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Research

Massage therapy has short-term benefits for people with common musculoskeletal disorders compared to no treatment: a systematic review

Diederik C Bervoets [a], Pim AJ Luijsterburg [a], Jeroen JN Alessie [b], Martijn J Buijs [b], Arianne P Verhagen [a]

[a] Department of General Practice, Erasmus MC, University Medical Center, Rotterdam; [b] Avans University of Applied Science, Breda, The Netherlands

KEY WORDS

Massage therapy
Systematic review
Randomised clinical trials
Physical therapy

ABSTRACT

Question: Is massage therapy effective for people with musculoskeletal disorders compared to any other treatment or no treatment? **Design:** Systematic review of randomised clinical trials. **Participants:** People with musculoskeletal disorders. **Interventions:** Massage therapy (manual manipulation of the soft tissues) as a stand-alone intervention. **Outcome:** The primary outcomes were pain and function. **Results:** The 26 eligible randomised trials involved 2565 participants. The mean sample size was 95 participants (range 16 to 579) per study; 10 studies were considered to be at low risk of bias. Overall, low-to-moderate-level evidence indicated that massage reduces pain in the short term compared to no treatment in people with shoulder pain and osteoarthritis of the knee, but not in those with low back pain or neck pain. Furthermore, low-to-moderate-level evidence indicated that massage improves function in the short term compared to no treatment in people with low back pain, knee arthritis or shoulder pain. Low-to-very-low-level evidence from single studies indicated no clear benefits of massage over acupuncture, joint mobilisation, manipulation or relaxation therapy in people with fibromyalgia, low back pain and general musculoskeletal pain. **Conclusions:** Massage therapy, as a stand-alone treatment, reduces pain and improves function compared to no treatment in some musculoskeletal conditions. When massage is compared to another active treatment, no clear benefit was evident. **[Bervoets DC, Luijsterburg PAJ, Alessie JJN, Buijs MJ, Verhagen AP (2015) Massage therapy has short-term benefits for people with common musculoskeletal disorders compared to no treatment: a systematic review. *Journal of Physiotherapy* 61: 106–116]**

Background

A considerable proportion of the population experiences musculoskeletal disorders.[1] The Global Burden of Disease 2010 Study shows that the musculoskeletal disorders are the fourth greatest burden on health throughout the world, causing 21.3% of years lived with disability.[2] The most affected areas of the body are the low back, neck, shoulder and the knee, with a point prevalence varying between 20 and 50% of the population.[1,2]

Massage therapy is one of the earliest therapeutic tools used to relieve pain.[3,4] It has been promoted as a treatment of choice for numerous conditions such as musculoskeletal disorders, stress and pregnancy.[3] With its popularity for pain relief and recovery of function, massage therapy has become a widely accepted treatment for musculoskeletal disorders.[5] In physiotherapy practices, massage therapy plays a major role in the treatment of patients with musculoskeletal disorders. In a large cohort study, 87% of participants with complaints of the arm, neck and/or shoulder were treated with massage therapy, often in combination with exercise therapy.[6]

Massage therapy can be defined in different ways. Recently, the Ottawa panel defined massage as 'soft tissue and joint manipulation using the hands or a handheld device'.[7,8] This definition also included (spinal) manipulation and the use of mechanical devices. Another definition of massage is 'a systematic manipulation of the soft tissues of the body with rhythmical pressure and stroking to prevent, develop, maintain, rehabilitate, or augment physical function or relieve pain'.[9] Most massage styles consist of one or more of the following actions: effleurage (a gliding or sliding movement over the skin), petrissage (lifting, wringing or squeezing of soft tissues in a kneading motion, or pressing or rolling of the tissues), friction (penetrating pressure applied through the fingertips), tapotement (strike the tissues at a rapid rate) and vibration.[3,10–12]

The specific mechanisms of action of massage therapy are unknown, but various physiological responses to massage therapy have been claimed. These mechanisms include: increased lymph flow, a shift from sympathetic to parasympathetic response, prevention of fibrosis, increased clearance of blood lactate, and effects on the immune system, cognition and pain.[9,13,14] A popular claim is that massage therapy can increase blood flow to the muscles. However, this claim has been questioned, as increasing scientific evidence has shown no influence of massage therapy on blood flow.[15] Massage does seem to produce local biochemical changes, which might lead to increased neural activity at the spinal cord level and subcortical nuclei, which might affect mood and

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pain perception.[5,16] Therefore, massage therapy could potentially reduce anxiety, depression and pain through the increase of serotonin and endorphins.[13]

Previous systematic reviews of the effectiveness of massage have shown mainly short-term positive effects on low back pain, neck pain and shoulder pain.[5,7,8,17] However, these reviews have combined studies that used a variety of massage, spinal manipulation and mobilisation techniques, often as part of complementary and alternative medicine interventions.[7,8] The present review aimed to evaluate the currently available evidence of massage (ie, manual manipulation of soft tissues) as a stand-alone treatment compared to no intervention or other interventions on pain and functional status for people with musculoskeletal disorders.

Therefore, the research question for this systemic review was:

Is massage therapy effective for people with musculoskeletal disorders compared to any other treatment or no treatment?

Methods

Identification and selection of studies

PubMed, PEDro and CINAHL were searched from inception until October 2014, using medical subject headings (MeSH) and key words including anatomical terms, disorder or syndrome terms, and treatment terms. The full search strategy is presented in Appendix 1 on the eAddenda. There were no language restrictions. The references of the systematic reviews and (quasi-) randomised trials identified by the electronic searches were also scanned for potentially relevant articles.

Published, randomised controlled trials that studied the effect of massage as a stand-alone intervention (compared to no treatment or to another active intervention) in people aged over 18 years with common musculoskeletal disorders (Box 1) were included. Two review authors (DB, PL) independently performed the selection. First, titles and abstracts were screened for possible eligibility. Next, the full-text articles were independently screened for definite inclusion. The review authors resolved discrepancies through discussion or by a third author (AV).

Assessment of characteristics of studies

Quality

To assess the risk of bias, the tool from the Cochrane Back Review Group was used. This tool describes seven domains, including 12 items: sequence generation, allocation concealment, blinding of participants and personnel, blinding of outcome assessment, incomplete outcome data, selective outcome reporting and 'other issues'. Each item was rated as being at 'low', 'unclear' or 'high' risk of bias. Two review authors (DB, PL) independently assessed the risk of bias. The discrepancies were resolved through discussion and disagreements were discussed with a third review author (AV). A study was defined as being at low risk of bias when it fulfilled six or more of the criteria.

Box 1. Inclusion criteria.

Design
- Randomised trial
- Published in any language

Participants
- Adults with a common musculoskeletal disorder[a]

Intervention
- Massage, defined as systematic manual manipulation of the soft tissues of the body with rhythmical pressure and stroking

Outcome measures
- Pain
- Function

Comparisons
- Massage versus no treatment (wait list control, sham, rest or usual care)
- Massage versus other active treatments (exercise therapy, joint manipulation, relaxation therapy)

[a] Common musculoskeletal disorders were defined by the International Classification of Primary Care (ICPC) codes chapter L: locomotor system.[46]

Participants

The inclusion criteria for participants are shown in Box 1. Studies were excluded if the participants had severe pathology such as a fracture, nerve damage, psychological disorders (eg, depression) or sport injuries.

Intervention

Studies were excluded if the intervention involved joint manipulation, energy manipulation (eg, Reiki or polarity), or mechanical devices (eg, roptrotherapy). The massage therapy had to be a stand-alone treatment; trials were excluded if massage therapy was combined with another intervention (eg, massage plus joint mobilisation compared to no treatment) or additional to other active interventions (eg, massage plus exercise compared to exercise alone). The comparison therapy could not be an alternative form of massage.

Outcome measures

The outcomes of interest were pain and function. Outcome data were categorised as short term (post treatment up to 12 weeks) or long term (12 weeks or over).

Data analysis

One review author (DB) extracted data using a standardised, piloted data extraction form. A second review author (AV) checked this process by performing data extraction (independently) on a random set of studies and comparing the results. Any disagreements were resolved by discussion. In cases of more than 5% of disagreements with the random sample, two review authors performed the data extraction of all studies. Data were extracted on patient population, experimental and control interventions, and outcomes. All original data on outcomes were converted into effect estimates, which were reported as: a mean difference (MD) when a continuous outcome was measured on comparable instruments in the included studies, a standardised mean difference (SMD) when a continuous outcome was measured on different instruments in the included studies, or relative risk (RR) when the outcome was dichotomous. Each of these estimates was reported with a 95% confidence interval (CI) whenever possible. An effect of 15% or more was considered to be clinically relevant.

Statistical analyses were performed using Review Manager 5.2.[18] Statistical heterogeneity was determined using I^2 tests, which were interpreted as follows: 0 to 40% no heterogeneity; 40 to 70% moderate heterogeneity; and 70 to 100% considerable heterogeneity.[19] For statistical pooling, the random effects model was used.

The quality of the evidence was assessed using the GRADE approach.[20] The quality of the evidence starts at high when at least two trials provide results for an outcome. The quality is reduced by one level for each of the following domains not met: limitations of the study design, defined as $>25\%$ of the participants from studies with a high risk of bias; inconsistency, defined as statistical heterogeneity ($I^2 > 40\%$) or inconsistent findings among studies ($<$ 75% of the participants reported findings in the same direction); indirectness, defined as generalisability of the findings; imprecision of results, defined as total number of participants < 300 for a dichotomous outcome and < 400 for continuous outcome; and 'other', such as publication bias, flawed design or massive dropout. Single randomised trials ($n < 400$) were considered to be