Relaxation for the relief of chronic pain: a systematic review

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Authors' objectives
To establish the effectiveness of relaxation strategies in managing chronic pain by means of a systematic review of published randomised controlled trials (RCTs).

Searching
The following databases were searched: MEDLINE from 1966 to June 1996; PsycLIT from 1974 to June 1996; CINAHL from 1982 to June 1996; EMBASE from 1980 to June 1996; and the Oxford Pain Relief Database from 1950 to June 1994. Initial searches for publications in any language were performed using the word 'relax' and variants of the word 'relaxation' as free-text search terms, including combinations of these words. Subsequent searches used a variety of free-text combinations of the terms 'imagery', 'hypnosis', 'visualisation' and 'cognitive therapy'. Additional reports were identified from the bibliographies of retrieved papers, published review articles, and textbooks. Unpublished studies were not actively sought.

Study selection

Study designs of evaluations included in the review
Published RCTs evaluating a relaxation technique as active treatment, compared with at least one other active or control treatment, and reporting at least one pain outcome measure, were included. Studies with unconcealed treatment allocation, or treatment groups with less than 10 participants, were excluded. Abstracts, review articles, and evaluations of laboratory experiments were not considered for inclusion.

Specific interventions included in the review
Relaxation techniques used with either chronic cancer or chronic non-malignant pain conditions were included. The relaxation techniques were usually progressive muscle relaxation with tape recordings and regular home practice. Studies in which a relaxation technique was studied in combination with another pain intervention, such as cognitive behaviour therapy, biofeedback, hypnosis or imagery, were excluded. The treatment periods varied, as did the frequency and duration of relaxation. The control regimens included waiting-list, alternative relaxation techniques, biofeedback, education, imagery, routine care, occlusal splint and hydro-galvanic baths.

Participants included in the review
Studies recruiting patients with either chronic cancer or chronic non-malignant pain conditions were included. Evaluations of treatments for headache, migraine and acute pain conditions were excluded.

Outcomes assessed in the review
The primary outcome was the change in the severity of pain. A range of different pain outcomes were used across the included trials; the most commonly used was the McGill Pain Questionnaire. All but one study used more than one different subjective patient rating to assess pain. The other study used single investigator ratings of pain on palpation in patients with temporomandibular joint dysfunction. The assessments commonly involved pre- and post-treatment clinic assessments and self-report patient diaries. Psychological outcomes, such as anxiety and depression, were also considered.

How were decisions on the relevance of primary studies made?
Each study was read by both authors independently.

Assessment of study quality
The criteria used to assess validity were the description of randomisation and withdrawals. Studies were scored for methodological quality using a modified 3-item scale (see Other Publications of Related Interest no.1). Studies described as random were allocated one point, and a further point if the method of randomisation was given and was
deemed appropriate (e.g. the use of random number tables). A further point was allocated for a description of the numbers of, and reasons for, withdrawals. Studies could therefore score a maximum of 3 points and a minimum of 1. Both authors independently rated all nine studies, and achieved complete agreement for the scores.

Data extraction
The following data were extracted from each study: the pain condition; the site of pain; the number of patients approached and the number who entered the study; the aims of the study and its design; pain outcomes; psychological outcomes; treatment groups; type of relaxation technique; frequency of its use; instructions given to patients; withdrawals; and adverse effects. Study interventions were considered to be effective if p-values of less than 0.05 were reported for at least one pain and/or psychological outcome. The authors of the included trials were not contacted for additional information.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative summary and tables were presented.

How were differences between studies investigated?
Heterogeneity was not formally tested. The results were presented according to the type of pain (cancer and non-cancer) and the type of comparison (within-treatment and between-treatments).

Results of the review
Nine RCTs (n=414, of which 196 received relaxation) met the review’s inclusion criteria. Eight trials used a parallel group design and one study used a crossover design. Two trials involved oncology patients and seven were in a variety of different chronic non-malignant pain conditions, e.g. lower-back pain, rheumatoid arthritis, temporo-mandibular joint dysfunction, fibromyalgia and ulcerative colitis.

Within-treatment study comparisons for trials of non-cancer pain: of the 5 studies reporting pre-tst post-test differences, 2 showed that relaxation produced a statistically-significant difference for at least one pain outcome and/or other outcomes, whereas 3 studies did not.

Between-treatment study comparisons for trials of non-cancer pain: 2 of the 7 trials reported statistically-significant differences for at least one pain outcome in favour of relaxation at the early post-treatment assessment. However, none of the 3 trials with a longer-term follow-up (at least 4 months) reported any statistically-significant difference in favour of relaxation. One trial of temporo-mandibular joint dysfunction reported statistically-significant differences for pain outcomes, which favoured the oral splint device over relaxation. Another trial showed significantly lower morning pain scores for hydro-galvanic bath, compared with relaxation, in patients with fibromyalgia. Two trials comparing biofeedback with relaxation reported significantly lower pain scores at the 4-year follow-up for biofeedback, but not for relaxation; however, this finding was not replicated at a 2-year follow-up in another trial.

Within-treatment study comparisons for trials of cancer pain: statistically-significant pre-test post-test treatment differences were reported for some pain outcomes in both studies.

Between-treatment study comparisons for trials of cancer pain: one trial reported statistically-significant differences in favour of two different relaxation techniques (taped versus live instruction), compared with no treatment controls; no significant differences were detected between the 2 relaxation groups. In the second trial, there were no statistically-significant differences between progressive muscle relaxation and pleasant guided imagery for pain outcomes; however, there were significant differences in the baseline pain scores of the 2 groups.

Authors’ conclusions
The results of this review suggest that there is little evidence to support the effectiveness of relaxation in the relief of chronic pain.
CRD commentary
Overall, this was a well-conducted and clearly presented systematic review. Adequate details were provided for the research questions, the criteria for selecting the trials, the primary material, and the review process. A good level of detail was also provided for the search strategy. An attempt to identify unpublished literature may have helped identify additional studies. The method used to pool the data (descriptive) was appropriate, but more information about the methodological quality of the included trials would have been useful as the instrument used only covered two dimensions of study quality. The inclusion of different types of pain conditions, and outcomes other than changes in severity of pain, made the results, at times, difficult to interpret. The authors' conclusions appear to follow on from the presented evidence, and they rightly highlight the need for further research in this area.

Implications of the review for practice and research
The authors stated that more well-designed and executed studies with adequate sample sizes are needed to examine the effect of different methods of relaxation on chronic pain. The relaxation methods used need to be reported in detail so that they can be reproduced by others in future research and in the clinical setting.

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Other publications of related interest

This additional published commentary may also be of interest. Abbot NC. Relaxation techniques in pain relief: systematic reviews. FACT 1998;3:161-2.

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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.