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THE EFFECT OF KINESIO TAPPING TO REDUCE PAIN AND OEDEMA IN ANKLE SPRAIN PATIENTS: A CASE STUDY

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Abstract

Introduction: Sprain Ankleis a sports injury condition that causes problems in ligaments, muscles and joints. This condition causes instability in the ankle joint and causes pain and swelling on the injured side. Giving Kinesio Tapping can reduce pain levels, reduce swelling and can also provide stabilization of the ankle joint.

Case Presentation:The patient came with difficulty walking, there was swelling, pain and the skin looked abnormal on the right ankle.

Management and Outcome: In this case, the administration of kinesio tapping with the AET stretching technique of 30%-40% for two weeks with daily administration for 16 hours can reduce the level of pain as measured by a visual analogue scale and can reduce the size of swelling to its normal condition which is measured using a meterline. .

Discussion:Using this technique for two weeks will help in the natural healing process. Proprioception will detect the location of joints and all moving extremities and help them recover to a normal position, in other studies showing that the application of tapping can improve proprioception by stimulating skin mechanoreceptors. The use of tapping is thought to reduce swelling by stimulating the drainage of edema in the interstitial spaces into less dense lymphatic channels

Conclusion: In the cases and data described above, it has been proven that conventional therapy using kinesio tapping the acute eversion tapping technique in patients with ankle sprain injuries is able to reduce pain values measured using a visual analogue scale and the size of edema measured using a meterline.

Keywords: Sprain ankle, Kinesio Tapping, AET, Oedema, Pain

Introduction

Health is one of the main things that must be maintained by humans in this life so that they are still able to carry out all the activities they want, in maintaining human health, they are given many choices, one of which is by exercising. Besides being able to maintain health, exercise can also be a form of achievement, recreation and education, but the risk that often occurs in sports activities is injury[1]. There are various kinds of injuries that can occur during sports, namely fractures to bones, injuries to muscles, injuries to tendons and injuries to ligaments, in 2013 in the United States there were at least 4.3 million emergency department visits for sports injury conditions each year.[2].

Sprain Ankle is a sports injury condition that causes problems in ligaments, muscles and joints. This condition causes instability in the ankle joint and causes pain and swelling on the injured side[3]. There are several kinds of movements that can cause the risk of ankle sprains during exercise, namely the movement of running, jumping and landing. In the condition of people with a history of ankle sprain injuries, it is reported that they can experience reinjury as much as 52.9% of those who have never experienced an ankle sprain injury.[4]. In ankle sprain conditions, there are several symptoms that can arise, especially in acute conditions, namely the patient feels pain, swelling occurs in the lateral side of the ankle, and there is instability in the ankle joint. The most common treatment for patients with acute ankle injuries is the provision of Protect, Rest, Ice, Compression, and Elevation (PRICE). Giving Kinesio Tapping can reduce pain levels, reduce swelling and can also provide stabilization of the ankle joint[5].

Case Presentation

The patient on behalf of the initials Mr. Fz 19 years old with a job as a student came to a physiotherapy clinic in the metro city. The patient came with difficulty walking, there was swelling, and the skin looked abnormal on the right ankle. From the description of the patient there was pain, the patient explained that he had been injured three days ago while doing futsal sports activities, the injury occurred when the patient jumped into the air and then landed with the wrong foot position when treading, the patient landed using the lateral leg of the ankle that was This causes overstretching of the anterior talofibular ligament (ATFL). There are two special examinations given to patients when they come to the physiotherapy clinic, namely using the anterior drawer test to evaluate the integrity of the ATFL which serves to prevent excessive anterior translation of the talus to the tibia. The second special examination is the talar tilt test to evaluate the calcaneofibular ligament which if there is a tear there will be a gap on the lateral side

of the ankle.

Management and Outcome

Management

This study uses kinesio tapping in its intervention which aims to reduce pain and reduce edema on the ankle side after a sprain injury. Giving this intervention for 2 weeks with every day for 16 hours. The kinesio tapping technique given to the patient is Acute Evers Tapping (AET) with a stretch of 30-40%, in its application the AET consists of 4 steps, namely to maintain the posterior glide and increase the ankle dorsi flexion tapping is applied from the talus to the calcaneus on both side, to maintain eversion of the ankle the ankle is opened until it is painful and the tap is placed on the medial calcaneus below the subtalar joint starting 5 cm above the lateral malleolus and facing the medial side of the instep

Outcome

Evaluation of swelling using the number eight method using a meterline, measurements showed that on the healthy side a measurement of 53 cm was obtained, while on the injured side the swelling was measured with a value of 55 cm on the first day of the meeting. At the final measurement, the measurement value was 53cm/53cm after giving the intervention for 2 weeks.

Evaluation of pain using the Visual Analogue Scale (VAS) with initial measurements showed the value of silent pain 0, motion pain 4.3, and tenderness 3.2. At the final measurement, the VAS value was obtained, namely silent pain 0, motion pain 2.1, and tenderness 1.5.

Picture 1 (Kinesio Tapping with AET)

Item	Diam		Gerak		Tekan	
	Pre	Post	Pre	Post	Pre	Post
Nyeri	0	0	4.3	2.1	3.2	2.1

Data primer 1 (nilai pengukuran nyeri menggunakan VAS)

Item	Pre	Post
Kanan	55	53

Kiri	53	53

Data primer 2 (nilai pengukuran oedema menggunakan meterline)

Discussion

In another study, the continuous AET tapping technique was able to reduce pain and swelling and increase ankle stability. The main intervention strategy in the AET tapping technique is to protect the sprained ankle from further injury and avoid inversion that causes pain through mechanical effects of eversion. The kinesiological elasticity of tapping supports movement of the ankle joint without limiting reach[6]When the ankle joint moves, tapping applied to the peripheral skin of the ankle stretches. As the tapping tension increases, the elasticity aimed at returning it to its original length will return the joint to its normal position and speed up the recovery process[7]. The application of the AET tapping technique on the ankle when the ankle is bent will avoid inversion and dorsiflexion which causes pain in the patient, the use of this technique for two weeks will help in the natural healing process. Proprioception will detect the location of joints and all moving extremities and help them recover to their normal position[8], in another study showed that the application of tapping can increase proprioception by stimulating skin mechanoreceptors [9]Application of tapping with a pull of 30% -40% on the skin around the ankle can stimulate the skin mechanoreceptors and activate the proprioceptors of the ankle joint [10]. According to Melzack and Wall, the use of tapping can cause a stretching effect on the skin which will stimulate mechanoreceptors through the gate control theory so that it can reduce pain and increase soft tissue flexibility in the area and reduce muscle spasm.

The use of tapping is thought to reduce swelling by stimulating the drainage of edema in the interstitial spaces into less dense lymphatic channels[11]. In another study the swelling disappeared after two days and one week, respectively. In patients with first- and second-degree ankle sprains, heat therapy increased the size of the ankle swelling after three days of therapy after an ankle sprain, and cold therapy reduced swelling for three, four, and five days after an ankle sprain.[12].

Conclusion

In the cases and data described above, it has been proven that conventional therapy using kinesio tapping, the acute eversion tapping technique in patients with ankle sprain injuries, is able to reduce pain values measured using a visual analogue scale and the size of edema measured using a meterline. However, this research is still far from perfect, so a comparative study is needed in order to compare it with other intervention.

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References

1. Bahruddin, M. (2013). Penanganan Cedera Olahraga pada Atlet (PPLM) dan (UKM) Ikatan Pencak Silat Indonesia dalam Kegiatan Kejurnas Tahun 2013. *Journal Unesa*, *2*, 1–11. Retrieved from http://ejournal.unesa.ac.id/index.php/jurnal-kesehatan-olahraga/issue/view/633

2. Amoako, A., Amoako, A., & Pujalte, G. (2015). Family medicine residents’ perceived level of comfort in treating common sports injuries across residency programs in the United States. *Open Access Journal of Sports Medicine*, 81. https://doi.org/10.2147/oajsm.s71457

3. Fujiya, H., & Goto, K. (2016). New aspects of microcurrent electrical neuromuscular stimulation in sports medicine. *The Journal of Physical Fitness and Sports Medicine*, *5*(1), 69–72. https://doi.org/10.7600/jpfsm.5.69

4. Lee, A. C., & Kuang, P. F. (2016). The Effectiveness of Sports Specific Balance Training Program in Reducing Risk of Ankle Sprain in Basketball. *International Journal of Physiotherapy*, *3*(6), 731–736. https://doi.org/10.15621/ijphy/2016/v3i6/124745

5. Lee, B. G., & Lee, J. H. (2015). Immediate effects of ankle balance taping with kinesiology tape on the dynamic balance of young players with functional ankle instability. *Technology and Health Care*, *23*(3), 333–341. https://doi.org/10.3233/THC-150902

6. Lee, S. M., & Lee, J. H. (2017). The immediate effects of ankle balance taping with kinesiology tape on ankle active range of motion and performance in the Balance Error Scoring System. *Physical Therapy in Sport*, *25*, 99–105. https://doi.org/10.1016/j.ptsp.2016.08.013

7. Lee, B. G., & Lee, J. H. (2015). Immediate effects of ankle balance taping with kinesiology tape on the dynamic balance of young players with functional ankle instability. *Technology and Health Care*, *23*(3), 333–341. https://doi.org/10.3233/THC-150902

8. Callaghan, M. J., Selfe, J., Bagley, P. J., & Oldman, J. A. (1997). Effects of Patellar Taping on Knee Joint Proprioception Resting and Post-exercise Ankle to

Brachial Pressure Index in Untrained Subjects , Trained Cyclists and Trained Cyclists Complaining of Exercise-induced Leg Pain. *Physiotherapy*, 1997–1997.

9. Chang, H. Y., Chou, K. Y., Lin, J. J., Lin, C. F., & Wang, C. H. (2010). Immediate effect of forearm Kinesio taping on maximal grip strength and force sense in healthy collegiate athletes. *Physical Therapy in Sport*, *11*(4), 122–127. https://doi.org/10.1016/j.ptsp.2010.06.007

10. Chang, H. Y., Chou, K. Y., Lin, J. J., Lin, C. F., & Wang, C. H. (2010). Immediate effect of forearm Kinesio taping on maximal grip strength and force sense in healthy collegiate athletes. *Physical Therapy in Sport*, *11*(4), 122–127. https://doi.org/10.1016/j.ptsp.2010.06.007

11. Analauw, I., Mogi, T., & Damopolii, C. (2018). Efektifitas Kinesio Taping Terhadap Nyeri dan Performa Fungsional Pada Nyeri Punggung Bawah Mekanik. *Jurnal Medik Dan Rehabilitasi*, *1*, 1.

12. Ristow, O., Pautke, C., Kehl, V., Koerdt, S., Schwärzler, K., Hahnefeld, L., & Hohlweg-Majert, B. (2014). Influence of kinesiologic tape on postoperative swelling, pain and trismus after zygomatico-orbital fractures. *Journal of Cranio-Maxillofacial Surgery*, *42*(5), 469–476. https://doi.org/10.1016/j.jcms.2013.05.043

13. Cote, D. J., Prentice, W. E., Hooker, D. N., & Shields, E. W. (1988). Comparison of three treatment procedures for minimizing ankle sprain swelling. *Physical Therapy*, *68*(7), 1072–1076. https://doi.org/10.1093/ptj/68.7.1072