Prophylactic Ankle Taping: Kinesiology Versus Athletic Taping Effects on Ankle Range of Motion and Knee Kinematics

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Background

- Lateral ankle sprains are the most common sports-related ankle injury.
- Inversion sprains make up 85% of ankle injuries.
- Closed basket-weave with white ankle tape (WAT) is standard of care for treatment and prevention of ankle sprains.
- WAT restricts mobility in all planes, which can lead to undesirable effects throughout the kinetic chain, increasing risk of injury.
- Kinesiology tape (KT) has emerged as a leading modality for treatment of musculoskeletal injuries.
- There is currently no research regarding the use of KT for restrictive purposes.
- Development of an alternative taping technique could lead to improved acute and chronic management of ankle injuries.

Objective

- To determine the effects of an innovative kinesiology tape (KT) technique for prophylactic ankle support without restricting performance.

Methods

- Repeated measures design
- 53 healthy 18-25 year old participants from NU
- 3 conditions: WAT, KT, no tape
- Passive and active ankle range of motion (ROM) measured in all planes for each condition
- Jump landing from 18-inch box to assess knee valgus angle (KVA)
- KT measured using 2-D video analysis
- Pairwise comparison of means to determine the difference in ankle ROM for each condition
- Electronic survey completed by participants assessing comfort and stability of KT vs. WAT

Results

- WAT most restrictive in all ranges of motion (p < .05) (figures 1, 2, 3)
- KT restricted inversion/eversion more than no tape (p < .05)
- KT allowed significantly more dorsiflexion and plantar flexion as compared to WAT (p < .05) (figures 1&2)
- No significant relationship demonstrated between taping conditions and KVA (figure 4)
- Secondary analysis of video demonstrated only 19 subjects demonstrated compensation primarily in frontal plane (figure 4)
- Comparison of mean KVA of these subjects demonstrated a significant relationship between taping conditions and KVA (p < .05) (figure 4)

Discussion

- Limiting excessive INV ROM while allowing normal ankle ROM in the frontal plane may decrease risk of developing a knee injury.
- Significant prevalence, cost, and extended time lost due to lateral ankle sprains demonstrates the need for a more effective treatment.
- Increased KVA is a compensation of limited ankle ROM and may lead to knee injury.
- Athletes may benefit from a prophylactic ankle support that is less restricting, more comfortable, and has the potential to minimize risk of injury.
- Limitations of this study include:
  - Healthy subjects
  - 2D analysis
  - Manual goniometric measurement

Conclusion

- KT allows for more ankle ROM than WAT while still providing some motion limitation for undesired movements that contribute to ankle sprains.
- KT technique may be applicable for the acute management of ankle sprains as well as long term prevention and treatment.

References