

## COMPARISON OF KINESIO TAPING AND SPORTS TAPING IN FUNCTIONAL ACTIVITIES FOR COLLEGIATE BASKETBALL PLAYERS: A PILOT STUDY

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The purpose of this study was to identify the effects of kinesio taping and sports taping for collegiate basketball players in functional activities. Seventeen collegiate basketball players were recruited to participate in this study and divided into three groups (Kinesio taping group, sports taping group and control group) in random. The ankle range of motion, plantarflexor muscle strength and endurance, vertical jump, and dynamic balance were measured before and after taping applied. The results showed significantly increasing in ankle plantar-flexion range for Kinesio taping group ( $p=0.03$ ). There were no remarkable difference in the other measurements. In conclusion, the Kinesio Taping would not restrict the ankle plantar-flexion range. In future, we may recruit more subjects to identify the effect of Kinesio taping in functional activities for collegiate basketball players.

**KEY WORDS:** Kinesio taping, functional performance, basketball.

**INTRODUCTION:** Taping are commonly used in athletes during practice or competitive (Verhagen, van der Beek, & van Mechelen, 2001; Hughes & Rochester, 2008; Williams, Whatman, Hume, & Sheerin, 2012). The sports taping played the important role in protection and prevention of injuries (Verhagen, van der Beek, & van Mechelen, 2001; Hughes & Rochester, 2008; Williams, Whatman, Hume, & Sheerin, 2012). However, in order to protect the body parts of athletes, the sports taping may restrict joint motion, that results in affect the functional movements for athletes. In recently, the Kinesio taping is a new-invented taping method and its tape had elastic material (Kase, Wallis, & Kase, 2003). It was allowed joint free of movement and facilitate muscle function (Kase, Wallis, & Kase, 2003). However, few researches had understood the effect of Kinesio taping in functional activities for athletes as the tapes applied. Therefore, the purpose of this study was to examine the effects of Kinesio taping and compare with sports taping in functional activities for collegiate basketball players.

**METHODS:** Seventeen collegiate basketball players were voluntarily participated in this study (11 females and 6 male). All subjects divided into three groups in random by a ballot: Kinesio taping group ( $N=6$ ; average age: 19.7 y/o), sports taping group ( $N=6$ ; average age: 20.2 y/o) and control group ( $N=5$ ; average age: 19.5 y/o). They were not injured or received surgery at lower extremities before study. The dominant leg was used to test all measured variables. Ankle active plantar- and dorsiflexion of range of motion (ROM), muscle strength and endurance of plantar-flexor, vertical jump, and multiple single leg hop test as dynamic balance variable were measured for three groups (Figure 1). The Kinesio taping (KT) was applied over gastrocnemius, fibularis longus, and anterior tibialis of dominant leg for Kinesio taping group (Figure 2a), while the sports taping (ST) was applied with closed basketweave and heel lock techniques of dominant ankle for Sports taping group (Figure 2b). One-way ANCOVA was used to examine the difference among three groups while the pre-test results were the covariance in this study.

**RESULTS:** There was statistically significant in plantar-flexion of ankle ROM among three groups ( $P=0.024$ ; Figure 3). ST group had decreased the plantar flexion ROM with comparing control group and Kinesio taping group. Other variables had no statistically significant for three groups. But, the obviously trend was appeared in ankle muscle strength and dynamic balance (Table 1).



Figure 1: (a) Ankle plantar-flexor muscle endurance test; (b) Multiple single leg hop test.

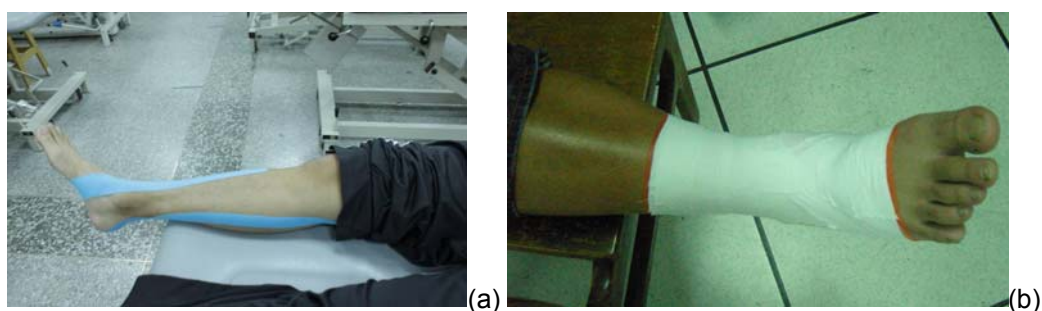
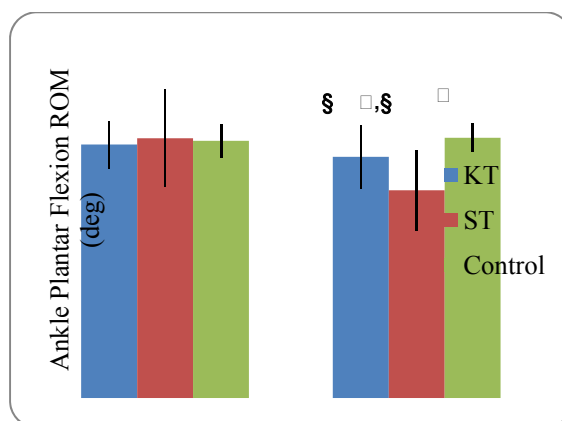


Figure 2: Taping technique. (a) Kinesio taping applied; (b) Sports taping applies.

Table 1: The results of percentage change among Kinesio taping (KT) group, Sports taping (ST) group, and control group.

	KT group(N=6)		ST group(N=6)		Control group(N=5)		P
	Pre	Post	Pre	Post	Pre	Post	
Ankle ROM							
Dorsi-flexion,deg	18.0±3.2	19.2±3.6	21.9±7.5	20.2±6.6	18.8±4.7	18.8±5.2	.547
Plantar-flexion,deg	56.9±5.3	54.1±7.1§	58.3±10.9	46.6±9.1#,\$	57.7±3.8	58.4±3.2#	.024*
Ankle Plantar Flexor Function							
Muscle Endurance, reps	35.3±8.7	41.0±9.2	43.3±21.9	49.0±26.8	44.6±13.1	51.6±16.1	.889
Muscle Strength, lbs	55.5±12.5	78.8±18.4	52.7±15.6	58.9±17.3	60.2±8.1	67.9±8.0	.147
Dynamic Balance, frequency							
Landing error	2.4±1.1	1.5±0.9	2.1±1.3	1.6±1.0	2.2±0.5	2.1±0.6	.131
Balance error	2.0±1.0	2.0±0.7	2.2±1.1	1.9±1.1	2.9±1.8	2.8±1.6	.701
Total error	4.3±1.4	3.3±0.8	4.2±1.4	3.5±1.4	5.1±1.5	4.9±1.9	.206
Vertical Jump, cm	39.8±12.7	40.6±9.0	36.4±6.8	39.0±5.9	37.9±8.0	36.6±8.4	.434

\*P<.05; # represented ST group and Control group had significantly difference; § represented KT group and ST group had significantly difference



**Figure 3: The plantar flexion ROM of the ankle before and after taping applied (#: represented ST group and Control group had significantly difference; §: represented KT group and ST group had significantly difference).**

**DISCUSSION:** In this study, the results found KT group may be not restricted ankle ROM than ST group, and also saw the trend of improving in muscle strength and decreasing dynamic balance. Base on previous studies, Both of Kinesio taping and sports taping were also facilitated the motor unit firing and muscle recruitment after tapes applied (Slupik, Dwornik, Bialoszewski, & Zych, 2007; Chen, Hong, Lin, & Chen, 2008; Hsu, Chen, Lin, Wang, & Shih, 2009; Lin, Hung, & Yang, 2011; Paoloni et al, 2011; Briem, Eythörðsdóttir, Magnúsdóttir, Pálmarrsson, Rúnarsdóttir, & Sveinsson, 2011). Our study had similar phenomenon when comparing with previous studies. Some scholars considerate the Kinesio taping could enhance the flexibility or range of motion (Yoshida & Kahanov, 2007; Merino, Mayorga, Fernández, & Torres-Luque, 2010; Liou, Tsai, Chang, & Chin, 2011). Our study also supported previous findings. In KT group, the ankle plantar flexion ROM had simile range with comparing control group while taped applied. It meant that no-restriction at the plantar flexion range of ankle would be not limitate the functional movement of ankle. However, Delahunt, McGrath, Doran, & Coughlan (2010) found the dynamic balance was not change after Kinesio taping applied. Hence, the effect of Kinesio taping for balance may needed further study to determinate. The results of vertical jump in KT and ST group has similar effect. That we could say both taping might also improve the vertical jump. However, the smaller sample size which reduced the probability of obtaining significant differences. It was a limitation of this study. Data from the present study could be used to calculate effect size and power for future studies.

**CONCLUSION:** The KT group may be not restricted ankle ROM when comparing with ST group, and also saw the improving trend in ankle plantar flexor muscles strength and decreasing dynamic balance errors. The further study might focus on the effect of Kinesio taping for balance assessment.

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