

Effect of Kinesio® Tape application on shoulder joint position sense

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INTRODUCTION

Individuals, such as overhead athletes, who perform actions with the arm above the shoulder repeatedly, are at an increased risk for glenohumeral joint pain and injury¹. Injuries from overuse, as well as those from trauma, may result in a decrease in stability and proprioception at the joint. Proper functioning of the somatosensory system is important for both injury prevention and performance². Taping is commonly used for both prevention and treatment of athletic related injuries. Specifically, Kinesio Tape is becoming more widely used in rehabilitation. Although there is limited research on this taping technique, studies done on a pediatric population have seen improvements in function, pain, stability, and proprioception³.

The purpose of this study was to determine if applying Kinesio Tape to the glenohumeral joint would result in increased proprioception as measured by joint position sense.

METHODS

To date, seven healthy individuals (3 males, 4 females) with a mean height of 173.43 cm and a mean body weight of 68.4kg have participated in the study. The University of Oregon's Institutional Review Board (IRB) approved all methods and all subjects signed an informed consent form prior to participation. Exclusion criteria included; history of surgery to the dominant shoulder in the past year or any current injury to the dominant arm resulting in a decrease in range of motion (ROM) or change in participation status.

Data is being collected using the Polhemus Fastrak 3Space magnetic tracking system. Magnetic sensors were placed on the scapula, humerus, and anterior border of the latissimus dorsi. The scapular sensor was removed after digitization and before testing. Landmarks on the thorax, humerus, and scapula were located during digitization to determine the coordinate system and use in determining the center of the humeral head.

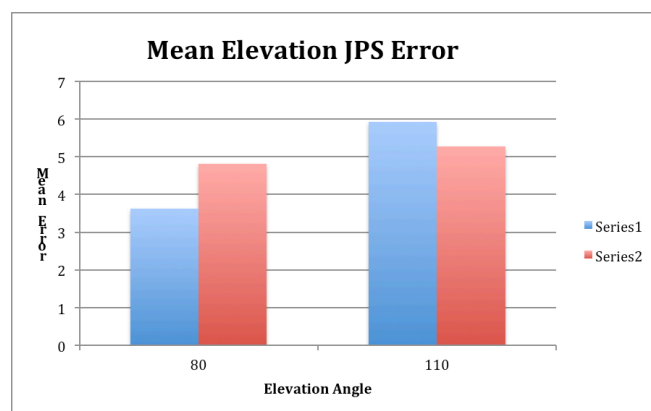
All testing was done in a single session with one set of trials collected without Kinesio Tape and a set of trials being collected following the application of Kinesio Tape to the glenohumeral joint. During trials, subjects wore a head mounted display to eliminate visual feedback. One set of trials included subjects finding each of four target positions twice. Plane angles of 35 and 70 were used along with elevation angles of 80 and 135. The order in which target positions appeared was randomized for each subject. The order of tape and no tape trials was also randomized.

For each target position subjects were instructed to keep their arm straight and thumb pointing up as they moved their arm in the direction of the boxes on the screen. As the subject approached the target the boxes would disappear and a dot would appear which subjects would move to the center

of the screen. Once there subjects would hold that position for 5 seconds before being given instructions to relax. After 3 seconds the computer would instruct subjects to "find target" and subjects would return to the previous target position. When he or she thought they had reached the corrected position he or she would push a trigger to register the position. Subjects would then return to the starting position and rest 15 seconds before the next target was presented. This procedure was repeated 16 times (8 tape, 8 no tape).

RESULTS AND DISCUSSION

Data is still being collected and the results have not yet been statistically analyzed. Figure one shows the mean elevation error data for the first three subjects tested. Series 1 represents the no tape condition and series 2 the taped condition.



Although data has not been analyzed, viewing these preliminary results suggests that Kinesio Tape may be beneficial at enhancing proprioception at higher elevation angles, but not all positions. At 80 degrees subjects appear to be worse with the tape, however at 110 degrees the tape may be beneficial. Continued data collection and statistical analysis will be needed to determine if in fact Kinesio Tape can increase JPS.

REFERENCES

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