The clinical effectiveness of therapeutic massage for musculoskeletal pain: a systematic review

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CRD summary
This review assessed the effects of therapeutic massage for the symptomatic relief of musculoskeletal pain and concluded that the evidence was inconclusive due to the methodological failings of the included studies. Despite some concerns about the review methodology, the authors' cautious conclusions adequately reflect the poor quality and limitations of the included studies.

Authors' objectives
To determine the effectiveness of therapeutic massage (compared with sham or alternative treatments) for the symptomatic relief of muscle pain and to analyse therapeutic massage protocols used in studies.

Searching
MEDLINE, CINAHL, Physiotherapy Evidence Database (PEDro), Sports Discus and the Cochrane Library were searched from inception to December 2004 for papers published as abstracts or full journal publications. Search terms were listed. There was no language restriction. Reference lists of all articles retrieved were also searched.

Study selection
Studies were eligible if they were controlled trials of therapeutic massage using hands and including patients with low back pain, neck and shoulder pain and diffuse muscular pain, or healthy participants of studies inducing experimental pain affecting the musculoskeletal system (experimentally induced post-exercise soreness). Pain due to any form of arthritis was excluded. Studies had to assess musculoskeletal pain. Pain and/or soreness had to be evaluated using a validated measuring tool.

The majority of included studies assessed patients with musculoskeletal conditions or back pain or healthy patients with post-exercise muscle pain and soreness.

Therapeutic massage was compared to no treatment, sham treatment or active (standard) treatment. The following interventions were excluded: manipulation techniques such as deep transverse friction; specialised therapeutic massage; therapeutic massage administered using devices such as a vibrator; therapeutic massage as part of polytherapy without the possibility of isolating the effects of massage.

In most of the studies included, therapeutic massage was compared to no treatment, to sham laser treatment, or to a range of active treatments. Healthy patients received a median of 25 hours of massage (range 15 to 150) during a median of two days (range one to 11); patients in clinical studies received a median of 200 hours of massage (range 40 to 600) during a median of 24.5 days (range 14 to 252). The median duration of massage was 17 minutes (range eight to 60 minutes). Most interventions used Swedish massage (effleurage and/or petrissage); others described the intervention as “stroking massage”, “soft tissue massage” or just “massage”. Administration by a registered massage therapist was reported in eight studies.

Abstracts were independently screened by two reviewers and full articles were retrieved if either of the reviewers considered the study to be potentially relevant.

Assessment of study quality
Methodological quality was assessed using the nine-item CRD-scale (assessing randomisation, allocation concealment, similarity of baseline characteristics, specific eligibility criteria, blinding of outcome assessment, blinding of therapists, blinding of patients, point estimates and variability for primary outcome measure, intention-to-treat analysis). Studies were awarded a score out of a maximum of nine points.

Quality appeared to have been assessed independently by two reviewers.
Data extraction
Outcomes were dichotomised as effective (i.e. therapeutic massage better than comparison, positive outcome) or not effective (i.e. therapeutic massage equally or less effective than comparison, negative outcome).

Two authors extracted information from the trials independently (overview of information extracted was given), discrepancies were resolved by discussion.

Methods of synthesis
Data from studies were summarised narratively using text and tables. Studies were grouped by comparator. Therapeutic massage regimens were compared for positive and negative outcome studies using non-parametric statistics (median, range and Mann-Whitney tests).

Results of the review
Twenty studies assessing 34 comparisons were included (n=1,341 participants). Study sample sizes ranged from nine to 262. Quality was limited, quality scores out of 10 ranged from 0 to 3 for studies using healthy participants, and from 3 to 7 for clinical studies. Studies using healthy participants also had smaller sample sizes. Most studies were underpowered. Details and rationale of the massage interventions were rarely reported. There was no difference in methodological scores between studies with a positive outcome regarding pain/soreness and those with a negative outcome.

Therapeutic massage was judged to be effective at reducing pain/soreness compared to control in half of the 20 studies (four of nine studies in healthy patients with post-exercise pain, six of 11 studies in patients with musculoskeletal pain, three of seven studies in patients with low back pain).

Therapeutic massage was better than no treatment in five of 10 studies (four of nine studies in healthy patients with post-exercise pain, one study in patients with shoulder pain receiving six 20 minute massage sessions over two weeks).

Therapeutic massage was better than active treatment in seven of 22 comparisons (active interventions included self care educational material, traditional Chinese acupuncture, exercise and education, muscle relaxation, mental relaxation, and standard care).

There was no difference in the total amount of massage given or in the amount of massage administered per study day when comparing studies with positive or negative outcomes with respect to pain relief. However, median dosing per study day was eight minutes and lack of effect may have been due to insufficient dosing despite the inability to find a relationship between dosing and outcome.

Authors' conclusions
The available evidence on therapeutic massage for relief of musculoskeletal pain is inconclusive, probably due to a combination of inadequate sample sizes, low methodological quality of studies, insufficient dosing of massage interventions and a lack of clarity about the physiological intent of the intervention and its relationship to the time course of putative effects.

CRD commentary
The review addressed a clearly stated research question. Appropriate inclusion criteria were defined and measures were taken to avoid the introduction of error and bias during the review process. A variety of appropriate electronic databases was searched, although the authors conceded that they may have overlooked studies by not searching alternative medicine databases (such as AMED or CISCOM). A thorough assessment of the methodological quality of the included studies was undertaken and used in the data analysis, although it was not completely clear whether this was done by two authors. Data were summarised narratively, although some statistical analysis was done comparing pre-defined characteristics of studies with positive and negative outcomes on pain measures. A narrative synthesis was appropriate because of the variation in the studies included, but a more concise way of summarising the data would have made an overall judgement easier. Analysis was largely based on vote counting, rather than on an analysis of the
magnitude of effects; the latter was not reported in the tables, neither were significance values. Sample sizes of the included studies were small and study quality was often poor. It may have been desirable to report additional outcomes rather than just pain or soreness. Despite some concerns about the review methodology, the authors' cautious conclusions adequately reflect the poor quality and limitations of the included studies.

**Implications of the review for practice and research**

Practice: The authors did not state any implications for practice.

Research: The authors stated that better research in this field is needed, for example adapting the standards for reporting interventions in controlled trials of acupuncture (Standards for Reporting Interventions in Controlled Trials of Acupuncture or STRICTA) to therapeutic massage interventions. Good quality experimental studies are needed to establish the time course of massage effects as a basis for designing robust clinical trials. Depending on physiological intent (e.g. curative of symptom relief) timing of outcome measurement (i.e. during or after massage) and duration of outcome measurement (e.g. long term for time to healing) need to be adjusted.

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