The effect of acupuncture compared to physiotherapeutic intervention on osteoarthritis of the knee

A Literature Review

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FOREWORD

Throughout the study of physiotherapy the western medical methods have been applied over and over again, with little regard for Chinese medicine. The client Contra expertise en Inspanningsonderzoek naar Arbeidsbelastbaarheid (CIA) has tasked two third year students from the ESP to investigate in the professional assignment project, “the effect of acupuncture compared to physiotherapeutic intervention in the management of knee OA”.

Introduction: Osteoarthritis (OA), also called osteoarthroses or degenerative joint disease, is the most common type of arthritis. OA is a chronic condition characterized by the breakdown of the joint’s cartilage. The breakdown of cartilage causes the bones to rub against each other, causing stiffness, pain and loss of movement in the joint. The purpose of this study is to compare two types of therapy, acupuncture (TCA) and physiotherapeutic intervention, for the management of osteoarthritis of the knee in adult population aged 55 and above.

Method: Systematic searches were conducted on Medline, CINHAL, Google scholar, Pubmed, Pubmed central, PiCarta, Cochrane Library and PEDro. Computer based literature research for this study included six Randomized Control Trials (RCT). Only one of the articles evaluated the effect of standardized western acupuncture and physiotherapy on pain and functional ability in patients with severe osteoarthritis of the knee. Other articles separately discussed about physiotherapy or acupuncture.

Results: Articles found and included in this literature research focused on acupuncture as an adjunctive therapy to physiotherapeutic intervention.

Discussion: Based on the literature reviewed, the authors could not conclude whether physiotherapeutic intervention is more effective than acupuncture or vice versa. In this, both therapies are effective if combined in the management of osteoarthritis of the knee.

Keywords: Osteoarthritis, Acupuncture or physiotherapeutic intervention, pain, knee osteoarthritis, functionality.
the meridians and provide one means of altering the flow of Qi.

Traditional acupuncturists use an Oriental medicine framework for referring to disturbances thought to cause symptoms, such as “kidney yang vacuity, water overflowing” or “damp heat in the bladder”. Many conventional healthcare professionals who practise acupuncture have dispensed with such concepts. Acupuncture points are thought to correspond to physiological and anatomical features such as peripheral nerve junctions, and diagnosis is made in purely conventional terms (Tillu et al. 2002).

It is often implied that a clear distinction exists between traditional and western acupuncture, but the two approaches overlap considerably (Manheimer E et al 2006). Moreover, traditional acupuncture is not a single historically stable therapy and there is considerably variation between different “schools” of acupuncture practice. Two acupuncturists treating the same patient may vary in the particular points chosen, the depth and duration of needling, the method and intensity of needle stimulation, and the use of adjunctive techniques such as massage or herbal medicines (Witt C. et al 2005).

Conservative physiotherapeutic treatments including exercise and massage therapy have proven to decrease pain on knee OA. (Williamson et al. 2006, Berman et al. 2004, Adam et al. 2006).

However, there is evidence that acupuncture is an effective therapy for patients with OA. (Manheimer E et al. 2004)

Participants

This literature research was conducted by two third year students from the European School of Physiotherapy (ESP), Amsterdam.

Searching Strategies

The two authors independently searched for articles with a data base such as: Cochrane library, Pubmed, Pubmed central, Science direct, PiCarta and google scholar. Keywords used were: Osteoarthritis, Acupuncture, physiotherapeutic intervention, pain and functionality. Only Randomized Control Trails were used in this research. The articles were implied concerning the following topics. Severe knee osteoarthritis acupuncture, physiotherapy (supervised exercise, Acupuncture as an adjunctive to exercise based physiotherapy for OA of the knee, Acupuncture for knee OA, Effectiveness of Acupuncture as Adjunctive Therapy in OA of the knee, Effect of acupuncture on the symptoms of knee OA, Acupuncture as an adjunctive therapy for OA, Massage Therapy for OA of the knee and Acupuncture and knee OA. Most literatures found were acupuncture as an adjunctive therapy in osteoarthritis of the knee. There is not much literature comparing the two interventions. In this aspect there is not much comparison on both therapies and more investigation is still being carried out in this study area.

Criteria List

A criteria list was made by the two authors in order to judge the quality and methodological studies. The quality of all studies were assessed individually by the two participants. The criteria list (see appendix A) used to judge the literatures were based on Pedro Scale and consort checklist. The scale and the check list are used to evaluate the methodological quality control of RCT’s.

Articles were scored on 26 items with a total score of 60 points. The explanation of the total score of the criteria list is as
follows; ≤ 30: poor article don’t use it, 31-40: good article, 41-50: very good article, 51-60: perfect article. Each reviewer independently and anonymously graded every article from the collected literature to test the reliability of the criteria list.

In total six RCTs were used of which one of the literature compared acupuncture and physiotherapeutic intervention (supervised exercised), three discussed the effect of acupuncture in OA, other 1 discussed acupuncture as an adjunctive therapy in OA. One of the studies discussed massage therapy for OA. Table 1 reports the grading of each article done by 2 reviewers using the criteria list and the average of these two results including their standard deviation (SD) and the point difference. For criteria list: (Appendix D)

<table>
<thead>
<tr>
<th>Autour</th>
<th>Review 1</th>
<th>Review 2</th>
<th>Mean</th>
<th>Difference</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe knee OA: acupuncture, physiotherapy (supervised exercise) (L. Williamson et al. 2007).</td>
<td>48</td>
<td>50</td>
<td>49</td>
<td>2</td>
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<tr>
<td>Acupuncture and OA (Hans Peter Schard et al. 2006)</td>
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<td>50</td>
<td>49</td>
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<td>1.0</td>
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<tr>
<td>Acupuncture Adjunctive to Physiotherapy (Foster et al. 2007.)</td>
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<td>53</td>
<td>51.5</td>
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<tr>
<td>Acupuncture for OA (Eric Manheimer 2006)</td>
<td>43</td>
<td>50</td>
<td>46.5</td>
<td>7</td>
<td>3.5</td>
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<tr>
<td>Effect of acupuncture on knee OA (Tukmachi E.L. et al 2004)</td>
<td>48</td>
<td>51</td>
<td>49.5</td>
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<td>2.5</td>
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<tr>
<td>Massage therapy for OA/Adam I.P. et al. 2006)</td>
<td>50</td>
<td>54</td>
<td>52</td>
<td>4</td>
<td>2.0</td>
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</table>

Table 1: mean score and standard deviation included in the study.

Six randomized control trial (RCTs) were included in this study. One of the studies compared acupuncture and physiotherapeutic intervention (supervised exercised), which there was no significant difference between the two therapies, three studies discussed the effect of acupuncture on OA, other 2 discussed acupuncture as an adjunctive therapy in OA, one literature discussed massage therapy for OA. Data of 2059 patients out of the 6 RCTs suffering from knee OA have been evaluated. Four studies recruited 68 to 570 patients, (Young J.C. et al. 2007). One study (Wessel 1994), recruited less than 40 patients while one study recruited 1039 patients (Muir, K.R. & Doherty, M. 1999).

Fig 1: Number of articles retrieved and screened for the review

Comparison 1 (RCT)
Severe knee osteoarthritis: acupuncture, physiotherapy (supervised exercise) (L. Williamson et al).
181 Participants who met with the criteria was allocated into three groups: acupuncture for 6 weeks; physiotherapy for 6 weeks, and control group (Home exercise for 6 weeks). There was no significant different at baseline measurement. A hundred and sixty-one (89%) patients were assessed at 7 weeks, 120 (66%) patients where assessed at 12 weeks and 69 (38%)
patients were assessed at 3 months the acupuncture cohort attended once a week for 6 weeks. This was carried out in a group settling of 6–10 patients by a senior physiotherapist experienced in musculoskeletal acupuncture. The needles (1 inch, 0.25 gauge) were inserted and de chi achieved where possible, and left in situ for 20 min. The acupuncture points used were those most commonly used in previous reported research studies in the field up to three additional needles were used in trigger or traditional points at the physiotherapist’s discretion.

The physiotherapy group attended in groups of 6–10 patients, hourly, once a week for 6 weeks. They carried out an exercise circuit devised and supervised by the same physiotherapist who provided the acupuncture. The exercises were: static quadriiceps contractions; inner range quadriiceps contractions; straight leg raises; sit to stands, stair climbing; calf stretches; theraband resisted knee extensions; wobble board balance training; knee flexion/extension sitting on gym ball and freestanding peddle revolutions.

The control group received an exercise and advice leaflet, which had been designed by consensus between the physiotherapy, rheumatology and orthopaedic departments. In this way, the advice was standardized received by the control group to reflect the best current practice.

The acupuncture group had a lower OKS than the other two groups at 7 weeks (Table 2): acupuncture group mean (S.D.) score 36.8 (7.2) compared with the physiotherapy mean (S.D.) score of 39.2 (8.2) and control group mean (S.D.) score of 40.3 (8.48). ANOVA \( P \approx 0.0497 \) between the three groups; Bonferroni analysis \( P \approx 0.0161 \) between the acupuncture and control groups; \( P \approx 0.0829 \) between acupuncture and physiotherapy group. During the 50-m timed walk, the physiotherapy group had a lower mean walking time (50.3 s, S.D. 17.7) compared with the control group (58.4 s, S.D. 25.2) and the acupuncture group (54.9 s, S.D. 17). These trends in difference did not achieve statistical significance; ANOVA analysis \( P \approx 0.0965 \).

**RCT Comparison II**

**The Effect Acupuncture on Knee Osteoarthritis**

*(Tukmachi E. et al 2004)*

The 30 patients (five males) ranging in age from 42 – 77 years with an average of 62 years, met with the criteria and were assigned to one of the three groups: acupuncture only, acupuncture with oral medication, and control group. There was no significant difference between the three groups at baseline in age, and disease duration or body mass index. Although slightly more patients in group A had stage three OA. Four patients dropped after completing the five week acupuncture sessions: two who described gaining benefit from treatment, one who did not wish to continue, and one who noticed only temporary relief after some sessions.

One patient in group A continued taking concomitant analgesic and anti-inflammatory medications contrary to the protocol; this patient’s data were excluded from the analysis. Repeated measure analyses gave a highly significant improvement in pain (VAS) after the courses of acupuncture in groups A (\( P \approx 0.001 \)) and B (\( P \approx 0.001 \)); there was no change in group C until after the course of acupuncture, when the improvement was significant (\( P \approx 0.001 \)). Similar significant changes were seen with the WOMAC pain and stiffness scores. These benefits were maintained during the one month after the course of acupuncture. Patients’ rating of global assessment was higher than that of the acupuncturist.

**Primary end point**

The baseline pain scores were similar for the three groups. Group C showed no change in pain score during the first five weeks while waiting for acupuncture. After
acupuncture there was a large and statistically significant drop in VAS pain score. The present study supports the evidence from other studies and shows that acupuncture treatment of knee OA, given either alone or as an adjunct to conventional treatment, can produce a beneficial effect on subjective symptoms.

Secondary end point
WOMAC pain
The pattern of pain relief shown in the primary end point was reflected in the changes in the pain component of the WOMAC. There was the same significant drop in the pain score after the acupuncture, which was maintained for at least four weeks in groups A and B.

WOMAC stiffness
Similar changes occurred in the WOMAC stiffness scores, which decreased by more than half in groups B and C after the course of acupuncture. The reduction was less dramatic in group A, but still significant, and still present one month later.

RCT Comparison III
Acupuncture Adjunctive to Physiotherapy (Foster N. et al. 2007).
352 adults aged 50 or more with a clinical diagnosis of knee osteoarthritis. Follow-up rate at six months was 94%. The mean (SD) baseline pain score was 9.2 (3.8). At six months mean reductions in pain were 2.28 (3.8) for advice and exercise, 2.32 (3.6) for advice and exercise plus true acupuncture, and 2.53 (4.2) for advice and exercise plus non-penetrating acupuncture. Mean differences in change scores between advice and exercise alone and each acupuncture group were 0.08 (95% confidence interval −1.0 to 0.9) for advice and exercise plus true acupuncture and 0.25 (−0.8 to 1.3) for advice and exercise plus non-penetrating acupuncture. Similar non-significant differences were seen at other follow-up points. Compared with advice and exercise alone there were small, statistically significant improvements in pain intensity and unpleasantness at two and six weeks for true acupuncture and at all follow-up points for non-penetrating acupuncture. Acupuncture in combination with physiotherapeutic intervention is effective in the management of OA.

RCT Comparison IV
Acupuncture For Osteoarthritis (Manheimer E. et al. 2004)
In this study 570 patients who met the criteria was randomly assigned to three groups, 190 true acupuncture, 191 sham acupuncture and 189 patients were in the education group. Pain among participants in the true acupuncture group decreased more than in the sham group at all of the post baseline assessments, this difference was not statistically significant at week eight. By week 14 the mean WOMAC pain score had decreased by 3.6 units in the acupuncture group (a 40% decrease from baseline) compared with 2.7 units in the sham group (P=0.02). These differences remained at week 26 (P=0.003).

Function
True acupuncture group’s improvement in function from based line was significantly greater than that of the sham control group at week 8 (P= 0.01). 14 (P=0.04), and 26 (P=0.009). A change of more than 12 units by 14 weeks is an almost 40% improvement from baseline.

RCT V
Massage Therapy for Osteoarthritis of the Knee (Perlman A.I. et al.2006)
Of 210 participants screened 68 subjects participated 34 subjects per group of two Intervention group and control group. At baseline the mean SD WOMAC pain score was higher (P= .02) in the intervention group (52.10 [18.82] mm) vs the control group (40.69 [20.01] mm). The stiffness, functionality, global, VAS, and range of motion scores at the baseline did not differ between the groups.
The mean (SD) WOMAC global score improved significantly from baseline value (-12.15 [22.46] mm; P<.001), as did the score in each domain (pain, stiffness, and physical functional disability) The greatest improvement from baseline in the intervention group was observed in pain (-23.19 [24.30] mm; P<.001) followed by stiffness (-21.60 [26.99] mm; P<.001) and physical function (-20.50 [22.50] mm; P<.001). No significant change was observed in the control group from baseline in any of the domains. Improvements observed in the intervention (massage therapy) group differed significantly from the control group (pain: -23.19 [24.30] mm vs -3.08 [17.58] mm, P<.001; stiffness: -21.60 [26.99] mm vs. -4.29 [24.18] mm, P=.007; physical functional disability: -20.50 [22.50] mm vs. -0.02 [16.37] mm, P=.002; and global score: -21.15 [22.46] mm vs. -4.56 [15.85] mm, P<.001). Massage therapy seems to be efficacious in the treatment of OA of the knee. Further study of cost effectiveness and duration of treatment effect is clearly warranted.

RCT VI
Acupuncture and Knee Osteoarthritis (Scharf H.P. et al.2006)
This study recruited 1531 eligibility, not randomly assigned 492, not eligible: 407 declined to participate: 69, other reason 16. Randomly assigned patients 1039 into three groups: Traditional Chinese Acupuncture 330, sham acupuncture 367, standard care 342, by 297 investigators. Thirty-two subjects declined further participation immediately after randomization and were excluded from the analysis because no measurements were available (28). Therefore, 1007 patients were analyzed following intention-to treat principles: 326 randomly assigned to TCA (32.4%), 365 randomly assigned to sham acupuncture (36.2%), and 316 randomly assigned to conservative therapy (31.4%). Interviews of 985 patients were available after 26 weeks (22 patients were lost to follow-up). The pre-protocol analysis set consists of 611 patients: 200 who received TCA (32.7%), 223 who received sham acupuncture (36.5%), and 188 who received conservative therapy (30.8%)

Baseline data
Most study patients were women (68.8%). Twenty-five percent of the patients were younger than age 55 years. There were no pre treatment differences among the 3 treatment groups with respect to demographic characteristics, outcome variables, disease-specific characteristics, and medication use, suggesting that the randomization procedure produced comparable groups at baseline.

Primary End Point
The observed success rates were 53.1% for the TCA group, 51.0% for the sham acupuncture group, and 29.1% for the conservative therapy group (Table 3). The observed success rates adjusted for regional cluster and number of affected knees were 55.3%, 53.2%, and 31.1%, respectively. Random-effects multivariate logistic regression analysis confirmed the existence of strong overall differences among treatment groups (P<0.001 for global comparison). Pairwise comparisons showed statistically increased success rate in the TCA and sham acupuncture groups compared with the conservative therapy group (P<0.001 for both comparisons) and no difference between the TCA and sham acupuncture groups (P=0.48). The relative risks and the absolute risk differences, respectively, for the unadjusted success rates were 1.75 (95%CI, 1.43 to 2.13) and 24.0% (CI, 16.6% to 31.3%) for TCA versus conservative therapy, 1.73 (CI, 1.42 to 2.11) and 21.8% (CI, 14.7% to 29.0%) for sham acupuncture versus conservative therapy, and 1.01 (CI, 0.87 to 1.17) and 2.1% (CI, _5.4% to 9.6%) for TCA versus sham acupuncture.

Secondary End Points
Here there are statistically significant changes with respect to total WOMAC score. The changes in the TCA and sham acupuncture groups were much more distinct than those measured in the conservative therapy group (_2.3 [CI, _2.5
to \([2.0], \[2.1 \text{ [CI, } 2.3 \text{ to } 1.8\], \text{ and } 1.2 \text{ [CI, } 1.5 \text{ to } 0.9\], \) respectively). Results were comparable at week 13. The dichotomized global patient assessment showed statistically significant differences among treatment groups (\(P < 0.001\) for global comparison), with a higher rate of satisfaction in the TCA and sham acupuncture groups at week 26 (73.0% for the TCA group, 62.5% for the sham acupuncture group, and 47.1% for the conservative therapy group). Similar results were observed at week 13. The SF-12 physical subscale at week 26 was also greater with TCA and sham acupuncture than with conservative therapy.

Success rates were 53.1% for TCA, 51.0% for sham acupuncture, and 29.1% for conservative therapy. Acupuncture groups had higher success rates than conservative therapy groups (relative risk for TCA compared with conservative therapy, 1.75 [95% CI, 1.43 to 2.13]; relative risk for sham acupuncture compared with conservative therapy, 1.73 [CI, 1.42 to 2.11]). There was no difference between TCA and sham acupuncture (relative risk, 1.01 [CI, 0.87 to 1.17]).

**Discussion**

The aim of this literature review is to compare the effect of acupuncture to physiotherapeutic intervention on OA of the knee. Studies have shown that, TCA in combination with physiotherapeutic intervention yield more favourable results than limited studies comparing the interventions.

One of the limitations of this study was the unavailability of articles that discussed the issues in the research question. Consequently the criteria were broadened to include articles that discussed acupuncture and Knee Osteoarthritis, physiotherapeutic intervention and osteoarthritis separately and combine the results of these literatures. With this change the articles were grouped into four categories; acupuncture and knee osteoarthritis (three articles), acupuncture as an adjunctive to physiotherapy (one article), acupuncture, physiotherapy (supervised exercise) for osteoarthritis, (one article and finally one article that discussed massage therapy for osteoarthritis. All articles were used for data collection, but more emphasis was placed on the articles that scored higher.

**Quality control:** For reliability of the grading of the two reviewers, the articles were graded independently. A separate folder was made for each member of the group including the articles for grading on a digital work platform, which was used to share information. A weekly group meeting was set up with the aim of discussing the grading procedure and the content of the paper. No major disagreement came up concerning the final grading. (see Table 1).

**Searching of Articles**

Lack of availability of full text article was a limitation on the quality of this literature review. The fact is that there is not enough literature on the subject investigated in this study as to answer the research question.

**Outcomes**

However (Williamson L. et al 2007) has demonstrated that patients with severe knee osteoarthritis can achieve a short-term reduction in Oxford Knee Score(OKS) when treated with acupuncture. Though they failed to demonstrate any other clinically or statically significant effects between the groups both interventions can be delivered effectively in an out-patient group.

Foster N. et al (2007) reports that, firstly, true acupuncture did not show any greater therapeutic benefit than a credible control procedure in patients with a clinical diagnosis of knee osteoarthritis. Secondly, acupuncture was safe, with few, minor adverse events. Thirdly, acupuncture provided no additional improvement in pain scores compare with a course of six sessions of physiotherapy led advice and
exercise. The small additional benefits from acupuncture were unlikely to be clinically significant, were limited to pain intensity and unpleasantness, were mostly short lived, and could not be attributed to specific acupuncture needling effect. (Tukmachi E. et al 2004) concluded that manual and electro acupuncture causes a significant improvement in the symptoms of osteoarthritis of the knee, either on its own or as an adjunct therapy, with no loss of benefit after one month. Moreover in two studies (Scharf et al. 2006; and Witt et al.2005) participants were allowed to take pain medication. In the study of Takeda & Wessel (1994) participants were not allowed to change the dosage. The other three studies did not discuss pain killers at all. Furthermore, there was a wide variety of Acupuncture points used. However, there were also very frequently used Acupuncture points such as sham and true acupuncture points. (Perlman A.I et al 2006) reports that massage therapy seem to be efficacious in the treatment of osteoarthritis of the knee. Further study of cost effectiveness and duration of treatment effect is clearly warranted.

**Strength of the Study**

Due to the fact that six previous randomized control trials were included, sufficient data was available to come to a strong evidence based conclusion. Systematic errors were greatly reduced by implementation of quality control measures.

**Conclusion**

Based on the literature reviewed, it is concluded that acupuncture in combination with physiotherapeutic intervention yield benefit results in the management of OA in terms of pain reduction, range of motion and functionality. Further research is needed to compare the effect of both interventions to determine the optimal treatment.

Physiotherapists should be aware of the fact that physiotherapeutic intervention in the management of OA could be well managed in combination with acupuncture to yield beneficial results to patients as regards pain, functionality, quality of life etc.

**Acknowledgements**

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Petrou P, Winkler V, Genti G, Balint G, Double blind trial to evaluate the effect of acupuncture treatment on knee ostearttirosis, Scand JAcupunct 1988;3:1 t3-6,


status of patients with osteoarthritis of the knee joint. Nursing research, 45. pp 68-72


APPENDIX

APPENDIX A: ARTICLES INCLUDED IN THIS PROJECT CRITERIA LIST

Appendix B: ARTICLES INCLUDED IN THIS PROJECT

APPENDIX C: ARTICLES NOT INCLUDED IN THIS PROJECT:

APPENDIX D: CRITERIA LIST

APPENDIX E: GRAPH (MEAN SCORE OF THE GRADED ARTICLES)
### APPENDIX A

<table>
<thead>
<tr>
<th>Article</th>
<th>Patient population</th>
<th>Intervention</th>
<th>Outcome (pain in VAS and WOMAC)</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>570 patients with osteoarthritis of the knee (mean age [±SD], 65.5 ± 8.4 years)</td>
<td>23 true acupuncture sessions over 26 weeks. Controls received 6 two-hour sessions over 12 weeks or 23 sham acupuncture sessions over 26 weeks</td>
<td>The true acupuncture group's improvement in function from baseline was significantly greater than that of the sham control group at weeks 8 (P=0.01), 14 (P=0.04), and 26 (P=0.009)</td>
</tr>
<tr>
<td>2</td>
<td>352 adults aged 50 or more with a clinical diagnosis of knee osteoarthritis.</td>
<td>Advice and exercise (n=116), advice and exercise plus true acupuncture (n=117), and advice and exercise plus non-penetrating acupuncture (n=119).</td>
<td>The primary outcome was change in scores on the Western Ontario and McMaster Universities osteoarthritis index pain subscale at six months. Secondary outcomes included function, pain intensity, and unpleasantness of pain at two weeks, six weeks, six months, and 12 months</td>
</tr>
<tr>
<td>3</td>
<td>Sixty-eight adults with radiographically confirmed OA of the knee were assigned either to treatment (twice-weekly sessions of standard Swedish massage in weeks 1–4 and once-weekly sessions in weeks 5–8) or to control (delayed intervention)</td>
<td>standard Swedish full-body therapeutic massage technique20 and a standard protocol for the study intervention, which included pétrissage (compression or manipulation of soft tissue between the fingers and thumb), effleurage (gliding of hands over the skin or soft tissues), and tapotement (percussion-based massage where hands strike soft tissue in a repetitive, rhythmic fashion)</td>
<td>The group receiving massage therapy demonstrated significant improvements in the mean (SD)</td>
</tr>
<tr>
<td>4</td>
<td>315 primary care practices staffed by 320 practitioners with at least 2 years’ experience in acupuncture.</td>
<td>Up to 6 physiotherapy sessions and as-needed antiinflammatory drugs plus 10 sessions of TCA, 10 sessions of sham acupuncture, or 10 physician visits within 6 weeks. Patients could request up to 5 additional sessions or visits if the initial treatment was viewed as being partially successful.</td>
<td>Acupuncture groups had higher success rates than conservative therapy groups</td>
</tr>
<tr>
<td>5</td>
<td>30 Patients with symptomatic osteoarthritis of the knee were randomised to one of three treatment groups.</td>
<td>Patients receiving acupuncture were treated twice weekly over five weeks. Needles were inserted (with manual and electrical stimulation) in acupuncture points for pain and stiffness, selected according to traditional acupuncture theory for treating Bi syndrome.</td>
<td>We conclude that manual and electroacupuncture causes a significant improvement in the symptoms of osteoarthritis of the knee, either on its own or as an adjunct therapy, with no loss of benefit after one month</td>
</tr>
<tr>
<td>6</td>
<td>181 patients awaiting knee arthroplasty. Interventions: acupuncture for 6 weeks; physiotherapy for 6 weeks; standardized advice. Main outcome measures</td>
<td>acupuncture for 6 weeks; physiotherapy for 6 weeks; standardized advice. Main outcome measures: Oxford Knee Score questionnaire (OKS) (primary); 50m timed walk, and duration of hospital stay following knee arthroplasty.</td>
<td>There was no baseline difference between groups. At 7 weeks, there was a 10% reduction in OKS in the acupuncture group which was a significant difference between the acupuncture</td>
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## APPENDIX B

<table>
<thead>
<tr>
<th>Article</th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>(Margriet E.Van Baar et al 1998): The effectiveness of exercise Therapy in patients with OA of the hip and knee:</td>
</tr>
<tr>
<td>4</td>
<td>(A. White et al): Acupuncture treatment for chronic knee pain: a systematic review</td>
</tr>
<tr>
<td>5</td>
<td>(Eric Manheimer et al 2007): Meta-analysis: Acupuncture for Osteoarthritis of the Knee</td>
</tr>
<tr>
<td>6</td>
<td>181 patients awaiting knee arthroplasty. Interventions: acupuncture for 6 weeks; physiotherapy for 6 weeks; standardized advice. Main outcome measures</td>
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**APPENDIX C:** Criteria list based on PEDro scale and CONSORT list which is evidence based.

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<td>1. The article was written in the last 10 years</td>
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<td>2. There is sufficient scientific background and explanation which logically leads to</td>
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<td></td>
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<td>the research question</td>
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<td>3. Well-defined research question and Hypothesis is stated</td>
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<td>4. Eligibility criteria were specific</td>
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<td>5. The sample is adequate in size ≥ 20</td>
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<td>Materials &amp; Methods</td>
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<td>6. Numbers meeting and not meeting the eligibility criteria stated</td>
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<td>7. Adequate randomization</td>
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<td>Results &amp; statistics</td>
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<tr>
<td>8. Concealment of allocation</td>
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<tr>
<td>9. Blinding of subjects</td>
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<td>10. Blinding of therapists</td>
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<td>11. Blinding of assessors</td>
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<td>12. Precise details of the interventions administered</td>
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<tr>
<td>13. Description of all outcome measures</td>
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<td>14. Flow of participants is fully described</td>
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<td>15. The researched groups are similar at baseline regarding the most important prognostic indicators</td>
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<td>16. Dates defining the periods of recruitment</td>
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17. The presentation of the results is appropriate and includes all outcomes 3
18. P-value is clearly stated 3
19. Results of between-group statistical comparisons are reported 3
20. The size of the treatment effect and measures of variability are presented 3
21. Confounders mentioned 3
22. The impact of biases is estimated 2
23. Conclusions follow the data reported 2
<table>
<thead>
<tr>
<th></th>
<th>24. Answer to the research question</th>
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<tr>
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<td>25. Generalization (external validity) of the trial findings</td>
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<td>26. General interpretation of the results in the context of current evidence</td>
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**Total score = 60**
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<thead>
<tr>
<th><strong>Scoring system</strong></th>
<th><strong>Explanation of total score</strong></th>
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<td>Low = 1 point</td>
<td>Scores $\leq 30$: poor article, don’t use it</td>
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<td>Medium = Complete: 2 points</td>
<td>Incomplete: 1 point</td>
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<td>High = Complete: 3 points</td>
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