SSN Journal of Management & Technology Research Communications

Vol 3 No (4) 2026 CrossRef DOI: https://dx.doi.org/10.21786/mntrc

Published by Society for Science and Nature Bhopal India E-ISSN : 3049-0014

Efficacy of Myofascial Release Using IASTM Tool Versus Conventional Physiotherapy in Chronic Plantar Fasciitis

Ritika[1], R. Deepak[2], K. Prince[3], R.K. Sharma[4] and Manish Attri[5]

[1]MPT, Department of Physiotherapy, Santosh Paramedical College and Hospital, Ghaziabad, India

[2]*Professor/Principal, Department of Physiotherapy,

Santosh Paramedical College and Hospital, Ghaziabad, India

[3]Assistant Professor, Department of Physiotherapy, Santosh

Paramedical College and Hospital, Ghaziabad, India

[4]Dean, Santosh Paramedical College and Hospital, Ghaziabad, India

[5]Assistant Professor & Head, Department of Chest & TB, Santosh

Medical College, Santosh Deemed to Be University Ghaziabad, India

ABSTRACT

Plantar fasciitis is a prevalent cause of heel pain, often affecting individuals engaged in prolonged standing or physical activity. Conservative physiotherapy remains a preferred management approach, with myofascial release and static stretching being common techniques. Despite their widespread use, direct comparative evidence regarding their effectiveness is limited. To compare the effectiveness of myofascial release using an IASTM tool ,in conjunction with conventional treatment, in reducing pain ,improving functional outcomes and enhancing mobility of ankle in chronic plantar fasciitis patients. A randomized controlled trial was conducted on 30 individuals diagnosed with plantar fasciitis. Participants were randomly allocated into two groups. Group A received myofascial release therapy along with conventional physiotherapy, while Group B received static stretching in addition to the same physiotherapy protocol. The interventions were administered thrice weekly over four weeks. Outcome measures included the Numerical Pain Rating Scale (NPRS), Foot Function Index (FFI), and goniometric measurements of ankle dorsiflexion and plantarflexion. Pre- and post-intervention data were statistically analysed. Both groups showed significant improvements in pain reduction, functional outcomes, and ankle mobility from baseline to post-intervention. However, Group A exhibited more pronounced improvements in NPRS, FFI scores, and ankle range of motion. The between-group comparison revealed statistically significant differences in favour of the myofascial release group. The study findings suggest that both interventions are effective in managing plantar fasciitis, but myofascial release, when combined with conventional physiotherapy, is superior in reducing pain and enhancing foot function and mobility. It may therefore be considered a more effective conservative approach for patients with plantar fasciitis.

KEY WORDS: PLANTAR FASCIITIS, MYOFASCIAL RELEASE, STATIC STRETCHING, FOOT FUNCTION, ANKLE RANGE OF MOTION, PHYSIOTHERAPY.

Article Information: *Corresponding Author: deepak.raghav@santosh.ac.in
Received 05/02/2026 Accepted after revision 18/08/2026
Page Number- 148-152
This is an open access article under Creative Commons License, https://creativecommons.org/licenses/by/4.0/.
Available at: https://mntrc.in/
DOI: http://dx.doi.org/10.21786/mntrc/3.4.28

INTRODUCTION

Plantar fasciitis is one of the most frequent causes of heel pain that clinicians come across in daily

physiotherapy practice. It usually happens because of repeated strain or overuse of the plantar fascia, which is a thick fibrous tissue running from the heel bone to the toes.

This fascia helps to support the arch of the foot and maintain stability while walking or standing. When it is stressed for a long time, tiny tears appear near its attachment on the heel, and the person starts feeling pain or stiffness, mostly during the first few steps after rest [1]. In the past, plantar fasciitis was thought to be an inflammatory problem, but newer evidence shows that it is more of a degenerative process.

The collagen fibres lose their normal pattern, and the fascia becomes thick and weak due to continuous mechanical stress [2]. Tightness in the calf muscles, especially the gastrocnemius and soleus, increases this load further because both muscles act through the Achilles tendon and pull on the plantar fascia whenever a person walks or stands3. There are several risk factors linked to this condition such as increased body weight, prolonged standing hours, reduced ankle movement, or wearing footwear that does not support the arch well. Flat feet and poor posture of the foot are also common findings [4,5]. People between the ages of thirty and fifty, and those whose jobs need long standing, are affected most.

Imaging with ultrasound or MRI often shows thickened fascia or mild swelling around the heel6. Conservative care is still the first line of management. Stretching of the plantar fascia and calf muscles, strengthening, use of heel pads or orthoses, ultrasound and other electrotherapy methods are usually given. Though these help in pain relief for some time, the improvement often does not last long7. Because of this, soft-tissue-based treatments are now getting more attention as they aim to correct the real fascial restrictions rather than only control symptoms.

Myofascial Release (MFR) is a manual therapy method where the therapist applies slow and gentle pressure on the tight fascial tissues. This helps in reducing adhesions, improving blood flow, and restoring smooth movement of the fascia. Many clinical reports have found that MFR can lessen heel pain and improve function in plantar fasciitis8,9. Instrument-Assisted Soft Tissue Mobilization (IASTM) is another technique that uses specially designed tools to mobilize the fascia. It stimulates fibroblast activity, promotes new collagen formation, and helps the tissue heal better [10].

Combining MFR with IASTM may give better results because both techniques target different layers of fascia. Together they help restore flexibility, reduce tightness, and improve overall foot mechanics. Recent research suggests that people receiving such combined soft-tissue therapy show greater improvement in pain, gait, and plantar flexor strength than those getting only conventional therapy [11,12].

Even though the results are promising, very few studies have explored this combined approach in chronic plantar fasciitis. The present study therefore aims to find out how Myofascial Release used together with IASTM, along with conventional physiotherapy, affects pain, functional recovery, and mobility in individuals suffering from chronic plantar fasciitis.

METHODS

Study Design and participants: This randomized controlled trial was conducted at Santosh Hospital , Ghaziabad. A total of 30 participants (15 in each group) were selected based on specific inclusion and exclusion criteria. Ethical clearance was obtained from the institutional ethical committee (REF NO.- SCOP/OCT-24/ECN-94510023667) prior to the commencement of the study.

Participants included both male and female individuals between the ages of 25 and 50 years who presented with unilateral plantar fasciitis for more than 4 weeks. All participants demonstrated pain on the first step in the morning and had a minimum score of 4 on the Numeric Pain Rating Scale (NPRS). Participants with recent fractures around the foot and ankle, open wounds, systemic conditions like rheumatoid arthritis, or any known neurological disorders were excluded from the study.

Written informed consent was obtained from all eligible individuals after explaining the study objectives and procedures. All participants were instructed to avoid taking any NSAIDs or muscle relaxants during the intervention period. Following baseline assessment, participants were randomly assigned into two groups: Group A (received Myofascial Release therapy) combined with conventional physiotherapy, and Group B received static stretching exercises along with the same conventional physiotherapy. The intervention lasted for 4 weeks, with participants attending three sessions per week under supervised conditions.

For Group A, the Myofascial Release technique focused on the gastrocnemius-soleus complex and plantar fascia. The therapist applied a low-load, sustained pressure using hands and fingers along the tight fascial regions to facilitate tissue release. Each session lasted for 30 minutes, including 15 minutes of MFR followed by 15 minutes of conventional physiotherapy. Group B underwent static stretching exercises targeting the gastrocnemius, soleus, and plantar fascia.

Each muscle group was stretched for 30 seconds, with 3 repetitions per session. Like Group A, this group also received 15 minutes of conventional physiotherapy including ultrasound therapy, strengthening of intrinsic foot muscles, and heel cord stretching. Outcomes measures included the Numeric Pain Rating Scale (NPRS) for pain intensity, Foot Function Index (FFI) for disability and functional limitations, and the Roles and Maudsley Score (RMS) for patient satisfaction. Assessments were carried out at baseline and after 4 weeks of intervention.

5.Statistical Analysis: The data were analyzed using SPSS software version [insert version number]. Descriptive statistics were used to summarize demographic details.

Within-group and between-group comparisons were performed using paired and unpaired t-tests respectively, with the level of significance set at $p < 0.05$.

Table 1. The pre-treatment data reveals key baseline characteristics across pain, function, and range of motion measures.

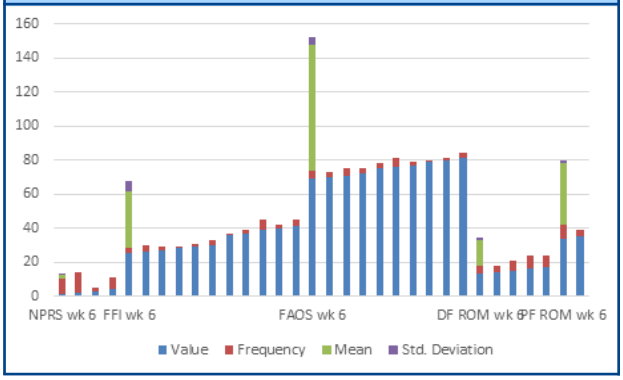
Measure	Value	Frequency	Mean	Std. Deviation
NPRS	6	4	7.67	0.884
	7	6		
	8	16		
	9	4		
FFI	60	2	65.67	2.746
	61	2		
	62	1		
	63	1		
	64	2		
	65	5		
	66	2		
	67	6		
	68	5		
	69	4		
FAOS	40	2	46.83	4.426
	41	1		
	42	4		
	43	3		
	46	4		
	47	5		
	48	1		
	49	2		
	51	2		
	53	4		
	54	2		
DF ROM	8	3	9.23	0.626
	9	17		
	10	10		
PF ROM	27	1	28.67	0.758
	28	12		
	29	13		
	30	4		

RESULTS

water contaminant constituents such Phenol and resorcinol the pollution of industrial wastewater, which can reduce the concentration of pollutants discharged into the plant (Agency for Toxic Substances and Disease Registry (ATSDR).

For pain levels measured by NPRS, the mean score was 7.67 (SD=0.88), with the majority of patients reporting scores of 7 (n=6) or 8 (n=16), indicating consistently moderate-to-high pain levels in the cohort. Only a few patients reported slightly lower (6, n=4) or higher (9, n=4) pain scores, demonstrating relatively homogeneous baseline pain severity.

Figure 1



Functional outcomes revealed continued enhancement. The FFI improved to a mean of 33.23 (SD=6.31), showing a 49% total improvement from baseline. While scores remained somewhat variable (25-41), there was a clear trend toward better function, with 16 patients scoring ≤30. The FAOS reached a mean of 73.87 (SD=4.02), a 58% improvement, with most patients (n=19) scoring between 69-77, and four patients achieving scores of 79-81, indicating near-normal or normal foot and ankle function.

Table 2. Shows differentiation of data a significant improvement in all the scales are noticed after the intervention.

Measure	Effect Size	Point Estimate	95% CI (Lower - Upper)
NPRS	Cohen's d	-0.831	-1.541 to -0.050
	Hedges' g	-0.854	-1.500 to -0.049
	Glass's delta	-0.756	-1.654 to -0.084
FFI	Cohen's d	-2.389	-1.941 to -0.385
	Hedges' g	-2.456	-1.889 to -0.374
	Glass's delta	-1.335	-3.132 to -1.030
FAOS	Cohen's d	2.768	1.504 to 3.433
	Hedges' g	2.845	1.463 to 3.340
	Glass's delta	2.53	1.472 to 3.923
DF ROM	Cohen's d	-0.613	-1.268 to 0.191
	Hedges' g	-0.63	-1.234 to 0.186
	Glass's delta	-0.507	-1.402 to 0.108
PF ROM	Cohen's d	0.772	-0.716 to 0.716
	Hedges' g	0.793	-0.696 to 0.696
	Glass's delta	0.488	-0.716 to 0.716

Range of motion measures showed substantial gains. Dorsiflexion ROM increased to a mean of 15.27° (SD=1.41°), a 65% improvement from baseline, with most patients (n=21) achieving

15° or greater. Plantarflexion ROM also improved significantly to 36.03° (SD=1.56°), a 26% increase, with the majority of measurements (n=22) at 35° or higher. Table 3 showing the 6-week follow-up, highly significant differences ($p < 0.001$) were maintained between the two treatment groups across all outcome measures, with the IASTM group (Group B) continuing to demonstrate superior clinical outcomes compared to conventional physiotherapy.

Table 3

Measure	t-value	DF	Sig. (2-tailed)	Mean Difference	95% CI (Lower - Upper)
NPRS wk 6	5.94	28	0	1.667	1.092 to 2.241
FFI wk 6	18.72	28	0	11.933	10.628 to 13.239
FAOS wk 6	-10.51	28	0	-7.067	-8.444 to -5.689
DF ROM wk 6	-9.081	28	0	-2.4	-2.941 to -1.859
PF ROM wk 6	-10.25	28	0	-2.733	-3.280 to -2.187

DISCUSSION

This study found that Instrument-Assisted Soft Tissue Mobilization (IASTM) was more effective than conventional physiotherapy in managing chronic plantar fasciitis. Participants in the IASTM group (Group B) experienced greater reductions in pain, better functional mobility, and improved ankle range of motion compared to those receiving conventional therapy alone.

Pain relief was more notable in Group B, with significant drops in NPRS scores by both the third and sixth week assessments, indicating quicker and longer-lasting symptom relief. Functional scores, as measured by FFI and FAOS, also improved more significantly in the IASTM group, suggesting better performance in daily and recreational tasks. Gains in ankle dorsiflexion and plantarflexion further support the role of IASTM in restoring soft tissue flexibility and improving gait mechanics.in terms of functional mobility, Group B participants shows better outcomes in both the Foot Function Index and foot and ankle outcome scores.

These improvements indicates that IASTM reduces discomfort and enhance patients Ability to perform daily activities. Overall the findings highlight the clinical advantage of IASTM into treatment protocols for the patients with chronic plantar fasciitis. The technique appears to promote faster symptoms and functional recovery, offering a valuable alternative to conventional physiotherapy treatment. The findings of the present study align with expand upon previous research emphasizing the superiority of myofascial release techniques, particularly when administered using instrument assisted soft tissue mobilization (IASTM), in managing chronic plantar fasciitis.

Similarly to the current results, previous studies have demonstrated that myofascial release techniques significantly reduced heel pain and improved foot function, as measured by the Foot Function Index (FFI) and pain scales. Patients receiving myofascial release showed greater improvements in functional mobility and symptom relief compared to those undergoing only conventional therapy [13,14]. Furthermore, [15,16] found myofascial release to be effective in reducing plantar heel pain and Associated disability, reinforcing its role in targeting fascial restrictions that contribute to chronic symptoms.

Additionally, the use of IASTM, as observed in this study, findings by other studies highlighted that IASTM led to a significant increase in pressure pain thresholds and ankle range of motion, which are important outcomes in rehabilitation of plantar fasciitis. Previous studies have also demonstrated that myofascial release effective decreased heel pain intensity and improved mobility, suggesting it's clinical superiority over conventional modalities [17–19].

CONCLUSION

This study demonstrates that Instrument-Assisted Soft Tissue Mobilization (IASTM) is more effective than conventional physiotherapy for treating chronic plantar fasciitis. The IASTM group showed significant improvements in pain reduction, functional mobility, and overall foot function, as evidenced by better scores on the Numeric Pain Rating Scale (NPRS), Foot Function Index (FFI), and improved Ankle Range of Motion (ROM).

REFERENCES

1. Ryskalin L, Morucci G, Soldani P, Gesi M. Do the fasciae of the soleus have a role in plantar fasciitis? Clin Anat. 2024;37(4):413-424. doi:10.1002/ca.24102
2. Rabadi D, Seo S, Wong B, Chung D, Rai V, Agrawal DK. Immunopathogenesis, early Detection, current therapies and prevention of plantar Fasciitis: A concise review. Int Immunopharmacol. 2022;110:109023. doi:10.1016/j.intimp.2022.109023
3. Engkananuwat P, Kanlayanaphotporn R, Purepong N. Effectiveness of the Simultaneous Stretching of the Achilles Tendon and Plantar Fascia in Individuals With Plantar Fasciitis. Foot Ankle Int. 2018;39(1):75-82. doi:10.1177/1071100717732762
4. van Leeuwen KDB, Rogers J, Winzenberg T, van

Middelkoop M. Higher body mass index is associated with plantar fasciopathy/'plantar fasciitis': systematic review and meta-analysis of various clinical and imaging risk factors. Br J Sports Med. 2016;50(16):972-981. doi:10.1136/bjsports-2015-094695

5. Kim S, Lee SH, Kim MR, et al. Is cupping therapy effective in patients with neck pain? A systematic review and meta-analysis. BMJ Open. 2018;8(11):e021070. doi:10.1136/bmjopen-2017-021070
6. Turchin O, Liabakh A, Burianov O, Omelchenko T, Osadcha L. AB1380 ULTRASONOGRAPHIC CHANGES OF PLANTAR FASCIA IN PATIENTS WITH PLANTAR FASCIITIS DUE TO ACQUIRED FLAT FOOT. Annals of the Rheumatic Diseases. 2022;81:1795. doi:10.1136/annrheumdis-2022-eular.5097
7. Siriphorn A, Eksakulkla S. Calf stretching and plantar fascia-specific stretching for plantar fasciitis: A systematic review and meta-analysis. J Bodyw Mov Ther. 2020;24(4):222-232. doi:10.1016/j.jbmt.2020.06.013
8. Ahamed A A, M S, A S. Effectiveness of Myofascial Release and High Load Strength Training in Chronic Plantar Fasciitis: A Randomized Controlled Trial. Int J Health Sci Res. 2024;14(4):54-58. doi:10.52403/ijhsr.20240409
9. Kage V, Basti A, Tashildar A, Jain A. Combined effect of myofascial release and passive stretching on plantar pressure in individual with hamstring tightness- an experimental study. J Bodyw Mov Ther. 2024;37:412-416. doi:10.1016/j.jbmt.2023.12.004
10. Alhakami AM, Babkair RA, Sahely A, Nuhmani S. Effectiveness of therapeutic ultrasound on reducing pain intensity and functional disability in patients with plantar fasciitis: a systematic review of randomised controlled trials. PeerJ. 2024;12:e17147. doi:10.7717/peerj.17147
11. Mohamed RA, Abdallah GA, Hafez HA, et al. Effectiveness of myofascial release technique versus dry cupping therapy in management of patients with non-specific low back pain. sportk. 2025;14:166-166. doi:10.6018/sportk.696001
12. Titus J, Kamalakannan M, Anitha A, Ramana K. Effectiveness of Percutaneous Electrical Nerve Stimulation Versus Conventional Therapy in Adults with Plantar Fasciitis. IJPOT. 2024;18:74-79. doi:10.37506/xpwd3d22
13. Kaiser PB, Keyser C, Crawford AM, Bluman EM, Smith JT, Chiodo CP. A Prospective Randomized Controlled Trial Comparing Physical Therapy With Independent Home Stretching for Plantar Fasciitis. J Am Acad Orthop Surg. 2022;30(14):682-689. doi:10.5435/JAAOS-D-21-00009
14. Al-Siyabi Z, Karam M, Al-Hajri E, Alsaif A, Alazemi M, Aldubaikhi AA. Extracorporeal Shockwave Therapy Versus Ultrasound Therapy for Plantar Fasciitis: A Systematic Review and Meta-Analysis. Cureus. Published online January 2, 2022. doi:10.7759/cureus.20871
15. Ajimsha MS, Binsu D, Chithra S. Effectiveness of myofascial release in the management of plantar heel pain: a randomized controlled trial. Foot (Edinb). 2014;24(2):66-71. doi:10.1016/j.foot.2014.03.005
16. Ajimsha MS, Al-Mudahka NR, Al-Madzhar JA. Effectiveness of myofascial release: systematic review of randomized controlled trials. J Bodyw Mov Ther. 2015;19(1):102-112. doi:10.1016/j.jbmt.2014.06.001
17. Kim J, Sung DJ, Lee J. Therapeutic effectiveness of instrument-assisted soft tissue mobilization for soft tissue injury: mechanisms and practical application. J Exerc Rehabil. 2017;13(1):12-22. doi:10.12965/jer.1732824.412
18. Lambert M, Hitchcock R, Lavallee K, et al. The effects of instrument-assisted soft tissue mobilization compared to other interventions on pain and function: a systematic review. Physical Therapy Reviews. 2017;22(1-2):76-85. doi:10.1080/10833196.2017.1304184
19. Seffrin CB, Cattano NM, Reed MA, Gardiner-Shires AM. Instrument-Assisted Soft Tissue Mobilization: A Systematic Review and Effect-Size Analysis. J Athl Train. 2019;54(7):808-821. doi:10.4085/1062-6050-481-17