MASSAGE THERAPY SHOWS PROMISING RESULTS FOR PATIENTS WITH SUBACUTE LOW BACK PAIN

low-back pain is a major health problem in modern society. Seventy to 85 per cent of the population will experience low-back pain (LBP) at some time in their lives.[3] Each year 5–10 per cent of the workforce is off work for some time due to LBP, the majority for less than seven days. Almost 90 per cent of all patients with acute LBP get better quickly, regardless of therapy. The remaining 10 per cent are at risk of developing chronic pain and disability, and account for more than 90 per cent of the social costs for back incapacity.[4]

Although low-back pain is a benign and self-limiting condition, many patients look for some type of therapy to relieve their symptoms and to provide them with hope for a cure. For this reason, it is possible to list more than 50 different therapies promising to relieve the pain, lessen the suffering and offer a solution for this problem. However there is sound evidence for the effectiveness of only a minority of these therapies.[2]

Prior to the publication of the randomized trial that is the subject of this article, we conducted a systematic review of the literature of the effects of massage for LBP.[5] At that time we did not find any randomized controlled trial or controlled clinical trials that examined massage as the primary intervention. There were four randomized trials that examined other interventions (spinal manipulation, electrotherapy or corsets) and used massage therapy as a control treatment. Massage did not show benefit over these interventions in any of the outcome measures.

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Transferring Research into Practice

The purpose of Linkages is to critically review the best available evidence in the literature in the area of soft-tissue injury and to disseminate these reviews to clinical decision makers in practice, workplace, policy and compensation settings. Articles reviewed in Linkages are topical English-language articles in the area of soft-tissue injuries. The findings, we believe, will be useful and relevant to our stakeholders.

Linkages No. 8
June 2001

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When used appropriately, massage is a safe intervention, with no associated risks or adverse effects. However, there are some contraindications, such as: applying massage over an acute inflammation, skin infection, non-consolidated fracture, burn, deep vein thrombosis or over sites of active cancer tumours.[6]

Massage therapy is well accepted by patients, because it concurrently relieves the pain, leads to relaxation, and promotes a feeling of well being and a sense of having received good care. The basic physiologic mechanisms are not completely known, but in theory it causes muscle and mental relaxation, increases the pain threshold and stimulates the release of endorphins, which are potent analgesics.[7]

The use of massage for back pain is very popular, especially in eastern cultures, where massage is believed to have powerful analgesic effects, particularly if applied to acupuncture points, a technique known as *acupressure*.

The article that follows was published after we concluded our systematic review. It will be incorporated into the update of our review, scheduled for later this year.

This issue of Linkages summarizes a recent randomized controlled trial conducted at the Health and Performance Centre, University of Guelph, Guelph, Ontario and published in the Canadian Medical Association Journal.[1]

The article was critically appraised by two internal Institute reviewers using standard criteria recommended by the editorial board of the Cochrane Back Review Group.[2] Two external clinical experts provided commentaries on the study's relevance and applicability. We thank all those who contributed to this issue of Linkages.

Questions about Linkages?

This and previous issues of Linkages are available on the Institute's Web site (www.iwh.on.ca) and may be downloaded in PDF format. For more information about Linkages, please contact Andrea Furlan at the Institute for Work & Health, by phone: (416) 927-2027 ext 2171, fax: (416) 927-4167, or e-mail: afurlan@iwh.on.ca.

INSTITUTE FOR WORK & HEALTH
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Research Excellence Advancing Employee Health

ARTICLE REVIEWED

Preyde M. Effectiveness of massage therapy for subacute low-back pain: a randomized controlled trial. CMAJ 2000; 162(13):1815-20

Funding: College of Massage Therapists of Ontario

Objective: To compare the effectiveness of massage plus exercise and posture education with massage only, with exercises only and with sham laser therapy for patients with subacute low-back pain.

Population: Volunteers were recruited in the area of Guelph, Ontario, Canada between November 1998 and July 1999.

Inclusion and exclusion criteria: Subjects were 18 to 81 years of age and in stable health; duration of present episode of low-back pain was between one week and eight months (defined as subacute). Subjects were excluded if they were pregnant or had significant pathology (bone fracture, nerve damage or severe psychiatric condition).

Study methods: Subjects were randomized to one of four groups with the use of a random numbers table. Informed consent and baseline characteristics were obtained at the first appointment. All subjects received six treatments within about one month. Post-treatment measures were obtained after one month of treatment and follow-up measures were obtained one month after the treatment ended.

Description of interventions: The interventions were provided in individual sessions at the Health and Performance Centre, University of Guelph, Guelph, Ontario. There were four intervention groups:

I. Comprehensive massage therapy which included:

- 30–35 minutes of soft-tissue manipulation using techniques such as friction, trigger points, and neuromuscular therapy;
- remedial exercises including stretching exercises for the trunk, hips and thighs, including flexion and modified extension, were taught and reviewed to ensure proper mechanics. Subjects were taught to stretch within a pain-free range and hold the extreme position for about 30 seconds. They were to complete this twice on one occasion per day for the related areas and more frequently for the affected areas;
- 15 to 20 minutes of education on posture and body mechanics, particularly as they related to work and daily activities.

II. Soft-tissue manipulation only. This group received the same soft-tissue manipulation as the subjects in the comprehensive massage group.

III. Remedial exercise only. This group received the same exercise and education sessions as subjects in the comprehensive massage group.

IV. The control group received 20 minutes of sham low-level laser (infrared) therapy. The laser was set up to look as if it was functioning, but in reality it was not. The subject was "treated" lying on his or her side with proper support to permit relaxation. The instrument was held on the area of complaint by the treatment provider.

Outcome measures: Two primary outcome measures were function and pain, which were obtained through self-completed questionnaires. The Roland Disability Questionnaire was used to measure subjects' level of function when performing daily tasks. The McGill Pain Questionnaire was used to measure the present pain intensity and the Pain Rating Index was used to measure the quality of pain. Two secondary outcome measures were anxiety — measured with the State Anxiety Index, and lumbar range of motion — measured with the Modified Schober test.

Sample size calculation: A minimum of 20 subjects per group were required to detect a proportional reduction of pain of 50 per cent with a level of significance of 0.05 and a power of 0.80.

Analysis: Outcomes were analyzed by intention to treat, which means that subjects were analyzed as part of the treatment group to which they were originally assigned, even if they did not actually receive the intended treatment. Group means were compared with ANOVA (analysis of variance), and subsequently Scheffé (post hoc).

Withdrawals and losses to follow-up: 165 potential subjects responded to the advertisements, 107 (65 per cent) of whom met the inclusion criteria. Five dropped out before the first session of treatment

	Comprehensive Massage Therapy		Soft-Tissue Manipulation		Remedial Exercise		Sham Laser		Outcome Measures
	Post treatment	One month	Post treatment	One month	Post treatment	One month	Post treatment	One month	
Comprehensive Massage Therapy			≈	≈	+	+	+	+	**Function**
			+	≈	+	+	+	+	**Pain Intensity**
			≈	≈	+	≈	+	+	**Quality of Pain**
Soft-Tissue Manipulation					+	≈	+	+	**Function**
					≈	≈	+	≈	**Pain Intensity**
					≈	≈	≈	≈	**Quality of Pain**
Remedial Exercise							≈	≈	**Function**
							≈	≈	**Pain Intensity**
							≈	≈	**Quality of Pain**
Sham Laser									**Function**
									Pain Intensity
									Quality of Pain

(+) The treatment group in the row is statistically better than the treatment in the column.
(≈) The treatment group in the row is not different from the treatment in the column.

(three before randomization, one from the comprehensive massage group and one from the remedial exercise group), four subjects dropped out after receiving at least one session but before the end of the treatment series (two soft-tissue manipulation, one remedial exercise and one sham laser). Ninety-eight individuals (92 per cent of the eligible subjects) completed the treatment (25 comprehensive massage, 25 soft-tissue manipulation, 22 remedial exercise and 26 sham laser). Follow-up measures, taken at one month after the end of the sessions, were completed on 91 subjects (85 per cent of the eligible sample).

Results: The subjects in the four treatment groups were very similar at baseline in various demographic, occupation, pain history and outcome measures. The minimal differences between groups at baseline with a near normal distribution of characteristics, permitted analysis without adjustments.

The mean age of all subjects was 46 years; 52 per cent were female. The majority of the subjects reported that the duration of the present episode of pain was longer than three months. No patients were receiving disability payments or compensation for their low-back pain.[8]

What does this mean?

Massage therapy given by an experienced massage therapist, plus stretching exercises and posture education seems to be beneficial for patients whose current episode of non-specific low-back pain has lasted from one week to eight months.These benefits are expressed in terms of improved self-reported function, pain intensity, quality of the pain and in level of anxiety.

The ANOVA conducted at the end of the treatments demonstrated that there were statistically significant differences between the groups on self-reported measures of function, pain and anxiety. There was no difference between the groups in lumbar range of motion.

The post-hoc testing demonstrated that the comprehensive massage therapy group had significantly better scores than the sham laser group on measures of function, intensity of pain, quality of pain and anxiety at the end of the treatment and that these differences were maintained at the one-month follow-up measures.

The comprehensive massage therapy group was significantly better than the soft-tissue manipulation group only on measures of pain intensity, and only when measured at the end of the sessions. This difference was not observed at the one-month follow-up measure.

At the end of the sessions, the comprehensive massage therapy demonstrated better outcomes compared to the remedial exercise group on measures of function, pain intensity and quality of pain. However, the difference in quality of pain was not maintained at the one-month follow-up measure.

At the end of the treatments, soft-tissue manipulation had significantly better scores than the remedial exercise group on function, but this difference was not maintained at the one-month follow-up measure. At the end of the treatments, the soft-tissue manipulation group had better scores compared with the sham laser group on measures of function and this difference was maintained at the one-month follow-up measure. The soft-tissue manipulation group also showed better results compared to the sham laser group on pain intensity, but only at the end of the sessions.

At the end of the one-month follow-up, 63 per cent of the subjects in the comprehensive massage therapy group reported having no pain, as compared to 27 per cent in the soft-tissue manipulation group, and 14 per cent in the remedial exercise group. In the sham laser group, everyone still reported some level of pain.

The cost of treatment per subject in the comprehensive massage group was $300 (six sessions at $50 per treatment) and $240 for the soft-tissue manipulation group. The estimated cost of treatment per subject in the remedial exercise group and sham laser was $90 (all amounts in Canadian dollars).

Conclusions: At the end of the sessions, comprehensive massage therapy (consisting of massage given by an experienced massage therapist plus stretching exercises and posture education) showed better results on measures of function, pain intensity, quality of pain, and anxiety compared to sham laser therapy. These benefits were maintained at the one-month post-session measures. At the end of treatments, soft-tissue manipulation (massage therapy) alone showed better results on function and pain intensity compared to sham laser therapy. Only the function benefits were maintained after one month. None of the interventions showed a benefit on measures of range of motion.

COMMENTARIES

this randomized controlled trial is the first one to examine the effectiveness of massage therapy for low-back pain. It meets the minimum criteria for methodological quality: adequate method of randomization and sample size, good description of interventions, use of valid and reliable outcome measures, satisfactory statistical analysis and acceptable rates of withdrawal and losses to follow-up. Some aspects of its design might affect its validity, for example: 1) sham massage would have been more appropriate to account for the touching effects of massage, and 2) double blinding was not feasible for this intervention.

There are several characteristics that raise some concerns regarding the generalizability of its results to the broader population, such as: 1) the patient population was composed of volunteers. There is evidence to show that volunteers are healthier than non-volunteers, more concerned with self-care, more compliant with treatments, and more likely to respond favorably to any treatment given.[9,10] 2) The criteria of pain duration for entry into the study was broad (one week to eight months). 3) A heterogeneous population was used — individuals with or without previous episodes of low-back pain.

Despite these shortcomings, this study is a landmark paper and brings evidence into this area of practice. However, a firm decision about the benefits of massage for subacute low-back pain requires that these results be replicated and confirmed in other patient settings. In drug trials, the FDA requires that at least two high quality RCTs reach the same conclusions before approving a drug.

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the "comprehensive massage therapy" condition used in this study is consistent with current massage therapy practice, which utilizes a variety of techniques, modalities and assessment tools, such as patient questionnaires, specific soft-tissue management techniques, exercise and education to provide optimal treatment.[1] Pinpointing the source of pain and using specific techniques and modalities are vital for resolving symptoms and treating compensating mechanisms.[2] Sensory stimulus through soft-tissue manipulation is another technique commonly used to enhance patient self-awareness, which can result in an increase in the patient's ability to control their symptoms and prevent or reduce precipitating factors.[3] Cost of treatment is an important variable to consider since the majority of patients pay for massage therapy "out of pocket" and thus tend to be compliant with self-care recommendations. It is important to assess the patient's self-reliance before initiating lower treatment frequencies.

This evidence-based study begins the systematic examination of the benefits of massage therapy for acute low-back pain. Reprinting this study in the *Journal of Soft Tissue Manipulation*,[4] which is published by the Ontario Massage Therapist Association, was instrumental in reaching massage therapists who could apply the study's results to their clinical practice.

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1 Andrade C, Clifford P. *Outcome-Based Massage*. NY: Lippincott, Williams & Wilkins, 2000.
2 Chiatow L. *Palpation Skills*. NY: Churchill Livingstone, 1997
3 Mense S., Simons D. Muscle Pain. *Understanding Its Nature, Diagnosis, and Treatment*. NY: Lippincott, Williams & Wilkins, 2000
4 Preyde M. Effectiveness of massage therapy for subacute low-back pain: a randomized controlled trial. *Journal of Soft Tissue Manipulation*; 8(2): 4–10.

michelle preyde's randomized controlled trial on the effects of massage therapy on low-back pain is a landmark study in the profession with significant clinical application. As well outlined by the internal reviewers, this study is the first of its kind. I share the concerns of the internal reviewers about the overall generalizability of the findings, given the small number of patients, the broad criteria of pain duration, the type of control used, etc. However, despite these concerns, the findings of this study suggest validity for the ways in which massage therapists actually practice.

This study points to what massage therapy clinicians and educators have known for some time—namely, that the sophisticated use of soft-tissue manipulation is only one part of successful massage therapy treatment. To sustain the benefits of treatment, it is critical for massage therapists to educate patients in self-care through appropriate exercise and knowledge of the biomechanics of their bodies. Increasingly, massage therapy curriculum and practice is focused on the role of the massage therapist in patient education to sustain gains made in treatment and to prevent re-injury.

Practitioners will want to both replicate and improve on this study, including a closer examination of the types of soft-tissue manipulations actually used. Educators are already utilizing the study in the massage therapy curriculum, and clinicians will find the conclusions validating as it is the combination of soft-tissue manipulation with patient education that appears to be the most beneficial for patients with non-specific low-back pain.

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