



Physiotherapy

TO COMPARE THE EFFECTIVENESS OF TAPING WITH STRENGTHENING EXERCISE AND BALANCE TRAINING WITH STRENGTHENING EXERCISE FOR YOUNG ATHELETS WITH CHRONIC ANKLE INSTABILITY

P K Jaisri	MPT Orthopaedics(Assistant Professor) Sree Abirami College of Physiotherapy Coimbatore, Affiliated to The TamilNadu Dr. MGR Medical University
Dr. R Jayabharathi	PhD (Principal) Sree Abirami College of Physiotherapy Coimbatore, Affiliated to The TamilNadu Dr. MGR Medical University
James Leslin Rusvelt J	BPT (Student) Sree Abirami College of Physiotherapy Coimbatore, Affiliated to The TamilNadu Dr. MGR Medical University

ABSTRACT An ankle sprain is a common musculoskeletal injury that involves the stretch (or) tear [partial or complete] of the ligaments of the ankle. The lateral ankle sprains are very common in young athletes and account for 80% of injuries to the ankle. The mechanism of injury in 85% of cases due to inversion of plantar flexed foot. Up to 70% of patients may not receive proper rehabilitation after the initial ankle injury, resulting in chronic ankle instability. Chronic Ankle Instability will also cause proprioceptive deficits and decrease in proprioceptive feedback. Intense proprioceptive training enhances the proprioceptive sense and feedback mechanism in athlete with Chronic Ankle Instability. 20 subjects with Chronic Ankle Instability were selected according to inclusive and exclusive criteria and conveniently divided into 2 groups with 10 subjects in to two groups. Group A (control group) receives Taping with Strengthening exercise and Group B (Experimental group) receives Balance training with Strengthening exercise. Age group of participants varies from 19 - 25 years. The treatment duration was 6 weeks. The outcome measure was made using Y balance test. The result indicated that improvement in both groups, statistical improvement was better in Group B.

KEYWORDS : Chronic Ankle Instability, Proprioceptive, Taping, Y Balance Test

INTRODUCTION

An ankle sprain is a common musculoskeletal injury that involves the stretch (or) tear [partial or complete] of the ligaments of the ankle. The lateral ankle sprains are very common in young athletes and account for 80% of injuries to the ankle. The mechanism of injury in 85% of cases due to inversion of plantar flexed foot. Ankle sprain and it's following consequence may affect youth athletes, active participation in training and competition that eventually hinder their athletic progression and development, especially for those at a transition into higher level physical demands.

Up to 70% of patients may not receive proper rehabilitation after the initial ankle injury, resulting in chronic ankle instability. Chronic Ankle Instability is characterized by a history of one significant lateral ankle sprain, which manifested as sensory 'giving way' and instability, recurrent ankle sprain, joint laxity, pain, swelling and impaired ankle function. These injuries cause damage to the ligaments, muscles, nerves that cross the lateral ankle.

The lateral ligament commonly injured is Anterior Talofibular ligament followed by Calcaneo Fibular ligament. The Posterior Talofibular ligament is rarely sprained. Chronic Ankle Instability will also cause the tissue to be damaged with proprioceptive deficits and decrease in proprioceptive feedback. Clinically it is important to regain full function and sufficient functional stability to prevent recurrent injuries and to improve the performance of an individual. Intense proprioceptive training enhances the proprioceptive sense and feedback mechanism in athlete with Chronic Ankle Instability. The wobble board training improves the proprioception and balance through stimulation of mechanoreceptors which are available in the muscle, tendon, ligament and joint through the loading mechanism. There have been a few studies focusing on the impact of resistance training on balance levels using free weights or different devices, and the effect of elastic resistance training on the dynamic balance index has received less attention from the researchers. Kinesiology Tape (KT) is an elastic tape that is widely used to support and stabilize the ankle joints and muscles without restricting the range of motion. There is a limited study on reviewing the effect of the application of kinesiology tape on ankles improving balance abilities, focusing on the taping technique and duration of application. Therefore, the purpose of this study is to review the existing literature on evaluating the effectiveness of kinesiology tape, its application technique, and duration.

AIM

The aim of the study is to find out the effectiveness of taping with strengthening exercise versus balance training with Strengthening exercise in young athletes having chronic ankle instability.

Selection Criteria

Inclusion Criteria

1. Age: 19-25
2. Males
3. Running athletes
4. CAIT Score – Less than or equal to 27
5. Who has not undergone any kind of medical intervention or received any physical therapy before participating in the study.
6. Composite score- Below 89
7. Willing Participants

Exclusion Criteria

1. Females
2. Non running Athletes (Volley ball, Basketball, Hand ball)
3. CAIT Score – 28-30
4. Acute sprain
5. History of Lower extremity fracture or surgery in the involved limb.
6. Neurological dysfunction (Multiple sclerosis, Head injury)
7. Composite score- Above 89
8. Non willing participants.

PROCEDURE

Group A: Three tapes, Two I-shaped and one Y-shaped, were applied within the first 3 weeks. Due to the lateral ankle sprain, the direction of the tapes was from the inside to the outside, and the ankle was slightly in dorsiflexion. The starting point of one of the I-shaped Kinesiology Tape was at the origin of the tibialis anterior muscle. Another I-shaped strip was placed from the medial malleolus to the lateral malleolus in the transverse direction, and the Y-shaped strip was placed from the medial malleolus to the sides of the lateral malleolus.



Fig: 1

Strengthening Exercise

The strengthening exercise involved the use of an elastic Thera band. Different colored bands were used-Yellow, red, blue, black, and silver. These bands have different tensions, with the yellow band having the lowest tension and silver having the highest tension. The strengthening exercise program was conducted for 1 week with each color, proceeding from yellow to silver over the 6-week period. Same to Group B



Fig:2

Group B: Balance Training With Strengthening Exercise

Group B performed selected Wobble Board exercise three times per week for 6 weeks. These exercises were performed progressively, changing from open to closed eyes and from a hard to soft surface.



Fig: 4



Fig 5

Data Analysis:

Table:1

S.NO	POST-TEST	MEAN	SD	MD	't' VALUE
1.	GROUP A	84.5	5.46	5.2	2.738
2.	GROUP B	89.7	2.5		

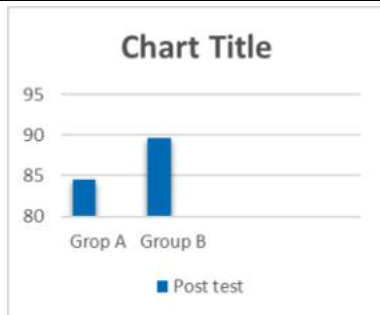


Chart: 1

RESULTS

The unpaired 't' test analysis for the post-test variables of both Group A and Group B for Balance in young running athletes having Chronic Ankle Instability which was shown in table 1. There was significant difference shown between the groups. Subjects in Group B shown little more improvement than the Group A. The unpaired 't' value for the post - test variable for both Group A and Group B are 2.738.

The statistical analysis revealed that there was statistically significant improvement on Balance in both the Groups, but there is a statistically significant improvement on balance in patients with chronic ankle instability in Group B.

Summary and Conclusion

Statistical analysis was done by using unpaired 't' test to find the difference between the groups.

The results showed that there was a significant difference between the effectiveness of Kinesiology Taping with strengthening exercise versus Balance training with Strengthening exercise on Balance in young running athletes having Chronic Ankle Instability.

This study concluded that Balance training with Strengthening exercise is more effective than Kinesiology Taping with strengthening on Balance in young running athletes having Chronic Ankle Instability.

REFERENCES

1. Zhang S, Wortley M, Silver nail JF, Carson D, Paquette MR (2012). similar effects on ankle biomechanical variables in subjects with chronic ankle instability during landing? Sport Health Sci .
2. De-La-Torre-Domingo, C., Alguacil-Diego, I. M., Molina-Rueda, F., López-Román, A., & Fernández-Carnero, J. (2015). Effect of Kinesiology Tape on Measurements of Balance in Subjects with Chronic Ankle Instability: A Randomized Controlled Trial. Archives of Physical Medicine and Rehabilitation.
3. Jackson, K., Simon, J. E., & Docherty, C. L. (2016). Extended use of kinesiology tape and balance in participants with chronic ankle instability. Journal of Athletic Training.
4. Kim, B. J., Lee, J. H., Kim, C. T., & Lee, S. M. (2015). Effects of ankle balance taping with kinesiology tape for a patient with chronic ankle instability. Journal of Physical Therapy Science.
5. Jackson, K., Simon, J. E., & Docherty, C. L. (2016). Extended use of kinesiology tape and balance in participants with chronic ankle instability. Journal of Athletic Training.
6. Kim, B. J., Lee, J. H., Kim, C. T., & Lee, S. M. (2015). Effects of ankle balance taping with kinesiology tape for a patient with chronic ankle instability. Journal of Physical Therapy Science.
7. Simoneau GG, Bereda SM, Sobush DC, Starsky AJ (2001). Biomechanics of elastic resistance in therapeutic exercise programs. J Orthop Sports Phys Ther
8. Docherty CL, Moore JH, Arnold BL. Effects of strength training on strength development and joint position sense in functionally unstable ankles. J Athl Train.
9. Tanen, L., Docherty, C. L., Van Der Pol, B., Simon, J. & Schrader (2014), J. Prevalence of chronic ankle instability in high school and division I athletes. Foot Ankle Spec
10. Hiller, C. E., Kilbreath, S. L. & Refshauge, K. M. (2011). Chronic ankle instability: evolution of the model. J. Athl. Train.