



**ACUPUNCTURE AS A COMPLEMENTARY THERAPY FOR  
MUSCULOSKELETAL PAIN**

**HEALTH TECHNOLOGY ASSESSMENT SECTION  
MEDICAL DEVELOPMENT DIVISION  
MINISTRY OF HEALTH MALAYSIA**

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**DISCLAIMER**

Technology review is a brief report, prepared on an urgent basis, which draws on restricted reviews from analysis of pertinent literature, on expert opinion and / or regulatory status where appropriate. It has not been subjected to an external review process. While effort has been made to do so, this document may not fully reflect all scientific research available. Additionally, other relevant scientific findings may have been reported since completion of this review.

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## **DISCLOSURE**

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## **Executive Summary**

### **Background**

Musculoskeletal pain syndromes are a common health problem. The causes of musculoskeletal pain are varied starting from trauma up to musculoskeletal diseases such as low back pain, Osteoarthritis and etc. Nowadays there are many ways to treat musculoskeletal pain depending on the severity of the condition. Pharmacologic and non pharmacologic therapies such as acupuncture and physiotherapy can be used to manage patient with musculoskeletal pain. Understanding the physiology of pain transmission, modulation, and perception is crucial for effective management.

Nowadays acupuncture has grown in popularity among alternative therapies and it is estimated that 2% of adults in the UK use it each year for a variety of conditions. It was claimed to have many benefits and advantages especially reducing pain in various diseases and improve quality of life.

This technology review was conducted following a request from Director of Traditional and Complementary Medical (T&CM) Division, Ministry of Health (MOH) Malaysia to provide the best available evidence in ensuring T&CM practice in Malaysia is safe and conforms to acceptable standards for the benefits of the public, and in line with requirement of the Traditional and Complementary Medicine Act 2013.

### **Objective/aim**

The objective of this technology review is to review evidence on the effectiveness, safety and cost-effectiveness of acupuncture as a complementary therapy for musculoskeletal pain.

### **Results and conclusions**

There were 11 systematic reviews, one Randomised Controlled Trial and one economic evaluation study included in this review.

There was evidence on the effectiveness of acupuncture for patients with musculoskeletal pain such as neck pain, osteoarthritis, back pain, low back pain, fibromyalgia and ankle sprain. However, the systematic reviews retrieved included studies which have various biases and hence varying the quality of the included studies.

From the review, there was evidence to suggest that acupuncture was safe and there was no serious adverse events noted. However, pain due to local insertion of the needle, ecchymosis and local paresthesia were among some of adverse events reported. In one study, three of the participants felt tired during acupuncture treatment.

Based on one economic evaluation study conducted in primary care setting, a short course of traditional acupuncture for persistent non-specific low back pain in primary care confers a modest health benefit for minor extra cost to the NHS compared with usual care. However, acupuncture care for low back pain seems to be cost-effective in the longer term. The overall incremental cost-effectiveness ratio (ICER) for acupuncture in the treatment of low back pain was positive with a mean of £4241 at 24 month with QALY gain of 0.027. In Malaysia, it is estimated that the cost for one session acupuncture treatment for chronic pain management is around RM50 /session.

## **Methods**

Literatures were searched through electronic databases specifically PubMed, Medline, Cochrane, Ovid, Horizon scanning databases, other websites and from non scientific database - Google search engine. In addition, a cross-referencing of the articles retrieved was also carried out accordingly to the topic. Relevant articles were critically appraised and evidence graded using US/Canadian Preventive Services Task Force.

# ACUPUNCTURE AS A COMPLEMENTARY THERAPY FOR MUSCULOSKELETAL PAIN

## 1. BACKGROUND

Musculoskeletal conditions are prevalent and their impact is pervasive. They are the most common cause of severe long term pain and physical disability, and they affect hundreds of millions of people around the world. They significantly affect the psychosocial status of affected people as well as their families and careers.<sup>1</sup>

Musculoskeletal pain is defined as pain perceived within a region of the body, and believed to arise from the muscles, ligaments, bones, or joints in that region.<sup>2</sup> Musculoskeletal conditions are a diverse group with regard to pathophysiology but are linked anatomically and by their association with pain and impaired physical function. They encompass a spectrum of conditions, from those of acute onset and short duration to lifelong disorders; including osteoarthritis, rheumatoid arthritis, osteoporosis, and low back pain. The prevalence of many of these conditions increases markedly with age, and many are affected by lifestyle factors, such as obesity and lack of physical activity. The increasing number of older people and the changes in lifestyle throughout the world mean that the burden on people and society will increase dramatically.<sup>1</sup>

The treatment of musculoskeletal pain syndromes is multimodal. Besides pharmacological and surgical treatment different types of physical therapies are applied. Nonsurgical treatment includes drug prescription, local infiltration and various physical therapies, like different forms of electrotherapy, thermotherapy, massage therapies, exercise therapies and ultrasound. In general, combinations of different physical modalities are used. The choice of treatment combination depends on the clinical needs and symptoms of the patient.<sup>3</sup>

Acupuncture for the treatment of musculoskeletal pain is growing in acceptance, by both clinicians and consumers of health care. Approximately one million consumers utilize acupuncture annually in the United States (Paramore 1997), and a large percentage of these suffer musculoskeletal disorders (Diehl 1997).<sup>4</sup>

According to WHO, acupuncture is defined as the insertion of needles into humans or animals for remedial purposes or its methods.<sup>5</sup> Acupuncture is thought to confer an analgesic effect and several hypotheses as to the chain of events resulting in analgesia from acupuncture have been proposed.<sup>4</sup>

In some countries, such as China and Korea, acupuncture is frequently used in the treatment of certain diseases such as musculoskeletal pain, either as a single treatment or a secondary intervention accompanied by standard medical treatment.<sup>6</sup> However, unfortunately the effectiveness of acupuncture in treatment of diseases especially musculoskeletal pain is still in doubt and inconclusive.

This technology review was conducted following a request from Director of Traditional and Complementary Medical (T&CM) Division, Ministry of Health (MOH) Malaysia to provide the best available evidence to ensure T&CM practice in Malaysia is safe and conforms to acceptable standards for the benefits of the public, and in line with requirement of the Traditional and Complementary Medicine Act 2013.

## **2. OBJECTIVE**

The objective of this technology review was to review evidence on the effectiveness, safety and cost-effectiveness of acupuncture as a complementary therapy for musculoskeletal pain.

## **3. TECHNICAL FEATURES**

Acupuncture is come from a Latin word which is 'acus' mean needle and 'punctura' mean to puncture.<sup>7</sup> According to WHO acupuncture is defined as insertion of needles into humans or animals for remedial purposes or its methods.<sup>5</sup>

Acupuncture is the stimulation of defined, specific acupuncture points along the skin of the body using thin needles.<sup>8</sup> Acupuncture is thought to confer an analgesic effect and several hypotheses as to the chain of events resulting in analgesia from acupuncture have been proposed. Some authors attribute the analgesic effects to the release of b-endorphins in the lumbar spine and increased 5-Hydroxy tryptophan level in the cerebrum. Other explanations include the overriding of the pain stimulus by the biochemical lines of acupuncture in the transmitting process of the central nervous system, and the more traditional explanation of the freeing of a blockage of "Qi" or energy flow by acupuncture (Viola 1998).<sup>4</sup>

There are several techniques for applying acupuncture such as conventional acupuncture, acupressure, laser acupuncture, Moxabustion and cupping, electroacupuncture and these are described below:<sup>9</sup>

### **1. Conventional Acupuncture**

Conventional acupuncture involves the use of single-use, pre-sterilised disposable needles of varying widths, lengths and materials that pierce the skin at the acupuncture points. The acupuncturist will determine the locations of these points on the basis of an assessment of the cause of the imbalance. A number of needles may be used during each treatment, and these are typically left in position for between 20 and 30 minutes before being removed.

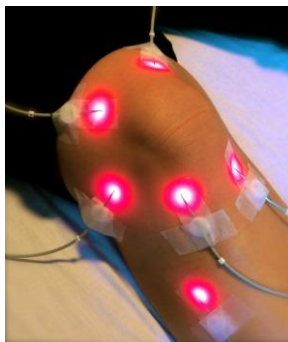


## 2. Acupressure

In acupressure treatment, acupuncturists use their hands to activate acupuncture or trigger points in order to relieve muscle tightness, or to stimulate Qi flow and balance the body. It is a healing art in which the fingers are applied to key acupuncture points. The amount of pressure used varies according to the condition and requires trained, sensitive hands. It is often used to treat patients who are sensitive, those with a phobia of needles, children and frail people.

## 3. Laser acupuncture

Laser is an acronym of "light amplification by stimulated emission of radiation", and the use of these beams in treatment is known as low-level laser therapy (LLT). Laser stimulation may be used to perform any acupuncture treatment for which needles are typically used. It is particularly suited for nervous patients, children, sports injuries, sensitive areas and ears.



## 4. Electroacupuncture

Following a detailed physiotherapy assessment, inserted needles can be coupled to the electrodes of an electroacupuncture machine. These units are designed to deliver variable amplitudes and frequencies of electrical impulses. Low-frequency electroacupuncture is intended to contribute to the mechanism of pain reduction, especially by stimulating chemicals in the brain that aid analgesia, relaxation and sleep. This technique is particularly useful in chronic pain problems and solid research to supports its use. Your physiotherapist may use transcutaneous electrical nerve stimulation (TENS) machines over specific acupuncture points in order to help this mechanism and enhance pain modulation.





## 4. METHODS

### 4.1. Searching

Electronic databases searched through the Ovid interface:

- MEDLINE(R) In-process and other Non-Indexed Citations and Ovid MEDLINE(R) 1946 to present
- EBM Reviews - Cochrane Central Register of Controlled Trials (January 2015)
- EBM Reviews - Cochrane database of systematic reviews - 2005 to January 2015)
- EBM Reviews - Health Technology Assessment – 1st Quarter 2015
- EBM Reviews – NHS Economic Evaluation Database – 1st Quarter 2015

Other databases:

- PubMed
- Horizon Scanning database ( National Horizon Scanning Centre, Australia and New Zealand Horizon Scanning Network, National Horizon Scanning Birmingham)
- Other websites: US, FDA, INAHTA, MHRA
- Google Scholar

General database such as Google and Yahoo were used to search for additional web-based materials and information. Additional articles retrieved from reviewing the references of retrieved articles or contacting the authors. The search was limited to articles on human. There was no language limitation in the search. Appendix 1 showed the detailed search strategies.

### 4.2. Selection

A reviewer screened the titles and abstracts against the inclusion and exclusion criteria and then evaluated the selected full-text articles for final article selection. The inclusion and exclusion criteria were:

## Inclusion criteria

Population	- musculoskeletal pain, myalgia, sprains and strains, arthralgia, musculoskeletal disease, tendinopathy, tendon injuries, neck pain, low back pain and bone pain
Interventions	- acupuncture, needle acupuncture, electro-acupuncture, auricular/ear acupuncture, moxibustion, Acupressure, Traditional Chinese Acupuncture, Verum/Bee venom acupuncture, Traditional acupuncture, Korean hand acupuncture, warm needling, pharmacopuncture and scalp acupuncture
Comparators	-
Outcomes	- reduce pain, reduce symptoms, reduce number of medication taken, improved quality of life,
Study design	Systematic reviews, randomised control trials, cross-sectional and cohort
Type of publication	English, full text articles

## Exclusion criteria

Study design	Case series, case report, survey, abstract, animal study, narrative review
Type of publication	Non-English

Relevant articles were critically appraised using Critical Appraisal Skills Programme (CASP) and evidence graded according to the US/Canadian Preventive Services Task Force (Appendix 2)

## 5. RESULTS AND DISCUSSION

From the systematic search conducted in the available scientific databases and other website, there were 11 literatures retrieved for inclusion consisting of 1 meta-analysis, 2 meta-analysis with systematic review, 7 systematic review and 1 Randomized Controlled Trial (RCT) on effectiveness of acupuncture as a complementary treatment in musculoskeletal pain. There were two studies from the same article that discussed about the adverse events of acupuncture. Furthermore, only one economic evaluation study retrieved discussed about cost-effectiveness.

### 5.1 EFFECTIVENESS

There were eleven literatures with good level of evidence retrieved discussing about the effectiveness of acupuncture. There was no literature retrieved discussing directly about the effectiveness of acupuncture for musculoskeletal pain. Most of the literatures

discussed the effect of acupuncture according to the diseases. Below is the finding of the result of the eleven literatures which were included in this review.

### **5.1.1 Acupuncture for Neck Pain**

There was one systematic review reporting about the efficacy of acupuncture in the treatment of neck pain. This systematic review was conducted by White AR and E. Ernst to establish whether there was evidence for or against the efficacy of acupuncture in the treatment of neck pain. All RCTs published in January 1998 that is compared any form of acupuncture to any form of non-acupuncture control intervention in the treatment of neck pain were included. The methodological quality of the included studies was assessed using the Jadad score. A total of 14 randomized controlled trials were included in this systematic review. Results show that;

- As overall, the results of the 14 studies were balanced between positive and negative.
- Acupuncture was superior to waiting-list in one study and either equal or superior to existing treatment i.e physiotherapy in three studies.
- Needle acupuncture was compared with indistinguishable control in five studies; all but one produced negative result.
- Laser stimulation of acupuncture points was better than sham laser in two studies and no different in one study.
- Three studies examined the effectiveness of acupuncture for short-term pain relief only: acupuncture was superior to sham laser but not superior to indistinguishable sham acupuncture.

At the end of the study the authors concluded that the hypothesis that acupuncture was efficacious in the treatment of neck pain was not supported by current evidence from controlled trials. More, better designed trials of acupuncture are required before it can be placed in the management of neck pain.<sup>12, level I</sup>

### **5.1.2 Acupuncture for Rheumatic condition.**

There was one systematic review done by Ernst E and Lee MS on acupuncture as a treatment of rheumatic conditions. This systematic review was conducted to provide a critical evaluation on effectiveness of acupuncture for rheumatic condition. The search was done in February 2010 in which 30 SRs met the inclusion criteria. The Overview Quality Assessment Questionnaire (OQAQ) was used to evaluate the methodological quality of all included SRs. The scores ranged from 1 to 7; a score of  $\leq 3$  was considered as indicative of extensive or major flaws and a score of  $\geq 5$  as suggesting only minor or minimal flaws. From the review the author reported that:

- Most of the studies arrived at a clearly positive conclusion especially in treating patient with neck pain, shoulder pain, Frozen shoulder, Ankylosing spondylitis and Sciatica.

- There were relatively clear consensus existing among the studies that acupuncture was effective for Osteoarthritis (OA). Of the seven studies reported on OA topic, five studies were clearly positive while two casted doubts on the clinical relevance of the small effect size.
- For Fibromyalgia, the evidence seems to be clearly negative with all three available studies drawing negative conclusions.
- Of the six SRs on lower back pain, three were clearly positive while three draw unequivocal conclusions.
- In the case of Rheumatoid Arthritis, there were four studies that span the entire spectrum from negative to positive.
- For lateral elbow pain, the author reported that there was one study where there was insufficient data for lateral elbow pain, whereas 2 years later; one author (Trinh et al) concluded in their report, there was strong evidence to suggest acupuncture was effective for treatment of lateral elbow pain. <sup>13, level I</sup>

In conclusion, the authors reported that based on this overview of recent studies suggested that acupuncture was effective for low back pain, lateral elbow pain, OA and neck pain, whereas for Rheumatoid Arthritis and Fibromyalgia the evidence was negative. <sup>13, level I</sup>

### **5.1.3 Acupuncture for back pain**

One meta-analysis of randomized controlled trials retrieved examined on the effectiveness of acupuncture for back pain. Ernst E and White AR performed a meta-analysis of the trial to know the benefit or effectiveness of acupuncture for treatment of back pain, in view of that this acupuncture treatment was commonly used to treat back pain. A systematic literature search was conducted to retrieve all randomized controlled trials of any form of acupuncture for any type of back pain in human. The quality of the studies was assessed by a modification of the method described by Jadad et al. Points were awarded by the author in 3 categories: randomization (2 points), blinding (2 points), and description of dropouts and withdrawals (1 point). The adequacy of the acupuncture treatment was assessed by consulting 6 experienced acupuncturists.

Base on the review of the 12 studies that were included, the authors reported that, there were nine studies presented data in a form suitable for inclusion in the meta-analyses. The results of the primary meta-analysis showed that in a total of 377 patients that was included in the trials, the overall Odd Ratio (OR) was 2.30 (95% CI, 1.28-4.13). There was no significant heterogeneity between studies ( $\chi^2_8=12.58$ ,  $P> 0.1$ ).

In three studies (Coan et al, Duplan et al. and Gunn et al.), the outcome was markedly more positive than in the remainder. These studies have no uniformity of inclusion criteria, acupuncture approach, setting or end points that could account for the divergence. Alternative outcome data were available in 1 study (Duplan et al.) yielding a new OR for all studies combined of 2.54 (95% CI, 1.32-4.88).

In conclusion, the authors reported that, the combined result of all studies shows acupuncture to be superior to various control interventions, although there is insufficient evidence to state whether acupuncture to be superior to placebo. However, the author recommended that further studies are required to conclude with certainty whether acupuncture has specific effects in addition to its nonspecific effects.<sup>14, level I</sup>

#### **5.1.4 Acupuncture for Fibromyalgia**

A systematic review was conducted by Deare JC et al. to determine whether real acupuncture was more beneficial in terms of pain reduction, function and well-being improvement than placebo and other treatments and was safe in people with fibromyalgia. The search was inception in April 2008 as per protocol and updated search was done in May 2010 and latest in January 2012. At the end, only 9 RCTs and 1 quasi-RCT were included. The results were as below;

- There was low quality evidence from one study (13 participants) which showed electroacupuncture (EA) improved symptoms with no adverse events at one month following treatment. Below was the result reviewing on electro acupuncture (EA):
  - i. EA reduced pain by a mean of 22 points (95% CI, 4 to 41), or 22% absolute improvement. Mean pain in the non-treatment control group was 70 points on a 100 point scale.
  - ii. EA improved well-being by a mean of 15 points (95% CI, 5 to 26 points). Control group well-being was 66.5 points on a 100 point scale.
  - iii. EA reduced stiffness by a mean of 0.9 points (95% CI, 0.1 to 2 points; absolute reduction 9%, 95% CI, 4% to 16%). Control group stiffness was 4.8 points on a 0 to 10 point.
  - iv. EA reduced fatigue by a mean of 1 point (95% CI, 0.22 to 2 points), absolute reduction 11% (2% to 20%). Fatigue was 4.5 points (10 point scale) without treatment.
  - v. There was no difference in sleep quality (MD 0.4 points, 95% CI, -1 to 0.21 points, 10 point scale), and physical function was not reported.
- The authors also reported that moderate quality evidence from six studies (286 participants) indicated that acupuncture (EA or MA) was no better than sham acupuncture, except for less stiffness at one month.
- Subgroup analysis of two studies (104 participants) indicated benefits of EA.
  - i. Mean pain was 70 points on 0 to 100 point scale with sham treatment; EA reduced pain by 13% (5% to 22%); (Std. Mean Difference (SMD) -0.63, 95% CI, -1.02 to -0.23).
  - ii. Global well-being was 5.2 points on a 10 point scale with sham treatment; EA improved well-being: Std Mean Difference (SMD) 0.65, (95% CI, 0.26 to 1.05) absolute improvement 11% (4% to 17%).

- iii. EA improved sleep, from 3 points on a 0 to 10 point scale in the sham group: Std Mean Difference (SMD) 0.40 (95% CI, 0.01 to 0.79); absolute improvement 8% (0.2% to 16%).
- There was moderate quality evidence from one study (58 participants) whereby compared with standard therapy alone (antidepressants and exercise), adjunct acupuncture therapy reduced pain at one month after treatment: mean pain was 8 points on a 0 to 10 point scale in the standard therapy group; treatment reduced pain by 3 points (95% CI, -3.9 to -2.1), an absolute reduction of 30% (21% to 39%).
  - Another low quality evidence reported by the author in their report from one study (38 participants) showed a short-term benefit of acupuncture over antidepressants in pain relief: mean pain was 29 points (0 to 100 point scale) in the antidepressant group; acupuncture reduced pain by 17 points (95% CI, -24.1 to -10.5).
  - Moderate-quality evidence from one study (41 participants) indicated that deep needling with or without *deqi* did not differ in pain, fatigue, function or adverse events.

The authors concluded that based on the study reviewed as overall; there was a low to moderate-quality evidence that acupuncture for the treatment of fibromyalgia was safe. There was a moderate level of evidence that acupuncture was not better than sham controls. Electro-acupuncture was found to be consistently better than sham interventions in improving pain, global well-being, sleep, stiffness and fatigue. The effect of acupuncture was not maintained at six to seven months after treatment. The same level of evidence supported acupuncture as an adjunct therapy to medication and exercise or acupuncture when compared with a medication and exercise control. When comparing acupuncture with medication or a wait list, there was low quality evidence in favour of acupuncture but this needs more rigorous and methodologically sound studies whereby large studies are warranted.<sup>15, level 1</sup>

### **5.1.5 Acupuncture for low back pain**

There were one systematic review with meta analysis and three systematic reviews retrieved from the databases. Most of the articles reviewed were about effectiveness of acupuncture in treatment of low back pain.

**5.1.5.1** Lam M et al. conducted a systematic review with meta-analysis of randomized controlled trials to evaluate the totality of evidence in relation to the effectiveness of acupuncture for nonspecific chronic low back pain (NSCLBP). A total of 32 RCTs were included in this study and data on 25 of these RCTs were included in the meta-analysis. Of these, 7 studies were excluded in the meta-analysis because of incomplete data or relevant outcome measures were not available. The methodological qualities of the included studies were evaluated using the Cochrane risk of bias tool. The author divided the meta-analysis outcome into 6 categories namely Acupuncture versus no treatment,

Acupuncture versus Medication (NSAIDs, Muscle Relaxants, and Analgesics), Acupuncture versus TENS, Acupuncture versus Sham Acupuncture, Acupuncture in Addition to Usual Care versus Usual Care and Electroacupuncture versus Self-care or Usual Care.

**a) Acupuncture versus No Treatment**

Five studies examined the effect of acupuncture on pain when compared with no treatment, where no treatment included waitlist control or self-care. Data were pooled for pain using either VAS or NPS, which suggests a significant moderate difference between acupuncture and no treatment immediately post intervention (Std. mean difference (SMD) = - 0.72 [95% CI, - 0.94 to - 0.49],  $P < 0.000$ ;  $I^2 = 51\%$ ). Additionally, data that examined the levels of function immediately post intervention suggests a large statistically significant difference between the intervention and the control (Std. mean difference (SMD) = - 0.94 [95% CI, - 1.41 to - 0.47],  $P < 0.00$ ,  $I^2 = 78\%$ )).

**b) Acupuncture versus Medication (NSAIDs, Muscle Relaxants and Analgesics)**

Pain intensity, measured using VAS, was pooled for 3 studies that compared acupuncture with medication including NSAIDs, muscle relaxants, and analgesics post intervention. There was a statistical but not clinically relevant difference in self-reported pain immediately post intervention (Mean difference (MD) = - 10.56 [95% CI, - 20.34 to - 0.78],  $P = 0.03$ ,  $I^2 = 0\%$ ). Additionally, a significant moderate difference in favor of acupuncture with respect to the levels of activity limitation immediately post intervention (Std. mean difference (SMD) = - 0.36 [95% CI, - 0.67 to - 0.04],  $P = 0.03$ ,  $I^2 = 7\%$ ).

**c) Acupuncture vs. TENS**

Three studies, including 122 patients, which compared acupuncture with TENS reported levels of pain immediately post intervention. There was no significant difference found in self-reported pain intensity between acupuncture and TENS therapy ( $P = 1.00$ ). Two studies reported follow-up assessments on pain that was in the range between 10 and 12 weeks and reported no significant differences between acupuncture and TENS ( $P = 0.29$ ). Levels of function were not assessed.

**d) Acupuncture vs. Sham Acupuncture**

Four studies reported levels of self-reported pain intensity using VAS. Acupuncture is clinically more effective in reducing pain when compared with sham acupuncture (Mean Difference (MD) = - 16.76 [95% CI, - 33.33 to - 0.19],  $P = 0.05$ ,  $I^2 = 90\%$ ) immediately post intervention.

Three studies reported follow-up results between 6 and 12 weeks and demonstrated that a significant difference was evident up to 3 months after intervention (Mean Difference (MD) = - 9.55 [95% CI, - 16.52 to - 2.58], P = 0.007, I<sup>2</sup> = 40%).

In terms of functional outcome, 3 studies reported levels of activity limitation. A total of 256 patients were pooled with no significant differences observed immediately post intervention between the 2 groups (P = 0.20) or during follow-up assessment (P = 0.76).

#### **e) Acupuncture in Addition to Usual Care vs. Usual Care**

Four studies that examined the effect of acupuncture in addition to usual care when compared with usual care alone were pooled. A significant but not a clinically meaningful difference was found in favour of acupuncture with respect to self-reported levels of pain immediately post intervention (Mean Difference (MD) = - 13.99 [95% CI, - 20.48 to - 7.50], P < 0.000, I<sup>2</sup> = 34%). Similar findings were reported at follow-up (Mean Difference (MD) = - 12.91 [95% CI, - 21.97 to - 3.85], P < 0.005, I<sup>2</sup> = 63%).

Activity limitations were measured in 3 studies. A large significant difference in levels of function in favor of acupuncture immediately post intervention (Std Mean Difference (SMD) = - 0.87 [95% CI, - 1.61 to - 0.14], P = 0.02, I<sup>2</sup> = 71%).

Two studies reported that a moderate statistical significant difference persisted during follow-up assessment (Std Mean Difference (SMD) = - 0.51 [95% CI, - 0.91 to - 0.12], P = 0.01, I<sup>2</sup> = 0%).

#### **f) Electroacupuncture vs. self-care or usual care**

Six studies examined for electroacupuncture. Levels of pain were pooled for 5 studies. A large statistically significant difference in self-reported pain between the electroacupuncture group and usual-care group immediately post intervention (Std Mean Difference (SMD) = - 1.39 [95% CI, - 2.37 to - 0.40], P < 0.000, I<sup>2</sup> = 92%).

Four studies reported follow-up results with moderate significant difference in pain reduction between the intervention and control group (Std Mean Difference (SMD) = - 0.66 [95% CI, - 1.17 to - 0.15], P < 0.01, I<sup>2</sup> = 66%). Levels of function were not examined.

Based on the review above, the authors concluded that, this systematic review demonstrated that acupuncture was an effective method of treating pain and functional limitations in patients who present with NSCLBP. However, given the varied nature of the methodological quality of the RCTs, the author suggested the use of acupuncture should be considered as an adjunct to routine practice in the treatment of NSCLBP, whereas future efforts should focus on improving the methodological and reporting quality of the trials. Additionally, longer-term follow-up, not just immediate post



intervention is needed in future research to examine the lasting effect of acupuncture. <sup>16,</sup>  
level I

**5.1.5.2** Tringkalidas D. conducted a systematic review about acupuncture therapy for chronic lower back pain. The aim of this systematic review was to evaluate if this treatment option was justified in view of recent evidence available on the efficacy of acupuncture. This systematic review was done in 2009. A total of four studies that fulfilled the eligibility criteria were included in this study. All studies were included comparing acupuncture treatment with usual care treatment. Base on the four studies reviewed by the author, all studies reported that acupuncture significantly improved function and decreased symptoms in patients with chronic low back pain. Furthermore, the author also reported that there were reductions in self-medication intake for acupuncture groups compared to the usual care group. The SF-36 scores were better for the acupuncture groups but this improvement was not statistically significant. The author also mention about the pain intensity which were decreased from baseline in the acupuncture. There were no serious adverse effects reported in all studies. At the end of the report, the author concluded that acupuncture can be effective in managing patients with low back pain. This is especially true if the patients have positive expectations about acupuncture, suggesting a strong psychological element. Furthermore, the lack of evidence to support traditional acupuncture over sham or simulated acupuncture could mean that the physiology of acupuncture is still unclear or it could further support the argument for a strong psychological effect. <sup>17, level I</sup>

**5.1.5.3** A systematic review was conducted in 2013 by Lee J-H et al. aimed at critically evaluating the evidence for or against acupuncture for acute LBP. The search attempted to identify all relevant studies using multiple databases. At the end, only 11 studies finally met the inclusion criteria. Each RCT's was independently assessed for the risk of bias using the risk of bias assessment tool from 2009 updated method guidelines for systematic review from the Cochrane Back Review Group (CBRG). The authors divides the finding result into 4 categories namely acupuncture versus medication, acupuncture versus sham acupuncture, acupuncture plus medication versus Medication alone and adverse events.

**a) Acupuncture versus Medication (7 Studies included)**

➤ **Overall improvement (5 studies)**

In 5 trials reporting patient-reported overall improvement (ie, cured or improved vs. failed), 2 had a low risk of bias and 3 had a high risk of bias. Pooling of these studies showed that significantly more participants in the acupuncture group improved immediately after the end of the sessions than those on the medication arm [5 studies; pooled RR, 1.11; 95% CI: 1.06, 1.16; P<0.00001; I<sup>2</sup> =0, immediately after the end of the session(s)].

One trial that measured overall improvement at 1 month after randomization reported a favorable effect of acupuncture against conventional medication [1 study; RR, 1.07; 95% CI: 1.02, 1.11; P=0.006; short-term follow-up].

Although 2 trials with a low risk of bias favored acupuncture, excluding 3 trials with a high risk of bias from meta-analysis negated the effects of acupuncture [2 studies; pooled RR, 1.14; 95% CI: 0.99, 1.30; P=0.06; I<sup>2</sup> =48%; 3 studies with a low risk of bias only].

When the author reanalyzed the data as “cured versus improved or failed,” the results were strengthened both at the end of the sessions (5 studies; pooled RR, 1.63; 95% CI: 1.43, 1.86; P<0.00001; I<sup>2</sup> =0%) and at 1-month follow-up (1 study; RR, 1.28; 95% CI: 1.12, 1.45; P=0.0002). Limiting reanalysis to the studies with a low risk of bias still favored acupuncture over medication both at the end of the sessions (2 studies; pooled RR, 1.63; 95% CI: 1.36, 1.94; P<0.00001; I<sup>2</sup> =0%).

➤ **Pain intensity (3 studies):**

Three studies reporting pain intensity on NRS or VAS, one Chinese study with a high risk of bias showed significant analgesic effect of acupuncture (pain intensity on VAS, 0.18±0.13 versus 3.31±0.76; P<0.00001), whereas the other two with a high risk of bias had neutral outcomes.

➤ **Analgesic use (1 study):**

In one study with a high risk of bias, significantly fewer participants on the acupuncture arm used other analgesics during the first week than those on the medication arm (2/28 versus 11/29; P<0.01).

**b) Acupuncrure versus. Sham acupuncture (3 Studies included)**

➤ **Pain intensity (3 studies):**

Two studies with a low risk of bias showed that 1 session of acupuncture provided significantly better pain relief than sham acupuncture (2 studies; pain intensity on VAS, Mean Difference (MD), -9.38; 95% CI: - 17.00, -1.76; P = 0.02; I<sup>2</sup> = 27%). When 3 to 12 sessions of acupuncture were compared with sham acupuncture in patients with subacute LBP, there was no difference between groups in terms of pain intensity on VAS. Only worst pain on VAS in the acupuncture group had significantly lower value than the sham group at 3-months follow-up (estimated marginal MD from baseline, 18.7; 95% CI: 1.5, 36.0; P=0.034).

➤ **Function/disability (3 studies):**

Three studies with a low risk of bias found no significant difference between acupuncture and sham acupuncture in terms of Modified-Modified Schober test, RMDQ, or Japanese orthopedic association score.

➤ **Analgesic use (1 study):**

Participants in the acupuncture group had significantly fewer analgesic tablets than those in the sham acupuncture group.

**c) Acupuncture Plus Medication versus. Medication alone**

➤ **Overall improvement (1 study):**

One study with a high risk of bias reported significantly better improvement in the acupuncture plus medication group compared with the medication alone group.

➤ **Pain intensity (1 study):**

Acupuncture plus medication was significantly more effective than medication alone in pain relief (pain intensity on NRS, mean±SD, 4.9±0.8 versus 3.3±1.0; P<0.00001) at the end of the 5 acupuncture sessions. This study was rated as having a high risk of bias.

➤ **Function/disability (1 study):**

In terms of RMDQ, acupuncture plus medication resulted in a significantly better outcome than medication alone (higher values are worse, 8.4±2.7 versus 5.6±2.1; P<0.0001).

Based on the above review at the end of the study the authors concluded that the current evidence was encouraging in that acupuncture may be more effective than medication for symptom improvement or relieve pain better than sham acupuncture in acute LBP. The present findings should be confirmed by future studies that overcome the methodological limitations of the studies evaluated in our review.<sup>18, level I</sup>

**5.1.5.4** Another systematic review was conducted by Tulder MWv et al. evaluating on the efficacy and effectiveness of acupuncture for the management of nonspecific low back pain. Eleven RCT studies on acupuncture for nonspecific LBP were identified that met the criteria for inclusion in this review. The methodological quality of each RCT was assessed independently using methodological quality criteria list by two reviewers, who were blinded with respect to authors, institution, and journal. This blinding was performed by an independent person not involved in the review. Consensus was used to resolve disagreements, and a third reviewer was consulted if disagreements persisted. Furthermore, the same two reviewers blinded to author, institution, and journal independently extracted the data on the primary outcome measures and secondary outcome measures. Based on studies characteristics and methodological quality the author compared the conclusion of all studies and come out with their own conclusion. From the study the author review and divide the result into 3 categories which is:

**a) Acupuncture versus No treatment.**

For these categories the author reported that, there were three studies that compared acupuncture to no treatment. All the three studies were of lower methodological quality and the conclusions of the author were contradictory. Thus, there was conflicting evidence on the effectiveness of acupuncture compared with no treatment.

**b) Acupuncture versus. Conventional Treatment**

There were two studies that compared acupuncture with conventional treatment. One study has a higher methodologic quality and the other study has a lower methodologic quality. However, the overall conclusion of the author concerning both was neutral, indicating that there was moderate evidence to show that acupuncture was not more effective than trigger point injection or transcutaneous electrical nerve stimulation (TENS).

**c) Acupuncture versus. Placebo or Sham Acupuncture.**

Eight studies were identified comparing acupuncture to a placebo or sham acupuncture. Of these, only two studies were of higher methodological quality. There was conflicting evidence that acupuncture is more effective than placebo or sham acupuncture resulting from the contradictory outcomes of the two higher-quality studies. The author concluded that five of the six low-quality studies was neutral, indicating that acupuncture was not more effective than placebo or sham acupuncture. In one study, the overall conclusion was unclear.

Based on the above findings the authors concluded that this systematic review did not clearly show that acupuncture was effective in the management of back pain, and the authors do not recommend acupuncture as a regular treatment of patients with Low Back Pain. Furthermore, because most of the studies were of very poor methodological quality, future studies should have larger sample sizes, should use a valid acupuncture treatment and should have both a short-term and a long-term follow-up.<sup>19, level I</sup>

**5.1.6 Acupuncture for ankle sprain**

There was one systematic review with meta-analysis conducted by Park J et al. in 2012 to evaluate any evidence regarding acupuncture for ankle sprains. From the systematic search, 17 studies involving 1820 participants were included in the review. The main goal outcome of this systematic review was patient-reported global symptom improvement at the end of treatment such as pain relieved, maintain range of motion (ROM), return to pre-injury level and prevent recurrence of injury. The risks of bias for the included studies were evaluated according to the Cochrane Collaboration's risk of bias assessment tool. Trial quality was generally poor, with just three reporting adequate methods of randomization and only one reporting a method of allocation concealment. The results were:

- In acupuncture groups there were significantly more participant reporting global symptom improvement compared with no acupuncture groups (RR of symptoms persisting with acupuncture = 0.56, 95% CI 0.42-0.77).
- Acupuncture as an add-on treatment also improved global symptoms compared with other treatment only, without significant variability (RR of symptoms persisting with acupuncture = 0.61, 95% CI 0.51-0.73, I<sup>2</sup> = 1%).
- Acupuncture significantly alleviated pain compared with the control group on VAS (1.32 ± 0.42 versus 6.55 ± 1.76, Mean Difference (MD) -5.23, 95% CI -5.61 to -

4.85) immediately after the treatment and the analgesic effect were maintained  $\pm 0.15$  versus  $5.89 \pm 1.93$ , Mean Difference (MD)  $-4.88$ , 95% CI  $-5.29$  to  $4.47$ ) at long-term follow-up of 28.8 months on average.

- The acupuncture group reported significantly better quality of life than the control group using the SF-36, immediately after treatment ( $91.25 \pm 10.16$  versus  $76.53 \pm 5.24$ , MD  $14.72$ , 95% CI,  $12.32-17.12$ ). At 2-year follow up, the effect remained significant on using SF-36, ( $93.62 \pm 9.05$  versus  $62.31 \pm 6.67$ , Mean Difference (MD)  $31.31$ , 95% CI  $28.95-33.67$ ). However these analyses were based on only a small number of studies.
- Acupuncture did not appear to be associated with adverse events.

Based on above review the authors concluded that the study had insufficient evidence due to methodological shortcomings and the small number of high-quality primary studies. So the author did not recommend acupuncture as an evidence-based treatment option for ankle sprain. Further well-designed and conducted trials are needed to draw a definitive conclusion.<sup>20, level I</sup>

Another systematic review conducted by Kim TH. to assess the effects of acupuncture for the treatment of ankle sprains in adults. The study was conducted in 2013. A total of 20 heterogeneous studies consisted of 2012 participant with acute ankle sprains were included in this study. All of the studies had a high risk of bias due to lack of blinding. For the result the author reported that:

- There was one study, which compared acupuncture with no treatment and found acupuncture to be more effective with regard to cure rate and pain.
- Acupuncture plus another active treatment versus that active treatment alone was compared in eight studies, with cure rate data available for seven. Most studies reported higher cure rates in the acupuncture plus another active treatment group than in the active treatment alone group.
- However, while the results of an explanatory meta-analysis of cure rate data from eight trials comparing acupuncture versus no acupuncture tended to favour acupuncture, but the results were not statistically significant and the data were very heterogeneous (383/396 versus 272/355; RR 1.32, 95% CI 0.95 to 1.84; P value = 0.1;  $I^2 = 98\%$ ).
- Furthermore, there were 14 studies comparing acupuncture with a variety of other non-surgical treatments, such as Chinese drug patches, hot and cold water, ice packs, oral Chinese herbal medicine and elastic bandages. Some studies were found to favour acupuncture, some in favour of the other treatment and some found a lack of evidence for a difference between the two interventions under test.
- The results of an explanatory meta-analysis of cure rate from 11 studies comparing acupuncture with another nonsurgical intervention tended to favour acupuncture, but were not statistically significant and were associated with very substantial heterogeneity. (404/509 versus 416/497; RR 1.07, 95% CI 0.94 to 1.22; P value = 0.30;  $I^2 = 92\%$ ).

At the end of the study, the author concluded that current available evidence did not provide reliable supported evidence for the effectiveness or safety of acupuncture for treatment of acute ankle sprains in adult. Future rigorous randomised clinical trials with larger sample sizes are necessary to establish robust clinical evidence concerning the effectiveness and safety of acupuncture treatment for acute ankle sprains.<sup>6, level I</sup>

### **5.1.7 Acupuncture for Carpal Tunnel Syndrome**

Only one Randomized Controlled Trial was conducted by Yang C-P et al. on the efficacy of acupuncture compared with steroid treatment in patient with mild –to-moderate carpal tunnel syndrome (CTS). This study was conducted in 2009. A total of 90 patients fulfill the inclusion and exclusion criteria. However 13 of them were excluded from the study because the patients were not interested and difficult to find time to cooperate. At the end, a total of 77 patients who fulfilled the inclusion and exclusion criteria agreed to participate in the study. The 77 patients were randomly allocated to either the steroid treatment group (n=39) or acupuncture treatment group (n=38). The randomization was carried out according to computer-generated randomly allocated treatment codes and data were kept by a person not involved in the care or evaluation of the patients or in the data analysis. Of the 77 patients, 3 patients in the acupuncture group dropped out due to inability to take time off work, and 4 patients in the steroid group did not finish the study due to intolerance of side effects of epigastric pain with nausea. The outcome measurements were clinical assessments including the symptomatic questionnaire. Result showed that there was no significant difference between the two groups before treatment. However at the end of the study, the authors reported that there was a high percentage of improvement in both the acupuncture and steroid groups at weeks two and four (all  $P < 0.01$  for both groups), though statistical significance was not achieved between the two groups ( $P = 0.15$ ). Of the 5 parameter scores (pain, numbness, paresthesia, weakness/clumsiness, nocturnal awakening), only 1, nocturnal awakening showed a significant decrease between the 2 groups. Patients with acupuncture treatment had significantly better improvement in nocturnal awakening compared with the steroid group at week 4 ( $P = 0.03$ ). Base on the result, the authors concluded that short term acupuncture treatment was as effective as short-term low-dose steroid for mild-to-moderate CTS. The authors also mentioned that for those who did not tolerate oral steroid or did not opt for surgery, acupuncture treatment provides an alternative choice.<sup>21, level I</sup>

## **5.2 SAFETY**

There was one same systematic review conducted by Lee J-H et al. reporting about adverse event as one of the outcome. In their systematic review the authors mentioned that, there was one study that reported minor adverse event. In the study the author reported that one of their participants in the study feeling more energetic and three felt tired during acupuncture treatment.<sup>18</sup>

There was one RCT conducted by Yang C-P et al. reporting about adverse events on acupuncture. From the study the authors reported that there were no serious adverse

effects. However, in the acupuncture treatment group, side effects were reported by 5% of the patients. Most adverse effects were related to the local insertion of the needles, such as local pain after session, ecchymosis, and local paresthesia during session. Acupuncture was well tolerated by patients and no one discontinued prematurely because of needle-related side effects.<sup>21</sup>

### **5.3 COST-EFFECTIVENESS**

There was one economic evaluation study reporting on cost effectiveness of a effectiveness of acupuncture in the management of persistent non-specific low back pain. This study was conducted by Ratcliffe J. et al. to measure the incremental cost per quality adjusted life year (QALY) gain over two year. A total of 241 patient with persistent non-specific low back pain of 4-52 weeks' duration, who were diagnosed as suitable for management in primary care, were recruited to the trial through referral from 43 general practitioners were included in this study. Patients were randomly allocated either to receive up to 10 acupuncture treatments over three months from acupuncturists trained in traditional Chinese medicine (n = 161) or to receive usual care only (n = 81). Costs were measured from both the NHS and a societal perspective. Effectiveness was measured as quality adjusted life years (QALYs) gained. Costs were measured in sterling prices for 2002-2003. The primary economic analysis was over the 24 month period. From the study, the authors reported that, the total mean cost of treatment to the NHS for acupuncture group ( £ 471.10) were higher than for usual care group ( £332.24) and the difference was statistically significant. The authors reported that the ICER for cost-effectiveness of acupuncture care and usual care was £4241. The overall incremental cost-effectiveness ratio for acupuncture in the treatment of low back pain was positive with a mean of £4241 at 24 month with QALY gain of 0.027.

The authors concluded that a short course of traditional acupuncture for persistent non-specific low back pain in primary care confers a modest health benefit for minor extra cost to the NHS compared with usual care. However, Acupuncture care for low back pain seems to be cost-effective in the longer term.<sup>22</sup>

In Malaysia the estimated cost for one session acupuncture treatment for chronic pain management is around RM 50 / session.

### **5.4 LIMITATIONS**

- Although there was no restriction in language during the search but only English full text articles were included in this report.
- The methodological quality of all papers included in SR article had a high risk of bias.

## 5. CONCLUSION

There were 11 systematic reviews, one Randomised Controlled Trial and one economic evaluation study included in this review.

There was evidence on the effectiveness of acupuncture for patients with musculoskeletal pain such as neck pain, osteoarthritis, back pain, low back pain, fibromyalgia and ankle sprain. However, the systematic reviews retrieved included studies which have various biases and hence varying the quality of the included studies.

From the review, there was evidence to suggest that acupuncture was safe and there was no serious adverse events noted. However, pain due to local insertion of the needle, ecchymosis and local paresthesia were among some of adverse events reported. In one study, three of the participants felt tired during acupuncture treatment.

Based on one economic evaluation study conducted in primary care setting, a short course of traditional acupuncture for persistent non-specific low back pain in primary care confers a modest health benefit for minor extra cost to the NHS compared with usual care. However, acupuncture care for low back pain seems to be cost-effective in the longer term. The overall incremental cost-effectiveness ratio (ICER) for acupuncture in the treatment of low back pain was positive with a mean of £4241 at 24 month with QALY gain of 0.027. In Malaysia, it is estimated that the cost for one session acupuncture treatment for chronic pain management is around RM50 /session.



## 7. REFERENCE

1. D.Woolf A, Pfleger B. Burden of major musculoskeletal conditions. Bulletin of the World Health Organization. 2003, 81:646-656.
2. Acute Musculoskeletal Pain. 2009.
3. Pieber K, Herceg M, Kienbauer M et al. Combination treatment of physical modalities in the treatment of musculoskeletal pain syndromes: a prospective-controlled study. European Journal Translational Myology. 2010, 1(4):157-165.
4. S G, R B, L B et al. Acupuncture for lateral elbow pain. The Cochrane Collaboration. 2013, (2):1-16.
5. Pacific WROftW. WHO international standard terminologies on traditional medicine in the Western Pacific Region. 2007.
6. KIm T-H, Lee MS, Kim KH et al. Acupuncture for treating acute ankle sprains. The Cochrane Collaboration. 2014, (6).
7. Pyne D, Shenker NG. Demystifying acupuncture. Rheumatology. 2008, 47(8):1132-1136.
8. Adams D, Cheng F, Jou H et al. The Safety of Pediatric Acupuncture: A Systematic Review. Pediatrics. 2011, 128(6):e1575-e1587.
9. What is Acupuncture?. Acupuncture Association of Chartered Physiotherapies. Available at : [www.aacp.org.uk/public-sp-31531/what-is-acupuncture](http://www.aacp.org.uk/public-sp-31531/what-is-acupuncture) (Accesses at 11/3/2015)
10. Comparing the advantages and disadvantages of acupuncture treatments. The spine and sports health center. Available at: [www.spinesportshc.com/comparing-advantages-disadvantages-acupuncture](http://www.spinesportshc.com/comparing-advantages-disadvantages-acupuncture) (Accessed at 11/3/2015)
11. Advantages and disadvantages of acupuncture.aarogna.com. Available at:[www.aarogya.com](http://www.aarogya.com) > Complementary Medicine > Acupuncture (Accessed at 11/3/2015)
12. White AR, E.Ernst. A systematic review of randomized controlled trials of acupuncture for neck pain. British Society for Rheumatology. 1999, 38:143-147.
13. Ernst E, Lee MS. Acupuncture for rheumatic conditions: an overview of systematic reviews. Rheumatology. 2010, 49(10):1957-1961.

14. Ernst e, White AR. Acupuncture for back pain. ARCH INTERN MED. 1998, 158:2235-2241.
15. Deare JC, Zheng Z, Xue CCL et al. Acupuncture for treating fibromyalgia. 2013.
16. Lam M, Galvin R, Curry P. Effectiveness of Acupuncture for Nonspecific Chronic Low Back Pain. SPINE. 2013, 38(24):2124-2138.
17. Trigkilidas D. Acupuncture therapy for chronic lower back pain: a systematic review. Annals of The Royal College of Surgeons of England. 2010, 92(7):595-598.
18. Lee J-H, Choi T-Y, Lee MS et al. Acupuncture for Acute Low Back Pain A Systematic Review. Clin J Pain. February 2013, 29(2):172-185.
19. Tulder MWv, Cherkin DC, Berman B et al. The Effectiveness of Acupuncture in the Management of Acute and Chronic Low Back Pain.pdf>. SPINE. 1999, 24(11):1113-1123.
20. Park J, Hahn S, Park J-Y et al. Acupuncture for ankle sprain: systematic review and meta-analysis. BMC complementary and alternative medicine. 2013, 13(55):1-16.
21. Yang C-P, Hsieh C-L, Wang N-H et al. Acupuncture in Patient With Carpal Tunnel Syndrome A Randomized Controlled Trial. Clin J Pain. May 2009, 25(4).
22. Ratcliffe J. A randomised controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis. BMJ. 2006, 333(7569):626-620.

## 8. APPENDIX

### 8.1. Appendix 1: LITERATURE SEARCH STRATEGY

**Ovid MEDLINE® In-process & other Non-Indexed citations and OvidMEDLINE® 1946 to present**

- 1 Musculoskeletal pain/ (990)
- 2 Musculoskeletal pain.tw. (3297)
- 3 MYALGIA/ (241)
- 4 (muscle adj1 (soreness\* or tenderness or pain)).tw. (4139)
- 5 myalgia.tw. (4916)
- 6 SPRAINS.mp. and STRAINS/ [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (3682)
- 7 strain\*.tw. (538400)
- 8 sprain\*.tw. (3897)
- 9 sprains.mp. and strains.tw. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (807)
- 10 strains.mp. and sprains.tw. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] (1471)
- 11 ARTHRALGIA/ (5200)
- 12 Polyarthralgia\*.tw. (631)
- 13 (joint\* adj1 pain\*).tw. (5529)
- 14 arthralgia\*.tw. (5788)
- 15 MUSCULOSKELETAL DISEASES/ (8597)
- 16 (musculoskeletal adj1 disease\*).tw. (1375)
- 17 TENDINOPATHY/ (4297)
- 18 Tendinosis.tw. (604)
- 19 Tendinopathy.tw. (1730)
- 20 Tendinitis.tw. (1929)
- 21 Tendinoses.tw. (18)
- 22 Tendonitis.tw. (704)
- 23 Tendonitides.tw. (1)
- 24 Tendinitides.tw. (0)
- 25 tendinopathies.tw. (350)
- 26 TENDON INJURIES/ (10647)
- 27 (tendon adj1 injur\*).tw. (1991)
- 28 Neck pain/ (4627)
- 29 cervical pain\* anterior.tw. (0)
- 30 anterior cervical pain\*.tw. (6)
- 31 (neck pain\* adj1 anterior).tw. (24)

32 pain\* anterior cervical.tw. (3)  
 33 pain\* anterior neck.tw. (6)  
 34 neckache\*.tw. (19)  
 35 (cervical pain adj1 posterior).tw. (13)  
 36 (neck pain\* adj1 posterior).tw. (60)  
 37 pain\* posterior neck.tw. (1)  
 38 pain\* posterior cervical.tw. (0)  
 39 cervicodynia\*.tw. (9)  
 40 (neck adj1 pain\*).tw. (6070)  
 41 (cervical adj1 pain\*).tw. (993)  
 42 cervicalgia\*.tw. (72)  
 43 (neck adj1 ache\*).tw. (25)  
 44 Low back pain/ (14620)  
 45 back pain\* low\*.tw. (78)  
 46 (low\* back adj1 (pain\* or ache\* or postural or mechanical or posterior  
 compartment or backache or recurrent)).tw. (19074)  
 47 (backaches adj1 low).tw. (0)  
 48 Bone pain/ (0)  
 49 (pain adj1 syndrome\* vertebrogenic).tw. (0)  
 50 vertebrogenic pain syndrome\*.tw. (28)  
 51 (back adj1 (pain or ache)).tw. (30833)  
 52 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or  
 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or  
 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or  
 47 or 48 or 49 or 50 or 51 (633174)  
 53 ACUPUNCTURE/ (1243)  
 54 ACUPUNCTURE THERAPY.tw. (634)  
 55 ACUPUNCTURE ANALGESIA/ (1054)  
 56 (acupuncture adj1 (anesthesia or analgesia)).tw. (735)  
 57 ACUPUNCTURE THERAPY/ (12124)  
 58 MEDICINE, CHINESE TRADITIONAL ACUPUNCTURE.tw. (0)  
 59 ACUPUNCTURE, EAR/ (272)  
 60 (acupuncture\* adj1 (auricular or ear)).tw. (346)  
 61 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 (14505)  
 62 52 and 61 (862)  
 63 limit 62 to (full text and humans) (176)-18/2/2015

<b>OTHER DATABASES</b>	
EBM Reviews - Cochrane Central Register of Controlled Trials	Same MeSH, keywords, limits used as per MEDLINE search
EBM Reviews - Database of Abstracts of Review of Effects	
EBM Reviews - Cochrane database of systematic reviews	
EBM Reviews - Health Technology Assessment	

## 9.2 Appendix 2

### HIERARCHY OF EVIDENCE FOR EFFECTIVENESS STUDIES

#### DESIGNATION OF LEVELS OF EVIDENCE

- I Evidence obtained from at least one properly designed randomized controlled trial.
- II-1 Evidence obtained from well-designed controlled trials without randomization.
- II-2 Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one centre or research group.
- II-3 Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence.
- III Opinions or respected authorities, based on clinical experience; descriptive studies and case reports; or reports of expert committees.

**SOURCE: US/CANADIAN PREVENTIVE SERVICES TASK FORCE  
(Harris 2001)**

1.Evidence table : Effectiveness

Questions : Is it acupuncher effective in treating musculoskeletal pain (neck pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up  (if applicable)	Outcome measures/Effect size	General comments
<p>White AR, Ernst E. A systematic review of randomized controlled trials of acupuncture for neck pain. 1999, 38:143-147.</p>	<p>Systematic Review</p> <p>A systematic literature review was undertaken in January 1998 searching for study of acupuncture for neck pain using Medline, Embase (1974–97), The Cochrane Library (Issue 1, 1998), and CISCOP (December 1997). The searches revealed 32 possibly relevant studies of which 18 were excluded for diverse reasons. At the end of search, only 14 studies included in this systematic review. The quality of studies was assessed by the system of Jadad et al. Point 1 to 5 were awarded base on the quality of the studies. The maximum points available were 5. Two reviewers independently extracted data concerning study methods, quality and outcome.</p>	<p>I</p>	<p>621</p> <p>Patient characteristic Neck pain</p>	<p>Acupuncture</p> <p>Needle Acupuncture</p> <p>Laser stimulation acupuncture</p>	<p>Waiting list</p> <p>Existing treatment ie physiotherapy</p> <p>in distinguish able control</p> <p>sham TENS (transcutaneous electrical nerve stimulation)</p>		<p>Overall, the results of the 14 studies were balanced between positive and negative.</p> <p><b>Acupuncture vs. Waiting list</b> Endpoint : Pain</p> <ul style="list-style-type: none"> <li>- Acupuncture significant &gt; waiting list <math>P&lt;0.001</math></li> </ul> <p><b>Acupuncture vs. existing treatment, i.e. physiotherapy</b> Endpoint : Pain</p> <ul style="list-style-type: none"> <li>- acup=physio</li> </ul> <p>Endpoint : ROM, pain relief</p> <ul style="list-style-type: none"> <li>- acup 87% relief, physio 54% relief</li> </ul> <p><b>Needle acupuncture vs. in distinguish able control</b> Endpoint : Pain</p> <ul style="list-style-type: none"> <li>- acup = sham / non point needling</li> <li>- acup &gt; sham</li> </ul> <p><b>Short-term sensory and affective pain</b></p> <ul style="list-style-type: none"> <li>- acup = superficial acup / diazepam</li> <li>- acup sig &gt; placebo diazepam <math>P&lt;0.05</math></li> </ul> <p><b>Short-term pain</b></p> <ul style="list-style-type: none"> <li>- acup=sham</li> </ul> <p><b>Laser stimulation acupuncture vs. sham acupuncture</b> Endpoint: Pain</p> <ul style="list-style-type: none"> <li>- Laser acup sig&gt; sham laser <math>P&lt;0.001</math></li> <li>- Laser acup = sham laser</li> </ul> <p><b>ROM/ Short-term pain</b></p> <ul style="list-style-type: none"> <li>- Laser acup sig &gt; sham laser up to 6 hr, <math>P&lt;0.05</math> laser But acup=sham laser at 24hr</li> <li>- Laser acup = sham laser</li> </ul> <p><b>Acupuncture vs. sham TENS (transcutaneous electrical nerve stimulation)</b> Endpoint : Pain</p> <ul style="list-style-type: none"> <li>- Acup sig &gt; sham TENS, <math>P&lt;0.01</math></li> <li>- Acup = sham TENS</li> </ul> <p>In conclusion, the hypothesis that acupuncture is efficacious in the treatment of neck pain is not supported by current evidence from controlled trials. More, better designed trials of acupuncture are required before its place in the management of neck pain can be defined.</p>	

2.Evidence table :Effectiveness :

Questions : Is it acupuncher effective in treating musculoskeletal pain (Rheumatoid conditions)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Ernst E, Lee MS. Acupuncture for rheumatic conditions: an overview of systematic reviews. Rheumatology. 2010, 49(10):1957-1961.	Systematic Review  Electronic searches were conducted in 15 databases to locate all SRs on acupuncture for rheumatic conditions in February 2010. The searches generated 238 hits, and 30 SRs met the inclusion criteria . The Overview Quality Assessment Questionnaire (OQAQ) was used to evaluate the methodological quality of all included SRs . The scores ranged from 1 to 7; a score of ≤3 was considered as indicative of extensive or major flaws and a score of ≥5 as suggesting only minor or minimal flaws.	I		Acupuncture			<p><b>1. Fibromyalgia</b> -All the studies failed to show effectiveness of acupuncture in Fibromyalgia patient</p> <p><b>2. Low back pain</b> - 3 studies are clearly positive result -3 studies are unequivocal conclusion</p> <p>3, <b>Lateral elbow pain</b> -1 study reported as positive result -1 study reported as unclear result</p> <p>4. <b>Musculoskeletal pain</b> -1study reported as unclear result</p> <p>5. <b>Orthopaedic diseases</b> -1study reported as unclear result</p> <p><b>6. Osteoarthritis</b> -5 studies showed positive result -2 study showed unclear result</p> <p><b>7. Rheumatoid arthritis</b> --1 study reported as positive result -2 study showed unclear result - 1 study failed to show effectiveness</p> <p><b>8. Neck pain</b> - 2 studies reported a positive result</p> <p><b>9. Shoulder pain</b> -1 study failed to show effectiveness</p> <p><b>10 Frozen shoulder</b> --1 study reported as positive result</p> <p><b>11. Ankylosing spondylitis</b> --1 study reported as positive result</p> <p><b>12. Sciatica</b> --1 study reported as positive result</p>	

3. Evidence table: Effectiveness

Questions : Is it acupuncher effective in treating musculoskeletal pain (back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Ernst e, White AR. Acupuncture for back pain. ARCH INTERN MED. 1998, 158:2235-2241.	Meta-analysis  A systematic literature search was conducted to retrieve all randomized controlled trials of any form of acupuncture for any type of back pain in human. Search was perform using 3 computerized databases: MEDLINE (1969-1996); the Conchrane Controlled Trials Register (issue 1, 1997) and CISCOM (November 1996). The search revealed 30 references for controlled trials. However, 18 reports were excluded from the studiy for multiple reasons.  The quality of the studies was assessed by a modification of the method described by Jadad et al. Points were awarded by the author in 3 categories: randomization (2 points), blinding (2 points), and description of dropouts and withdrawals (1 point). The adequacy of the acupuncture treatment was assessed by consulting 6 experienced acupuncturists. The main outcome measure for the meta-analysis was numbers of patients whose symptoms were	I	377 paticipants	Acupuncture  Needling	Formula EA  Sham Acup  Physiotherapy  Lidocaine  waiting-list  corticosteroid  exercise  sodium chloride injection  sham electrical stimulation  TENS  vapocoolant spray		<p><b><u>1. Electro acupuncture(EA) vs. sham acupuncture</u></b> - No intergroup difference</p> <p><b><u>2. Acup vs sham acup vs physiotherapy</u></b> - Acup &gt; physio but not to sham</p> <p><b><u>3. Acup vs sodium chloride injection vs sham electrical stimulation</u></b> - Acup &gt; control (P&gt;0.05)</p> <p><b><u>4. Individualized traditional acup vs. waiting-list control</u></b> - Pain reduction: Acup:51%, control: 2%</p> <p><b><u>5. Needling at muscle motor point + standard physiotherapy vs. physiotherapy alone</u></b> - Needling superior to control (P&lt;0.01)</p> <p><b><u>6. Formula acup vs. 2 forms of sham acup vs. 5 forms of laser acup</u></b> - All groups improved</p> <p><b><u>7. Formula acup vs. sham acup</u></b> - Acup &gt; sham for severe pain</p> <p><b><u>8. Superficial needling (with or without EA) vs. sham TENS</u></b> - Pain reduction greater after needling (P&lt;0.01)</p> <p><b><u>9. Formula acup vs. lidocaine injections</u></b> - No significant difference between groups</p> <p><b><u>10. Individualized EA vs. TENS vs sham TENS + education and exercise program</u></b> -EA superior to TENS (P&lt;0.11) -No difference between TENS and sham TENS</p> <p><b><u>11. trigger point needling vs. vapocoolant spray + acupressure vs. lidocaine injection vs lidocaine + corticosteroid injection</u></b> - Needling and acupressure yielded the best result (P&gt;0.05)</p>	



3.Evidence table: Effectiveness

Questions : Is it acupuncher effective in treating musculoskeletal pain (back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
	improved at the end of treatment.						<p><b>12. Flexible formula acup vs. low-frequency EA vs. high-frequency EA by pt choice vs. waiting-list controls</b></p> <ul style="list-style-type: none"> <li>- After 6 wk all EA groups superior to untreated controls (P&lt;0.05)</li> <li>- nine studies presented data in a form suitable for inclusion in the meta-analyses. overall Odd Ratio (OR) was 2.30 (95% CI, 1.28-4.13). There was no significant heterogeneity between studies (<math>\chi^2=12.58, P&gt;.1</math>).</li> <li>- the results of the meta-analyses of studies grouped according to design features, The OR of the 4 sham-controlled, evaluator-blinded studies was 1.37 (95% CI, 0.84-2.25).</li> </ul> <p><b>-Conclusion</b> Acupuncture was shown to be superior to various control interventions, although there is insufficient evidence to state whether it is superior to placebo</p>	

4.Evidence table

Question : Is it acupuncher effective in treating musculoskeletal pain (Fibromyalgia)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Deare JC, Zheng Z, Xue CCL et al. Acupuncture for treating fibromyalgia. 2013.	Systematic Review  The search was inception in April 2008 as per protocol and updated search was done in May 2010 and latest in January 2012. The search was done using multiple databases such as Cochrane Central Register of Controlled studies, MEDLINE via PubMed, CAM PubMed and PubMed Central, EMBASE, CINAHL, Chinese databases: Chongqing Weipu and Wanfang Database, Unpublished databases: National Research Register via the Department of Health, UK,HSRProj via the National Library of Medicine, USA and current contents. The search resulted in 439 studies from the English databases and 63 from Chinese databases. After removing duplicates and irrelevant papers, the author identified 49 acupuncture trials for fibromyalgia. Forty studies were excluded by author from the review due to multiple reasons. At the end only 9 RCTs and 1 quasi-RCT were included		395 participant  Criteria for inclusion -gender, aged 18 and over, with a diagnosis of fibromyalgia according to the American College of Rheumatology (ACR) classification criteria for fibromyalgia	Acupuncture	1.sham/fake/placebo acupuncture, 2.other types of placebo control, 3.non-acupuncture treatment, 4.different styles of acupuncture 5.other treatment		<p><b><u>Electroacupuncture vs. non-acupuncture treatment</u></b></p> <p><b><u>Pain</u></b> -significant reduction in pain -favouring acupuncture</p> <p><b><u>Global well-being</u></b> - significant group difference -favouring acupuncture</p> <p><b><u>Sleep</u></b> significant group difference</p> <p><b><u>Fatigue</u></b> statistically significant group difference favouring acupuncture</p> <p><b><u>Stiffness</u></b> statistically significant group difference favouring acupuncture</p> <p><b><u>Real acupuncture versus placebo or sham acupuncture</u></b></p> <p><b><u>Pain</u></b> - statistically significant difference between the groups in reducing pain</p> <p><b><u>Physical Fuction</u></b> - sham manual acupuncture was superior to manual acupuncture in improving SF-36 physical function</p> <p><b><u>Global well-being</u></b> no statistically significant difference between real and sham acupuncture</p> <p><b><u>Sleep</u></b> no statistically significant difference with real acupuncture when compared with sham interventions</p> <p><b><u>Fatigue</u></b> no statistically significant difference between real and sham acupuncture in reducing fatigue</p> <p><b><u>Stiffness</u></b> real electro-acupuncture was statistically significantly better than sham electro-acupuncture in improving stiffness</p> <p><b><u>Adverse events:</u></b> No adverse events were reported</p>	

4.Evidence table

Question : Is it acupuncher effective in treating musculoskeletal pain (Fibromyalgia)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
							<p><b><u>Real acupuncture versus standard or usual care (medication)</u></b>  <b><u>Pain</u></b>                      statistically significant group difference favouring acupuncture  <b><u>Adverse events:</u></b>                      No adverse events were reported</p> <p><b><u>Real acupuncture as an adjunct therapy</u></b>  <b><u>Pain</u></b>                      statistically significant group difference favouring acupuncture  <b><u>Adverse events:</u></b>                      No adverse events were reported</p> <p><b><u>A particular style of acupuncture versus another (deep invasive needling with stimulation (deqi) (T/S) versus deep invasive needling without stimulation (T/O))</u></b>  <b><u>Pain</u></b>                      no statistically significant difference between the two interventions  <b><u>Physical function</u></b>                      No group difference between the two interventions  <b><u>Fatigue</u></b>                      no group difference between the two interventions</p>	

5.Evidence table

Question : Is it acupuncher effective in treating musculoskeletal pain (Carpal Tunnel Syndrome)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Chun-Pai Yang, Ching-Liang Hsieh, Nai-Hwei Wang et al. Acupuncture in Patients With Carpal Tunnel Syndrome, A Randomized Controlled Trial. Clin J Pain. May 2009, 25(4):327-333.	Randomized Controlled Trial -A total of 90 patient fulfill the inclusion and exclusion criteria because the patient were not interested and difficult to find time to cooperate - a total of 77 patient who fulfill the inclusion and exclusion criteria agreed to participate in the study. -77 patient were randomly allocated to either the steroid treatment group (n=39) or acupuncture treatment group (n=38). The randomization was carried out according to computer-generated randomly allocated treatment codes - The outcome measurement are clinical assessments included the symptomatic questionnaire. The author rated symptoms from 0 (no symptoms) to 10 (very severe symptoms) in each of categories: pain, numbness, and paresthesia, Nocturnal awakening Weakness and assessed for clumsiness by difficulty in manipulating small objects.	I	a total of 77 patient who fulfill the inclusion and exclusion criteria  3 patients in the acupuncture group dropped out due to inability to take time off work, and 4 patients in the steroid group did not finish the study due to intolerance of side effects of epigastric pain with nausea.  <u>Patients characteristic</u> -age 18 to85 had clinical symptoms and sign of CTS	Acupuncture	Prednisolone 20 mg daily followed by 10mg for another 2 week		- there was no significant difference between the 2 groups before treatment. However at the end of the study, the author reported that there was a high percentage of improvement in both the acupuncture and steroid groups at weeks 2 and 4 (all P<0.01 for both groups), though statistical significance was not achieved between the 2 groups (P=0.15).  - Of the 5 parameter scores (pain, numbness, paresthesia, weakness/clumsiness, nocturnal awakening), only 1, nocturnal awakening showed a significant decrease between the 2 groups. Patients with acupuncture treatment had significantly better improvement in nocturnal awakening compared with the steroid group at week 4 (P=0.03).  Conclusion - short term acupuncture treatment is as effective as short-term low-dose steroid for mild-to-moderate CTS. - for those who do not tolerate oral steroid or do not opt for surgery, acupuncture treatment provides an alternative choice	

## 6.Evidence table

Question : Is it acupuncher effective in treating musculoskeletal pain (Ankle sprain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Park J, Hahn S, Park J-Y et al. Acupuncture for ankle sprain: systematic review and meta-analysis. BMC complementary and alternative medicine. 2013, 13(55):1-16.</p>	<p>Systematic review &amp; meta-analysis</p> <p>A systematic search was performed following databases from their inception to February 2012 including Cochrane Central Register of Controlled Trials, PubMed, Ovid EMBASE, the Cumulative Index to Nursing and Allied Health Literature (CINAHL), SPORTDiscus, the Allied and Complementary Medicine Database (AMED), Rehabilitation and Sports Medicine Source, and the China National Knowledge Infrastructure databases (CNKI), Korean databases, trial registries and reference lists. The systematic search yielded 387 records. Of these, 370 records were excluded. Finally 17 studies included in the review. The risk of bias evaluated according to the Cochrane Collaboration's risk of bias assessment tool. The author reported the result base of primary and secondary out come.</p>	I	<p>1820 participants</p> <p><b><u>Pt characteristic</u></b> <b><u>Pt who reported an ankle sprain</u></b></p>	<p>Acupuncture -needle acupuncture -ear acupuncture -electro- acupuncture -pharmaco- acupuncture -bee venom acupuncture -scalp acupuncture -warm acupuncture -moxibustion</p>	<p>-placebo -usual care -no intervention</p>		<p><b>Primary outcome</b> <b><u>Effects of acupuncture as an alternative treatment</u></b> - Acupuncture statistically significant effect in reducing symptoms of ankle sprain</p> <p><b><u>Effect of acupuncture as an add-on treatment</u></b> - Acupuncture + other treatment statistically significantly improved symptoms compared with the other treatment only</p> <p><b><u>Effects of acupuncture on pain intensity</u></b> - Warm acupuncture significantly better than control group in alleviated pain</p> <p><b>SECONDARY OUTCOME</b> <b><u>1. Time to achieve pre-injury level of work or spot</u></b> -4 studies that reported time to cure - one study reported acupuncture in addition to functional exercise shortened the time to return to normal activity by 3.4 days compared with a functional exercise only group -3 studies participants were no more likely to have recovered within 1 week than were those in the control group, regardless of whether they were given acupuncture as an add-on or an alternative treatment <b><u>2. Ankle instability and swelling</u></b> - No included study reported on ankle instability and/or swelling</p> <p><b><u>3. Recurrence of ankle sprain</u></b> - One study reported that one participant in the acupuncture group and five in the control group had suffered a re-injury at 6-month follow-up 4. Health-related quality of life - The acupuncture group reported significantly better quality of life than the control group - At 2-year follow up, the effect remained significant</p> <p>Conclusion -insufficient evidence due to methodological shortcomings and the small number of high-quality primary studies. -not recommend acupuncture as an evidence-based treatment option for ankle sprain. - Further well-designed and conducted trials are needed to draw a definitive conclusion.</p>	

7.Evidence table

Question : Is it acupuncher effective in treating musculoskeletal pain (Ankle sprain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Kim T-H, Lee MS, Kim KH et al. Acupuncture for treating acute ankle sprains. The Cochrane Collaboration. 2014, (6).</p>	<p>Systematic Review  Search strategy was performed using multiple databases to identified all relevant article. The search hit 935 studies. a total of 20 heterogeneous studies included in this study.</p>	I	<p>2012 participant  Pt with ankle sprain in adult</p>	<p>-needle acupuncture -electro-acupuncture -laser acupuncture -pharmaco-acupuncture -non-penetrating acupuncture point stimulation -moxibustion</p>	<p>-No treatment -placebo -standard non surgical intervention</p>		<p><b><u>acupuncture with no treatment</u></b> - acupuncture to be more effective with regard to cure rate and pain.</p> <p><b><u>Acupuncture + another active treatment versus that active treatment alone</u></b> - higher cure rates in the acupuncture + another active treatment group than in the active treatment alone group - meta-analysis of cure rate data from eight trials comparing acupuncture versus no acupuncture tended to favour acupuncture, but the results were not statistically significant and the data were very heterogeneous</p> <p><b><u>acupuncture vs variety of other non-surgical treatments</u></b> -14 studies included - Some studies were found to favour acupuncture, some in favour of the other treatment and some found a lack of evidence for a difference between the two interventions under test. -meta-analysis of cure rate from 11 studies comparing acupuncture with another nonsurgical intervention tended to favour acupuncture, but were not statistically significant and were associated with very substantial heterogeneity.</p>	

## 8.Evidence table : Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Lam M, Galvin R, Curry P. Effectiveness of Acupuncture for Nonspecific Chronic Low Back Pain. SPINE. 2013, 38(24):2124-2138.	Systematic Review & Meta-analysis  Systematic search was performed using 7 databases such as PubMed, EMBASE, AMED, CINAHL ScienceDirect, CENTRAL, and Cochrane Library without date or language restriction up to May 2012. The search hit 1068 studies were manually screened by title and/or abstract. 992 records were deemed irrelevant. The remaining 76 records were retrieved in fulltext of which 44 articles were subsequently removed because they did not meet the inclusion criteria. In total, 32 RCTs were included in this study and data on 25 of these RCTs were included in the meta-analysis. 7 studies were excluded in the meta-analysis because of incomplete data or relevant outcome measures were not available. The methodological qualities of the included studies were evaluated using the Cochrane risk of bias tool.	I	Intervention group = 3191 Control group = 2886  <b><u>Patient characteristic</u></b> -17 years of age and older with NSCLBP -pain in lumbosacral region with or without radiating leg pain lasted for 6 weeks and longer	Acupuncture	-No treatment -medication -physiotherapy -transcutaneous electrical nerve stimulation (TENS) -exercise -spinal stimulative therapy -sham intervention		<b><u>Acupuncture vs. no treatment</u></b> <b><u>Pain</u></b> - significant moderate difference between acupuncture and no treatment immediately postintervention <b><u>levels of function</u></b> - large statistically significant difference between the acupuncture and no treatment immediately postintervention  <b><u>Acupuncture vs. Medication (NSAIDs, Muscle Relaxants and Analgesics)</u></b> <b><u>Pain</u></b> statistical but not clinically relevant difference in self-reported pain immediately postintervention <b><u>levels of function</u></b> Acupuncture significant moderate difference than medication immediately postintervention  <b><u>Acupuncture vs. TENS</u></b> <b><u>Pain</u></b> - no significant difference found in self-reported pain intensity between acupuncture and TENS <b><u>Follow-up between 10 and 12 weeks</u></b> - no significant differences between acupuncture and TENS  <b><u>Acupuncture vs. Sham Acupuncture</u></b> <b><u>Pain</u></b> - acupuncture is clinically more effective in reducing pain when compared with sham acupuncture immediately post intervention. <b><u>follow-up between 6 and 12 weeks</u></b> - significant difference up to 3 months after intervention <b><u>Levels of function</u></b> - no significant differences observed immediately post intervention or during follow-up assessment	

8.Evidence table : Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
							<p><b><u>Acupuncture in Addition to Usual Care vs. Usual Care Pain</u></b>                      significant but not a clinically meaningful difference was found in favor of acupuncture immediately postintervention  <u>follow-up between 6 and 12 weeks</u>                      significant but not a clinically meaningful difference was found in favor of acupuncture  <b><u>Activity Limitation</u></b>                      large significant difference in levels of function in favor of acupuncture immediately post intervention                      moderate statistical significant difference persisted during follow up assessment</p> <p><b><u>Electroacupuncture vs. self-care or usual care Pain</u></b>                      statistically significant difference in self-reported pain between the electroacupuncture group and usual-care group immediately postintervention  <u>Follow-up</u>                      moderate significant difference in pain reduction between the electroacupuncture and usualcare group</p> <p><b><u>Conclusion</u></b>                      acupuncture was an effective method of treating pain and functional limitations in patients who present with NSCLBP. the author suggested the use of acupuncture should be considered as an adjunct to routine practice in the treatment of NSCLBP, whereas future efforts should focus on improving the methodological and reporting quality of the trials. Additionally, longer-term follow-up, not just immediate post intervention is needed in future research to examine the lasting effect of acupuncture.</p>	



9.Evidence table : Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Trigkilidas D. Acupuncture therapy for chronic lower back pain: a systematic review. Annals of The Royal College of Surgeons of England. 2010, 92(7):595-598.	Systematic Review  Pubmed search was performed by author and studies from 2005 onwards were included in the study. The PubMed search yielded 21 studies. Of these, 17 were excluded by author, leaving four studies that fulfilled the eligibility criteria.	I	1701 patient  <u>Patient characteristic</u> Patient with chronic lower back pain	Acupuncture	Usual care treatment		<p><b>STUDY 1</b> <u>Acupuncture vs. usual care</u> Acupuncture-like treatments significantly improved function in patients with chronic low back pain but the benefits of real acupuncture were no greater than those of sham acupuncture raising questions about acupuncture's mechanism of action.</p> <p><b>STUDY 2</b> <u>verum acupuncture vs. sham acupuncture vs. conventional therapy</u> -acupuncture constitutes a strong therapy alternative to multimodal conventional therapy. -there was no significant difference between the acupuncture groups.</p> <p><b>STUDY 3</b> <u>Acupuncture vs. usual care (physiotherapy, manipulation, exercises and medication)</u> -a weak effect of acupuncture treatment at 12 months.(SF-36 body pain) -At 24 months there was a statistically significant difference between the two groups in favor of acupuncture. -a weak difference in favor of the acupuncture group but that was not statistically significant.</p> <p><b>STUDY 4</b> <u>acupuncture vs. sham acupuncture vs. no acupuncture waiting list control.</u> pain intensity decreased from week 8 by a mean of 28.7 mm in the acupuncture group and by a mean of 6.9 mm in the waiting list group. The difference between the two groups was 21.8 mm, which was statistically significant. -There was no statistically significant difference between the two acupuncture groups.</p> <p>Conclusion acupuncture can be effective in managing patients with low back pain. This is especially true if the patients have positive expectations about acupuncture, suggesting a strong psychological element. Furthermore, the lack of evidence to support traditional acupuncture over sham or simulated acupuncture could mean that the physiology of acupuncture is still unclear or it could further support the argument for a strong psychological effect</p>	

10.Evidence table : Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Lee J-H, Choi T-Y, Lee MS et al. Acupuncture for Acute Low Back Pain A Systematic Review. Clin J Pain. February 2013, 29(2):172-185.</p>	<p>Systematic Review</p> <p>The search attempted to identify all relevant studies using multiple databases such as the Cochrane Central Register of Controlled Trials (CENTRAL), Ovid Medline, Embase (1980 to July 2011), and Chinese databases of the China Academic Journal and China Doctor/Master's Dissertation. The author also does a search in 4 related Korean journals including Acupuncture, Journal of Korean Oriental Medicine, Journal of Korean Oriental Rehabilitation Medicine, and Journal of Korean Acupuncture &amp; Moxibustion Society. The author also does a search in 4 related Korean journals including Acupuncture, Journal of Korean Oriental Medicine, Journal of Korean Oriental Rehabilitation Medicine, and Journal of Korean Acupuncture &amp; Moxibustion Society. search strategy retrieved 1821 records and after overlapping articles were deleted,</p>	<p>I</p>	<p><u>Patient characteristic</u>  <u>Patient with resulting from acute/ subacute nonspecific LBP (&lt;12 wk)</u></p>	<p>Acupuncture</p>	<p>-Medication                      -sham acupuncture</p>		<p><b><u>Acupuncture vs. Medication</u></b>  <u>Overall improvement</u>                      -4 studies reported that acupuncture significantly better than medication                      -2 studies reported that no significant difference  <u>Pain intensity</u>                      -1 study reported that acupuncture group significantly better than medication group after each session                      -1 study reported that acupuncture + medication significantly better than medication alone                      -1 studies reported that no significant difference  <u>Analgesic use</u>                      Acupuncture group significantly better than medication group</p> <p><b><u>Acupuncture vs. Sham acupuncture</u></b>  <u>Pain intensity</u>                      -1 study reported that 1 session of acupuncture provided significantly better pain relief than sham acupuncture                      - 1 study reported that when 3 to 12 sessions of acupuncture were compared with sham acupuncture in patients with subacute LBP, there was no difference between groups in terms of pain intensity on VAS.                      -Only worst pain on VAS in the acupuncture group had significantly lower value than the sham group at 3-months follow-up  <u>Function/disability</u>                      - no significant difference between acupuncture and sham acupuncture  <u>Analgesic use</u>                      Acupuncture group had significantly fewer analgesic tablets than those in the sham acupuncture group</p> <p><b><u>Acupuncture Plus Medication vs. Medication alone</u></b>  <u>Overall improvement</u>                      significantly better improvement in the acupuncture plus medication group compared with the medication alone group</p>	

10.Evidence table : Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
	title and abstract excluded and other exclusion criteria only 11 studies finally met the inclusion criteria.	I					<p><u>Pain intensity</u> Acupuncture plus medication was significantly more effective than medication alone in pain relief at the end of the 5 acupuncture sessions.</p> <p><u>Function/disability</u> acupuncture plus medication resulted in a significantly better outcome than medication alone</p> <p><u>Conclusion</u> acupuncture may be more effective than medication for symptom improvement or relieve pain better than sham acupuncture in acute LBP. The present findings should be confirmed by future studies that overcome the methodological limitations of the studies evaluated in our review.</p>	

11. Evidence table: Effectiveness

Question : Is it acupuncture effective in treating musculoskeletal pain (low back pain)?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Tulder MWV, Cherkin DC, Berman B et al. The Effectiveness of Acupuncture in the Management of Acute and Chronic Low Back Pain.pdf&gt;. SPINE. 1999, 24(11):1113-1123.</p>	<p>Systematic review  systematic search was performed using multiple databases. The search identified 55studies,however only 11 RCT studies on acupuncture for nonspecific LBP were identified. The methodologic quality of each RCT was assessed independently using methodologic quality criteria list by two reviewers. The same two reviewers extracted the data on the primary outcome measures and secondary outcome measures. From the result above the author consider the RCT studies as a high quality if more than 5 of 10 validity items scores positively. Based on studies characteristics and methodological quality the author compared the conclusion of all studies and come out with their own conclusion.</p>	<p>I</p>	<p><u>Patient characteristics</u> Patient wt subacute LBP (12 wk or less), chronic LBP or both</p>	<p>Acupuncture</p>	<p>- No treatment -placebo or sham treatment - conventional treatment</p>		<p><b><u>Acupuncture vs No treatment</u></b> -there were 3 studies that compared acupuncture to no treatment. - All the 3 studies were of lower methodological quality and the conclusions of the author were contradictory. -Thus, there was conflicting evidence on the effectiveness of acupuncture compared with no treatment.</p> <p><b><u>Acupuncture vs. Conventional Treatment</u></b> - two studies that compared acupuncture with conventional treatment. -overall conclusion of the author concerning both was neutral, indicating that there was moderate evidence to show that acupuncture was not more effective than trigger point injection or transcutaneous electrical nerve stimulation (TENS).</p> <p><b><u>Acupuncture vs. Placebo or Sham Acupuncture</u></b> Eight studies were comparing acupuncture to a placebo or sham acupuncture. - only two studies were of higher methodological quality - conflicting evidence that acupuncture is more effective than placebo or sham acupuncture resulting from the contradictory outcomes of the two higher-quality studies. - The author concluded that five of the six low-quality studies was neutral, indicating that acupuncture was not more effective than placebo or sham acupuncture. In one study, the overall conclusion was unclear.</p> <p>Conclusion did not clearly show that acupuncture was effective in the management of back pain, and the authors do not recommend acupuncture as a regular treatment of patients with Low Back Pain. Futhermore, because most of the studies were of very poor methodologic quality, future studies should have larger sample sizes, should use a valid acupuncture treatment, and should have both a short-term and a long-term follow-up.</p>	

12.Evidence table : Safety and adverse event

Questions : Is it acupuncture procedure safe for patients with musculoskeletal pain or is it any adverse event occur after acupuncture procedure?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Lee J-H, Choi T-Y, Lee MS et al. Acupuncture for Acute Low Back Pain A Systematic Review. Clin J Pain. February 2013, 29(2):172-185.</p>	<p>Systematic review</p> <p>The search attempted to identify all relevant studies using multiple databases such as the Cochrane Central Register of Controlled Trials (CENTRAL), Ovid Medline, Embase (1980 to July 2011), and Chinese databases of the China Academic Journal and China Doctor/Master's Dissertation. The author also does a search in 4 related Korean journals including Acupuncture, Journal of Korean Oriental Medicine, Journal of Korean Oriental Rehabilitation Medicine, and Journal of Korean Acupuncture &amp; Moxibustion Society. The author also does a search in 4 related Korean journals including Acupuncture, Journal of Korean Oriental Medicine, Journal of Korean Oriental Rehabilitation Medicine, and Journal of Korean Acupuncture &amp; Moxibustion Society. search strategy retrieved 1821 records and after overlapping articles were deleted title and abstract excluded and other exclusion criteria only 11 studies finally met the inclusion criteria.</p>	<p>I</p>	<p><b>Patient characteristic</b> Patient with resulting from acute/ subacute nonspecific LBP (&lt;12 wk)</p>	<p>Acupuncture</p>	<p>-Medication -sham acupuncture</p>		<p>The author mention that, there was one study that reported minor adverse event. In the study the author reported that one of their participants in the study feeling more energetic and 3 felt tired during acupuncture treatment.</p>	

13.Evidence table : Safety and adverse event

Questions : Is it acupuncture procedure safe for patients with musculoskeletal pain or is it any adverse event occur after acupuncture procedure?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
<p>Yang C-P, Hsieh C-L, Wang N-H et al. Acupuncture in Patient With Carpal Tunnel Syndrome A Randomized Controlled Trial. Clin J Pain. May 2009, 25(4).</p>	<p>RCT</p> <p>-A total of 90 patient fulfill the inclusion and exclusion criteria</p> <p>-13 of them excluded from the study because the patient were not interested and difficult to find time to cooperate</p> <p>- a total of 77 patient who fulfill the inclusion and exclusion criteria agreed to participate in the study.</p> <p>-77 patient were randomly allocated to either the steroid treatment group (n=39) or acupuncture treatment group (n=38). The randomization was carried out according to computer-generated randomly allocated treatment codes</p> <p>- The outcome measurement are clinical assessments included the symptomatic questionnaire. The author rated symptoms from 0 (no symptoms) to 10 (very severe symptoms) in each of categories: pain, numbness, and paresthesia, Nocturnal awakening Weakness and assessed for clumsiness by difficulty in manipulating small objects.</p>		<p>a total of 77 patient who fulfill the inclusion and exclusion criteria</p> <p>3 patients in the acupuncture group dropped out due to inability to take time off work, and 4 patients in the steroid group did not finish the study due to intolerance of side effects of epigastric pain with nausea.</p> <p>Patients characteristic</p> <p>-age 18 to85 had clinical symptoms and sign of CTS</p>	<p>Acupuncture</p>	<p>Prednisolone 20 mg daily followed by 10mg for another 2 week</p>		<p>- no serious adverse effects reported</p> <p>- in the acupuncture treatment group, side effects were reported by 5% of the patients.</p> <p>-Most adverse effects were related to the local insertion of the needles, such as local pain after session, ecchymosis, and local paresthesia during session.</p> <p>-Acupuncture was well tolerated by patients and no one discontinued prematurely because of needle-related side effects.</p>	

14.Evidence table : Cost effectiveness  
Is it acupuncture cost-effective?

Bibliographic citation	Study Type / Method	LE	Number of patient and patient characteristics	Intervention	Comparison	Length of follow up	Outcome measures/Effect size	General comments
Ratcliffe J. A randomised controlled trial of acupuncture care for persistent low back pain: cost effectiveness analysis. BMJ. 2006, 333(7569):626-620.	RCT  241 patient with persistent non-specific low back, were recruited to the trial through referral from 43 general practitioners were included in this study. Patients were randomly allocated either to receive up to 10 acupuncture treatments over three months from acupuncturists trained in traditional Chinese medicine (n = 161) or to receive usual care only (n = 81). Costs were measured from both an NHS and a societal perspective. Effectiveness was measured as quality adjusted life years (QALYs) gained. The primary economic analysis is over the 24 month period.		Total participant : 241 Acupuncrure treatment : n = 161  Usual care : n = 81  <u>Patients characteristic</u> -persistent non-specific low back pain of 4-52 weeks' duration who were diagnosed as suitable for management in primary care,	Acupuncture	Usual care		- the total means cost of treatment to the NHS for acupuncture group ( £ 471.10) were higher than for usual care group ( £332.24) and the difference was statistically significant - ICER for cost effectiveness of acupuncer care and usual care is £4241. - The overall incremental cost effectiveness ratio for acupuncture in the treatment of low back pain was positive with a mean of £4241 at 24 month with QALY gain of 0.027.  <u>Conclusion</u> a short course of traditional acupuncture for persistent non-specific low back pain in primary care confers a modest health benefit for minor extra cost to the NHS compared with usual care. However, Acupuncture care for low back pain seems to be cost effective in the longer term.	