



Research

Kinesio Taping does not decrease swelling in acute, lateral ankle sprain of athletes: a randomised trial

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KEY WORDS

Bandages
Ankle injuries
Lymphatic system
Oedema
Sprains and strains



ABSTRACT

Question: Does Kinesio Taping reduce swelling in athletes who have suffered an acute, lateral ankle sprain? **Design:** Randomised controlled trial with concealed allocation, intention-to-treat analysis and blinded assessment. **Participants:** Thirty-six athletes who participated regularly in one of seven different sports modalities and suffered an acute ankle sprain. **Intervention:** The experimental group received Kinesio Taping application for 3 days, which was designed to treat swelling. The control group received an inert Kinesio Taping application. **Outcome measures:** For the comparison between groups, the swelling was measured via volumetry, perimetry, relative volumetry and two analyses of the difference in volume and perimetry between ankles of each participant. Data were collected immediately after the 3 days of intervention and at follow-up, which was 15 days post intervention. **Results:** At 3 days after intervention, there were no differences between groups for swelling in volumetry (MD -2 ml, 95% CI -28 to 32); perimetry (MD 0.2 cm, 95% CI -0.6 to 1.0); relative volumetry (MD 0.0 cm, 95% CI -0.1 to 0.1); and the other analyses. At day 15 follow-up, there were no significant between-group differences in outcomes. **Conclusion:** The application of Kinesio Taping, with the aim of stimulating the lymphatic system, is ineffective in decreasing acute swelling after an ankle sprain in athletes. **Trial registration:** Brazilian Registry of Clinical Trials, RBR-32sctf. [Nunes GS, Vargas VZ, Wageck B, dos Santos Haupenthal DP, da Luz CM, de Noronha M (2015) Kinesio Taping does not decrease swelling in acute, lateral ankle sprain of athletes: a randomised trial. *Journal of Physiotherapy* 61: 28–33]

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Introduction

Ankle sprain is one of the most common sports-related injuries.¹ A study that analysed the occurrence of ankle sprains, in the United States between 2003 and 2006, calculated that there were around 3 million ankle sprains during that period and half of them were related to sport.² For high-performance athletes, an ankle sprain can not only limit activities but also generate financial consequences due to absence from participation.³ Perhaps the most significant consequences of an ankle sprain in the acute phase are the pain and swelling commonly seen in this injury.^{1,3,4} When such a condition is not treated properly in the acute phase, it can progress to synovitis, tendinopathy, joint stiffness, muscle weakness, joint instability, and persistent pain and swelling.^{3,4} After an ankle sprain, around 60% of cases are likely to present with symptoms up to 18 months after the injury,^{5,6} increasing the chance of recurrence.³

Among the acute consequences of an ankle sprain, swelling is one of the symptoms that requires the most immediate attention because it is related to the progression of the inflammation and can be a limiting factor during rehabilitation.³ Among the techniques used to reduce or contain the swelling, Kinesio Taping seems to be gaining popularity among some rehabilitation professionals.⁷ The Kinesio Taping technique involves the use of adhesive elastic tape

that – unlike traditional strapping tape – has some inherent extensibility. Some proponents of Kinesio Taping claim that the Kinesio Taping technique, when applied at the ankle, is expected to stimulate the drainage of the oedema present in the interstitial space towards less-congested lymphatic channels, thus reducing the swelling.⁷

Some recent studies have shown positive results after the application of Kinesio Taping when compared to placebo taping⁸ or to other manual techniques that treat swelling, such as manual lymphatic drainage.⁹ Aguilar-Ferrández and colleagues⁸ reported a positive effect of Kinesio Taping on lower-limb swelling in post-menopausal women with chronic venous insufficiency. In this controlled trial, Kinesio Taping decreased extracellular liquid in the lower limbs, pain and severity of disease, while improving function.⁸ However, that study only included participants with chronic venous insufficiency, so it is not possible to extrapolate the effects of Kinesio Taping for oedema from an acute ankle sprain. Other studies have attempted to investigate the effect of Kinesio Taping in swelling;^{9,10} however, the quality of those studies is questionable, as blinding of assessors and comparison to a control or placebo group were not always present. Therefore, there is a lack of good-quality studies that have investigated whether Kinesio Taping is effective in treating acute swelling.

Therefore, the research question for this study was:

Is Kinesio Taping effective in reducing swelling in athletes who have suffered an acute, lateral ankle sprain?

Method

Design

In this parallel-group, randomised, controlled trial, participants were randomly allocated to an experimental group or a control group. The experimental group received a Kinesio Taping application designed to treat swelling, while the control group received a sham intervention (ie, an inert Kinesio Taping application).⁷ The randomisation was performed in a concealed fashion using opaque, sealed envelopes, which were prepared by a researcher who was not involved in the recruitment or assessment of participants. The Kinesio Taping applications were left in situ for 3 days; participants were measured at baseline, 3 days, and 15 days (Figure 1).

Participants, therapists and centres

Thirty-six athletes from the metropolitan area of a state capital in Brazil took part in the present study. The participants attended practice sessions and competitions for their respective sports on a regular basis. They were athletes who participated in one of seven exercise modalities: 17 soccer, five athletics, four volleyball, three basketball, two rugby, two swimming, two dance and one European handball.

To be included, participants had to report a lateral ankle sprain that had occurred between 48 and 96 hours before the first assessment, with visible swelling of the ankle. Participants were

not included in the study if they: had a fracture; had an open wound; had systemic lower-limb swelling related to cardiac, kidney or venous diseases; or were suspected to be pregnant.

The interventions and assessments were conducted at Clínica Escola de Fisioterapia of Universidade do Estado de Santa Catarina and at the participants' training sites. An initial assessment was conducted to confirm that the participant met the inclusion/exclusion criteria. After the initial assessment, both ankles were shaved and cleansed, and the volume of the ankles was assessed (see Volumetry under Outcomes measures, below). Participants were then allocated to either the experimental group or the control group. There were two post-intervention assessments: one at 3 days after the Kinesio Taping application and one at a follow-up assessment 15 days after the Kinesio Taping application. An assessor who was blinded to group allocation performed both post-intervention assessments.

Intervention

The experimental group received the Kinesio Taping application called a 'fan cut'.⁷ The participants were positioned in supine and marked at 13 cm above the lateral malleolus and at 10 cm above the medial malleolus of the affected ankle. Participants were then asked to perform a plantar flexion and 5 deg inversion of the ankle, so that the length of the Kinesio Tape to be applied could be measured (ie, the distance from the lateral skin mark to the fifth toe) (Figure 2A). The Kinesio Tape that was applied to the medial ankle was the same length as the one applied to the lateral ankle. The Kinesio Tape was applied starting from the skin marks to the metatarsal region of the foot, with an elastic tension of 20%.⁷ The Kinesio Tape was divided into four strips and applied with a distance of approximately 1 cm between strips. The lateral Kinesio Taping application commenced along the fibula and the strips were placed in the following order: posterior to the lateral malleolus

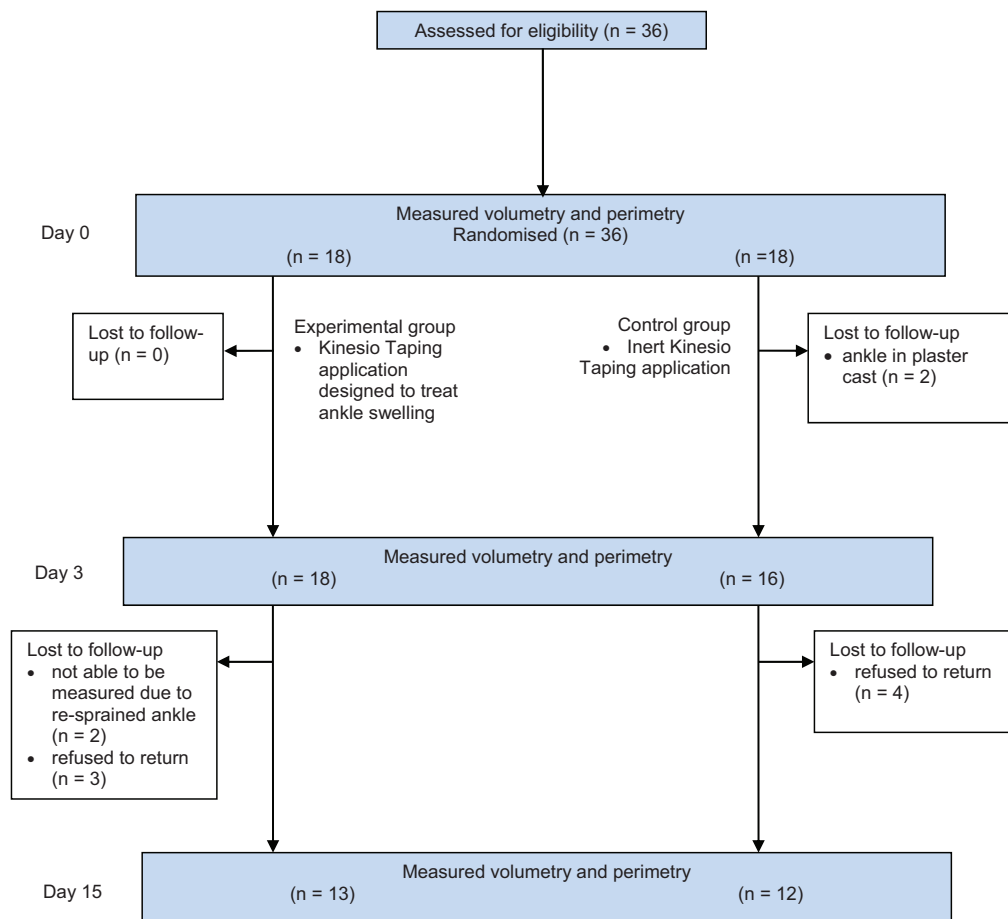


Figure 1. Flow of participants through the study.

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