

Oral presentation

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The effects of taping and exercise on ankle joint movement in subjects with functional instability (FI) of the ankle joint during a jump down

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Introduction

Ankle joint taping is a common prophylactic measure used by individuals involved in sports. Little information is available on the effects of ankle joint taping on biomechanical parameters in subjects with FI during functional activities such as jump landing. [1] Thus the aim of this study was to examine the effects of ankle joint taping and exercise on ankle joint frontal and sagittal plane movement in subjects with FI while they performed a jump landing technique.

Methods

Eleven (7 male and 4 female) subjects with a history of unilateral FI volunteered to participate in the study. FI was defined as a score of ≤ 24 of 30 on the Cumberland Ankle Instability Tool (CAIT). [2] Each subject performed three single leg sagittal plane jump landings under three conditions; condition 1 (no tape), condition 2 (tape), condition 3 (post-exercise tape). The exercise protocol between testing of condition 2 and 3 consisted of a series of hopping, ladder and cutting drills. Joint movement was measured at 250 Hz using a 12 camera motion analysis capture system (Vicon Oxford Metrics, UK), while initial contact with the ground was identified using the vertical component of ground reaction force. Ankle joint frontal and sagittal plane motion was measured at 50 ms prior to and at initial contact (IC) with the ground.

Results

There was no significant effect on ankle joint inversion, either at 50 ms prior to [$F_{2,18} = 1.2$, $P = 0.32$] or at IC with the ground [$F_{2,18} = 0.4$, $P = 0.68$]. However, there was a significant effect on the angle of ankle joint plantar flexion, both at 50 ms prior to IC [$F_{2,18} = 29.4$, $P < 0.001$] and at IC [$F_{2,18} = 16.1$, $P < 0.001$]. *Post hoc* analysis revealed that condition 1 (no tape) resulted in significantly greater plantar flexion at 50 ms prior to IC than condition 2 (tape) [$7.7 \pm 3.0^\circ$; $P < 0.002$] and condition 3 (post-exercise tape) [$8.3 \pm 4.8^\circ$; $P = 0.001$]. Similarly, condition 1 (no tape) resulted in significantly greater plantar flexion at IC than both condition 2 (tape) [$5.3 \pm 3.2^\circ$; $P = 0.002$] and condition 3 (post-exercise tape) [$5.3 \pm 4.4^\circ$; $P = 0.01$]. No significant differences were evident between condition 2 (tape) and condition 3 (post-exercise tape) [$P > 0.05$].

Conclusion

These results indicate that taping acted to reduce the degree of plantar flexion at both 50 ms prior to and at IC with the ground, and that these reductions were retained even after exercise.

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