THE IMPACT OF KINESIO© TAPE ON BALANCE FOR INDIVIDUALS WITH CHRONIC ANKLE INSTABILITY

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Abstract

Purpose
- The purpose of this study was to compare ankle stability using the Biodex Balance System (BBS) with the application of Kinesio© Tape, the application of non-elastic athletic tape, and without tape in subjects with chronic ankle instability (CAI).

Design
- True experimental design using repeated measures.
- Each individual received all conditions; KT, elastic white, and no tape
- Each participant attended three separate sessions and were tested on the BBS with each condition
- The Athletic Single Leg Stance protocol as preset by the BBS was utilized to determine the effectiveness of each independent variable

Variables
- Dependent variable: balance on the BBS
  - indicated by the anterior posterior stability index (APSI), medial-lateral stability index (MLSI), and overall stability index (OSI)
- Independent variables: Non-elastic white tape, KT, and no tape

Data Analysis
- General linear model (GLM) repeated measures procedure using Wilks Lambda (p=0.05)

Results
- No statistically significant difference in outcomes for the three conditions: KT, non-elastic tape, or no tape based on a comparison of APSI (p = 0.34), MLSI (p = 0.61) and OSI (p = 0.59) as measured by the BBS.

Research Question

Is there a difference in balance, as measured by the BBS, in patients with CAI when KT is applied to the affected ankle versus non-elastic tape and no tape?

Hypothesis

Our hypothesis for this study was that the application of KT would show no difference in balance on the BBS as compared to the application of non-elastic tape and no tape.

Participant Demographics

Demographics	N	Age Range	Involved Ankle
Male	10	20-27	L: 7 R: 3
Female	7	20-26	L: 3 R: 4
Total	17	24 (Average)	L>R

Procedure

- Participants filled out both the consent and Par-Q forms
- The participant was asked to draw a number blindly from a box
  - 1: a professor from the Department of Physical Therapy who is certified in the application of KT applied the KT and a timer was set to 30 minutes for the KT to activate
  - 2: a Licensed and Certified Athletic Trainer applied the non-elastic athletic tape to the affected ankle with a closed basket weave taping procedure
  - 3: tape was not applied
- The BBS was then set to the Athletic Single Leg Stance protocol
- The subject was then placed on the BBS in what they found a comfortable single leg stance position
- The participant was given one 20 second practice trial
- The test began and consisted of three trials of 20 seconds each
- Between each trial was a 10 second rest

Results

Outcome Measure	Estimated Marginal Mean (95% CI)			Multivariate Test (Wilks' Lambda)
	No Tape	Rigid tape	K Tape	
Overall Stability Index (OSI)	1.50 (1.02 – 1.99)	1.35 (1.06 – 1.63)	1.62 (.92 – 2.32)	P = .59
A-P Stability Index (APSI)	.91 (.69 – 1.13)	.97 (.75 – 1.19)	1.09 (.83 – 1.36)	P = .34
M-L Stability Index (MLSI)	.99 (.52 – 1.48)	.82 (.62 – 1.02)	1.01 (.35 – 1.67)	P = .61

Results of the repeated measures analysis of variance showed no statistically significant differences in OSI, APSI, or MLSI within each subject based on taping condition.

Discussion & Conclusion

Theoretically, KT, when applied specifically to reduce ligament/proprioception deficits has an effect on the cutaneous mechanoreceptors, essentially leading to improved proprioception (Baltaci et al., 2012). Ideally white non-elastic tape, when applied utilizing the closed basket weave procedure will restrict excessive range of motion by acting as an external ligament (Knight & Weimar, 2010).

Since individuals with CAI are thought to be lacking proprioceptive feedback and mechanical stability, KT, non-elastic tape, and no tape were all compared to determine the effectiveness of each procedure in improving balance on individuals with CAI. However, the results from this study showed no significant differences in outcomes based on the three different conditions.

Although the results did not provide a definitive answer to which procedure will have the greatest effect on balance for individuals with CAI, it does prove that we should be somewhat conservative when attributing benefits of KT and non-elastic tape until there is greater supporting evidence supporting its use. While the size of this pilot study was small, it does demonstrate the need for further research using a larger sample size so we can determine the best clinical intervention for our patients with CAI.

Key References

Knight, A., & Weimar, W. (2010). Effects of Ankle Taping on Single and Double Leg Balance. Sport Science Review, 19(1-2), 5-19.

Baltaci, G., Bicici, S., & Karatas, N. (2012). Effect of athletic taping and kinesiotaping® on measurements of functional performance in basketball players with chronic inversion ankle sprains. The International Journal of Sports Physical Therapy, 7(2), 154-166.