Elbow orthoses: a review of literature
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CRD summary
This review aimed to assess the scientific basis of the prescription of elbow orthoses. The authors concluded that current prescriptions of elbow orthoses cannot be evidence-based, because no scientific evidence on elbow orthoses is available. However, potential flaws in the conduct of the review mean that relevant evidence might have been overlooked.

Authors' objectives
To review the available literature on elbow orthoses in patients with various diagnoses, to assess the scientific base of the prescription of elbow orthoses.

Searching
MEDLINE, EMBASE, the Cochrane Library and RECAL Information Services were searched from 1989 to June 2003; the search terms were reported. In addition, the references of included studies were checked for further relevant studies.

Study selection
Study designs of evaluations included in the review
Studies were included if they compared an orthotic treatment group against a control group (an alternative treatment or different type of orthosis), or compared pre-orthotic with post-orthotic treatment periods. All studies that clearly described a scientific methodology were included. Single case-studies were excluded.

Specific interventions included in the review
Studies were included if they evaluated the effects of monoarticular elbow orthoses. Studies of functional electrical stimulation orthoses, fracture braces, post-surgical orthoses and polyarticular orthoses were excluded. A range of orthoses were evaluated in the included studies.

Participants included in the review
Studies were included if they were limited to a specific patient group, rather than healthy volunteers. The selected studies included patients with joint contractures, neurological disorders, epicondylitis or acute painful disorders of the elbow.

Outcomes assessed in the review
The authors did not state any inclusion criteria in relation to the outcomes. Range of motion (ROM), symptom severity, ulnar nerve conduction, sensation, pain, motor function and muscle strength were among the outcomes measured by the included studies.

How were decisions on the relevance of primary studies made?
One reviewer selected studies for inclusion. Where there was doubt, a second reviewer was consulted.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. Data on patient diagnosis, intervention details and outcomes were extracted.
Methods of synthesis

How were the studies combined?
The studies were combined in a narrative, arranged according to patient diagnosis.

How were differences between studies investigated?
Some differences between the studies were discussed in the text; others could be determined from the tables.

Results of the review

Eighteen studies (n=511) were included in the review.

Contractures.

Four uncontrolled studies (n=69) were identified. The Flowtron intermittent compression garment re-established ROM in patients with elbow contractures secondary to trauma and due to haemophilic arthritis. Static progressive stretching re-established ROM in patients with elbow contractures secondary to trauma at the elbow. The treatments appeared safe.

Neurological disorders.

Five studies were identified: 2 randomised controlled trials (RCTs; n=28) and 3 non-randomised studies (n=66). The application of elbow splints for 1 to 6 months or longer in ulnar neuropathy at the elbow can improve symptoms and conduction velocity of the nerve. It is unclear whether wearing splints during daytime has any additional benefit to splinting at night. Additional benefits from local steroid injections were not seen.

Epicondylitis.

Eight studies were identified: 5 RCTs (n=233) and 3 non-randomised studies (n=80). There were conflicting results for studies on the effects of different braces on grip strength in patients with lateral epicondylitis. The immediate effects of epicondylitis bracing seem limited, but several studies suggested improvement in subjective and objective measures due to the application of counterforce braces or 'Epitrain' elbow orthosis during activities for several weeks.

Acute painful conditions of the elbow.

One RCT (n=35) found that an Epitrain elbow orthosis provided greater and more rapid alleviation of pain than a simple elastic support in participants with sprains, pains due to falls on the elbow, and epicondylitis.

Further interpretations of the study findings were presented in the paper.

Authors' conclusions

Current prescriptions of elbow orthoses cannot be evidence-based, because no scientific evidence on elbow orthoses is available.

CRD commentary

This review was based upon a broad review question that was partially supported by the inclusion criteria, though these were quite vaguely described. The authors searched several electronic databases and examined reference lists. However, they did not mention whether the search was limited by language or whether they attempted to identify unpublished literature. Consequently, it was unclear whether the identified studies reflected an incomplete or biased selection of relevant research. Other than checking with a second reviewer where there were doubts about study relevance, it was unclear whether steps were taken to avoid bias and errors throughout the systematic review process. The included studies were classified according to their level of evidence, but the validity of the individual studies was not assessed.
Adequate details of the studies were presented. The narrative synthesis of the studies was appropriate given the differences between them. The authors' conclusion that the evidence they found was of generally poor quality seems appropriate but, given that relevant studies might have been missed, the conclusion that no evidence is available may not be.

**Implications of the review for practice and research**
The authors did not state any implications for practice or further research.

**Funding**
Dutch Health Care Insurance Board.

**Bibliographic details**

**PubMedID**
15658639

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Brachial Plexus /injuries /physiopathology; Contracture /therapy; Elbow Joint /physiopathology; Hemiplegia /physiopathology /therapy; Humans; Orthotic Devices; Pain /physiopathology; Pain Management; Stroke /physiopathology /therapy; Tennis Elbow /therapy; Ulnar Neuropathies /physiopathology /therapy

**AccessionNumber**
12005009387

**Date bibliographic record published**
30/09/2006

**Date abstract record published**
30/09/2006

**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.