

# EFFECTS OF MYOFASCIAL TRIGGER POINT RELEASE IN PLANTAR FASCIITIS FOR PAIN MANAGEMENT

Adeela Arif<sup>1</sup>, M Faheem Afzal<sup>2</sup>, Tasneem Shahzadi<sup>3</sup>, Fouzia Nawaz<sup>4</sup>, Imran Amjad<sup>2</sup>

<sup>1</sup> Department of Physical Therapy, University of Lahore Gujrat Campus-Pakistan

<sup>2</sup> Department of Physical Therapy, Riphah international University Islamabad-Pakistan

<sup>3</sup> Department of Physical Therapy, Mars institute of Health Sciences for women Lahore-Pakistan

<sup>4</sup> Department of Physical Therapy, Shaikh Zaid Hospital Rahim Yar Khan-Pakistan

## ABSTRACT

**Objective:** To determine the effect of myofascial trigger point release of the plantar fascia and calf muscles in patients with plantar fasciitis for pain management.

**Material and Methods:** It was Quasi experimental study on 42 diagnosed plantar fasciitis patients (13 male and 29 female) with age more than 20 years. It was conducted in Private Physiotherapy clinic in Gujrat, Pakistan, from December 2016 to May 2017.. The patients were given 03 sessions per week of myofascial trigger point release of calf muscles and the plantar fascia for 4 weeks. Plantar fasciitis pain scale questionnaire was used to measure the results of pre and post intervention. The paired T-test was used to determine the significance of treatment.

**Results:** The mean age for diagnosed plantar fasciitis patients was  $31.40 \pm 7.46$ . The intensity of pain significantly reduced after the treatment in walking ( $2.35 \pm 0.79$  vs.  $1.35 \pm 0.65$ ,  $p=0.0001$ ). The intensity of pain during standing on bare foot was also improved ( $1.23 \pm 1.07$  vs.  $0.61 \pm 0.66$ ,  $p=0.53$ ) as well as during stairs climbing ( $2.28 \pm 0.77$  vs.  $1.07 \pm 0.68$ ,  $p=0.004$ )

**Conclusion:** Myofascial trigger point technique was seen effective in relation to improve pain in patients of plantar fasciitis.

**Key words:** Myofascial, trigger points, plantar fasciitis, Pain.

---

**This article may be cited as:** Arif A, Afzal MF, Shahzadi T, Nawaz F, Amjad I. Effects of myofascial trigger point release in plantar fasciitis for pain management. *J Med Sci* 2018; 26: (2) 128-131.

---

## INTRODUCTION

The plantar fascia of the foot is acting as tie rod and supports the arch of foot, and when it bears weight it under goes tension. According to biomechanical point of view it carries as much as 14% of the total foot load. Failure of the plantar fascia averaged at loads of  $1189 \pm 244$  Newton<sup>1</sup>. Plantar fasciitis (PF) is an inflammatory condition of the thick tissue (plantar fascia) on the base of the foot that causes heel pain and disability. Plantar fasciitis or plantar heel pain (PHP) is usually common reason of pain at heel's lower side<sup>2</sup>. PF occur almost 10% of the total population<sup>3</sup>. During activity, there is

no pain while this condition could worsen during rest. Some literature shows that Planter heel pain ranges 8% and 15% of the foot complaints in non-athletics and athletics population respectively<sup>4</sup>.

In many studies, the objectives of PF treatment are to diminishing pain and irritation, distinguish and rectify conceivable causes, enhance adaptability then step by step improve quality and coming back to activity of daily livings. Various treatment protocol used for PF are orthotics, footwear modification, taping, stretching techniques, extracorporeal shock wave therapy, corticosteroid injections, manual therapy and different surgical interventions, removal of plantar fascia is often considered if non-surgical treatment has failed to correct the issue after six months and is viewed as a last solution<sup>5</sup>. The Orthopedic Section of the American Physical Therapy Association (APTA) guidelines recommended following criteria for the diagnosis of heel pain and PF: heel pain at medial side is usually noticeable with initial walk after rest; increased heel pain after weight bearing

---

**Dr. Muhammad Faheem Afzal** (Corresponding Author)  
Lecturer

Riphah International University, Islamabad-Pakistan

Cell: +92-333-6966697

Email: faheem.afzal@riphah.edu.pk

**Date Received:** September 26, 2017

**Date Revised:** March 29, 2018

**Date Accepted:** April 20, 2018

activity; pain on palpation of the proximal insertion of the plantar fascia; limited ankle dorsiflexion range of movement (ROM); abnormal foot posture index score; high body mass index (BMI) in a nonathletic population; positive windlass test; and negative tarsal tunnel tests<sup>6</sup>. The three most commonly used diagnostic criteria for PF were pain on palpation of the medial plantar heel, early morning pain and pain on plantar fascia stretch<sup>7</sup>. Less frequently imaging investigations used for diagnosis plantar fasciitis shows heel spurs on x-ray and thickened plantar fascia on ultrasound<sup>8</sup>.

Several previous studies suggest the manual therapy as a treatment for PF and many randomized clinical trials recommend the manual therapy to improve the pain and functions of foot<sup>9,10</sup>. The different manual techniques are used to treat PF are active and passive joint mobilization, different myofascial trigger point (TrPs) releasing techniques for example gastrocnemius, soleus and plantar fascia trigger point releasing techniques<sup>11</sup>.

Myofascial/muscle TrPs in the calf muscles might be included in the later stages of PF<sup>12</sup>. A study conducted by Rob Greive on patients of plantar fasciitis who had limited dorsiflexion. He applied trigger point release treatment on soleus. The result showed that dorsiflexion range of motion of participants was improved<sup>13</sup>. Ajimsha did a research on 66 patients of plantar fasciitis and gave them myofascial trigger point release on calf muscles, calcaneus and plantar fascia for 4 weeks. The results were significant with reduce pain on functional foot index scale after treatment<sup>14</sup>.

Plantar fasciitis is a very common condition among the females in young age. Physical therapy plays a key role in managing the condition with different techniques like electrotherapy, manual therapy and with some physical therapy exercise prescription. With reference to the literature review, there was a limited study on the importance of trigger point release techniques. The patients of this condition have pain and limited range of motion with trigger points in calf muscles and plantar fascia.

### MATERIAL AND METHODS

The design of this study was Quasi-experimental study and sampling technique was non-randomized convenient sampling technique. A total 42 patients of plantar fasciitis in which 13 male and 29 female were included in this study. Diagnosed patients of plantar fasciitis and having age more than 20 years were included in this study. The most commonly used diagnostic criteria for PF (pain on palpation of the medial plantar heel, early morning pain and pain on plantar fascia stretch) was used to diagnose the patients<sup>11</sup>. The exclusion

criteria were patients with diabetic wound, patient with any degenerative disease of foot, patients with septic wound, patients with any foot deformity and patients with any previous surgery. Data was collected from Physical therapy clinic in Gujrat, Pakistan. The duration of study was from December 2016 to May 2017. The measurement tool of this study was plantar fasciitis pain scale (PFPS) questionnaire<sup>15</sup>. This questionnaire contains a series of questions to measure the pain during different activities like pain during descending and ascending the stairs, pain during walking in morning, pain during walking on bare foot. The patients were given 03 sessions per week of myofascial trigger point release of calf muscles and the plantar fascia for 4 weeks<sup>14</sup>. Duration of each session was 30 minutes. The data was analyzed by using the SPSS 20.00 statistical software. Parametric test of significance (Paired T-test) was used to assess the significant difference between pre and post treatment values.

#### ***Technique of gastrocnemius triggers point release:***

The patient was prone lying and foot was off the table. The therapist was at end of the table and facing towards the patient. Elbow with 90 degree flexion was used by taking up a contact with the insertion of gastrocnemius at tendocalcaneus into mid-posterior calcaneus and provide the tension in cranial direction<sup>14</sup>. Each session time was 5 min with 1 repetition.

#### ***Technique of soleus triggers point release:***

The patient was prone lying with 10 to 15 degree knee flexion. The therapist was at end of the table and facing towards the patient. Elbow with 90 degree flexion was used by taking up a contact with the insertion of soleus at tendocalcaneus and provide the tension in cranial direction<sup>14</sup>. Each session time was 5min with 1 repetition.

#### ***Technique of plantar fascia triggers point release:***

The patient was prone lying and foot was off the table. The therapist was at end of the table sitting on a stool and facing towards the patient. Knuckles of the hand were used to release the fascia from head of calcaneus to downward direction<sup>14</sup>. Each session time was 5 minutes with 2 repetitions.

### RESULTS

The results showed through plantar fasciitis pain scale questionnaire. Table no. 1 show mean and standard deviation of pain scale during walking in morning before treatment ( $1.79 \pm 1.22$ ) and after treatment ( $1.00 \pm 0.826$ ). Mean and standard deviation of pain

## Effects of myofascial trigger point release in plantar fasciitis for pain management

scale during standing on bare foot before treatment ( $1.23 \pm 1.07$ ) and after treatment ( $0.61 \pm 0.660$ ). The score was reduced after treatment which shows that myofascial trigger point release of plantar fascia and gastrocnemius were significant for pain management.

**Table 1: Shows Mean  $\pm$  Standard Deviation of all contributing variables of plantar fasciitis**

Variables	Pre-Session Pain (Mean $\pm$ SD)	Post-Session Pain (Mean $\pm$ SD)	P values (Paired T test)
Morning	1.79 $\pm$ 1.22	1.00 $\pm$ 0.826	0.013*
Standing	1.23 $\pm$ 1.07	0.61 $\pm$ 0.660	0.53
Walking	2.35 $\pm$ 0.79	1.35 $\pm$ 0.655	0.0001
Running	2.28 $\pm$ 0.80	1.35 $\pm$ 0.576	0.006**
Climbing	2.28 $\pm$ 0.77	1.07 $\pm$ 0.676	0.004**
Descending	1.64 $\pm$ 1.10	0.69 $\pm$ 0.975	0.034*

\*P value is significant < 0.05

\*\*P value is significant < 0.01

### DISCUSSION

Plantar fasciitis (PF) is the most usual foot condition diagnosed by the clinicians while surgical and nonsurgical treatments recommended to the targeted populations according to the severity of conditions<sup>16</sup>. It was evaluated by the studies that 1 million patients visit physical therapy departments annually due to plantar fasciitis<sup>17</sup>. In 2000, the Foot and Ankle Special Interest Group of the Orthopedic Section, APTA played out an overview on 500 individuals and got reactions from 117 advisors. From those reacting, 100% demonstrated that PF was the most widely recognized foot illness found in their center<sup>11</sup>. Many pharmacological, non-pharmacological and physical therapy interventions are available to treat plantar fasciitis<sup>18</sup>. But according to results of this study, trigger point releasing technique was seen effective in minimizing the pain and inflammation with complain of plantar fasciitis. It was convenient, non-invasive and direct muscular technique.

Stretching of calf muscles is known as integral part of plantar fasciitis treatment but the calf muscle stretching alone was not effective as compared to stretching and myofascial trigger point release therapy combined<sup>14</sup>. This study suggested that pain during physical activities, early morning activities and during standing reduces and shows statistically significant results. Renan study support current findings of this study, as his combined treatment of self-stretching and trigger point release improved the physical activity and pain

as compared to those who only receive self-stretching protocol<sup>10</sup>. It is thought trigger point release technique reduces the tension over calf muscles and improves the dorsiflexion range<sup>19</sup>. The result of studies shows that intensity of pain significantly reduces after intervention in patients of plantar fasciitis. The conclusion of this studies are similar to the finding of study conducted by the Rob Grieve and concluded that the ankle range of motion enhance immediately after application of soleus trigger point release in patients of plantar fasciitis so according to the results of this study, trigger point release technique in plantar fasciitis is significant to improve pain<sup>20</sup>. Although it is beyond the study that how trigger points release significantly improve the pain, but it is said that there are taut bands of more stiffness with trigger points and with trigger point treatment we can improve the effectiveness of stretching<sup>19</sup>.

Renan conducted a study on to find the effectiveness of myofascial trigger point with self stretch in patients of plantar fasciitis and concluded that myofascial trigger point release with self stretching is more effective as compared to simple self stretching<sup>20</sup>. Above results and discussion shows that myofascial TrPs release along with active stretching is significant in pain management in patients of PF. Cleland in his study demonstrated that plantar fasciitis patients treated with manual therapy technique has better results as compared to those who received the modalities treatment for example ultrasound, iontophoresis<sup>21</sup>.

### LIMITATIONS

As indicated by Paired T- test mean contrast between post-Pre values was very significant. Short duration of time and lack of awareness of plantar fasciitis among patients especially in females are the limitation of this study.

### RECOMMENDATIONS

Additionally inquire about work is required to see the successful mediation to improve pain and range of motion.

### CONCLUSION

Myofascial trigger point technique was seen effective in relation to improve pain in plantar fasciitis patients.

### REFERENCES

1. Erdemir A, Hamel AJ, Fauth AR, Piazza SJ, Sharkey NA. Dynamic loading of the plantar aponeurosis in walking. *JBJS*. 2004;86(3):546-52.
2. Crawford F, Thomson CE. Interventions for treating plantar heel pain. *The Cochrane Library*. 2010 Jan.
3. Riddle DL, Pulisic M, Pidcoke P, Johnson RE. Risk

## Effects of myofascial trigger point release in plantar fasciitis for pain management

- factors for plantar fasciitis: a matched case-control study. *JBJS*. 2003;85(5):872-7.
4. Taunton JE, Ryan MB, Clement DB, McKenzie DC, Lloyd-Smith DR, Zumbo BD. A retrospective case-control analysis of 2002 running injuries. *British journal of sports medicine*. 2002;36(2):95-101.
  5. Johnson RE, Haas K, Lindow K, Shields R. Plantar fasciitis: what is the diagnosis and treatment?. *Orthopaedic Nursing*. 2014;33(4):198-204.
  6. Simons DG, Travell JG, Simons LS. *Travell & Simons' myofascial pain and dysfunction: upper half of body*. Lippincott Williams & Wilkins; 1999.
  7. McPoil TG, Martin RL, Cornwall MW, Wukich DK, Irrgang JJ, Godges JJ. Heel pain—plantar fasciitis. *Journal of orthopaedic & sports physical therapy*. 2008 ;38(4):1-8.
  8. Landorf KB, McMillan AM, Menz HB. Plantar heel pain: an update of its aetiology and diagnosis. *Journal of foot and ankle research*. 2013;6(S1):O18.
  9. Shashua A, Flechter S, Avidan L, Ofir D, Melayev A, Kalichman L. The effect of additional ankle and midfoot mobilizations on plantar fasciitis: a randomized controlled trial. *Journal of orthopaedic & sports physical therapy*. 2015;45(4):265-72.
  10. Renan-Ordine R, Albuquerque-Sendín F, Rodrigues De Souza DP, Cleland JA, Fernández-de-las-Peñas C. Effectiveness of myofascial trigger point manual therapy combined with a self-stretching protocol for the management of plantar heel pain: a randomized controlled trial. *Journal of orthopaedic & sports physical therapy*. 2011 ;41(2):43-50.
  11. Martin RL, Davenport TE, Reischl SF, McPoil TG, Matheson JW, Wukich DK, McDonough CM, Altman RD, Beattie P, Cornwall M, Davis I. Heel pain—plantar fasciitis: revision 2014. *Journal of Orthopaedic & Sports Physical Therapy*. 2014 ;44(11):1-33.
  12. Simons DG. Understanding effective treatments of myofascial trigger points. *Journal of Bodywork and movement therapies*. 2002 ;6(2):81-8.
  13. Gemmell H, Miller P, Nordstrom H. Immediate effect of ischaemic compression and trigger point pressure release on neck pain and upper trapezius trigger points: a randomised controlled trial. *Clinical Chiropractic*. 2008;11(1):30-6.
  14. Ajimsha MS, Binsu D, Chithra S. Effectiveness of myofascial release in the management of plantar heel pain: A randomized controlled trial. *The Foot*. 2014 ;24(2):66-71.
  15. Willis B, Lopez A, Perez A, Sheridan L, Kalish S. Pain scale for plantar fasciitis. *Foot & Ankle Online Journal*. 2009.
  16. Scher CD, Belmont Jr LC, Bear MR, Mountcastle SB, Orr JD, Owens MB. The incidence of plantar fasciitis in the United States military. *JBJS*. 2009;91(12):2867-72.
  17. Riddle DL, Schappert SM. Volume of ambulatory care visits and patterns of care for patients diagnosed with plantar fasciitis: a national study of medical doctors. *Foot & ankle international*. 2004;25(5):303-10.
  18. Borg-Stein J, Simons DG. Myofascial pain. *Archives of physical medicine and rehabilitation*. 2002;83:40-47.
  19. Meltzer KR, Cao TV, Schad JF, King H, Stoll ST, Standley PR. In vitro modeling of repetitive motion injury and myofascial release. *Journal of bodywork and movement therapies*. 2010;14(2):162-71.
  20. Grieve R, Clark J, Pearson E, Bullock S, Boyer C, Jarrett A. The immediate effect of soleus trigger point pressure release on restricted ankle joint dorsiflexion: a pilot randomised controlled trial. *Journal of bodywork and movement therapies*. 2011;15(1):42-49.
  21. Cleland JA, Abbott JH, Kidd MO, Stockwell S, Cheney S, Gerrard DF, Flynn TW. Manual physical therapy and exercise versus electrophysical agents and exercise in the management of plantar heel pain: a multicenter randomized clinical trial. *Journal of orthopaedic & sports physical therapy*. 2000;39(8):573-85.

**CONFLICT OF INTEREST:** Authors declare no conflict of interest  
**GRANT SUPPORT AND FINANCIAL DISCLOSURE** NIL

### AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

- Arif A:** Draft writing, Data Collection, Discussion  
**Faheem MA:** Draft writing, Article Writing  
**Ibrahim A:** Draft Writing Discussion  
**Shahzadi T:** Data analysis, result interpretation, references collection, helps in writing and typing.  
**Nawaz F:** Statistical analysis ,Proof Reading  
**Amjad I:** Proof Reading Article Writing Statistical Analysis

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.