Effectiveness of physical therapy treatments on lateral epicondylitis
Kohia M, Brackle J, Byrd K, Jennings A, Murray W, Wilfong E

CRD summary
The authors concluded that none of the numerous physical treatments for lateral epicondylitis was shown to be the most effective. Further research was required. The authors’ conclusions appeared to reflect limited findings from diverse studies, but incomplete reporting of review methods and insufficient results data made it difficult to assess the reliability of the authors' recommendations.

Authors' objectives
To evaluate the effectiveness of physical therapy interventions for lateral epicondylitis (tennis elbow).

Searching
PubMed, EBSCO, The Cochrane Library and Hooked on Evidence databases were searched from 1994 to 2006 for full-text peer-reviewed studies published in English. Search terms were reported. Studies had to be 12 years old or less.

Study selection
Studies that evaluated physical therapy interventions for lateral epicondylitis were eligible for inclusion.

All of the included studies were randomised controlled trials (RCTs). The studies evaluated a variety of different interventions including iontophoresis, phonophoresis, ultrasound, bracing, Cyriax physiotherapy, shockwave therapy, Bioptron light therapy, glyceryl trinitrate transdermal patch and other types of physical therapy interventions. Studies generally compared physical interventions with other physical interventions; some studies used sham treatments or placebo as the control. Multi-component interventions were sometimes used. Studies assessed a variety of outcomes including global improvement, pain, grip, severity of complaints, quality of life, self-reported progression, success, elbow disability, function and physical examination. Where reported, patients ranged in age from 18 to 72 years and the condition had been present for at least four weeks to 12 months. Some patients had received no previous treatment and others had failed to respond to conservative therapy. Study duration ranged from 18 days to 52 weeks.

The authors stated neither how papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality
At least two reviewers independently assessed validity using the following six criteria described by Megans and Harris: reporting of inclusion and exclusion criteria and operational definition of clinical problem; description of treatment protocol adequate for replication; reliability and validity of outcome measures (two criteria); blinding of outcome assessors; and reporting of attrition. The authors did not state how the validity assessment was performed.

Data extraction
The authors stated neither how data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
The level of evidence for each intervention was graded using a hierarchy of evidence described by Sackett: level I evidence from large RCTs with low false positives and low false negatives; and level II evidence from small RCTs with high false positives and high false negatives. Clinical recommendations for interventions were classified as grade A if evidence was supported by at least one level I study, level B if supported by at least one level II study and grade C if supported by level III, IV or V studies.

Results of the review
Sixteen RCTs were included (n=1,814). Seven studies were graded as level I and nine as level II. Three studies met all six validity criteria and three studies met at least five criteria. The following results are based on studies meeting at least
five of the six validity criteria.

Shockwave therapy (three studies): Two RCTs (n=114 and 78) reported that shockwave therapy improved visual analogue scale scores and function compared to placebo (one study) and improved pain during wrist extension compared to sham shockwave therapy (one study). One RCT (n=60) reported no difference in quality of life, grip strength and pain between shockwave therapy plus a forearm stretching programme and sham shockwave therapy plus the stretching programme.

Corticosteroid versus Cyriax and physiotherapy (physical therapy and elbow manipulation): One RCT (n=198) reported that corticosteroid injection significantly improved outcomes at six weeks compared to physiotherapy, but there was no difference at 52 weeks. One RCT (n=106) reported that corticosteroid injection was better than Cyriax therapy at six weeks, but there was no significant difference at one year.

Cyriax physical therapy versus physical exercise programme (slow progressive eccentric exercises and static wrist stretching exercises) versus Bioptron light: One RCT (n=75) reported that Cyriax physiotherapy improved all outcomes (pain, pain-free grip, function) compared to Bioptron light therapy. The exercise programme had highest scores for every outcome measure.

Other results and recommendations were also reported in the review.

Authors' conclusions
None of the numerous physical treatments for lateral epicondylitis were shown to be the most effective. Further research was required.

CRD commentary
The review question was clearly stated. Inclusion criteria were specified for participants and interventions, but not for study design or outcomes. Several relevant sources were searched, but no attempts were made to minimise publication or language bias. Appropriate methods were used to minimise reviewer error and bias during the assessment of validity, but it was not clear whether similar steps were taken in study selection and data extraction. Only RCTs were included, validity was assessed, reported and taken into account when classifying the level of evidence. However, results data and levels of statistical significance were not reported, which meant it was not possible to verify findings reported in the review. In addition, methods used to classify studies as showing an effect of treatment were not clearly described. These factors made it difficult to assess and interpret the evidence. The authors’ conclusions appeared to reflect the limited findings from diverse studies, but incomplete reporting of review methods and insufficient results data made it difficult to assess the reliability of the authors’ recommendations. Recommendations for further research appeared appropriate.

Implications of the review for practice and research
Practice: The authors stated that in the short-term for patients with lateral epicondylitis, shockwave therapy was effective, corticosteroid injection was more effective than Cyriax physical therapy and elbow manipulation, Cyriax physical therapy and a physical therapy programme of slow progressive eccentric exercises and static wrist stretching exercises were both more effective than Bioptron light therapy and Cyriax physical therapy was more effective than the physical exercise programme and Bioptron light therapy. There was insufficient information about results data to confirm the recommendations.

Research: The authors stated that there was a need for research to evaluate the long-term effects of physical treatments for lateral epicondylitis.

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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.