TACSM Abstract

Effects of Kinesio Taping® on Muscular Motor Unit Recruitment in the Quadriceps in Healthy Individuals

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ABSTRACT

Athletes and recreational exercise enthusiasts have considered numerous protocols and strengthening regimens for injury prevention, with Kinesio Tape® being a widely used intervention. Use of Kinesio Tape® has been suggested to enhance muscle performance and function in uninjured muscle but has received equivocal support in the literature. PURPOSE: To investigate the effect of muscular facilitation and inhibition taping methods using Kinesio Tape® on muscle activity during knee extension in healthy individuals. METHODS**:** Sixteen healthy Southwestern University students (20.19$\pm$0.98 yr, 170.59$\pm$11.71 cm, and 74.60$\pm$19.37 kg) performed unilateral concentric knee extensions on the dominant leg at two loads (35%max, 70%max) with three Kinesio Tape® conditions (no tape, facilitation, inhibition). Neuromuscular activity (EMG) of the vastus medialis (VM) and vastus lateralis (VL) was recorded and represented as a percentage of the participant's maximal effort EMG activity as determined during a maximum effort knee extension. A counter-balanced presentation of the three taping conditions was used. RESULTS: Two 3x2 (tape condition x load) Repeated Measures ANOVAs were used to analyze the data for VL and VM efforts. The mean (sd) efforts in VL muscle activity for no tape, facilitation, and inhibition tapings at the 35% load were 73.87% (14.16%), 66.62% (17.07%), and 68.12% (11.89%), respectively. The mean (sd) efforts in VL muscle activity for no tape, facilitation, and inhibition tapings at the 70% load were 86.16% (14.52%), 81.67% (9.25%), and 80.43% (12.11%), respectively. No significant difference was found in neuromuscular activity between taping condition in the VL ($F_{(2,30)}$=0.308, p=0.737); however, the effort for the 70% load was significantly greater (13.22%) than the 35% load (p<0.001). The mean (sd) efforts in VM muscle activity for no tape, facilitation, and inhibition tapings at the 35% load were 60.82% (20.16%), 49.08% (17.07%), and 50.28% (13.69%), respectively. The mean (sd) efforts in VM muscle activity for no tape, facilitation, and inhibition tapings at the 70% load were 72.28% (24.86%), 71.89% (12.13%), and 71.83% (14.66%), respectively. A significant interaction in effort was found between taping condition and load in the VM ($F_{(2,30)}$=5.750, p=0.008). For VM effort, the 70% load was significantly greater (18.62%) than the 35% load (p<0.001). However, a 2x2 Repeated Measures ANOVA revealed no significant difference between taping conditions at the 35% load ($F_{(2,30)}$=2.072, p=0.144). CONCLUSION: Kinesio Tape® does not significantly alter muscle performance in healthy individuals based upon facilitation and inhibition taping methods, but there is a slight decrease in muscle effort when performed at lighter loads with Kinesio Tape® than without.