 factorial$.ti,ab. (2463)
21 follow?up.ti,ab. (3710)
22 placebo$.ti,ab. (32609)
23 prospectiv$.ti,ab. (81230)
24 random$.ti,ab. (119291)
25 ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab. (27455)
26 trial.ti,ab. (57298)
27 (versus or vs).ti,ab. (144304)
28 or/13-27 (1052880)
29 12 or 28 (1707121)
30 human/ (1767116)
31 nonhuman/ (855690)
32 animal/ (592)
33 animal experiment/ (266367)
34 31 or 32 or 33 (857723)
35 30 and 34 (145063)
36 29 not 34 (1118616)
37 29 and 35 (85582)
38 36 or 37 (1204198)
39 Lumbar Spine/ (4963)
40 Lumbosacral Spine/ (629)
41 Intervertebral Disk/ (710)
42 Intervertebral Disk Disease/ (295)
43 Lumbar Disk Hernia/ (835)
44 Low back pain/ (5403)
45 Ischialgia/ (743)
46 low back pain.tw. (3184)
47 backache.tw. (270)
48 lumbago.tw. (162)
49 or/39-48 (12240)
50 exp ACUPUNCTURE/ (2907)
51 exp ACUPUNCTURE ANALGESIA/ (143)
52 acupuncture.tw. (1775)
53 electro-acupuncture.tw. (56)
54 acupressure.tw. (71)
55 or/50-54 (3014)
56 38 and 49 and 55 (85)

FEEDBACK

March 2005

Summary

Feedback 1: When assessing the outcome of acupuncture therapy for the low back, what points were used? What I have observed is there is an immediate proprioceptive effect with the patients following the therapy. Where there is a mild paresis on clinical examination, what I think acupuncture does is to establish a recruitment of those muscle fibres that are paretic due to whatever cause. Possible Type II fibres are activated. Therefore, any post assessment should not necessarily just assess pain but should include proprioceptive assessments, motor function and coordinative activities.

Feedback 2: Which acupoints were used? What were the classical symptoms of pain being modified? My understanding is that whilst acupuncture modifies pain, in doing so the manifestations of pain are being treated. In the outcome of the study you mention function as one of those outcomes. What were the functional factors and how were they measured?
I am interested in the inclusion and exclusion criteria for participants in the study, were there any controls, that is, participants without low back pain?

Reply

Response 1: The outcomes were assessed immediately after the end of treatment, and at short, intermediate and long-term follow-ups. Definitions of these time-lines are given in the review. The outcomes of interest were patient-reported pain and function. The authors of the systematic review did not include neurological outcomes and neither did the trials. We don't know if data were collected on these items in the original studies and not included in the published reports.
Response 2: I think some of the details you are looking for can be found in the 'Table of Included Studies'. If they are not listed, its because they were not included in the published report of the primary study, but to be sure, you may wish to refer to some of the primary studies if you had particular questions. The full text outlines which studies were included in these comparisons: [i] Acupuncture compared to no treatment, placebo or sham therapy [ii] Acupuncture compared to another intervention [iii] Acupuncture added to an intervention compared to the intervention without acupuncture. The authors also outline other outcomes and comparisons in the results section. The inclusion criteria only included Individuals with back pain.
Different aspects of pain and the tool used to measure them would have been addressed in different studies ... this will be in the Table of Included Studies; ditto for functional outcomes and measurement tools and participants of each study.

Contributors

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WHAT'S NEW

Last assessed as up-to-date: 1 June 2003.

Date	Event	Description
19 January 2011	Amended	Contact details updated.

HISTORY

Protocol first published: Issue 2, 1998

Review first published: Issue 1, 1999

Date	Event	Description
14 July 2010	Amended	contact details amended
29 May 2008	Amended	Converted to new review format.

(*Continued*)

30 October 2004	New citation required and conclusions have changed	Substantive amendment
30 October 2004	New citation required and conclusions have changed	The latest literature search was completed in June 2003 and the conclusions were updated in October 2004 In contrast to the previous review that concluded that the poor methodological quality of the trials did not allow any conclusions on the effectiveness of acupuncture, the current update demonstrated the effectiveness of meridian acupuncture for chronic low-back pain in some special cases: 1) compared to no treatment, acupuncture improved pain and function at short-term follow-up 2) compared to sham therapies, acupuncture improved pain at short-term follow-up, but these effects were not maintained at longer-term follow-up and they were not observed for functional outcomes 3) when acupuncture was added to other conventional therapies, there was better pain relief and improved function when compared to the conventional therapies alone. Also, this updated review examined acupuncture separately from dry-needling. The authors concluded that no clear recommendations could be made about dry-needling because of the small sample sizes and low methodological quality of the studies, although it appeared that dry-needling was a useful adjunct to other therapies for chronic low-back pain. Effects in all cases were only small
2 June 2003	New search has been performed	The first version of this review included 11 randomized trials. This update added 24 more randomized trials, for a total of 35. Meta-analyses were performed for some comparison groups

CONTRIBUTIONS OF AUTHORS

- Furlan, van Tulder, Cherkin, Lao, Koes and Berman wrote the protocol for this review;

- Furlan, van Tulder, Koes conducted the literature search and study selection of the English language trials;

- Tsukayama conducted the literature search and study selection of the Japanese language trials;

- The Chinese Cochrane Centre conducted the literature search of the Chinese language trials and Lao selected the studies;

- Furlan, van Tulder, Cherkin, and Koes performed the quality assessment and date extraction of the English language trials;

- Lao and Tsukayama performed the quality assessment and data extraction of the Japanese and Chinese language trials;

- All authors were involved in writing the final draft of the manuscript.

DECLARATIONS OF INTEREST

Three coauthors of this review (DC, HT and LXL) are also authors of some included trials. In order to avoid any conflict of interest, they were not involved in the methodological quality assessment or data extraction of their own study.

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Internal sources

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External sources

- National Center for Complementary and Alternative Medicine, USA.

INDEX TERMS

Medical Subject Headings (MeSH)

*Acupuncture Therapy; Low Back Pain [*therapy]; Randomized Controlled Trials as Topic

MeSH check words

Humans