Prophylactic ankle taping and bracing: a numbers-needed-to-treat and cost-benefit analysis
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Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

Health technology
The health technology under consideration in this study was ankle taping and ankle bracing used during sporting activities to prevent ankle sprains.

Type of intervention
Primary prevention.

Economic study type
Cost-effectiveness analysis.

Study population
The study population comprised people with and without a history of ankle sprain, participating in sports.

Setting
The setting was community. The economic study was carried out in the USA.

Dates to which data relate
The effectiveness evidence was taken from studies published between 1973 and 1994. Resource use data were assumed by the authors. The price year appears to have been 2002.

Source of effectiveness data
Effectiveness data were derived from a review of the literature.

Outcomes assessed in the review
The review identified the number needed to treat to prevent an ankle sprain for people with and without a history of ankle sprains.

Study designs and other criteria for inclusion in the review
The studies identified were assessed using a critical appraisal scale from a previously published study. Only those studies that scored 8.4 out of a possible 14 points were assessed as being of sufficient quality to be included in the review. The authors also reported that one study was excluded because it did not have a true control group.

Sources searched to identify primary studies
The authors searched PubMed, CINAHL, SPORT Discuss and PEDro to identify studies.
Criteria used to ensure the validity of primary studies
Not reported.

Methods used to judge relevance and validity, and for extracting data
Not reported.

Number of primary studies included
Three studies were included in the review.

Methods of combining primary studies
The data from the three studies were not combined.

Investigation of differences between primary studies
Not reported.

Results of the review
The following numbers needed to treat were identified for people with a history of ankle sprains:

Garrick and Requa = 26 (see Other Publications of Related Interest below for bibliographic details);
Stiler, et al = 18 (see Other Publications of Related Interest below for bibliographic details); and
Surve, et al = 5 (see Other Publications of Related Interest below for bibliographic details).

The following numbers need to treat were identified for people without a history of an ankle sprain:

Garrick and Requa = 143 (see Other Publications of Related Interest below for bibliographic details);
Stiler, et al = 39 (see Other Publications of Related Interest below for bibliographic details); and
Surve, et al = 57 (see Other Publications of Related Interest below for bibliographic details).

Measure of benefits used in the economic analysis
The measurement of health benefit used in the economic analysis was the number needed to treat, as identified by the review detailed above.

Direct costs
The costs to the individual undertaking sport were included in this study. The study identified the cost of providing the tape and braces. Unit costs were taken from Medco and resource use was assumed by the authors. Unit costs and resource use were indicated in the paper. The price year was 2002 and, as costs were incurred over a period of less than a year, they were not discounted.

Statistical analysis of costs
Cost data were treated in a deterministic manner.

Indirect Costs
No indirect costs were identified by the study.
Currency
US dollars ($).

Sensitivity analysis
No sensitivity analysis was undertaken.

Estimated benefits used in the economic analysis
Please see the (Effectiveness results( section above.

Cost results
The cost of taping an ankle was assessed to be $1.37 per session.

Assuming an ankle was taped a total of 78 times per season (six times a week for 13 weeks) the total cost of taping was $106.86 per season per person.

The cost of a brace was $35.00.

It was assumed that a brace could be used for the duration of the season resulting in a total cost per season of $35.00 per person.

Synthesis of costs and benefits
The following costs of taping per ankle strain averted (based on number needed to treat) were identified for people with a history of ankle sprains:

Garrick and Requa = $35.62;
Stiler, et al = $24.66; and

The following costs of taping per ankle strain averted (based on number needed to treat) were identified for people without a history of an ankle sprain:

Garrick and Requa = $195.91;
Stiler, et al = $53.43; and
Surve, et al = $78.09.

The following costs of bracing per ankle strain averted (based on number needed to treat) were identified for people with a history of ankle sprains:

Garrick and Requa = $910.00;
Stiler, et al = $630.00; and
Surve, et al = $175.00.

The following costs of bracing per ankle strain averted (based on number needed to treat) were identified for people without a history of an ankle sprain:
Garrick and Requa = $5,005.00;  
Stiler, et al = $1,365.00; and  
Surve, et al = $1,995.00.

**Authors' conclusions**  
The authors concluded that taping and bracing was more effective in people with a history of ankle sprains. They also concluded that, when taking account of the time taken to tape ankles, bracing might be a better way to provide the necessary ankle support.

**CRD COMMENTARY - Selection of comparators**  
The authors compared the impact of ankle taping and ankle bracing to a 'do nothing' approach, and provide a rationale for this approach. You should consider how this relates to current practice in your own setting prior to applying the results of this study.

**Validity of estimate of measure of effectiveness**  
The measures of clinical effectiveness used in this study were taken from a review of the literature. The authors clearly reported the sources searched and the search criteria. They also indicated that all studies identified were critically appraised for quality, and that only those that met a minimum threshold were included. However, the aspects covered by the appraisal were not reported. The three studies included in the study were not combined to create a single assessment of effectiveness. This means that there was no clear assessment of the clinical impact of the intervention and limits the conclusions that can be drawn from the study.

**Validity of estimate of measure of benefit**  
The measure of benefit used in this study was the number need to treat to prevent one ankle sprain. This was taken directly from the clinical effectiveness evidence.

**Validity of estimate of costs**  
The estimate of costs only took account of the cost of tape and braces. The additional materials required to tape an ankle such as prewrap, tape adherent and heel pads were not included. No account was taken of the time taken to tape an ankle and the necessary training required. These omissions are likely to have an impact on the results of the economic study and could alter the conclusions. In fact the authors concluded that, when taking these items into account, the less cost-effective option (ankle taping) may actually be more cost-effective. The paper reported that a cost-benefit analysis was performed. However, the health benefits were not given a monetary value and losses to productivity were not included in the analysis. As a result the study was classified as a cost-effectiveness study. No statistical or sensitivity analyses of unit costs or resource use were undertaken. This means that the degree of certainty around the study results has not been explored which, in turn, limits the generalisability of the study. A price year can be deduced from the paper which will allow future reflation exercises for comparison with other studies.

**Other issues**  
The authors presented their analysis in a comprehensive manner. However, their conclusion was based on a wider range of costs than were included in their analysis. They did not compare the results of their analysis with those from other similar studies (although these may be few in number). The authors noted that the study generalised the results of the three primary studies identified in the review to people of all ages and abilities taking part in all sports, and this might influence the results of the study.

**Implications of the study**
The authors do not make any direct recommendations for further research or changes to clinical practice.

**Source of funding**
None stated.

**Bibliographic details**

**Other publications of related interest**


**Indexing Status**
Subject indexing assigned by CRD

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