Which one Enhances Muscular Performance in ACL Reconstructed Subjects: Brace or Tape?

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Objectives: The aim of this study was to investigate the effects of functional knee brace and kinesiotaping on muscular performance in anterior cruciate ligament reconstructed subjects who reached return to sport phase of the rehabilitation.
Methods: Twenty (17 males, 3 females, Age: 24.7±7.1 years, Body weight: 74.4±12.0 kg, Height: 177.9±6.5 cm, BMI: 23.9±3.6 kg/m2) subjects who underwent anterior cruciate ligament reconstruction by using hamstring tendon auto graft were included in this study. When the subjects reached the return to sports phase of rehabilitation which was 6th months after surgery, knee muscle strength, jump performance and balance tests were performed 3 times: bare, with knee brace and with kinesio taping. The order of the tests were randomized to eliminate the effects of fatigue and motor learning. Quadriceps and hamstring muscle strength was measured on an isokinetic dynamometer at 180 ˚/s and 60˚/s angular velocities. Vertical Jump (VJ) and One Leg Hop Tests (OLHT) were used to assess jump performance. Star Excursion Balance Test (SEBT) with anterior, posteromedial and posterolateral reach distance was used to assess the dynamic balance. When all tests were performed, the subjects were asked under which test condition they felt more confident. Repeated measures of ANOVA was used to analyze the difference among three test conditions (bare, kinesiotaping, knee brace). Bonferroni post hoc test was used for pairwise comparison.
Results: SEBT posteromedial (PM)and posterolateral (PL) reach distances were found significantly different among three test conditions(PM: $F(2,38)=3.42, p=0.04$), PL: $F(2,38)=4.37, p=0.02$). Kinesiotaping increased posteromedial reach distance ($p=0.03$). On the other hand, brace decreased posterolateral reach distance ($p=0.04$). VJ and OLHT performance were also found significantly different between three test conditions (VJ: $F(2,38)=3.44, p=0.04$, OLHT: ($F(2,38)=4.04, p=0.02$). Kinesio taping increased one leg hop distance ($p=0.01$). However, brace decreased VJ distance ($p=0.04$). Kinesiotaping had no effect on quadriceps and hamstring strength ($p>0.05$). Only brace increased the quadriceps strength at 180 ˚/s ($p=0.02$). 40% of the subjects felt more confident with knee brace; 25% of them were more confident with kinesiotaping and the rest (35%) of them were more confident with no brace and kinesiotaping.
Conclusion: Kinesiotaping enhances balance and jump performance except for increasing knee strength in ACLR subjects at 6th months after surgery when they normally return to their sport. Although, knee brace increases quadriceps strength, it has adverse effect on functional performance . Therefore, Kinesiotaping can be applied for those patients when they start their sport specific training to enhance functional performance.

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