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Effects of kinesiotaping on shin splints in runners

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Abstract

Shin Splints is the term that is used to describe lower leg pain that occurs below the knee, on the front of the leg; either the outside part of the leg (anterior shin splints) or the inside of the leg (medial shin splints). Shin splints is an overuse injury.

Methodology: An interventional study was done to study the effects of kinesiotaping on shin splints in marathon runners coupled with a plantar-flexion and dorsiflexion exercise program. Study design: Prospective study. Sample size: 30 marathon runners.

Results: A statistically significant difference was found in: the IOWA Pain thermometer (IPT) test pre and post intervention (p value: 0.0065), in the shin pain experienced by the runner pre and post the intervention (p value: 0.0007) and also in the changes in running routine pre and post the intervention study (p value: 0.0001).

Keywords: Shin Splints, Marathon runners, Kinesiotaping, pain

Introduction

Shin splints describes leg pain that occurs on the front part of the leg; either on the lateral part or medial part of the leg. Shin splints occurs as an overuse injury, due to overdoing an exercise or activity; and the person develops a dull burning or aching in the front part of the leg^[1]. Shin splints occurs due to small tears in the muscle leading to an inflammation of the periosteum due to the muscle being pulled off the bone.^[3-5] Shin splints pain is worse in the morning as the soft tissue tightens overnight.

Kinesiotaping for shin splints helps to increase the natural blood flow around your muscles. The Kinesiotape features a revolutionary wave pattern adhesive that moves with your skin and muscles as you heal^[6].

Use of Kinesiotape

- It facilitates the body's natural healing process while providing support and stability to muscles and joints without restricting the body's range of motion.
- It provides extended soft tissue manipulation to prolong the benefits of manual therapy administered by the therapist.
- By targeting different receptors within the somatosensory system, the tape alleviated pain and facilitates lymphatic drainage by microscopically lifting the skin.
- This lifting techniques mentioned in the previous point, helps form convolutions in the swing thus increasing interstitial space and allowing for a decrease in inflammation of the affected areas.
- It has shown to have a positive physiological effects on the skin, lymphatic and circulatory system, fascia, muscles, ligaments, tendons and joint.
- It can be used along with other treatments and modalities, and is effective during the rehabilitative and chronic phases on an injury as well as being used for preventative measures.^[2] The above research study was done to check the effectiveness of kinesiotaping and an exercise program on shin splints in marathon runners.

2. Methodology

2.1 Study Design: Prospective study.

Study consisted of 30 marathon runners, both male and female, in the age group 20 to 59.

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2.2 Study Setting: Mumbai.

2.3 Sample Collection: Convenient sampling.

2.4 Study selection criteria:

- Inclusion criteria:** Runners preparing for marathons - Runners with shin pain
- Exclusion criteria:** Any trauma/ fracture to the lower extremity.

2.5 Methodology for kinesiotaping

Step 1

Starting with the bony bit on the inside of the ankle a strip of tape was applied across the front of the ankle, around the back of the Achilles tendon (not too tight here) and then diagonally across and up the front.

Made sure it was not too tight around the back of the Achilles tendon but also made sure that a little pressure was present as the tape came up the front.

Step 2: The shin splints taping was repeated two more times slightly overlapping the first one. The tape covered the painful area on the inside of the shin. ^[7]

2.6 Methodology for exercise intervention

The total number of subjects were divided into 2 groups. One group was given kinesiotaping accompanied with plantar flexion exercises while the other group was given kinesiotaping accompanied with dorsiflexion exercises. This variation was done to see whether plantarflexion or dorsiflexion exercises were more effective to treat MTSS pain.

3. Results & Discussion

From the interventional study performed, the following points were noted in the various aspects of the study:

There were statistically significant differences found in the following 3 aspects of the study, namely:

- Pre-intervention vs post-intervention IOHA Pain Thermometer (IPT) (P value: 0.0065)
- Pre-intervention vs Post-intervention Shin Pain while running (P value: 0.0007)
- Pre intervention vs post-intervention changes in running routine (P value: 0.0001).

The huge significance was due to the effect of Kinesiotaping and its effects in helping to alleviate pain by increasing the vascular supply to the painful area. This resulted in the runner being able to run faster as the pain had been alleviated and they were more comfortable while running. This also occurred as the kinesiotape helped hold the tibialis anterior muscle in place and prevented it from constantly rubbing against the shin bone thereby resulting in inflammation of the periosteum, wearing off and eventually in shin splints.

A simultaneous study of plantar flexion exercises vs dorsiflexion exercises was also carried out in order to check which was more significant in relieving the symptoms of shin splints. Though graphically there was a difference between the plantar flexion and dorsiflexion exercise results but statistically no significant difference was obtained. This may be attributed to the less sample size and short intervention period. However, both were equally effective with taping.

3.1 Tables and Figures

Table 1: Pre-intervention vs Post-intervention IOWA Pain Thermometer (IPT) comparison.

Pain Levels	% pre-intervention	% post-intervention	P-value
No pain	0%	33%	
Mild pain	50%	33%	
Moderate pain	20%	20%	. 0.0065
Severe pain	23%	13%	
Very severe pain	7%	0%	

Table 2: Pre-intervention vs Post-intervention shin pain while running.

Shin Pain While Running	% pre-intervention	% post-intervention	P-value
Yes	100%	67%	. 0.0007
No	0%	33%	

4. Conclusion

Our study concludes that pain experienced by the runners while running reduced with the application of the Kinesiotape. There was an extremely significant increase in the speed of the runners post the intervention period as the pain had reduced and this made running easier.

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