

THE EFFECT OF BILATERAL APPLICATION OF KINESIOTAPE (KT) ON BROAD JUMP AND VERTICAL JUMP

Martin Barnard¹, Edward Madolimov¹, Jacob Wszelaki¹
 1Department of Kinesiology/University of Wisconsin – Eau Claire



ABSTRACT

Purpose: The popularity of Kinesiotape (KT) use is increasing in professional and Olympic level competitions to improve physical performance, diminish pain, or both. However, little conclusive data exists, especially regarding its effectiveness on lower extremity functional power. Therefore, the purpose of the study is to examine the impact of KT application on vertical and broad jump performance in healthy, college students. **Methods:** A total of 39 college-age participants (16 male, 23 female) were split randomly into two groups: KT group (application from the anterior superior iliac spine to the proximal patella with a 75% tension) and placebo group (with no tension). Both groups underwent pre-testing with no KT application as a baseline assessment. Once each participant signed the consent form, he/she completed a general demographic questionnaire, viewed instructional videos on vertical and broad jumps, performed a 10-minute standardized warm-up, and underwent a testing session (2 practices, 3 true trials per jump test). On the treatment day, KT was applied to each participant (with or without tension) prior to testing. We expected that KT group would display greater increase from baseline to treatment day in vertical and broad jump tests than would placebo group. **Results:** The data analysis showed no significant difference between the proper KT application and placebo group for vertical jump ($p=.058$) or for the broad jump ($p=.669$). **Conclusions:** Although a noticeable improvement in VJ and BJ was measured, it was too small to be significant and more than likely due to a learning effect. It is not recommended that KT be applied for the purpose of improving muscular power of the lower extremity. However, more research needs to be done involving more comprehensive muscular coverage of the quadriceps. Also, for future research, it is recommended that application and baseline trials be randomized in order of completion to reduce the occurrence of any learning effect that could be taking place.

INTRODUCTION

- Kinesiotape (KT) has been used primarily as a method of alleviating pain and other ailments but, in recent years, professional interest has changed focus to its potential in improving human performance.
- Among current research there is little conclusive data to take an official stand on whether KT has a significant impact on MS and MP, and if so, to what degree.
- Measuring jump distances better correlates to direct power output than other methods of testing speed and force. Although jumps are typically scored in units of distance it is possible to derive power output by inputting an individual's weight (mass) into a formula.

PURPOSE AND HYPOTHESIS

The purpose of this study is to determine whether the proper application of KT has an effect on lower body power. We believe that proper application of KT will provide an increase in vertical and broad jump distances while the placebo application will not.



METHODS

Subjects

- 39 Caucasians, 23 females and 16 males
- Participants recruited via Classroom Presentations and Posters at the University of Wisconsin – Eau Claire
- Exclusion criteria: Previous symptomatic lower body injury within past year
- Informed consent gathered according to IRB guidelines at UW-Eau Claire

Table 1: Descriptive Variables of Participants

	Male (12)	Female (15)	Total (27)
Age	20.5 ± 1.62	20 ± 1.31	20.22 ± 1.45
Height (in)	69.79 ± 3.47	65.33 ± 2.94	67.32 ± 3.86
Weight (lb)	183.67 ± 46.64	139.37 ± 20.18	159.66 ± 40.53
BMI	26.83 ± 4.90	22.95 ± 2.93	24.67 ± 4.32

Instrumentation

- **Vertical Jump.** Vertical jump of our participants was measured using the Vertec (model # 22550 by Power Systems, Knoxville Tennessee USA). Maximal Reach height was acquired before jump height was recorded. Jump height was calculated by subtracting maximal reach from the height measured on the Vertec.
- **Broad Jump.** Participants' broad jump was measured using standard measuring tape. A strip of athletic tape was set perpendicular to the beginning of the measuring tape, giving the participant a reference line to jump from. After landing, a meter stick was used to form a perpendicular line from the back of the participant's heels to the measuring tape.
- **Kinesiotape.** The KT utilized for this study had dimensions of 2" x 16.4 ft. (5 cm x 5 m) and was beige in color (Mueller Company, Prairie Du Sac, Wisconsin USA).

Testing Procedure

- Initial informative meeting was conducted to explain the purpose of the research study. General information on the use of KT was given. The participants were then briefed on the process of the following two visits and instructed on how to perform both the vertical jump and broad jump tests. The participants read through the provided cover letter, filled out a brief questionnaire, and signed the informed consent form.
- Baseline data was collected over a one week span. Participants performed a general warm up followed by the testing of both the vertical and broad jump without treatment. Each participant was given standardized breaks after warm up and in between each test. Each participants' best recorded jump was collected for analysis.
- Application testing was conducted over a one week span following baseline testing. KT was applied with either a proper or placebo application to our participants. Each participant went through the same warm up and testing of both the vertical and broad jump. Each participant received the same standardized breaks after warm up and in between testing.

STATISTICAL ANALYSIS

- Data analyzed using IBM SPSS version 19.0
- Descriptive analysis was used to determine the mean and standard deviation of the baseline characteristics of the subjects including age, height, weight, BMI and activity level.
- Independent Sample T-test was used to examine the differences in broad jump and vertical jump performances between Placebo and KT groups
- Alpha level set at .05 to determine statistical significance

RESULTS

- The data analysis shows no significant difference for vertical jump ($p=.058$) or for the broad jump ($p=.669$).
- Results showed no significant difference in VJ or BJ between proper application of KT and placebo group.
- Proper application of KT for BJ displayed a mean increase of 1.58 in. from baseline values, whereas placebo application showed a mean increase of only 0.54 in.
- When analyzing data for the VJ, placebo application measured a greater increase from the baseline value than proper application, with a mean increase of 1.0 in.

Table 2: Data Analysis of Vertical and Broad Jump

Broad Jump	Baseline	Post Application
Kinesiotape (N=6)	77.63 ± 10.07	79.21 ± 10.37
Placebo (N=11)	76.65 ± 14.11	77.19 ± 14.254
Vertical Jump	Baseline	Post Application
Kinesiotape (N=6)	21.13 ± 4.63	21.28 ± 4.43
Placebo (N=11)	20.27 ± 5.36	21.27 ± 5.52

SUMMARY AND CONCLUSIONS

- KT provides no noticeable improvement in VJ or BJ performance over a placebo treatment or no treatment.
- From the data collected in this study, it is not recommended that KT be applied to improve muscular power.
- Modest improvements were measured in VJ and BJ, but this is likely due to a learning effect on performing VJ and BJ movements.
- More research needs to be done involving more comprehensive muscular coverage of the quadriceps and a randomization of treatment order.

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