A systematic review on the effectiveness of external ankle supports in the prevention of inversion ankle sprains among elite and recreational players

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CRD summary
This review concluded that compared with control, ankle tape and braces reduced the incidence of ankle sprain in players with previous injuries. Insufficient evidence was identified to assess any effect for those without a previous injury and to determine any difference between tape and braces. The quality of included studies was limited and the conclusions should be treated with caution.

Authors' objectives
To evaluate the effectiveness of external ankle supports in the prevention of ankle sprain, and to assess which support was more effective.

Searching
MEDLINE, EMBASE, the Cochrane Library, CINAHL, AMED, Current Controlled Trials, and 10 other sources, including sources of unpublished studies, were searched. The search end date was not given, but the start date was generally the inception of the database. The search terms were reported. The reference lists of identified reports were checked, relevant conference proceedings were handsearched, and experts were contacted. Only studies written in English were eligible for inclusion.

Study selection
Randomised controlled trials (RCTs), non-RCTs, and quasi-experimental studies that assessed the use of external ankle supports, in adolescent or adult elite or recreational players, were eligible for inclusion. Ankle supports were defined as any type of ankle tape, brace, or orthosis aimed at preventing injury. Participants could have a previous sporting injury or no history of ankle injury. Studies on people with other musculoskeletal injuries or after surgery were excluded. The outcomes of interest were the incidence of ankle sprain, adverse effects, and the severity of ankle ligament injury.

The included studies were on male or female basketball, football, or volleyball players, some of whom had a previous ankle injury. Treatments were prophylactic taping, semi-rigid orthosis, and lace-up and flexible braces; comparators were a prevention programme, proprioceptive training, or no treatment. The duration of most studies was one sports season; in one it was two years.

The authors did not state how studies were selected for the review.

Assessment of study quality
Two reviewers independently assessed the quality of studies and disagreements were resolved through discussion. Quality was assessed using the Joanna Briggs Institute's Critical Appraisal of Evidence Effectiveness tool. This consisted of 11 items including the method of randomisation, concealment of allocation, blinding, dropouts, and comparability of groups. The maximum score was eleven and those studies that scored one to four were of low quality and were excluded from the review.

Data extraction
The data were extracted by two reviewers independently and disagreements were resolved through discussion.

Odds ratios and 95% confidence intervals were calculated for each outcome.

Methods of synthesis
Pooled odds ratios and 95% confidence intervals were calculated using a fixed-effect model, except where there was statistical heterogeneity when a random-effects model was used. Heterogeneity was assessed using the $X^2$ test.
**Results of the review**

Six RCTs (4,882 players) were included. The sample size ranged from 52 to 2,562 players.

All studies were considered to be of moderate quality; the largest scored five and others between six and eight on the quality scale. The largest study was conducted in 1973.

**Previously injured players:** Compared with controls, the incidence of sprains was reduced with ankle braces (OR 0.31, 95% CI 0.18 to 0.51; four studies). One study found the incidence of sprains was reduced with ankle tape (OR 0.29, 95% CI 0.14 to 0.57). One study compared ankle braces against ankle tape and found no significant difference in the incidence of sprain between treatments.

**Players with no history of injury:** Fixed-effect analyses showed that the incidence of sprain was reduced for ankle braces compared with control, but there was significant heterogeneity. The random-effects analysis showed no significant difference between the two groups (three studies). There was no significant difference between ankle braces and ankle tape (two studies).

Three studies investigated the severity of sprains and reported that sprains in the control groups were more severe than those in the treatment groups. There were two studies on knee injuries and both reported no significant findings.

**Authors' conclusions**

This review found good evidence for either ankle tape or braces to prevent ankle sprains in previously injured players, but for those who were not previously injured, further evidence was needed. Neither type of ankle support was found to be better than the other.

**CRD commentary**

The aims of the review were stated, including the participants and treatment. The search covered a range of sources that included published and unpublished studies. This should have reduced any publication bias, but only studies written in English were eligible and language bias might have affected the results. The authors did not report the date of searching and the article was submitted in 2008. This makes it difficult to assess how up-to-date the review results were. The methods of data extraction and quality assessment aimed to reduce reviewer error or bias, but those for study selection were not described. Quality was assessed by assigning a score to studies, which is not considered to be the best method to identify differences in quality between studies. The methods of synthesis appear to have been appropriate.

The largest number of participants were from a study conducted in 1973 and the overall quality of the included studies was limited. The conclusions should be treated with caution.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that further research should investigate the incidence of knee injuries with ankle supports, in high-quality studies. An economic evaluation should also be performed.

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**Bibliographic details**


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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.