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The Therapy Taping Method in Halux Valgo of Ballerinas

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Abstract

Introduction: One of the problems described in classical dancers is the hallux valgus, a deformity caused by valgus deviation of the hallux, occurring medial deviation of the head of the first metatarsal and lateral bone of the phalanges, as well as lateral subluxation of the sesamoids and intrinsic musculature, causing pronation. The Therapy Taping® method has been widely used in sports activities worldwide, and consists of the application of elastic functional bandages, which can be applied to any type of orthopedic, neurological, and other injuries.

Objective: To evaluate the effectiveness of the application of the Therapy Taping® method, in the treatment of hallux valgus of classical dancers.

Methodology: The sample was composed of 26 dancers from the Vogue Studio of Tubarão-SC, all were evaluated according to an evaluation form, goniometry and pain were measured. The bandage was then applied for 4 weeks. Seven days after the last application the reevaluation was performed.

Result: The evaluated dancers graduated their pain through an analogue scale interpreted in values from 0 (without pain) to 10 (intense pain). There was a significant improvement in pain of 31%, evidencing that the method was positive for the treatment and prevention of hallux valgus, improving the left foot gonimetry in 36% and the right foot in 38%, bringing about a change in the aesthetics of the foot.

Conclusion: The Therapy Taping® method proved to be effective in correcting hallux valgus deformity. However, more scientific studies are needed to prove the effect of this method on hallux valgus in dancers.

Introduction

The practice of classical ballet is a dance mode very common among children and adolescents today, which involves a series of joint movements to ensure a good artistic performance and impeccable choreographies [1,2]. Repetitive movements lead the lower limbs and spine to mechanical overload predisposing to musculoskeletal injuries [1]. The soft and rigid calluses, sprains, fractures, tendinitis, bursitis and the hallux valgus [2] stand out as the main aggravations affecting the feet and ankles of dancers.The hallux valgus, commonly known as a bunion, refers to a deformity due to the valgus deviation of the hallux, accompanied by a medial deviation of the head of the first metatarsal bone3. Inadequate footwear, genetic factors, body mass index, among others, are also risk factors for such deformities [2,3]. The Therapy Taping® method has been widely used in sports activities in the world [4]. It is a relatively new and relevant method for the treatment of musculoskeletal injuries, in which it consists of the application of functional elastic bandages [4,5] . This elastic bandage can be stretched up to 40-60% of its original length, resulting in less mechanical limitation and less restriction of mobility than conventional banding [6].

In the search for researches, we did not find in the literature studies that relate the Therapy Taping® method to the Hallux

Valgo treatment, focusing mainly on neurological lesions, postural dysfunctions, locomotor system, among others [2,4,5]. From the foregoing, the general objective of the research was to evaluate the effectiveness of the application of the Therapy Taping® method in the treatment of hallux valgus of classical dancers. The specific objectives were: to measure the goniometry of the hallux valgus, before and after the intervention; to quantify the pain in the dysfunction before and after the application of the method and to compare the angulation of hallux valgus dysfunction after the treatment.

Materials and Methods

The study refers to a research of the explanatory type, having as form of quantitative approach, being approved by the Committee of Ethics in Research with Human Subjects (CEP) of the University of the South of Santa Catarina (UNISUL), under the opinion number: No. 1,992,466. In this study, elastic adhesive body bandage (Therapy Tex®) was used, which in its composition is latex-free, being 100% cotton, allowing the skin to breathe5. Its thickness is approximately equal to the thickness of the skin [4]. The research was carried out at the Vogue Studio of Tubarão-SC, according to the Science and Concordance Declaration of the institutions involved, according to the scheduling availability of the dancers and Studio. For the selection of the participants, an evaluation form was used to identify hallux valgus dysfunction by means of an interview, in which the volunteers signed the Free and Informed Consent Term Assent Term (TALE) and the Consent for Photographs, Videos and Recordings. Volunteers who did not have a civilian age at the time of the research were asked to sign the terms by their parents and / or guardians.

Forty-four (44) classical ballet dancers were evaluated, according to the inclusion and exclusion criteria, twenty-six (26) were considered for the research. As inclusion criteria, the following stand out: female gender; classical ballet practitioners for at least one (1) year; aged between 10 and 20 years; using high-heeled shoes for more than three (3) months; with at least two (2) hours of dance per week; presentation of musculoskeletal dysfunctions hallux valgo and that did not present contact dermatites or allergy to the elastic bandage component. The exclusion criteria were: male gender; less than 10 years and over 20 years of age; practice of another modality of physical activity; do not wear high-top sneakers or use in less than three (3) months; presence of injury and / or recent fracture (1 year).

An evaluation form, containing the visual analogue scale (VAS) for pain and frame and for the measurement of the hallux angle was used as a tool to record the data collection by means of the Carci® goniometer. For visual evaluation follow-up, photos of the dancers' feet were recorded before and after the intervention.Goniometry was performed through the goniometer, with the objective of measuring the angus of the hallux valgus of the participants. The ideal position for evaluation is the standing position on a stool, the fixed arm of the goniometer aligned on the first metatarsal bone, the movable arm aligned on the midline of the proximal and distal hallucinatory phalanges and the axis on the metatarsophalangeal joint, according to Figure 1 [7].

Figure 1: Goniometry Hallux valgus.

Figure 2: Application example for hallux valgus.

On the day of evaluation, a small piece of tape on the forearm of each volunteer was applied (following step 1, sensory method under study) [5], in order to perform the sensory test and checking the possibility of some allergy contact. The next day, after finding no consequence and the established dysfunction, the application was performed.Application was performed with a cleavage at the metatarsophalangeal joint to reduce pain, musculoskeletal dysfunction in existing [8], lane 1 of Figure 2. The base tape was applied on the medial region of the foot (the heel hallux valgus) , with fixed point in the calcaneus and movable towards the hallux, with fixation in the first metatarsus after being manually adducted, as shown in Figure 2 (Goldenberg, 1997)[8]. For a longer tape stay two tapes were applied vertically, according to track 3 of Figure 2, preventing the ends from peeling. The bandage remained for seven (7) days, being changed once a week for four weeks; the equivalent of twenty-eight (28) days of treatment with the use of therapeutic elastic bandaging. After the application was completed, the patients

were allowed to perform the dance lessons normally, getting used to the tape. It was observed during this practice whether the participant manifested any adverse effects of pain or discomfort. If they did, they were guided by the researchers regarding the procedure that should be taken, verifying the necessity or not to remove them.

The reassessment was made after the end of the twenty-eight day treatment (28), with interval of seven (7) days, that is, on day 35 of the treatment. In addition, all patients were informed about the importance of using appropriate footwear for their deformities, such as sneakers and light footwear, which do not alter the foot biomechanics and also how to remove the tapes without causing aggression to the skin. Removal of the tapes should be done during the bath after being wet, and with care when pulling on the tip. It was recommended to remove the bandage the night before the pre-established days of application, for the rest of the tegument tissue [2,5,8]. For statistical analysis, the program GraphPad Prism 7.03 was used, calculating the data according to the mean and the standard deviation. The values of the evaluation and reevaluation were measured through goniometry and pain scale, before and after the intervention. The comparisons between the evaluation and the reassessment were made using the non-parametric Wilcoxon statistical test for paired samples, with a significance level $p < 0.005$. For the analysis of the photos, the Tracker Video Analysis and Modeling Tool® program was used to combine and model the photos through the computer and thus draw the lines of the valgus angle of the hallux, with the measuring tool trajectory present in the software.

Result and Discussion

The mean age of the balusters with hallux valgus was 15.35 ± 3.4 years, with a weight of 49.85 ± 11.25 kg and a mean height of 157.3 ± 11.26 cm. Regarding the time of classical ballet practice, 75% of the dancers practiced the activity for more than 4.11 ± 1.58 years, with 100% of them rehearsing more than 4 hours a week. The 26 dancers evaluated presented at the beginning of the intervention, mild to moderate pain 5.36 ± 2.11. The pain scale, measured after the intervention, shows that the level of pain fell considerably by 1.4 ± 11.25 with $p < 0.0001$ (Figure 3). Forestti, Pina and Carvalho (2007) [9] emphasize that the conservative treatment for hallux valgus correction comes first, since their research indicates that surgery can lead to Later problems such as the diminution of movements of the metatarsophalangeal joint, and later can lead to worse consequences as the absence of the joint movement. As demonstrated in our study, the Therapy Taping® method was mainly significant in the pain of these dancers, as well as the authors above who affirm that the therapeutic bandages have as main objective the reduction of pain and joint inflammation.In relation to the goniometry, a statistically significant result was obtained, being ($p < 0.0001$) both of the right foot before 13.55 ± 3.80 and then 4.5 ± 1.4, as of the left before 14.21 ± 3.0 and then 4.9 ± 1.9 (Figure 4).

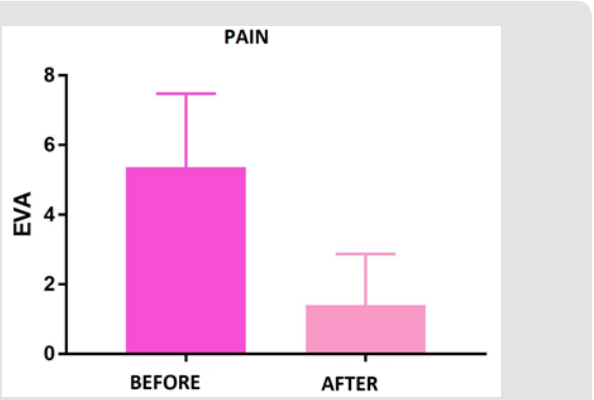

Figure 3: Pain according to EVA, before and after the intervention.

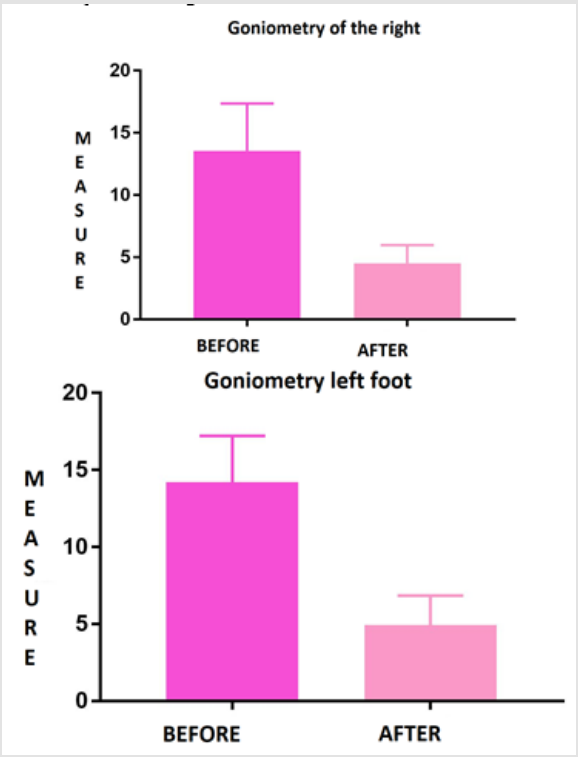

Figure 4: Goniometry of the right and left foot before and after the intervention.

This method is also indicated for the correction of mild to moderate degree hallux deformities [8-10]. The distal metatarsal angle represents the degree of inclination of the metatarsophalangeal joint surface relative to the axis of the first metatarsal bone. Its normal value varies between 0 and 10 degrees [11]. Values above this limit indicate that the metatarsophalangeal joint is tilted laterally 23. The dancers of the Voga Dance Studio had this value well changed before the 13.88º applications for both feet. The influence of the metatarsal distal articular angle on the

post interventional alignment with the Therapy Taping® method has shown that there is a direct correlation with this angle and the clinical and functional outcome [8]. Correlating that the higher the angle to be treated and the shorter the time of the dysfunction, the better the result obtained by the method being studied [5].

In Figure 5, there is the comparison of a hallux valgus dysfunction before and after the application. The patient is 16 years old, female, 71kg, 1.75cm tall, practicing classical ballet since the age of six (6), with minimum dance practice time of 8h per week. After the intervention the right hallux changed its angulation from 15º to 3º and the left hallux from 21º to 8º. The patient recorded pain improvement according to EVA, from 8 to 4 points. According to this patient's report, the "application of the tapes came as an alternative to avoid surgery, because she could no longer perform the dance with the strong pain, since the first application the result was satisfactory, ruling out even the possibility of performing surgery [12-25].

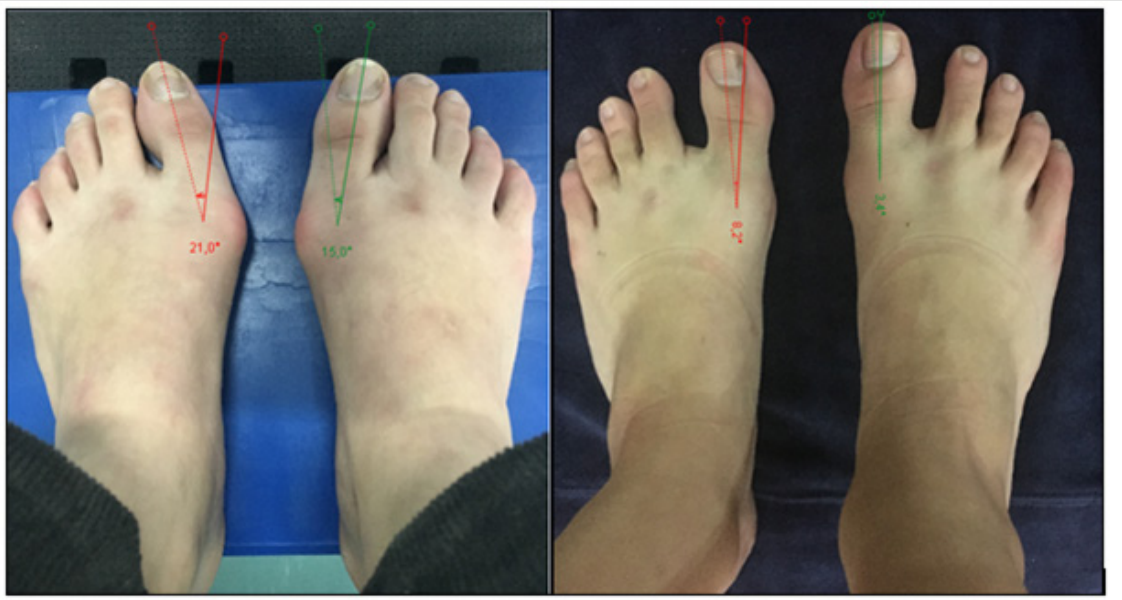

Figure 5: Before and after 35-day intervention.

Implications for Physiotherapy Practice

The Therapy Taping method presents good clinical results for hallux valgus deformities. There was a positive response in all cases presented, except in one participant who had an increase in pain scale. There was a greater joint amplitude and a correction in degree of effective form. It was concluded that the Therapy taping method, in the treatment for moderate and severe Hallux Valgo cases, was a safe and effective method, reducing all pre-existing parameters, leading to satisfaction in the majority of patients evaluated .

Acknowledgement

Approved by the Human Research Ethics Committee (CEP) of the University of the South of Santa Catarina (UNISUL), under the opinion number: 1.992.466.

Conflict of Interest

No conflict of interest.

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