

# A Comparison of Acupuncture with Advice and Exercises on the Symptomatic Treatment of Osteoarthritis of the Hip – A Randomised Controlled Trial

*Roisin Haslam*

## **Summary**

Acupuncture is becoming a common technique within the physiotherapy profession as a treatment modality for pain relief; however, few randomised controlled trials have been undertaken to assess the effectiveness of acupuncture, particularly in the treatment of osteoarthritis (OA) of the hip. Therefore, a randomised trial to compare the effectiveness of acupuncture with advice and exercises on the symptomatic treatment of OA of the hip was carried out. Thirty-two patients awaiting a total hip arthroplasty were randomly allocated to either the experimental group, (A), to have six sessions of acupuncture each lasting up to 25 minutes, or the control group, (B), to be given advice and exercises for their hip over a six week period. Group A consisted of three men and 13 women, and group B consisted of four men and eight women. The average age in group A was 66 years and in group B it was 68 years. Patients were assessed for pain and functional ability, using a modified version of the WOMAC questionnaire, pre-treatment, immediately post-treatment and at eight weeks post-treatment.

The pre-treatment WOMAC scores in the two groups were similar ( $p=0.85$ ). There was a significant improvement in group A (decrease in WOMAC score) immediately post-treatment ( $p=0.002$ ) and this was maintained at the eight-week follow-up ( $p=0.03$ ). There were no significant changes in group B. When the changes in WOMAC scores were compared between groups, a significantly greater improvement was found between pre-treatment and immediately post-treatment in group A, compared with group B ( $p=0.02$ ). The changes between pre-treatment and

the eight-week follow-up also showed a significant improvement in group A compared with group B ( $p=0.03$ ).

In conclusion, this trial supports the hypothesis that acupuncture is more effective than advice and exercises in the symptomatic treatment of OA of the hip.

## **Keywords**

Acupuncture, pain relief, osteoarthritis, hip joint, exercises, randomised controlled trial.

## **Introduction**

Osteoarthritis (OA) is an extremely common disease. In an ageing population, one in five individuals suffer from OA.<sup>1</sup> The underlying disease process involves destruction of the articular cartilage leading to proliferation and remodelling of the subchondral bone.<sup>2</sup> Patients present with pain, swelling and stiffness, causing a reduction in functional ability, particularly if a weight-bearing joint is affected.<sup>3</sup>

Conservative treatment of OA is aimed at pain relief through the use of anti-inflammatory drugs. Side effects from such drugs have been documented to include gastrointestinal haemorrhage, renal toxicity and an increased risk of hypertension.<sup>4</sup>

Another form of conservative treatment is physiotherapy. Current treatment focuses on advice and education about the disease process, how patients can help themselves, the latter having been identified as an important part of treating OA,<sup>5</sup> and stretching and strengthening exercises for the muscles around the pelvis, aimed at stabilising the joint.<sup>5</sup> King (1997) suggests that

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this form of management may help to extend the time before a total hip replacement is necessary.<sup>6</sup> Patients can wait many months for surgery, during which time the disease process progresses, and the patients' quality of life decreases. This may be one reason why patients and practitioners are seeking alternative or complementary treatments for the symptoms of OA.

Acupuncture is becoming increasingly popular in the symptomatic treatment of OA. In the United Kingdom, it has been reported that between 25 to 54% of patients with OA have sought alternative practitioners.<sup>7</sup>

Few studies exist on the effectiveness of acupuncture and OA of the hip.<sup>8</sup> Ernst (1997) performed a systematic review of studies on acupuncture as a symptomatic treatment of OA:<sup>2</sup> a Medline search (1966-96) and a search of a database specialising in complementary medicine highlighted 13 studies. Most of the studies used pain scales as outcome measures and employed formula acupuncture (predefined set of points). The review found inconsistencies in the effectiveness of acupuncture to relieve pain. Seven of the studies reported an apparent relief of pain compared with the control groups,<sup>9-15</sup> whilst the other six did not.<sup>16-20;27</sup> Of the former seven, however, several failed to control for placebo effects, some were not randomised trials, had small sample sizes and lacked formal statistical analysis. Such factors jeopardise the quality of the research and indicate the need for further randomised controlled trials to determine the specific efficacy of acupuncture on pain relief in this condition.

As a consequence of this lack of research, and a trend found in the researcher's own practice, it was decided to investigate the treatment of OA of the hip with acupuncture, compared with one type of current physiotherapy practice.

A randomised trial was designed, the null hypothesis being that there was no difference between acupuncture and advice and exercises in the symptomatic treatment of OA of the hip.

### Method

This trial was conducted with a group of 32 patients on the waiting list for a total hip arthroplasty. The number of patients was derived from those available at the time of the study, given the author's time and resource constraints, rather than from a formal power analysis. Swindon Research Ethics Committee approved the study and all patients gave informed consent prior to the start of the trial. All patients included in the study had radiographic changes consistent with OA. Patients were excluded from the study if they had rheumatoid arthritis, previous hip injury or surgery, intra-articular steroid injection in the last three months, if they were pregnant, had epilepsy, or had an allergy to metal.

The patients were randomly allocated, using a random number table, to group A or B, with 16 in each group. Group A received a course of acupuncture, and group B received advice and exercises for their hip. The total study period was 14 weeks. The setting for the study was a physiotherapy department in a District General Hospital.

Group A received six sessions of acupuncture. The first session lasted ten minutes, with the patient side-lying with their affected hip uppermost. Acupuncture points used were: GB29, GB30, GB34, GB43, ST44, LI4 bilaterally, and four 'ah shi' points around the greater trochanter, in a north, south, east, west formation. The majority of points chosen were on the Gall Bladder meridian, which is said to have an influence on muscles and tendons, and the course of which passes over the lateral and posterior aspects of the hip. ST44 and LI4 were chosen because of their general pain relieving influence,<sup>21</sup> and the 'ah shi' points to isolate the greater trochanter and its muscle attachments, which support the hip. 'Viva' sterile disposable acupuncture needles (0.25mm diameter, 25mm length) were used. Longer needles were used at GB30 (0.25mm diameter, 40mm length). The needles were manufactured by Helio Medical Supplies Inc, Santa Clara, CA 95050, USA. Each

needle was manually stimulated for approximately ten seconds half way through the treatment. Subsequent sessions lasted 25 minutes, with manual stimulation of each needle, for approximately ten seconds, every five minutes. Each patient received one session per week over a six-week period. Each session was conducted by the author at a similar time of day and in the same room.

Group B attended the department three times over the same time period. Each session lasted 30 minutes. The first session involved giving each patient an advice sheet on OA, and on self-help.<sup>22</sup> The advice sheet also contained a set of five exercises that were demonstrated to the patient,<sup>3</sup> who then practiced them to the author's satisfaction. Three weeks later the patients came back for a review to check that they were doing their exercises correctly, and they were advised, if appropriate, on how to gently progress. Three weeks later the patients came back for their final review and were encouraged to continue with the exercises and follow the advice given. Each session was conducted by the author at a similar time of day and in the same room. Neither the author nor the patients were blinded to the treatments received.

A slightly modified version of the WOMAC (Western Ontario and McMaster Universities) osteoarthritis index was used as the outcome measure (Appendix 1). A previous study by Berman et al (1994) used the original questionnaire as an outcome measure on the efficacy of traditional Chinese acupuncture in the treatment of symptomatic knee OA.<sup>23</sup> The WOMAC questionnaire is a three-dimensional, disease specific, self-administered measure of health status.<sup>24</sup> It defines clinical and patient relevant symptoms in the areas of pain, stiffness and physical function in patients with OA of the hip or knee. It is valid, reliable and sufficiently sensitive to identify changes in health status following a variety of interventions including physiotherapy.<sup>24</sup> The questionnaire was given to all patients in both groups on their first attendance to

establish a baseline of their pain and functional ability. Levels were measured on a 100mm point visual analogue scale. There were 16 questions in total, therefore each subject was scored out of 1600. The greater the WOMAC score, the more pain and dysfunction the patient reports. A body chart was also completed to establish the main area of pain, and this was compared with subsequent questionnaires to identify changes in areas of pain post-treatment. Patients were also asked to state how much analgesia they took on average per day for the pain in their hip.

Patients were given back their pre-trial questionnaire at the end of the six-week period to establish their score post-treatment. A new questionnaire was sent to all patients eight weeks later, to identify any longer term effects of their treatment.

Data from the questionnaires were tested for normality, and intra-group comparisons were performed using the paired t-test. Inter-group comparisons were performed using the unpaired t-test, and checked with the Mann-Whitney test where normality of the sample scores was in question.

## Results

Sixteen patients were randomly allocated to each group at the start of the study. Group A remained intact but in group B, four patients withdrew from the study during the intervention period. One patient was admitted for arthroplasty, another withdrew after the first session after having a fall at home, another withdrew after the first session due to difficulty in getting to the department because of poor mobility. The fourth patient attended the first session then did not attend the second and could not be re-contacted. Three further patients dropped out of group B between the post-treatment assessment and the eight-week follow-up. One reported having had an arthroplasty and the other two were not contactable. One patient dropped out of group A during this period to have a total hip replacement.

## Papers

Table 1 Demographic Data

	Group A	Group B
Number of patients	16	12
Male : female ratio	3 : 13	4 : 8
Mean age (yrs)	66	68
Age range (yrs)	39 - 77	57 - 77
Mean duration of symptoms (yrs)	9	6

Table 2 WOMAC Scores

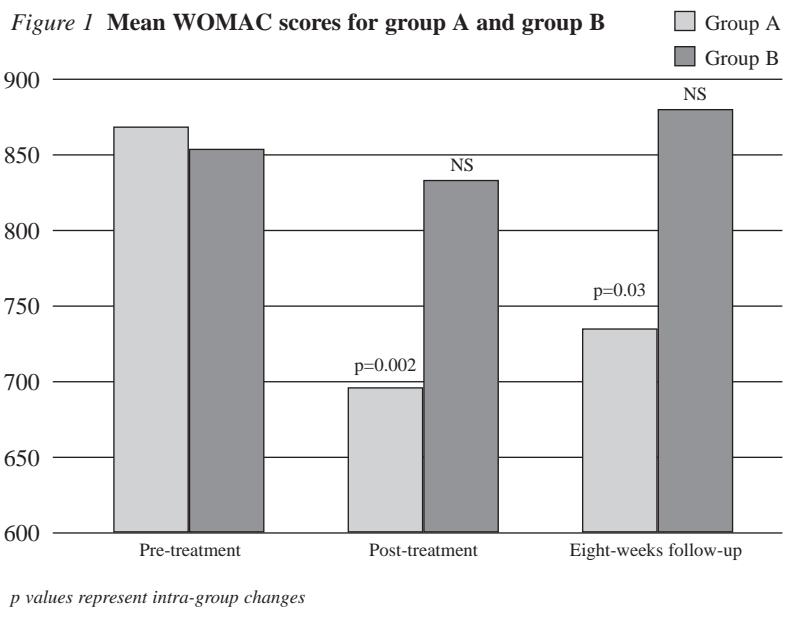
	Group A			Group B
	MEAN	SD	MEAN	SD
Pre-treatment	870	234	854	187
Post-treatment	696*	248	831	235
Eight-week follow-up	732*	258	878	310

\* $p<0.05$  for the inter-group comparisons of the changes in scores between pre-treatment and immediately post-treatment, and between pre-treatment and eight-week follow-up.

The demographic data for both groups is illustrated in Table 1.

Analysis confirmed that the data were normally distributed at all stages, with the exception, in group A, of the difference in scores between pre- and immediately post-treatment. No significant difference was found between the pre-treatment scores of group A and group B ( $p=0.85$ ), confirming that the groups were similar at baseline.

Figure 1 Mean WOMAC scores for group A and group B



WOMAC scores decreased significantly in group A from pre- to immediately post-treatment ( $p=0.002$ ), and from pre-treatment to the eight-week follow-up ( $p=0.03$ ) (see figure 1). A significant difference was found in the pre- to immediately post-treatment change when the two groups were compared ( $p=0.02$ ). This comparison was made using the unpaired t-test, and the result confirmed with the Mann-Whitney test, as one of the sets of figures was non-normal.

Five subjects (31%) in group A, and three (25%) in group B had reduced their analgesia intake by the end of the treatment course. At the eight-week follow-up, four subjects in group A, and one in group B had maintained this reduction.

Six subjects (38%) in group A, and three (25%) in group B reported fewer symptoms on their body chart at the end of the treatment course. At the eight-week follow-up, three subjects in group A and one in group B reported the maintenance of fewer symptoms.

## Discussion

To summarise the findings of this study, there was a significant improvement in pain relief and function in the acupuncture group compared with that in the group receiving advice and exercises, and this benefit lasted for at least two months. Further, almost a third (31%) of subjects in group A managed to reduce the analgesic drug intake for their hip by the end of the treatment session, compared with only a quarter of those in group B. These results provide evidence for the effectiveness of acupuncture compared with a more traditional approach in the treatment of both the pain and dysfunction associated with OA of the hip joint.

There are several limitations to this study. There was no control for the needle, so this trial is not able to determine the specific effect of the needling within the acupuncture intervention. The sample size was relatively small, and this questions whether the results can be generalised to the population as a whole. There was a relatively high number of dropouts, with seven of the

original 16 patients lost between pre-treatment and the eight-week follow-up in group B, compared with the loss of only one from group A. The high dropout rate may have been prevented by recruiting patients who had just been put on the waiting list for total hip arthroplasty, because the length of the wait is such that they would not have reached surgery within the trial period. The dropout rate for group B could also have been attributed to patients within this group wanting to have acupuncture and lacking faith in the advice and exercise intervention, which requires more co-operation and self-motivation on the part of the patient. This issue was identified pre-treatment, and the relevant patients were offered a course of acupuncture once the trial had finished.

The outcome measure used in this trial (WOMAC) has been tested as a valid and reliable way of measuring health status changes in patients with OA of the hip and was therefore deemed appropriate for this trial.<sup>24</sup> The modified version that was used involved asking fewer questions from the third section of the questionnaire that covers functional tasks. The researcher identified specific tasks relevant to the hip, thus keeping the questionnaire shorter, so that patients were not daunted by being posed too many questions of a similar nature. This may have reduced the validity and reliability of the outcome measure; however, compared with previous studies, it appears more valid and reliable than having purely subjective outcome measures.<sup>25</sup>

The WOMAC questionnaire can be used with either a visual analogue scale or a Likert scale. In validation studies of the questionnaire, the visual analogue scale proved the slightly more sensitive of the two, so it was chosen for the current trial. Some patients reported a difficulty, however, in translating their subjective levels of pain and stiffness to a 100mm line, with some patients reporting subjective changes in pain that were not consistent with their questionnaires. The reliability of such data must therefore be questioned, and in order to try and eliminate this

problem in future research, the Likert scale may be the more reliable outcome measure to use amongst this sample group.

It was also decided for the current trial to use the same questionnaire, post-treatment, that the patients had completed pre-treatment. Whether patients should be shown their prior scores remains controversial. This was addressed as part of a validation study for the WOMAC, and no statistically significant differences were found between blind and informed administration of the questionnaire.<sup>24</sup> Informed administration of the questionnaire was used in the current trial in an attempt to make it easier for the patients to judge their levels of pain and function pre- and post-treatment, because of the difficulties that some of them experienced in interpreting the visual analogue scale.

Despite such methodological problems, the results do seem consistent with other acupuncture studies, in that there was a significant benefit in the acupuncture group. McIndoe et al (1995) compared acupuncture with intra-articular steroid injections and found that both groups had pain relief, but that there was no statistically significant difference between them.<sup>8</sup> Gaw et al (1975) studied the efficacy of acupuncture on OA pain in 40 subjects.<sup>26</sup> The active group received treatment at classical acupuncture points and the control group at placebo points. They found that both groups showed significant improvements in tenderness and subjective reporting of pain, but they found no significant difference between the groups.

Such inconclusive research will continue to cast doubts on the effectiveness of acupuncture as a form of pain relief for OA. The findings from the current trial, however, should encourage its use. Patients were compliant with treatment, and there were no reported side-effects. Large numbers of patients can be treated within a relatively short space of time, making it time efficient. With some patients reporting a reduction in analgesia intake post-treatment, this has potential cost and health benefit implications for the patient.

For acupuncture to become a more accepted form of pain relief for OA of the hip, further randomised controlled trials need to be undertaken, with larger sample sizes, adequate control for the needling intervention, and with long term follow up. The aim of such research should be to determine whether acupuncture can be used as a long-term treatment for the symptoms of OA of the hip to improve patients' quality of life whilst awaiting surgery.

In conclusion, this study shows that acupuncture is effective in treating the symptoms of OA of the hip with patients waiting for a total hip arthroplasty and that such benefits can last for at least two months post-treatment.

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## Appendix 1

### HIP QUESTIONNAIRE

Please answer the following questions considering the pain / stiffness you have experienced over the last week in your hip.

All the questions require an answer in the form of a mark on the scale, this is between two extremes.

Please place your mark straight down across the scale, e.g. ————— | —————

The whole form should not take more than 10 minutes to complete.

1. Please mark on the line your level of pain

a) when walking

none |—————| extreme

b) stair climbing

none |—————| extreme

c) at night

none |—————| extreme

d) at rest

none |—————| extreme

2. Please mark on the line the degree of stiffness in your hip

a) in the mornings

none |—————| extreme

b) later in the day

none |—————| extreme

3. Please mark on the line the level of difficulty you have in performing

a) sit-stand

none |—————| extreme

b) bending to the floor

none |—————| extreme

c) walking

none |—————| extreme

d) putting on socks and tights

none |————— extreme

e) sitting

none |————— extreme

4. Please mark on the line the level of difficulty you have in your normal leisure activities

none |————— extreme

5. Please mark on the line the level at which you generally feel

a) anxious

none |————— extreme

b) depressed

none |————— extreme

c) relaxed

none |————— extreme

d) happy

none |————— extreme

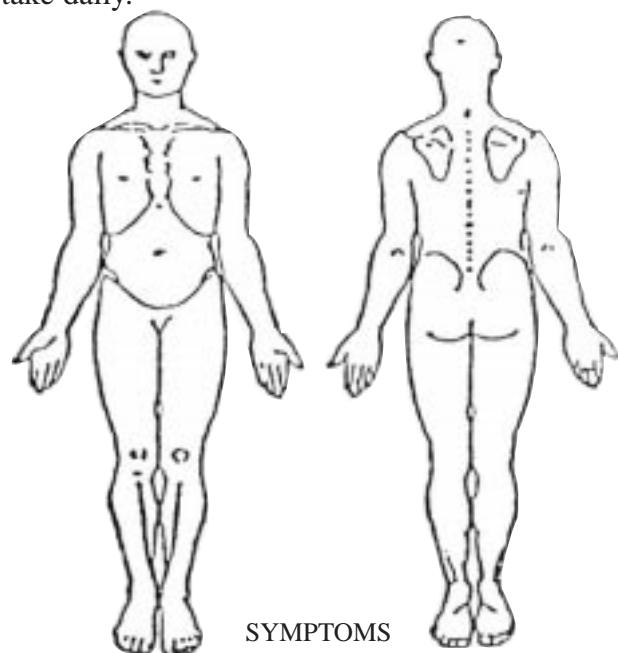
6. Please state the name of the medication you take as pain relief for your hip.

7. Please state the average number of these tablets you take daily.

8. Please draw on the chart where you got pain from your hip in the last week.

THANK YOU FOR COMPLETING  
THIS QUESTIONNAIRE

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