Crenobalneotherapy for limb osteoarthritis: systematic literature review and methodological analysis

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CRD summary
This review included studies comparing medical spa therapy or its components with other interventions or no intervention. Most included studies reported a beneficial effect of crenobalneotherapy, but the authors concluded that the studies were methodologically inadequate to allow definite conclusions. The authors’ conclusions reflected the limitations of the evidence, but weaknesses in the review methods make their reliability uncertain.

Authors' objectives
To assess the effectiveness of crenobalneotherapy (medical spa therapy) for patients with osteoarthritis of the knee, hip and/or hands.

Searching
The authors searched MEDLINE to January 2007 for articles published in English or French. Search terms were reported. Reference lists of retrieved articles, related articles in MEDLINE and articles by the authors of identified studies were also checked, as were the review authors' personal reference lists.

Study selection
Studies of any design that compared crenobalneotherapy with other interventions or no intervention, in patients with osteoarthritis of the knee, hip and/or hands, were eligible for the review.

Some included studies evaluated spa therapy as a whole, but most evaluated specific components including thermal water or vapour, exercises in water and mud-packs. Comparator interventions included tap water at the same temperature, exercises in the gym or no exercises, and usual medication. Outcomes included pain, function and quality of life measured on a variety of scales.

The authors did not state how the studies were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors assessed internal validity using a checklist covering: randomisation; allocation concealment; details of the interventions; skills of the care providers; assessment of treatment adherence; blinding of participants, care providers and outcome assessors; follow-up; and use of intention-to-treat analysis. The authors used a separate checklist to assess the adequacy of the statistical analysis and representativeness of the patient sample.

The authors did not state how the validity assessment was performed.

Data extraction
Data were extracted from study publications and used to express the treatment effect as either an effect size (difference between means in the two groups/mean standard deviation (SD) for the two groups) or standardised response mean (SRM; mean score change/SD of that change).

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

Methods of synthesis
Studies were synthesised narratively. Correlation coefficients were calculated between treatment effect and study features. Differences between studies were discussed in the text and were evident from tables.
Results of the review
Eighteen articles reporting 19 trials were included in the review. Treatment effects were estimable for 15 trials (n=1,539 patients), with follow-up ranging from eight days to one year. Of the 19 trials, three met eight of the 10 internal validity criteria, one met seven criteria, five met six criteria, and 10 met five or fewer criteria.

Twelve studies had no sample size calculation to show that they had sufficient statistical power to detect differences between treatments. Five randomised studies failed to report between-group comparisons.

Most studies showed some benefit of crenobalneotherapy or its components, but treatment effects varied widely between studies. Treatment effect was not correlated with sample size, follow-up duration or publication date.

Authors’ conclusions
Although the consistency of the results suggested a therapeutic effect of crenobalneotherapy in limb osteoarthritis, the available studies were methodologically inadequate and their sample sizes too small to allow definite conclusions.

CRD commentary
Inclusion criteria for interventions and participants were clear. Criteria for study designs and outcomes were broad, but it appeared that most included studies were randomised trials. The authors searched only one database and reference lists, and only articles in English or French were included. This meant that relevant studies could have been omitted, particularly since, as noted by the authors, much research on spa therapy was conducted in non-English-speaking countries. The validity assessment was rigorous and was used in the synthesis. A narrative synthesis was appropriate in view of the heterogeneity of the interventions, comparators and outcomes included. Adequate details of included studies were provided, but the emphasis on methodological quality meant that some aspects (for example, study design) were difficult to interpret. Methods used for study selection, validity assessment and data extraction were not reported, so the risk of reviewer errors or bias affecting these processes was uncertain. The authors’ conclusions reflected the limitations of the evidence presented, but the limited search and lack of reporting of review methods make it difficult to assess their reliability.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that spa centres should co-operate to conduct research studies with a large enough sample size to detect clinically relevant differences.

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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.