

“Effect of positional release therapy vs myofascial release therapy on pain and disability in plantar fasciitis patients - a comparative study”

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Abstract

Background: - The plantar fascia called the plantar aponeurosis, lies superficial to the muscles of the plantar surface of the foot. The inflamed tissue runs across the bottom of the foot is called as plantar fasciitis. **Objective:** - To study effect of positional release versus myofascial release on pain & disability in plantar fasciitis. **Methods and Materials:-** A survey among 50 patients was done among which 30 patients participated based on inclusion criteria from rehabilitation centers which were divided into Two group positional release therapy and myofascial release therapy Patients were evaluated pre and post intervention for pain and ankle disability using foot and ankle disability index score and foot and posture index scale. A four weeks intervention program was given to the patients for 3 alternate days per week. **Results:** - Data was statistically Analyzed, Average value was calculated. Paired and unpaired “t” test was used and level of significance set at 5 % (p<0.05.). There was significant difference in foot and ankle disability index (FADI) with p value 0.0001 in both positional release therapy and myofascial release therapy. **Conclusion:** - Our study concluded that positional release therapy was more effective than MFR on pain and disability in plantar fasciitis patients.

Key words – Myofascial Release Therapy, Positional Release Therapy, Planter fasciitis, Rehabilitation, Pain and disability

Introduction

The plantar fascia lies superficial to muscles of planter surface of foot. Planerfasciatis causes heel pain due to repetitive strain injury. It signifies around 80% of heel pain and about 8-10% of injuries because of running. Heel pain account for 41.5% of musculoskeletal difficulties in musculoskeletal pain in nurses at a tertiary midpoint. Around 10% of population complains from heel pain that results in one million professional visits for treatment of plantar fasciitis annually. The lifetime prevalence is 10% and it commonly affects all ages with a peak occurrence between 40-60 years with an equal predominance in males and females particularly in younger age.⁽²⁾

The causes of planerfasciatis are obesity, long standing, heel spur. In runners, it is triggered by repetitive micro trauma due to wearing faulty running shoes, unyielding surface and shortened Achilles tendon⁽⁴⁾. The foot posture index (FPI) is tool to measured pronated, supinated neutral foot position. It is intended to be simple method of scoring the various features of foot posture into a single quantifiable result, which in turn gives an indication of the overall foot posture.⁽⁵⁾

Positional release therapy is an extraordinary means of reducing hyper tonicity, both protective muscle spasm and the spasticity of neurologic manifestations. Its great achievement are correction of joint hypomobility, improvement of articular balance,

elongation of the muscle fiber during relaxation, and increase in soft tissue flexibility secondary to reduced excessive sensory input into the central nervous system⁽⁷⁾.

Myofascial release (MFR) is the use of a low load, long duration stretch to the myofascial compound, intended to bring back optimal length, decrease pain, and develop function.⁽⁸⁾

.Plantar fasciitis, apparently the most common reason of pain in the inferior heel is likely to be the reason for 11 to 15 percent of all foot signs requiring professional care between adults.

The lateral longitudinal curvature of foot changes, weakness of muscles leading to pain and difficulty in walking and standing. Hence, there is a need for a proper intervention. There is a need to reduce disability and pain as the difficulty in walking and in basic ADLs is increased due to PF. Moreover there is very limited study on the application of manual techniques for the intervention, hence the need to study.

Methods

A Comparative study was carried out on 30 planter fasciitis patients taken from various rehabilitative centers. Patients were selected according to the inclusion and exclusion criteria. Inclusion criteria's are medically diagnosed plantar fasciitis patients since 6 weeks, both male & female between group of 18 years to 35 years and Patients willing to participate. Patients were excluded based on the following criteria's such as patients having any history of fracture, any foot deformity.. The participants were assessed using plantar fasciitis pain and disability scale.⁽⁶⁾ And foot and ankle disability index score (FADI).⁽⁸⁾

Materials: Data collection sheet, Consent form, Pen, FADI score, Foot posture index scale, plantar fasciitis pain and disability scale.

Procedure

The study was approved by institutional ethical committee, Department Of Physiotherapy, Tilak Maharashtra Vidyapeeth, Pune. A survey was carried on 30 individuals having plantar fasciitis. The patients were taken from hospital in pune. Out of 30 patients, a experimental study was done on group of 15 patients who were selected according to inclusion and exclusion criteria and the intervention was explained to them. The participants were assessed using foot posture index scale and navicular drop test , plantar fasciitis pain and disability scale and foot and ankle disability index score before the intervention program and were divided randomly into Group A & Group B.

Protocol: Group A was receive stretching and strengthening (Conventional) along with positional release for 3 times per week for 4 weeks. Stretching: 5 min, positional release – 90 sec hold repeat 3 times per day and Strengthening for 10 min Group B was receive stretching and strengthening (Conventional) along with myofascial release 3 times per week for 4 weeks Stretching : 5 min ,Myofascial release for 30 min and strengthening 10 min

Results :

Table 1: Baseline Demographic and Clinical Characteristics of the Participants

	Group A (n=15)	Group B (n=15)
Age (in years)	24.8±5.02	23.4± 5.68
Gender : Male	4(27%)	4(27%)
Female	11(73%)	11 (73%)
Weeks since diagnosed	10.06±8.44	9.06±5.52

Table 2: Plantar fasciitis pain and disability scale pre & post for MFR and PRT.

	MFR	PRT
Pre	63.4	66.46
Post	32.93	29.6
P value	<0.0001	<0.0001

Graph 2: Plantar fasciitis pain and disability scale for MFR & PRT, pre and post values.

Interpretation: There was more significant difference in positional release therapy (PRT) groups as compared to myofascial release (MFR) on plantar fasciitis pain and disability scale (PEPS) with p value of <0.0001.

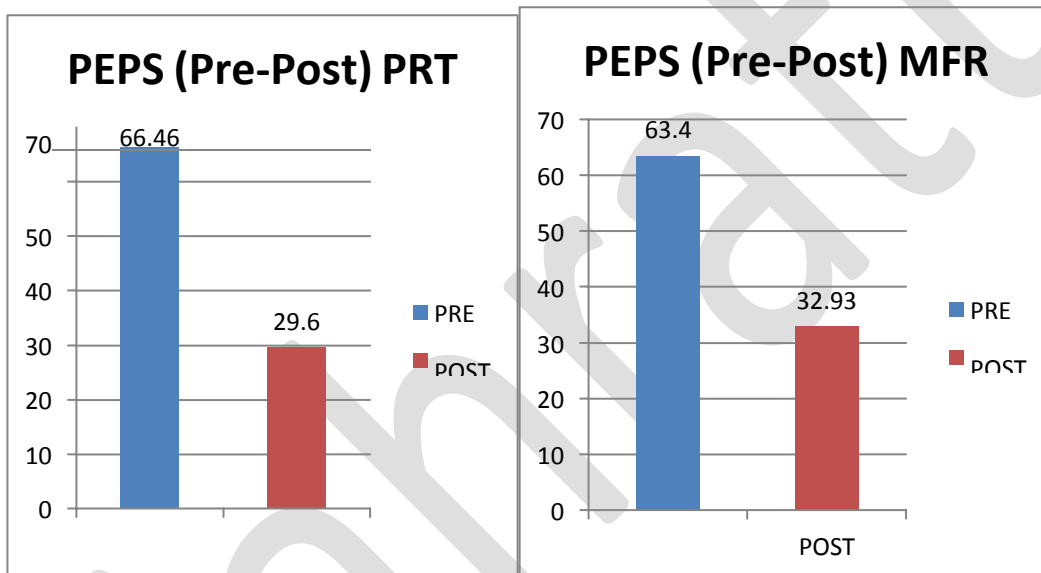
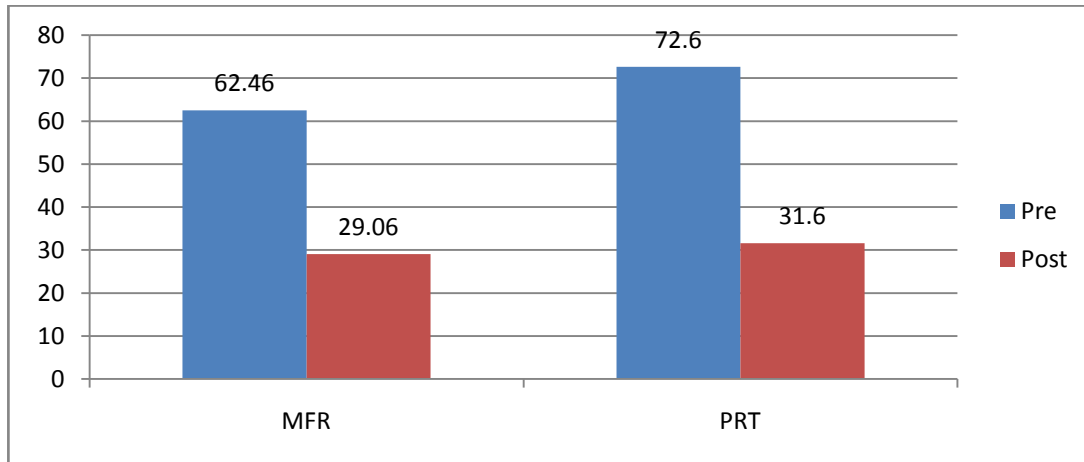


Table 3: Foot and ankle disability index score for MFR and PRT.

	MFR	PRT
Pre	62.46	72.6
Post	29.06	31.6
P value	<0.0001	<0.0001

Graph 3: Foot and ankle disability index score for myofascial release & positional release therapy, pre and post values.

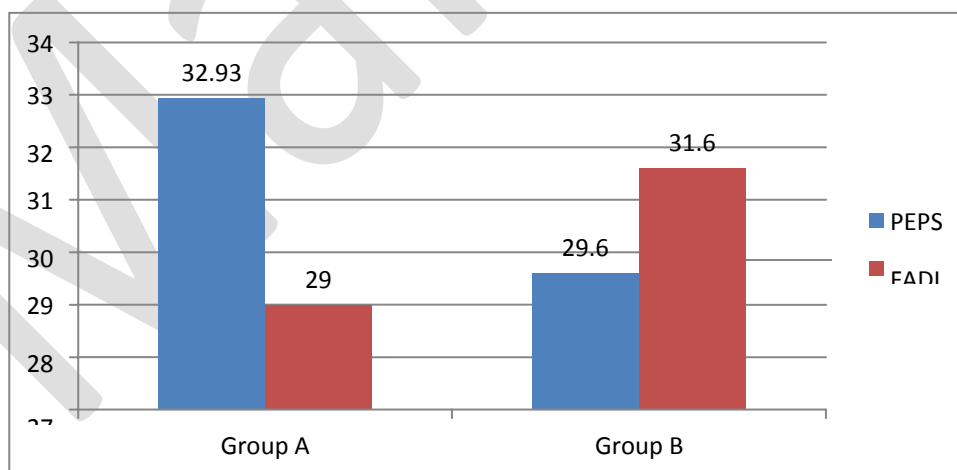


Interpretation: There was more significant difference in positional release therapy (PRT) group as compared to myofascial release (MFR) on foot and ankle disability index score (FADI) with p value of <0.0001.

Table 4: Post values for fasciitis pain and disability scale (PEPS) & foot and ankle disability index score (FADI).

POST	PEPS	FADI
PRT	32.93	29.6
MFR	29	31.6

Graph 4: Post values for positional release therapy and myofascial release on plantar fasciitis pain and disability scale (PEPS) & foot and ankle disability index score (FADI).



Interpretation: the post in PEPS & FADI, positional release therapy was more effective than myofascial release with the p value of 0.0001

Discussion

This study was conducted to study effect of positional release therapy versus myofascial release on foot and ankle disability index in plantar fasciitis patients. The study was done in plantar fasciitis patients only in which we saw that they have pronated foot which is most commonly seen in flat foot

patients in which the plantar fascia is tighten and then the stretch is felt on the plantar aponeurosis. Long standing, walking wrong foot wear are some of the most common factors resulting in plantar fasciitis. Arch height is a strong indicator of foot function, the shape of the arch can also be equally important. In a neutral foot, the curve of the arch should be moderately uniform, comparable to a segment of the border of a circle. When a foot is supinated the curve of the medial longitudinal arch becomes more acute at the posterior end of the arch. In the excessively pronated foot the medial longitudinal arch becomes flattened in the centre as the midtarsal and Lisfranc's joints open up. ⁽¹¹⁾

In our study out of 30 patients 22 were females and 8 were males, in this 72% are females and 28% were males. This shows that females are more as compared to males having plantar fasciitis and pronated foot. The foot posture index was taken which showed that most commonly pronated foot is seen in plantar fasciitis patients than the supinated foot. Amongst 30 participants selected, there were 8 males (20%) and 22 were females (80%).

There is more significant difference in positional release therapy (PRT) groups as compared to myofascial release (MFR) on plantar fasciitis pain and disability scale (PEPS) with p value of <0.0001. There is more significant difference in positional release therapy (PRT) group as compared to myofascial release (MFR) on foot and ankle disability index score (FADI) with p value of <0.0001. The stretching exercises are proved to be effective in plantar fasciitis. This is supported by a study done by Kent Stuber on Conservative treatment in plantar fasciitis, which states that stretching relieves the stress put on the plantar fascia by either fasciitis self being tight or the fascia begin tightened by a tight Achilles tendon, hence providing pain relief ⁽¹⁴⁾.

When a foot is supinated the curve of the medial longitudinal arch becomes more acute at the posterior end of the arch. In the excessively pronated foot the medial longitudinal arch becomes flattened in the center as the metatarsal joints open up. In our study we found that pronated foot have more foot and ankle disability

Erdemir et al in his study he shows that foot arch causes the abnormal force or pressure to the plantar fascia. When a patient has a high foot arch, the plantar fascia becomes too tight, the angle of foot-anterior-rocking is reduced the floor cannot be adequately absorbed by foot arch because of tight plantar fascia. Therefore, the plantar is overstretched which causes difficulty in walking on even and uneven ground. ⁽³⁾

There is more effect in positional release therapy group due to the following studies done by Kerry J.D. Ambrogio et al. The rupturing of the sarcoplasmic reticulum. The ensuing flood of calcium ions into the interstitial compartment leads to uncontrolled actin and myosin interaction and the development of the palpable taut bands of muscle associated with myofascial involvement. The result of these traumatic events is hyper tonicity, inflammation, ischemia, and an increased concentration.

This study is also supported by George B. Roth et al. studied that the effects of positional release therapy that include, normalization of muscle hyper tonicity, normalization of facial tension, reduction of joint hypermobility, increased circulation and reduced swelling, decreased pain and increased strength.

Daniel et al in his study of risk factors for plantar fasciitis shows when a patient has a low foot arch (flatty foot) causes excessive pronation of foot increases tensile loads on plantar aponeurosis foot ligaments are loose and the supporting force to the foot arch is weak. The angle of foot anterior rocking is too big. The foot is not stable during the stance phase of the other foot, and the plantar fascia is also overstretched which cause of disability in plantar fasciitis patients. ⁽⁶⁾

The findings of the present study indirectly suggested that limited ankle dorsiflexion, obesity, and prolonged weight-bearing may increase the risk of plantar fasciitis.

There is more effect in myofascial release group due to the following studies done by Sharon W. et al. myofascial release techniques are assumed to affect the continuous, contiguous connective tissue system that envelops every cell and fiber in the body. It relieve facial restrictions and to normalize the health and tension of this body system. Myofascial release apparently affects the elastocollagenous complex as well as the consistency of the ground substance.. increased soft tissue

flexibility relieves tissue tension within the elastocollagenous complex. While the density and viscosity of the matrix decreases, the metabolism and health.

In his study he also showed that decrease in tissue tension during manual therapy has been attributed to several factors that includes decrease in afferent neuron activity (Gamma and alpha impulses) resulting in decrease resistance of muscle spindle and relaxation and elongation of sarcomere and change of elastic resistance to viscous compliance of soft tissue due to morphology changes that leads to afferent relaxation of elastic fibers during release along with perception of increased fluid and increased energy throughout the tissue.

Conclusion

There is more effect of positional release therapy (PRT) than myofascial release on pain and disability in plantar fasciitis patients.

Limitations

1. Small sample size.
2. Advanced equipment were not used for assessing foot and ankle disability & navicular drop test.
3. Blinding not done.
- 4.

Future scope of study

1. Further study can be done on the intrinsic and extrinsic factors of the foot and ankle disability & pain in plantar fasciitis patients.
2. Study can be done with different age groups.
3. Larger sample size.

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