The Effect of Kinesio Taping in the Ankle Sprains of Athletes

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ABSTRACT

Objectives. The purpose of this study was the importance of applying Kinesio tape (KT) in relieving the pain in athletes' ankles using Y balance test and star.

Methods. 22 male athletes with average age of 22.33±1.37 were discussed with and without Kinesio tape. At first athletes didn’t use kinesiology tape on their deltoid ligament and did the (Y) balance test in 3 directions, then star twirling test (SEBT) in 8 directions that focused on the center of one plexus. These tests were repeated 3 times and all the stages of them were recovered after 24 hours and then the tests done on a pad and on a solid surface.

Results. Athletes in both tests on a soft pad experienced a high pressure on their muscles according to the position of their leg in plantar and dorsiflexion state; and they couldn’t finish the test.

Conclusion. The test showed that the Kinesio tape on a soft surface (pad) did have any positive effects on the muscles.

KEY WORDS: Ankle Instability, Deltoid Ligament, Kinesio Tape, Y Balance Test, Star Excursion Balance Test.

INTRODUCTION

Ankles sprain is occurred as a result of outer ligaments strain (1). This problem is common between athletes, infants and adults, and its results are chronic and continuum pains in ankle, the pains that strain one or two of outer ligaments of ankle. (talofibular and calcaneofibular ligaments) (2, 3). About 80 percent of ankle twist reasons are as a result of its inversion. Ankles twists are generally occurred in some activities including jumping or the actions that require fast and sudden turning or shifting specially on uneven surfaces (3, 4, and 5). This problem is usually widespread in some sports such as wrestling, gymnastics, basketball, volleyball Reason of this twisting is the ankles inversion and down warding the outer edge of the foot (5). After a high jump the athlete may not land on the ground properly and his ankle may have a severe inversion and cause a pain and damage in his collateral ligament. Ankles strain is a stubborn illness that can trouble the patient for a long time, so to relieve the pain the Kinesio tape could be used these questions are 1) Dose the Kinesio tape help (6, 7). Kinesio tape was suggested for the first time by a Japanese doctor named Dr Kenzo Kase in mid 1970 who was a physiotherapist and a acupuncturist (8, 9). After a decade of introducing this product in1980 the Orthopaedists Kairo practitioner an acupuncturists and other doctors in Japan are the main users of these tapes (11, 12). We try to answer to two questions in this study and check the importance of this tape in treating athletes

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Legs treat and improve the hurts of athletes' ankles?

2) If yes, what advantages does this tape have? These tapes have materials that should be stuck in special places to relieve the aches of severe exercises in that place and also make the skin and muscles more strength in case of exterior pressure (12, 13). If these tapes are used properly they can improve the muscle fervors in athletes body (13). In general the aim of using these tapes are to protect support vacate of special injuries increasing the joint moving and preventing following injured and damages (14). If these medical tapes are used in a correct way the joints can rest and help to keep the metabolical activity in the arms (15). And protect the following damages in muscles. Powerful flections of ankle can damage one or both proneal ligament (16, 17). Muscles are ankle dynamic abiders and have close relations with lateral ligaments (18). It seems that using these tapes on skin can decrease it (19). The pressure and the ache of positive effects of these tapes is improving the muscle function decreasing the muscle aches and increasing blood flow and help to move under skin liquids because these tapes increase the space of under skin (21, 22). We tried to give exercises to athletes using (Y) Balance test and star test and then analyze their improvement course with this tape and study their exercises (22).

MATERIALS AND METHODS

Participants. 22 male athletes were volunteered of participation in this study. They signed the written consent form and were asked to complete a questionnaire that had some questions about twisting and the level of their aches and so they could give first information to the researcher. Then demographic factors were recorded (age 22.33 ±1.37 years, weight 70.24 ±7.2 kg, and height 177.41 ±2.63 cm). In first step all the volunteers were divided in 2 groups and then were examined.

Study Design. The acquired equipments to measure were sport equipments to exercise such as bike (Y) And stare test designing and checking the angles these angles showed be 45° the exact measuring of paths and steps in each direction and recording the results and repeating them using elastic tapes or ice compress. The first step in the protocol To perform tests for Y The first group in the first two levels of the Tatami without equipment were up to the bar kinesio And for the tests were classified. To study and analyse active and dynamic balance of the players who had twisted ankles we used (Y) balance test and SEBT star test. In balance test the first group on a soft pad surface without kinesio tape did the test. The second phase of the protocol Afterward in star test eight directions were chosen anterior, anterolateral, lateral, posterolateral, posterior, posteromedial, medial and anteromedial. These directions were on a pad like eight cursors in a star shape that their angles were 45°. The players were located in the center of cursors on their one legs and put their next Leg to ward other direction and finally. They came to normal position they repeated this test 3 times.

Statistical Analysis. The data are presented in mean and SD. To analyze the research data after determining the normality of participants, ANOVA with repeated measures Statistical analysis was performed by software SPSS20 at significant level P<0.05.

RESULTS

According to the results apply Kinesio taping in both soft and solid surface showed us significant in test data. The numbers that resulted from ANOVA method the players who passed the test with (KT) in a solid surface didn’t experience a severe pressure on their anterior muscles of their ankle. But the players who passed it on a soft pad couldn’t do the test even for just one time because there was a high pressure on their muscles.

| Table 1. Data obtained in the test YBT |
|--------------------------------------|
| **test YBT**  | Average 3 times without KT Tape | Average 3 times with KT Tape | **P-value** |
| Anterior (cm) | 67.62 – 68.15 – 68.90          | 70.22 – 70.41 – 70.90        | .006         |

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|                | posterolateral (cm) | Anterior (cm) | Anterolateral (cm) | Lateral (cm) | Posterior (cm) | Posterolateral (cm) | PosteroMedial (cm) | Medial (cm) | Anteromedial (cm) |
|----------------|---------------------|---------------|--------------------|--------------|---------------|--------------------|-------------------|------------|------------------|
| Average 3 times with elastic tape | 70.90 – 71.75 – 71.08 | 64.10 – 64.70 – 65.20 | 68.22 – 68.44 – 68.40 | 71.06 – 70.89 – 70.92 | 69.11 – 69.30 – 69.23 | 72.32 – 72.60 – 72.78 | 70.66 – 70.77 – 70.73 | 65.41 – 65.44 – 65.48 | 63.37 – 62.95 – 63.30 |
| Average 3 times without elastic tape | 75.26 – 75.69 – 75.17 | 68.03 – 68.44 – 68.46 | 70.13 – 70.65 – 70.60 | 74.22 – 74.37 – 73.90 | 71.68 – 71.69 – 71.89 | 75.21 – 74.97 – 75.25 | 72.33 – 72.88 – 72.92 | 67.49 - 67.52 – 67.50 | 65.87 – 65.77 – 65.83 |
| P-value        | .000                | .000          | .000               | .000         | .000         | .000               | .000              | .000       | .000             |
REFERENCES

1. O. M. H. Wong, R. T. H. Cheung, and R. C. T. Li. Isokinetic knee function in healthy subjects with and without Kinesio taping. Physical Therapy in Sport. 2012; pp 255–258.

2. Y. Kinesio. taping stimulation with Kinesiology tape alleviates muscle weakness attributable to attenuation of In afferents. 2013; pp 45–48.

3. J. Ward, K. Sorrels, J. Coats et al. The ergogenic effect of elastic therapeutic tape on stride and step length in fatigued runners. 2014:221–229.

4. R. Bizid, E. Margnes, Y. François et al., “Effects of knee and ankle muscle fatigue on postural control in the unipedal stance. 2009. pp 375–380.

5. J. T. Han and J. H. Lee. Effects of kinesiology taping one positioning error of the knee joint after quadriceps muscle fatigue. 2014: 921–923.

6. G. Fratocchi, F. DiMattia, R. Rossi, M. Mangone, V. Santilli, and M. Paoloni. Influence of Kinesio Taping applied over biceps brachii on isokinetic elbow peak torque. A placebo controlled study in a population of young healthy subjects. 2013: 245–249.

7. H.-Y. Chang K.-Y. Chou J.-J Lin C.-F. Lin and C.-H. Wang, “Immediate effect of forearm Kinesio taping on maximal grip strength and force sense in healthy collegiate athletes, 2010; pp 122–127.

8. W. K. Kim, D.-K. Kim, K. M. Seo, and S. H. Kang, Reliability and validity of isometric knee extensor strength test with handheld dynamometer depending on its fixation: a pilot study, Annals of Rehabilitation Medicine, 2014; pp 84–93.

9. J. Swearingen, E. Lawrence, J. Stevens, C. Jackson, C. Waggy, and D. S. Davis, “Correlation of single leg vertical jump, single leg hop for distance, and single leg hop for time. 2011; pp 194–198.

10. T. O. Smith, L. Davies, and C. B. Hing, “A systematic review to determine the reliability of knee joint position sense assessment measures. Knee 2013; 162–169.

11. P. Piriyaprasarth, M. E. Morris, A. Winter, and A. E. Bialocerkowski, “The reliability of knee joint position testing using electrogoniometry,” BMC Musculoskeletal Disorders, vol. 9, article 6, 2008.

12. Halseth T, McChesney JW, De Beliso M, et al. The effects of kinesio taping on proprioception at the ankle. J Sports Sci Med. 2004; 3:1-7.

13. Kase K, Wallis J, Kase T. Clinical Therapeutic Applications of the Kinesio Taping® Method 2nd Edt Albuquerque, NM Kinesio Taping Association, 2006; pp 203-5.

14. Tik-Pui Fong D, Hong Y, Chan L, Shu-Hang Yung P, Chan, K. A systematic review on ankle injury and ankle sprain in sports. Sports Med. 2007; 37:73–94.

15. Stroup L M, 2000. The effects of ankle taping and ankle bracing on vertical jump performance in healthy elite female soccer players. MA Thesis, University of Cincinnati.

16. Nakajima M.A, Carolann B, The effect of kinesio taping on vertical jump and dynamic postural control. International Journal Of Sports Physical Therapy 2013;8(4): 393-406.

17. Yoshida A, Kahanov L. The effect of kinesio taping on lower trunk range of motions. Res Sports Med, 2007; 15:103-112.

18. Briem K, Eythórsdóttir H, Magnúsdóttir H. Effects of kinesio tape compared with nonelastic sports tape and Orthopaedic and Sports Physical

19. Bicici S, Karatas M, Baltaci G. Effects of athletic taping and kinesio taping on measurements of functional performance in basketball players with chronic inversion. JOSPT 2012; 7(2): 154-166.

20. Renström PA, Kannus P. Management of ankle sprains. Operative Techniques in Sports Medicine 1994; 2(1): 58–70.

21. Zoch C, Fialka-Moser V, Quittan M. Rehabilitation of ligamentous ankle injuries: a review of recent studies. British Journal of Sports Medicine, 2003; 37(4): 291-295.

22. Juvenal JP. The effects of ankle taping on vertical jumping ability. Athl Train J Natl Athl Train Assoc. 1972; 7:146–149.

23. Madeley, Luke T, Shannon E, Munteanu, et al. Endurance of the Ankle Joint Plantar Flexor Muscles in Athletes with Medial Tibial Stress Syndrome: A Case-Control Study. J Sci Med Sport. 2000; 356-62.

24. Cetin N, Karatas M, Aytaç A, et al. Reliability for static balance testing with a kinesthetic ability trainer (SportKAT 3000) in healthy young subjects, J Rheum Med Rehabil. 2006; 17(3):158-165.

25. Sawkins K, Refshauge K, Kilbreath S, et al. The placebo effect of ankle taping in ankle instability. Med Sci Sports Sci 2007; 39(5): 781-7.