Raymond J, Nicholson LL, et al. The effect of ankle taping or bracing on proprioception in functional ankle instability: a systematic review and meta-analysis. J Sci Med Sport. 2012;15(5):386-92.

Design: meta-analysis of crossover clinical trials

Purpose of study: to estimate the effectiveness of ankle taping or bracing on proprioception in patients with functional ankle instability

PICOS:

- Patient populations: patients who had sprained their ankle at least once or had functional ankle instability, defined as repeated episodes of ankle "giving way" following a history of a sprain
- Interventions: a tape or a brace on a sprained ankle
- Comparison: a condition in which a tape or brace was not used on the same ankle
    - This means that the patients were observed under both conditions, once with the tape/brace and once without
- Outcomes: measured acuity of at least one proprioceptive sensation, measured in degrees, often with special equipment for exact measurements (such as a computer-controlled linear servo-controlled motor):
    - Threshold for detection of passive movement
    - Position matching
    - Active or passive joint position sense
    - Movement discrimination
- Study types: crossover studies only, in which patients are tested under each of two conditions on the same ankle, allowing them to serve as their own controls

Study selection:

- Databases included MEDLINE, EMBASE, the Cochrane Central Register, CINAHL, AMED, SPORTDiscus PEDro, and the Web of Science through March 2012
- Two authors independently selected articles for eligibility and assessed study quality with criteria similar to that used by the Cochrane Risk of Bias tool

Results:

- 52 studies were retrieved for evaluation, and 8 studies were selected for having met all inclusion criteria
- All studies included relatively young adults with a history of ankle sprain or instability, but patient eligibility criteria was variable between different studies in terms of numbers of sprains and requirements for symptoms of functional instability

- 5 studies measured joint position sense and 3 studies used movement detection as outcome measurements
- 5 studies examined one or more types of bracing in addition to taping
- No study attempted to blind the assessors
- A random-effects meta-analysis was undertaken to combine study data using a standardized mean difference for estimating the pooled effect size
    - For joint position sense, there was no significant effect of ankle tape or brace; the mean difference was only 0.20 degrees
    - For movement detection studies, the mean difference was 0.24 degrees
    - For different directions of movement, there was also no significant effect of tape brace in either the plane of inversion/eversion or plantar flexion/dorsiflexion

Authors conclusions:

- Wearing ankle tape or brace has no effect on proprioception, which may actually make detection of movement in the inversion/eversion plane slightly worse
- Taping and bracing should not be discouraged on this basis, since there is evidence that they prevent recurrent sprains; however, proprioception is probably not the way that ankle supports accomplish this

Comments:

- The study has few implications for the management of ankle instability, but does clarify one aspect of the function of ankle supports
- 32 comparisons were made in all, of which 19 found no difference between conditions, 10 indicated that proprioceptive acuity was better with tape/brace, and 3 indicated that acuity was worse; it was the pooling of the data which showed a lack of effect of tape/brace on proprioceptive function
- For some reason, a standardized mean difference was used to pool study data; this is not invalid, but is puzzling when all measurements are done on the same scale (degrees), and probably has to do with pooling data from movements with different physiologic ranges of motion (inversion/eversion combined with plantar flexion/dorsiflexion)

Assessment: Adequate meta-analysis which supports good evidence that in the setting of ankle instability, ankle taping and bracing has no influence on proprioception, and that their effect in reducing recurrent ankle injury probably arises from other mechanisms