INTRODUCTION

KT Tape ® is an elastic, therapeutic tape that was introduced as a way to alleviate pain by promoting the movement of accumulated lymphatic fluids that build up as a result of injury or over-use and cause pressure on the surrounding tissues. It has also been speculated that the tape can provide structural support and proprioceptive awareness. However, these functions have not been researched as thoroughly.

The purpose of this study is to investigate the effect of KT Tape on the mechanical movements that lead to an increased risk of lower extremity injury, more specifically anterior cruciate ligament (ACL) injury risk. This study also investigated if the effect is altered by the message provided to the participant: whether the use of the tape was to improve physiological function or to provide structural support and proprioceptive awareness.

METHODOLOGY

Four uninjured, recreationally-active college-aged females performed six jump-land-jump maneuvers under three conditions: 1) untaped, 2) KT taped with a message of pain alleviation benefits, and 3) KT taped with a message of structural support and proprioceptive benefits.

The jump-land-jump maneuver involved jumping forward from a 40 cm box a distance of one-third body height, landing on the dominant foot, and jumping left or right at a 45° angle. Participants completed three jumps in each direction resulting in six jumps per condition. The order of taped versus untaped was counterbalanced as well as whether the participant would start by jumping to the right or to the left.

Three dimensional kinematics were monitored via 21 retroreflective markers on the dominant lower extremity, pelvis, and torso, recorded by 8 infrared cameras at 160 Hz through Vicon Nexus (Vicon Corp, Oxford, UK). Ground reaction forces were measured using force platforms (1600 Hz, AMTI).

Dominant knee flexion and valgus angles, peak vertical ground reaction forces, and peak posterior ground reaction forces during the first 100ms of foot contact on the force platform [2] were calculated and averaged across the three jumps for each condition and direction. Repeated-measures ANOVA was performed in order to compare the effects of KT Tape and messaging on kinematics and peak vertical and posterior ground reaction forces for each jump direction.

RESULTS & DISCUSSION

There were no significant main effects (p > 0.13). However, results of interest include the decreased knee flexion angle when using KT tape with a pain message during left jumps and the stair-step decrease in the knee valgus angle during right jumps.

Restricting range of motion along the frontal plane has been proposed as beneficial in decreasing the risk of ACL injury [1]. However, restricting the range of motion along the sagittal plane has been shown to increase this risk [3].

After observation of the patterns shown for these measures and taking into consideration the qualitative feedback provided from participants of the increased stability and heightened movement awareness experienced with the tape, more investigation is needed to determine the implications of KT Tape on ACL injury risk.

CONCLUSION

It appears that KT Tape may not significantly impact ACL injury risk when applied in a horse-shoe configuration to the anterior portion of the knee. Further research is needed to investigate the implications KT Tape has on knee flexion and knee valgus range of motion.

REFERENCES


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