



# **Assessing the efficacy of massage oil for relief of joint pain and stiffness and improvement in function in osteoarthritis: A pilot trial.**

McBURNEY, Helen, PhD, B AppSc (Physio)

SOUTHBY, Anne L., LTUDipUnivAdmin

School of Physiotherapy

La Trobe University,

PO Box 199

BENDIGO Vic 3552

Australia

Correspondence to:

Anne Southby

School of Physiotherapy

La Trobe University,

PO Box 199

BENDIGO Vic 3552

Australia

Telephone +61 3 5454 7020

Fax +61 3 5454 7028

E-mail [A.Southby@latrobe.edu.au](mailto:A.Southby@latrobe.edu.au)

## **ABSTRACT**

Eleven adults with osteoarthritis volunteered to participate in a trial to assess the effect of two different massage oils on pain and stiffness associated with joint arthritis. After an initial assessment and instruction session, all participants used each oil for a four week period. This was a double blind trial and participants were randomly assigned with respect to the order of oil use. There was a two week period of no intervention between use of each oil. Joint pain, stiffness and function scores from questionnaire ratings were compared across time using repeated measures analysis of variance.

**Key Words:** arthritis, massage oil, pain, stiffness

## **INTRODUCTION**

Arthritis is one of the most frequently reported chronic conditions in Australians (AIHW, 2008) and is particularly common in those aged over 55, leading the list of chronic disorders. Increases in osteoarthritis (OA) are also reported for the American population (Gemmell et al 2003; Perlmann et al 2006).

Osteoarthritis frequently leads to chronic pain and disability. Under the International Classification of Functioning, Disability and Health model (WHO, 2000), disability may be experienced in terms of impairments of body functions and structures, activity limitations or participation restrictions. The leading conditions associated with profound or severe core activity limitations among Australians aged less than 65 in 2005 were back problems and arthritis (AIHW 2008).

OA is often progressive despite treatments such as: pain medication, exercises, hot and cold therapy, corticosteroid injections before eventually requiring joint replacement. Perlman et al (2006) suggest massage therapy may reduce symptoms and improve the course of OA by increasing local circulation to the affected joint, improving the tone of supportive muscles, enhancing joint flexibility, and relieving pain.

The use of topical substances for the relief of symptoms in osteoarthritis has been addressed in a small number of studies. Gemmell et al (2003) report on the use of a herbal cream for improvement in pain and stiffness. Rosoiu et al,

(2006) reported pain relief in arthritic joints after gentle manual massage with a specific gel, van Haslen et al (2000) reported a homeopathic gel was as effective as a non-steroidal anti-inflammatory gel and Field et al (2007) reported on the efficacy of massage to reduce pain in osteoarthritic hands.

Massage is rarely performed without a coupling agent to improve contact with skin. Some coupling agents also claim therapeutic benefits. Some massage oils have been claimed to have beneficial effects on arthritis, in particular on joint pain, stiffness and subsequently on function. If this is the case, massage oil may provide an inexpensive, readily available and applicable form of treatment. Whilst some manufacturers claim their oil has beneficial effects others make no claims about the efficacy of their product.

The aim of this study was to assess the effect of two different massage oils on joint pain, joint stiffness and function in individuals with osteoarthritis.

## **METHOD**

This study was approved by the Human Ethics Committee of the Faculty of Health Sciences, La Trobe University.

### **Participants**

An invitation to participate in the study was directed to adults with osteoarthritis primarily affecting one joint and was sent electronically to adult employees of a number of local businesses. Individuals with a diagnosis of osteoarthritis in an

upper or lower limb joint were asked if they were interested in participating or alternatively if they knew of anyone who might be appropriate or interested.

Detailed information about the study was provided to all those indicating interest.

### **Procedure**

After providing informed consent, all participants were invited to an initial assessment where they provided some demographic information and completed questionnaire items about current joint pain and stiffness and functional ability. They were also tested with a small application of each oil to check skin sensitivity prior to participation.

This was a double blind trial. Oils were packaged externally in containers that were identical except for the colour of the lid. One form of oil was packaged in containers with green lids (oil 1) and the other in containers with white lids (oil 2). Both utilised an olive oil base.

Oil 1 (Elmore Oil™) contained 3.86% eucalyptus oil, 4.25% tea tree oil and vanilla as active ingredients claimed to provide pain relief. Oil 2 (placebo) had eucalyptus, tea tree and vanilla essence so that the two oils were not identifiably different in texture and scent. Participants were randomised in the order in which they received each of the oils and were given their oils by one researcher. The assessor was blinded to order and was the researcher to whom queries were addressed, and questionnaires were returned.

## **Questionnaire**

The Joint Pain and Stiffness Questionnaire that was utilised asked the participants to rate their bodily pain, pain intensity, joint stiffness, joint stiffness intensity, functionality, pain and stiffness limitation, and pain and stiffness intensity. In addition participants were asked to nominate three activities where their participation was limited by their OA for use in the Patient Specific Functional Scale (Stratford et al 1995). All of the questionnaire items were completed each week throughout the study.

After a two week period with no oil (to assess stability of pain and stiffness), participants were provided with a bottle of massage oil, instructions and a demonstration of gently massaging their arthritic joint using the oil. They did this daily for four weeks. This was followed by another two week period with no intervention. Participants were then given the alternative massage oil for use in the same manner over the following four weeks. Follow up questionnaires were then completed over the next fortnight. This gave a total of 15 sets of questionnaire responses for each participant.

## **Statistical analysis**

In each questionnaire participants were asked to nominate a score out of 10 for pain (more pain – higher score), joint stiffness (more stiffness – higher score) and function (better function – higher score). Desirable results would be a decrease in pain and stiffness and an increase in function.

One way repeated measures ANOVA (analysis of variance) was used to identify changes in scores for pain, stiffness, and function across baseline (no oil), oil 1 use and oil 2 use time frames. Initial scores for pain and stiffness were compared to the best scores for pain and stiffness during the oil use period. As three functional activities had been nominated, the scores were averaged for each time period.

## **RESULTS**

Eleven participants completed the study, seven female and four male. The average age of the participants was 58.5 years. The participants presented with a variety of arthritic joints including the wrist, hand, foot, knee and back.

All participants returned data for each phase of the study however, one participant did not complete the final week due to an adverse reaction to the oil in use at the time.

Table 1 shows the group mean scores for pain, joint stiffness and function across baseline and with the use of each oil. The results of the one way ANOVA for pain, joint stiffness and function are shown in table 2.

These results would suggest that there was an overall decrease in pain and in joint stiffness across the group. Post hoc analysis demonstrated differences between baseline scores and scores after use of each oil for both pain and stiffness but no differences between scores for the oil use periods. The range of scores suggests that improvement was not universal with individual participants scoring worse than at baseline for pain and joint stiffness with Oil 2.

## **DISCUSSION**

Improvement in joint pain and stiffness was shown with both oils but this did not translate into changes in function. Participants had been asked to nominate three activities their arthritis made difficult for them to perform. It may be that the changes in joint pain and stiffness, whilst statistically significant, were insufficient to alter the difficulty in performing everyday tasks or it may be that the Patient Specific Functional Scale was not sufficiently sensitive to capture these changes.

For most participants improvement was demonstrated in the first week of the first use of each oil with a small reduction in relief in the following weeks. This may have been because relief from pain and stiffness was most marked in the initial time of use and participants then became accustomed to a lower level of pain and stiffness.

A review of individual scores suggests that there were distinct individual preferences for one oil or the other. Some individual participants showed improvements in scores that were beyond the minimum clinically important change and for these individuals the use of the most effective oil, (Elmore Oil) could well be an important strategy for the management of their osteoarthritis.

## **REFERENCES**

Australian Institute of Health and Welfare 2006 Australia's Health 2008 p19-34

& p 211. Sourced 10 October 2008:

[www.aihw.gov.au/publications/index.cfm/title/10585](http://www.aihw.gov.au/publications/index.cfm/title/10585).

Baer, P. A., Thomas, L. M., Shainhouse, Z., 2005. Treatment of osteoarthritis of the knee with a topical diclofenac solution: a randomised controlled, 6-week trial. *Bio Medical Central* 6: 44.

Ernst, E., 2002. The safety of massage therapy. *Rheumatology* 42: 1101-1106.

Gemmell, H., Jacobsen, B., Hayes, B., 2003. Effect of a topical herbal cream on osteoarthritis of the hand and knee: a pilot study. *Journal of Manipulative and Physiological Therapeutics* 26:1-5.

Perlman A. I., Sabina, A., Williams, A., Yanchou Njike., V., Katz, D L., 2006. Massage therapy for osteoarthritis of the knee. *Archives of Internal Medicine* 166: 2533-2538.

Rosoiu N., Profir D., Marin V., Belc I., 2006. Certain experimental clinical data about the value of therapy with alflutop jelly in osteoarthritis. *Archives of the Balkan Medical Union* 41:10-15.

Stratford P., Gill C., Westaway M., Binkley J., 1995. Assessing disability and change in individual patients: A report of a patient specific scale. *Physiotherapy Canada* 47: 258-263.

Tomas-Carus, P., Häkkinen, A., Gusi, N., Leal, A., Häkkinen, K., Ortega-Alonso, A., 2007. Aquatic training and detraining on fitness and quality of life in fibromyalgia. *Medicine and Science in Sports and Exercise* 39: No 7 1044-1050.

van Haslen, R., Fisher, P., 2000. A randomised controlled trial comparing topical piroxicam gel with a homeopathic gel in osteoarthritis of the knee. *Rheumatology* 39:714-719.

World Health Organisation 2001. International classification of functioning, disability and health (ICF). Geneva: WHO.

Table 1

Group Mean scores (range) n=11

	<i>Baseline</i>	<i>Oil 1</i>	<i>Oil 2</i>
Pain	5.05 (2 – 8)	3.23 (1 – 5)	3.41 (1 – 9)
Joint stiffness	4.86 (0 – 8)	3.41 (2 – 5)	3.45 (0 – 9)
Function	4.12 (2.7 – 5.57)	4.14 (1.33 – 5.92)	4.06 (1.93 – 5.25)

Table 2

Results of One Way Repeated Measures Analysis of Variance

	<i>df</i>	<i>F</i>	<i>p</i>
Pain	2	6.69	0.006
Joint	2	4.83	0.019
Stiffness			
Function	2	0.33	0.967