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INSTRUMENT ASSISTED SOFT TISSUE MOBILIZATION VERSUS POSITIONAL RELEASE TECHNIQUE IN PATIENTS WITH CHRONIC PLANTAR FASCIITIS

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Abstract

Background: Plantar fasciitis, a condition commonly observed in older adults, mostly caused by recurrent microtrauma or overloading of the fascia. It is the leading cause of heel pain. Purpose: Were to compare between the effect of instrument assisted soft tissue mobilization versus positional release technique on pain pressure threshold and foot function level among patients suffering from chronic plantar fasciitis. Subjects: Sixty patients from both genders with chronic plantar fasciitis took part in this study. Methods: Patients were assigned randomly using a computerized block randomization into three equal groups; Group (A) Twenty patients received instrument-assisted soft tissue mobilization technique, moist hot pack on plantar fascia, both gastrocnemius and soleus muscles along with traditional treatment, Group (B) Twenty patients received positional release technique on different tender points along with traditional treatment and Group (C) Twenty patients received traditional treatment in form of stretching of plantar fascia, stretching of both gastrocnemius, soleus muscles and short-foot exercise, the assessment was done before and after treatment period, pain pressure threshold was assessed by digital pressure algometer on different four tender points (origin of plantar fascia, posteromedial aspect of the calcaneus gastrocnemius and soleus) and foot function level was assessed by Arabic version of Foot and Ankle ability measure questionnaire. The treatment protocol was two sessions/ week for four weeks for all patients. Results: The findings of this study revealed that there was a statistical significant increase in pain pressure threshold at different four tender points and foot function level of group A compared with that of group B and C. Conclusion: Both instrument assisted soft tissue mobilization as well as positional release technique were beneficial in treatment of chronic plantar fasciitis, while instrument assisted soft tissue mobilization has the superiority in the improvement of pain pressure threshold and foot function level than positional release technique.

Key words: Instrument assisted soft tissue mobilization, Positional release technique, Chronic plantar fasciitis.

INTRODUCTION

Plantar fasciitis (PF) is a painful inflammatory process involving the plantar fascia, Achilles tendon, as well as calcaneus. One fibrous tissue that covers the whole plantar area of the foot and lies just underneath the muscles is called plantar fascia or plantar aponeurosis [1]. Typical symptoms include tenderness at the calcaneal tuberosity, worsened by dorsiflexion of the toes passively, and sharp, stabbing pain exacerbated during the initial steps taken in the morning. The pain may diminish after a short period of walking, but it can recur after extended periods of standing or getting up from a seated posture [2].

The development of this condition is triggered by a gradual irritation of the perifascial tissues and the medial calcaneal tuberosity, which is where the plantar fascia originates [3]. PF is a prevalent condition affecting the foot with approximately 2 million people diagnosed annually. Around 10% of the whole population suffers from this condition, and among these persons, 83% are employed adults who are actively working and fall between the age range of 25 to 65 years [4,5].

Several PT treatment strategies have been recommended for the treatment of PF, including rest, taping, orthotics, stretching, myofascial release, positional release technique (PRT) as well as electrotherapy modalities and they were helpful in reducing severe morning pain [6].

Based on James Cyriax's cross-friction approach, instrument-assisted soft tissue mobilization (IASTM) uses metal devices to treat soft tissue injuries, adhesions, and constraints that are related to the musculoskeletal system [7]. This method is used to improve blood flow, decrease adhesions, and increase inter-fiber mobility by applying frictional strokes to both superficial as well as deep tissue structures [8]. Enhancing blood flow promotes the elimination of chemical irritants and the transport of naturally occurring pain-relieving substances, hence reducing the intensity of pain signals. Diminish pain perception and optimize the functionality of soft tissues [7].

The positional release technique is a technique of osteopathic manual therapy that aims to improve muscle flexibility by keeping the muscle in a contracted posture to promote muscle relaxation. This technique is an indirect method that focuses on the neurological aspect of neurovascular myofascial somatic dysfunction. A number of techniques are utilized in this method, including the positioning of the body, the utilization of tender areas to determine the problem, and the evaluation of the therapeutic intervention [9].

Previous studies have investigated the effect of various treatment approaches for PF. One study compared the effect of compressive myofascial release versus IASTM and revealed that IASTM slightly more significant in decrease pain and in improving pain pressure threshold (PPT) [10]. Also another study compared the effect of active release technique versus PRT, the findings showed that there were a substantial improvement in the ROM as well as a substantial decline in the pain scores in both the groups [11]. However, comparing the effects of IASTM vs PRT in the management of PF is not something that has been done in the research that has been done so far. As a result, the aim of this investigation was to find out the impact of IASTM in addition to PRT on the severity of pain intensity along with foot function among those having chronic PF.

PATIENTS AND METHODS

Patients and Eligibility

Sixty patients suffering from chronic plantar fasciitis referred from orthopedic physician were enrolled in a randomized controlled trial after providing informed consent. The age range of the patient population was 30–50 years, and there were 36 females and 24 males. [12]. Inclusion criteria required patients to be medically and clinically stable, had BMI within the range of 18.5 to 24.9 kg/m^2 [13], and a diagnosed with chronic plantar fasciitis for no less than 3 months. Exclusion criteria included intolerance to close physical contact, presence of skin infection, incomplete bony union from recent fractures, acute inflammatory or infectious processes, hematoma, osteoporosis, foot deformity, use of medication affecting blood clotting, or had surgery to the ankle or foot [5,14,15].

Study Design

A randomized controlled trial with a pre-test post-test design was conducted at a private clinic located in Port Said, Egypt. The trial was conducted from December 2022 to November 2023 after obtaining approval from the Ethics Committee of the Faculty of Physical Therapy, Cairo University (No: P.T.REC/012/003841), and registering with Clinical Trails Registration (NCT05754697).

Sample size

G*Power statistical software was employed to find out the sample size, which necessitated a minimum of 45 subjects. The calculation was performed using (α) of 0.05, a statistical power of 80%, with an effect size of 0.49. Patients were randomized into three groups using computerized block randomization.

Intervention Groups

Group A (IASTM Group): Twenty patients received instrument assisted soft tissue mobilization, moist hot pack on the plantar fascia, both gastrocnemius, and soleus muscles along with traditional treatment twice weekly for four weeks.

Group B (PRT Group): Twenty patients received positional release technique on the plantar aponeurosis, flexor hallucis brevis, plantar interossei, lumbricals, Achilles tendon, gastrocnemius, soleus, and tibialis posterior, along with traditional treatment twice weekly for four weeks.

Group C (Control Group): Twenty patients received traditional treatment, which included stretching of the plantar fascia, both gastrocnemius, soleus muscles, and the short-foot exercise, all received twice weekly for four weeks.

Assessment Tools:

1. **Digital Pressure Algometer**

A digital pressure algometer "Force ten FDX compact digital force gage" (Wagner instruments, Greenwish, CT, USA) was employed to assess plantar heel tenderness, with a unit of measurement being kg/cm². The validity and reliability of this instrument have been established, as it is employed to quantify the pressure necessary to elicit the pain threshold, which is the initial sensation of pain [16].

2. The Arabic Version of Foot and Ankle Ability Measure Questionnaire (FAAM)

The Arabic version FAAM is feasible, valid, as well as measure. The final version of the FAAM, which comprises the 21-item ADL along with 8-item athletics subscales, is a measure of human physical performance. Together, these subscales generate information across the spectrum of ability [12,17].

Treatment Tools

1. **Instrument Assisted Soft Tissue Mobilization**

The edge mobility tool is a unique tool made of 300 grade stainless steel that is used for assisted soft tissue mobilization. It originates from New York. The stainless steel is polished to achieve a mirror-like surface, making it smooth and easy to clean. It provides delicate support for massage and its shape is meant to be highly practical for usage. The design was created by a doctor of physical therapy and an international manual therapy instructor. The device is characterized by its lightweight design and ergonomic grip, which enhances user comfort and facilitates ease of use.

2. **Moist hot pack**

Chattanooga hydrocollator moist hot packs is a simple and effective method of applying moist heat. It provides therapeutic moist heat to decrease discomfort, two sizes were used in the study (25 × 61cm) and (25 × 30 cm).

Assessment Procedure

The general physical examination including demographic information (name, age, weight, height, and gender), and local physical examination of the foot was done and recorded immediately in the first session before starting the treatment procedure.

1. **Digital Pressure Algometer**

In this study the pain pressure threshold was assessed at the following different four tender points (origin of plantar fascia, posteromedial aspect of the calcaneus gastrocnemius and soleus). Patients were instructed to lie supine with their legs fully extended, passively dorsiflex their ankles and toes, and have their plantar fascia palpated at the medial calcaneal tubercle. Then, they were asked to apply a digital pressure algometer at the medial plantar process to measure PPT at the origin of the plantar fascia. The algometer contact head was positioned at a right angle to the skin, and the pressure was incrementally raised until the subject indicated feeling pain [18].

Following that, The patient was positioned prone and three particular locations on the affected leg were palpated. The patient was positioned prone and three particular locations on the affected leg were palpated.: the gastrocnemius (midpoint over the belly of the muscle), the soleus (midpoint over the belly of the muscle 10 cm above the Achilles tendon), as well as the posteromedial aspect of the calcaneus [19].

Three times the procedure was carried out in the same way at each place, and three readings were taken at the same locations, after which an average was calculated. Greater pressure threshold and, hence, less pain were indicated by higher algometer ratings. Less pressure threshold, or greater tenderness, was indicated by lower algometer scores [18]. Prior to and following the treatment, an evaluation of four different painful sites was performed for each patient.

2. The Arabic Version of Foot and Ankle Ability Measure Questionnaire

The patient was instructed to complete the Arabic version of the FAAM questionnaire, which includes the ADL in addition sports subscales. Each item on the ADL subscale was evaluated on a scale of 0 to 4, On a scale of 0 to 4, where 4 represents no difficulty and 0 represents the inability to complete the activity. Responses marked as N/A were excluded from the count. The sum of the scores for each item was calculated to determine the total score. This score was then multiplied by 4 to determine the maximum possible score. The maximum potential total was 84 if the patient responded to all 21 items. The maximum achievable score was divided by the overall number of items. This value was then multiplied by 100 resulting in a percentage. The sports subscale was scored in the same manner as the previous subscale. The patient's maximum potential score was 32 if they answered all 8 items. A higher score signifies a higher degree of physical functionality [12], this questionnaire was administered to each patient both prior to and subsequent to their treatment.

Treatment Procedure

1. Instrument Assisted Soft Tissue Mobilization

Each patient engaged in an initial warm-up routine that involved performing step taps on a wooden box for two minutes. This warm-up was designed to activate the gastrocnemius-soleus complex and improve blood flow. After the warm-up, the participant was directed to lie down facing downwards on a treatment table. The individual was positioned in a prone with the heel positioned outside the plinth. The therapist positioned themselves at the same height as the patient's feet and applied lubricating gel prior to the therapy. The scanning strokes were executed with gentle pressure and administered slowly. The strokes were made in parallel, diagonal, and cross directions. Then, warming strokes were administered using light to medium-long pressure strokes that are approximately 3 to 8 inches in length. These strokes are specific and are directed parallel to the fibers. The instrument was positioned at a 90° angle to identify any abnormalities in the fascia of the calf muscle as well as plantar fascia. Wherever inflammation occurred, the fascia in that area became tight. Then, it was positioned at adhesions at about 30°-60°, and a multidirectional stroking technique was performed to the treatment area. Deep pressure is exerted, and the instrument surface is manipulated in alignment with the muscle fibers. The technique was repeated, with the application of strokes being of a moderate intensity. This aids in the disruption of adhesions. [14]. The technique was implemented for study group (A), involves two sessions per week for four weeks [5].

2. Moist hot pack

After applying IASTM technique, two moist hot pack was placed on plantar fascia, both gastrocnemius and soleus muscles for 10 minutes [14].

3. Positional release technique

Each patient received releases of the following points (plantar aponeurosis,flexor hallucis brevis, plantar interossei and lumbricals, achilles tendon, gastrocnemius, soleus and tibialis posterior). The tender point of each muscle was located and, while maintaining contact with it, the patient's foot moved until a position of comfort was achieved, as directed by Speicher [20], The foot was adjusted until the pain was diminished by at least 70%. This position was sustained for a period of ninety seconds after which the foot was returned to its original position and the process was repeated three times. These techniques were conducted for study group (B), the treatment protocol was two sessions per week for four weeks [21].

4. Stretching Exercises

In stretching plantar fascia patient was positioned supine therapist stretch patient's toes backwards to tighten the tissue on the bottom of your foot, in stretching both gastrocnemius and soleus muscles patient was positioned supine ankle wasdorsiflexed with knee extended and stabilized by the therapist hand and forearm this was done three repetitions per session and was held for thirty seconds in each repetition, to increase stretching of soleus muscle patient was positioned prone ankle was dorsiflexed with knee flexed and stabilized by the therapist hand these stretching exercises were held for thirty seconds in each repetition and done three repetitions per sessionand [22]. These exercises were conducted for three groups (A, B and C), the treatment protocol was two sessions per week for four weeks.

5. Short Foot Exercises

Patient was positioned sitting with his bare foot placed on the floor then the heads of the metatarsals was pulled toward the calcaneus without curling the toes, Patient held the short foot position for five to ten seconds and repeat ten times [23]. These exercises were conducted for three groups (A, B and C), the treatment protocol was two sessions per week for four weeks.

DATA ANALYSIS

The Shapiro-Wilk test was utilized to make sure that the data were normal before they were analyzed. The Levene's test was utilized to assess the homogeneity of variances among the groups. The data showed homogeneity of variance and a normal distribution. To compare the gender distribution between groups, we utilized a Chi-squared test, and to contrast the subject characteristics, we used an ANOVA test. A mixed MANOVA analysis was used to assess the impact of both within-group and between-group variables on PPT and FAAM. Post-hoc tests were conducted utilizing the Bonferroni correction to compare several groups. The statistical tests were conducted with a predetermined level of significance of $p < 0.05$. The statistical analysis was performed using the SPSS software package, specifically version 25 for Windows, developed by IBM SPSS in Chicago, IL, USA.

RESULTS

***Subject characteristics*:**

Table (1) presents the subject characteristics of group A, B & C. There was no substantial difference among groups regarding age, weight, height, BMI as well as sex distribution ($p > 0.05$).

Table 1. Basic characteristics of participants.

	Group I	Group II	Group III	p-value	Significance
	Mean ± SD	Mean ± SD	Mean ± SD		
Age (years)	43.75 ± 4.69	42.45 ± 4.44	44.40 ± 3.42	0.34	**NS**
Weight (kg)	66.50 ± 6.19	66.30 ± 6.20	68.15 ± 6.47	0.60	**NS**
Height (cm)	167.15 ± 9.37	166.25 ± 8.45	168.15 ± 8.26	0.79	**NS**
BMI (kg/m²)	23.79 ± 0.89	23.96 ± 0.82	24.07 ± 0.90	0.59	**NS**
Sex, n (%)					
Females	12 (60%)	14 (70%)	10 (50%)		**NS**
Males	8 (40%)	6 (30%)	10 (50%)	0.44	

SD: standard deviation, p value: probability value, NS: non-significant.

Effect of treatment on PPT and FAAM:

The results of the mixed MANOVA indicated a statistically substantial interaction between the treatment as well as time variables. ($F = 9.09$, $p = 0.001$, Partial Eta Squared = 0.81). There was a substantial main effect of time ($F = 148.43$, $p = 0.001$, Partial Eta Squared = 0.98). There was a substantial main effect of treatment ($F = 2.27$, $p = 0.03$, Partial Eta Squared = 0.51).

Within group comparison

There was a substantial increase in PPT of different four tender points (origin of plantar fascia, gastrocnemius, soleus and at posteromedial aspect of the calcaneus) in the 3 groups post-treatment contrasted with that pre-treatment ($p < 0.05$). (Table 2).

There was a substantial increase in FAAM (ADL and sports subscales) scores in the three groups post-treatment contrasted with that pre-treatment ($p < 0.001$). (Table 3).

Between group comparison

There was no substantial difference among groups pre-treatment ($p > 0.05$). Post treatment there was a substantial increase in PPT of different four tender points (origin of plantar fascia, posteromedial aspect of the calcaneus, gastrocnemius and soleus), and FAAM (ADL and sports subscales) scores of group A contrasted with that of group B and C ($p < 0.05$).

There was a substantial increase in PPT of different four tender points (origin of plantar fascia, posteromedial aspect of the calcaneus, gastrocnemius and soleus), and FAAM (ADLand sports subscales) scores of group B contrasted with that of group C ($p < 0.05$). (Table 2,3).

1. The outcomes of group A revealed that there was substantial increase in PPT values at different four tender points post-treatment with percent of change (68.94%, 66.91%, 75.94%, 62.86%) respectively. Also, there was significant increase in FAAM (ADL and sports subscales) scores post-treatment with percent of change(59.01%, 41.79%) respectively.
2. The outcomes of group B revealed that there was substantial increase in PPT values at different four tender points post-treatment with percent of change (42.68%, 47.66%, 45.80%, 38.97%) respectively. Also, there was significant increase in FAAM (ADL and sports subscales) scores post-treatment with percent of change(24.95%, 24.94%) respectively.
3. The outcomes of group C revealed that there was substantial increase in PPT values at different four tender points post-treatment with percent of change (16.36%, 10.61%, 9.49%, 9.09%) respectively. Also, there was significant increase in FAAM (ADL and sports subscales) scores post-treatment with percent of change (8.49%, 13.11%) respectively.
4. There was no substantial difference among groups pre-treatment ($p > 0.05$).Post-treatment there was a substantial increase in PPT at different four tender points and the Arabic version of FAMM (ADL and sports subscales) scores of group A contrasted with that of group B and C ($p < 0.05$).

Table 2. Mean pain pressure threshold (origin of plantar fascia, posteromedial aspect of the calcaneus, gastrocnemius and soleus) pre- and post-treatment of group A, B and C:

PPT (kg/cm²)	Group A	Group B	Group C	p-value		
	mean ± SD	mean ± SD	mean ± SD	A vs B	A vs C	B vs C
Origin of plantar fascia						
Pre-treatment	1.61 ± 0.33	1.64 ± 0.34	1.65 ± 0.27	0.95	0.88	0.98
Post-treatment	2.72 ± 0.42	2.34 ± 0.32	1.92 ± 0.29	0.003	0.001	0.001
MD (% of change)	-1.11 (68.94%) **p = 0.001**	-0.7 (42.68%) **p = 0.001**	-0.27 (16.36%) **p = 0.001**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**
Posteromedial aspect of the calcaneus						
Pre-treatment	1.36 ± 0.38	1.28 ± 0.45	1.32 ± 0.37	0.81	0.96	0.93

Post treatment	2.27 ± 0.48	1.89 ± 0.42	1.46 ± 0.39	0.01	0.001	0.006
MD (% of change)	-0.91 (66.91%)	-0.61 (47.66%)	-0.14 (10.61%)			
	p = 0.001	**p = 0.001**	**p = 0.02**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**
Gastrocnemius						
Pre-treatment	1.33 ± 0.34	1.31 ± 0.48	1.37 ± 0.45	0.99	0.94	0.9
Post-treatment	2.34 ± 0.47	1.91 ± 0.55	1.50 ± 0.47	0.02	0.001	0.03
MD (% of change)	-1.01 (75.94%)	-0.6 (45.80%)	-0.13 (9.49%)			
	p = 0.001	**p = 0.001**	**p = 0.01**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**
Soleus						
Pre-treatment	1.40 ± 0.36	1.36 ± 0.49	1.43 ± 0.33	0.94	0.98	0.87
Post treatment	2.28 ± 0.33	1.89 ± 0.47	1.56 ± 0.37	0.01	0.001	0.02
MD (% of change)	-0.88 (62.86%)	-0.53 (38.97%)	-0.13 (9.09%)			
	p = 0.001	**p = 0.001**	**p = 0.02**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**

SD: standard deviation, MD: mean difference, p-value: probability value, S: significant.

Table 3. Mean of Arabic version of foot and ankle ability measure questionnaire scores pre- and post-treatment of group A, B and C:

	Group A	**Group B**	**Group C**	**p-value**		
	mean ± SD	**mean ± SD**	**mean ± SD**	**A vs B**	**A vs C**	**B vs C**
FAAM ADL						
Pre-treatment	52.13 ± 7.05	51.83 ± 8.57	49.68 ± 5.57	0.99	0.53	0.61
Post-treatment	82.89 ± 7.39	64.76 ± 8.78	53.90 ± 6.63	0.001	0.001	0.001
MD (% of change)	-30.76 (59.01%)	-12.93 (24.95%)	-4.22 (8.49%)			
	p = 0.001	**p = 0.001**	**p = 0.001**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**
FAAM sports						
Pre-treatment	60.01 ± 6.37	58.21 ± 9.86	57.04 ± 8.04	0.92	0.76	0.96
Post-treatment	85.09 ± 4.05	72.73 ± 4.39	64.52 ± 6.18	0.001	0.001	0.02
MD (% of change)	-25.08 (41.79%)	-14.52 (24.94%)	-7.48 (13.11%)			
	p = 0.001	**p = 0.001**	**p = 0.001**			
Significance	**S**	**S**	**S**	**S**	**S**	**S**

SD: standard deviation, MD: mean difference, p-value: probability value, S: significant.

DISCUSSION

The study aimed to contrast the impact of IASTM versus positional release technique in patients suffering from chronic plantar fasciitis. The findings demonstrated that there was substantial increase in PPT values at different four tender points and FAAM (ADL and sports subscales) scores post treatment in three groups also regarding pain threshold in addition foot function level, group A showed substantial improvements when compared to groups B and C.

IASTM was more effective because it provides the therapist with a mechanical advantage and provide greater tissue penetration while exerting less pressure on the clinician's interphalangeal joints. Additionally, As the physical therapist holds the instrument, it improves their awareness of vibrations, which enables the therapist to modify characteristics of soft tissues, like tissue restrictions. This, in turn, enhances the therapist's capacity to detect and treat these conditions more effectively [24,25].

The IASTM group showed better results because it can micro traumatize tissues, which triggers an inflammatory response and encourages the release of fibroblasts. This, in turn, stimulates collagen production and promotes tissue healing, thereby speeding up the process of healing. Furthermore, the a rise in body temperature and blood circulation resulting from the friction between the tool as well as the tissue might enhance tissue oxygenation and facilitate the elimination of local waste metabolites [26,27].

The findings of Group A were in line with a systematic review by Cheatham et al. 2016, which found that IASTM an effective intervention for various soft tissue conditions, including plantar fasciitis [28]. Additionally, a survey of United Kingdom physiotherapists by Grieve and Palmer 2017 reported that IASTM is commonly used in clinical practice for treating plantar fasciitis [29]. Also, a study by Vijayakumar et al. 2018 compared compressive myofascial release versus IASTM for treating trigger points in the calf, revealed that IASTM slightly more effective in improving pain and pressure pain thresholds [30]. However, Cotchett et al. 2014 found no substantial differences in findings between dry needling versus sham needling for plantar heel pain patients [31].

The enhancement of the PRT group is the result of positioning the distress tissue in its most comfortable "comfortable" position, which leads to the development of the most pain-free condition. It induces a physiological response that is therapeutically significant, such as a reduction in tension and nociceptive sensitivity, as well as lessen the stimulation of the afflicted dysfunction [32].

The findings of Group B were in agreement with a systematic review by Salvioli et al. 2017 which found that manual therapy techniques, including PRT, can be effective for managing plantar heel pain [33]. Also, Jadhav and Gurudut contrasted the effect of Gua Sha, cryostretch, and PRT and results indicated that PRT was better than Gua Sha as well as cryostretch in improving PPT [34].

Controversially to current study, Chandrasekaran and Sangeetha, 2018 concluded that taping technique had significant improvement in reduction of pain than positional release technique [21].

Traditional treatment approaches like stretching of the plantar fascia, both gastrocnemius soleus muscles and strengthening exercises like short foot exercises have been widely used for managing plantar fasciitis, with varying levels of success [35, 36].

The findings of Group C are in line with a systematic review by Sweeting et al. 2011 found that stretching exercises, particularly calf muscle stretching, can provide patients suffering from PF with temporary pain relief along with functional enhancement [37]. Additionally, RCT by Thong-On et al. 2019 revealed that a combination of strengthening as well as stretching exercises improved gait parameters and reduced pain among patients suffering from PF [38].

However, Radford et al. (2007) compared between calf stretching and sham ultrasound and stated that there is no difference between them [39].

LIMITATIONS

This study was limited by the variability of patient's reaction, their effects on variables and results, also psychological status of the patients may affect the treatment application.

CONCLUSION

Both instrument assisted soft tissue mobilization and positional release technique were beneficial in treatment of chronic plantar fasciitis, while instrument assisted soft tissue mobilization has the superiority in the improvement of pain pressure threshold and foot function level than positional release technique.

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