THE EFFECTS OF KINESIO TAPING ON RATE OF FORCE DEVELOPMENT IN SQUAT JUMP AND COUNTER MOVEMENT JUMP

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Kinesio tape (KT) has been widely used to prevent muscle pain and to improve strength and sports performance. Therefore, the aim of this study was to investigate the effect of KT in rate of force development (RFD). To compare with KT or non-KT in squat jump (SJ) and counter movement jump (CMJ). The RFD was improved or not improved by using KT. Six healthy female was recruited in this study. The kistler force plate was used to measure the RFD. There is no significant improve in SJ and CMJ. The results showed that KT did not affect RFD.

KEY WORDS: kinesio tape, jump, RFD.

INTRODUCTION: Kinesio tape (KT) has gained significant popularity in recent years and is widely used as an adjunct for sport performance. KT, developed by Dr. Kenzo Kase in the1970s, is a thin, air permeable, water resistant and elastic adhesive tape. Due to its elastic features, KT can be stretched to 120–140% of its resting length and then subsequently recoil back to its original length following application. When applied as specified by its developer, it has been claimed to have beneficial effects on muscles, and to improve muscle performance, and increased joint stability (Kase K, Wallis J, and Kase T, 2003). SJ and CMJ are a kind of movement often seen in sports and exercise skill tests, and it has been discussed frequently in past related studies (Huang et al., 2011). However, the mechanism through which KT exerts its hypothesized effects is unclear, and studies have not confirmed on the effectiveness of the performance. The purpose of the present study was to investigate the effect of the application of KT on rate of force development (RFD) to compare with KT or non-KT in SJ and CMJ.

METHODS: Six young female with healthy knees participated in this study (Height: 164.7 ± 4.8 cm; Weight: 55.8 ± 2.8 kg; Age: 22.3 ± 3.4 yrs). All volunteers had written informed consent for study participation. A VICON analysis system (Oxford Metrics Group, Oxford, UK) with one KISTLER force plates (Switzerland) used to record the ground reaction force (GRF) at 1000 Hz. We taped the KT on dominant leg (Figure 1.), KT were placed at the rectus femoris (RF), vastus medialis (VM), vastus lateralis (VL). Each participant was asked to perform a SJ and CMJ with both legs and land on two legs on the force plate. The jumping trail was performed at three times by each subject, and the force platform (Kistler) was used to measure the GRF. Jumping order was randomized in this study. The success data was chosen for analysis. The force platform force data was normalized by body weight. The maximum value of force and time were analyzed by Paired-Samples T Test. The level of significance was set at .05.

Figure 1. Quadriceps Taping

RESULTS: In SJ, the RFD between the two groups of measurement for the application with KT (95.07) and non-KT (102.41) was no significant (p = .316). In CMJ, RFD in KT (64.53) was higher than non-KT (64.40). But, there was no significance (p = .980) in this study. In table 2 and table 3, we also provide the jump height and the maximum force as a parameter. The maximum force and jump height were no significance in this study.

Table 1
Comparisons of the KT and non-KT in SJ and CMJ on RFD

	Mean	SD	p
SJ-non-KT	102.41	36.71	.316
SJ-KT	95.07	30.25	.316
CMJ-non-KT	64.40	28.44	.980
CMJ-KT	64.53	23.29	.980

Table 2
Comparisons of the KT and non-KT in SJ and CMJ on jump height

	Mean	SD	p
SJ-non-KT	18.86	5.11	.199
SJ-KT	20.40	6.39	.199
CMJ-non-KT	25.26	8.07	.465
CMJ-KT	25.95	6.17	.465

Table 3
Comparisons of the KT and non-KT in SJ and CMJ on the maximum force

	Mean	SD	p
SJ-non-KT	24.30	2.78	.480
SJ-KT	24.03	2.48	.480
CMJ-non-KT	23.01	2.29	.886
CMJ-KT	23.11	1.70	.886

DISCUSSION: KT has become a popular intervention for jumping performance. SJ and CMJ were used as a measure of performance as it is a common sports-related movement. To determine whether the jumping performance can be improved by the application of KT. The present findings revealed no significant differences in SJ and CMJ. Hence, KT did not change significantly at quadriceps taping. The performance itself, with regard to jumping height and movement kinematics, as well as different aspects of neuromuscular function of the muscles involved in the tasks have been covered in the literature. In this study, with KT or non-KT was no

significance with SJ and CMJ. Indicating that the rectus femoris with KT may not affect RFD, jump height, the maximum force. And some previous studies did not find significant differences by using KT (Kim et al., 2013; Vercelli et al., 2012; Wong et al, 2012). There are several limitations to this present study. First, the participants were a sample that included only healthy individuals. Second, we only chose female as participants. The last, KT only used at quadriceps. However, there was no significant difference in this study, the KT may have the other benefit in movement.

CONCLUSIONS: The results from this study indicate that no changes in RFD, jump height and maximum force were noted after quadriceps KT performed in female. It seems that the immediate effects of quadriceps KT in female were not found. In the further study, sample size increasing and KT performing at other muscles could be considered to evaluate the effect of KT.

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