Efficacy of paraffin wax baths for rheumatoid arthritic hands
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Authors' objectives
To provide an overview on the therapeutic application of paraffin wax to the hands of people with rheumatoid arthritis, and to examine critically whether paraffin wax is efficacious for this condition.

Searching
MEDLINE (from 1966 to 1999), CINAHL (from 1982 to 1999) and EMBASE (from 1980 to 1999) were searched using the MeSH terms 'rheumatoid arthritis’, ‘therapeutic use of heat’ and ‘therapeutic use of cold’. Additional papers were located by a manual search using citation tracking, and a scan of Index Medicus. Dissertation Abstracts International and Proceedings First were also searched. It was not stated whether there were any restrictions on publication language.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials. The authors stated that basic studies and clinical trials examining the effect that paraffin wax has on hand tissue temperature were also included in the search.

Specific interventions included in the review
Paraffin wax applied to the hands using the dip-wrap method was compared with other active treatment (ultrasound, shortwave, infrared, or faradic stimulation) or other control. Exercise was sometimes used in both the treatment and control groups.

Participants included in the review
Patients with definitive rheumatoid arthritis were included.

Outcomes assessed in the review
The effect of paraffin wax on hand tissue temperature, pain, mobility, and skin and joint temperatures, was assessed.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The authors assessed quality using the criteria of Beckerman et al.(see Other Publications of Related Interest). The authors state that two of the authors performed the quality assessment.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Data were extracted for the categories of trial identification, research objective, design of trial and sample characteristics, methods, outcomes, and results.

Methods of synthesis
How were the studies combined?
A narrative synthesis was undertaken because the authors felt that the small number of published studies on this topic,
and their poor statistical reports, precluded statistical pooling.

**How were differences between studies investigated?**
The authors do not state a method for assessing any differences between the studies.

**Results of the review**
Four randomised controlled trials were included in the review with 303 participants randomised. Only 194 participants were included in the analyses. The sample sizes ranged from 30 to 71 participants.

One trial yielded equivocal results. The remaining three trials reported that after 3 to 4 weeks, paraffin wax applications were accompanied by significant improvements in rheumatoid arthritic hand function when followed by exercise. Paraffin wax also relieved pain and stiffness immediately after its application, with no documented detrimental effects on the disease process, even though paraffin wax temporarily raises joint temperature.

No reliability estimates were forthcoming for any of the documented outcome measures. In addition, no standard deviations were reported, and no effective standardisation of the cointerventions was established.

**Authors' conclusions**
The authors state that as a whole, the data suggest there may be some benefit with few side-effects in the application of paraffin wax to the hands of people with non-acute rheumatoid arthritis, prior to exercise. However the data were insufficient and precluded any definitive conclusions concerning the efficacy of paraffin wax for treating painful hand arthritis.

**CRD commentary**
The authors stated the research question and the inclusion and exclusion criteria. The literature search was quite thorough, although it was not stated whether it was restricted to English language publications. The search did attempt to find additional papers but not unpublished or grey literature. Only full papers were included in the review. Additional relevant data may have been missed. There were no tests for publication bias.

The quality of the included studies was formally assessed, but the authors did not report how the articles were selected, or who performed the selection and data extraction.

The extracted data were reported in tabular format, then summarised and discussed extensively in the text of the review. The studies were not statistically combined. Heterogeneity was discussed, in that no single trial was directly comparable with another.

The authors’ conclusions appeared to follow from the results, but should be viewed with some caution because of the limitations in the quality of the review process.

**Implications of the review for practice and research**
**Practice:** The authors state that if implemented, wax applications may be helpful if they follow, or are followed by, an appropriate exercise programme.

**Research:** The authors state that a long-term prospective investigation that addresses the methodological limitations of the papers discussed in this review, and includes a non-treatment or sham-treatment control group, a valid randomisation procedure, and a sufficient sample of heterogeneous patients who have definitive rheumatoid arthritis, is advocated.

**Bibliographic details**
Ayling J, Marks R. Efficacy of paraffin wax baths for rheumatoid arthritic hands. Physiotherapy 2000; 86(4): 190-201
Other publications of related interest

This additional published commentary may also be of interest. Resch KL. Inconclusive evidence that paraffin wax is efficacious in the treatment of rheumatic hands. FACT 2000;5:214-5.

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MeSH
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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.