



EFFECT OF KINESIO TAPING VERSUS MYOFASCIAL RELEASE ON PAIN, RANGE OF MOTION AND FOOT FUNCTIONAL ACTIVITIES AMONG SUBJECTS WITH CHRONIC PLANTAR FASCIITIS: A COMPARATIVE STUDY

Physiotherapy

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ABSTRACT

Introduction: Plantar fasciitis is an inflammation of the plantar fascia, a thick band of tissue connecting the heel bone to the toes, commonly resulting in heel pain, especially with initial steps in the morning or after periods of rest. **Aim and Objective:** This study compared Kinesio Taping and Myofascial Release on pain, range of motion, and foot function in chronic plantar fasciitis subjects. **Methodology:** Forty adults (25–40 years) were randomly assigned to KT or MFR groups for a 4-week intervention; pain (NPRS), ROM (goniometer), and foot functional activities (FFI) were measured before and after treatment. **Results:** Both groups improved ($p < 0.05$), but MFR showed significantly greater benefits. **Conclusion:** Myofascial Release is more effective than Kinesio Taping for pain relief, ROM, and foot function in chronic plantar fasciitis.

KEYWORDS

Plantar Fasciitis, Kinesio Taping, Myofascial Release, Pain, Range of Motion, Foot Function Index.

1. INTRODUCTION

Plantar fasciitis is inflammation of the plantar fascia, causing heel pain with first morning steps or after rest, often linked to obesity, poor mechanics, microtrauma, or prolonged standing.⁽¹⁾

Affects approximately 10% of the general population. More prevalent in women and those with a BMI $> 25 \text{ kg/m}^2$. Common among runners and adults aged 40–60 years.⁽²⁾ Pain localised at the medial calcaneal tubercle, worsened by initial weight-bearing after rest. Mechanical factors (tight calf muscles, reduced dorsiflexion) and lifestyle risks (prolonged standing, poor footwear) exacerbate symptoms.⁽³⁾

Plantar fascia degeneration, linked to pronation, limited dorsiflexion, obesity, and anatomical factors, disrupts the Windlass mechanism, increasing strain⁽⁴⁾. Conservative treatments like stretching, kinesio taping, myofascial release, and orthotics are effective in most cases, while taping offers short-term relief; MFR reduces restrictions. Shockwave therapy, injections, or surgery are last-resort options⁽⁵⁾.

Kinesio Taping (KT) is an elastic therapeutic tape that supports muscles and joints without limiting movement, often used for plantar fasciitis to reduce stress on the fascia, relieve pain, support the arch, and improve circulation. KT enhances proprioception and overcomes the limitations of rigid tapes through its elasticity.⁽⁶⁾

Myofascial Release (MFR) is a manual therapy used by physiotherapists to release restrictions in the plantar fascia and surrounding tissues. It aims to relieve pain, restore normal function, improve mobility, and address biomechanical dysfunctions in patients with plantar fasciitis.⁽⁷⁾

2. Methodology

Materials:

- Kinesio tape
- Universal Goniometer
- Treatment Couch
- Foot Function Index questionnaire sheet

Methods:

The study was an experimental design conducted at the College of Physiotherapy, SVIMS, including 40 participants selected by simple random sampling from SVIMS and BIRRD Hospital. The study lasted 6 months, with a treatment duration of 4 weeks.

Inclusion and Exclusion Criteria

The Subjects Who are Included in this Study:(1) Individuals aged

25 to 40 years, (2) both male and female, (3) experiencing unilateral heel pain for at least 6 months. (4)The pain is localised to the inferior heel and is notably worse in the morning during the first steps following prolonged bed rest

The Subjects Who are Excluded from this Study: (1)Individuals below 25 or above 40 years, (2)Those with rheumatoid arthritis, osteoarthritis, osteoporosis, foot deformities (pes planus, pes cavus), (3)Recent ankle fractures or surgeries, (4)High-heeled footwear users, (5) Subjects with diabetes or congenital disorders.

Treatment Protocol

The study, approved by the Institutional Ethical Committee (IEC no: 1779), included 40 participants after 5 of 45 recruited declined. Subjects were randomly assigned to Group A (Kinesio Taping) or Group B (Myofascial Release). Both groups received 20-minute sessions, 3 days a week for 4 weeks. Group A received Kinesio taping combined with plantar fascia and calf stretches, while Group B received Myofascial Release with the same stretching protocol, including 10-second holds, 10 repetitions, 3 sets, twice daily.

Outcome Measures: (1)Pain: Numerical Pain Rating Scale (2)Range of Motion: Universal Goniometer (3)Foot Functional Activities: Foot Function Index

3. Study Procedure:

Group A(Kinesio Taping)

Kinesio taping was applied after shaving the calf for better adhesion. The patient lay prone with the knee extended and the ankle dorsiflexed. An I-shaped tape ran from the metatarsal heads along the plantar fascia and Achilles tendon to the calf near the fibular head (50% tension at Achilles, 15% up the calf). Another 50% tension strip extended from the 5th metatarsal across the sole to support the medial arch.



Figure 1: Method of Application of Tape

Group B (Myofascial Release)

In the MFR group, subjects lay prone with feet beyond the couch edge and a pillow under the shins. The area was cleaned, then the therapist applied sustained gentle thumb pressure along the plantar fascia from heel to toes. Each application lasted 90 seconds, followed by 60 seconds of rest, repeated throughout a 15-minute session.

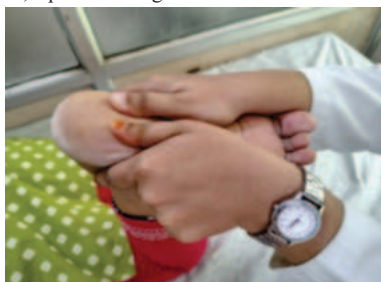


Figure 2: Myofascial Release for Plantar Fasciitis

Stretching Procedure

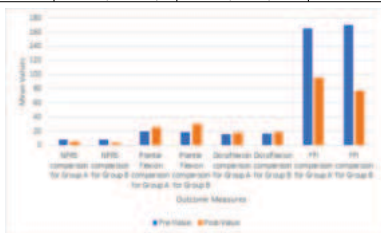
Calf muscle stretching was performed standing, with the affected foot back. For soleus, the knee was bent; for gastrocnemius, extended, holding each stretch 30 seconds. Plantar fascia stretching was done seated, pulling the toes toward the shin. Intensity was based on tolerance. Protocol: 10 repetitions per set, 3 sets per session, 2 sessions daily, 3 days/week for 4 weeks, with 2-minute rests between sets.

4. RESULTS

The data is entered into Microsoft Excel for tabulation and analysis. Statistical analysis was performed using SPSS 25.0 software. The paired sample t-test is used to compare the mean values of all parameters between the two groups. A p-value of <0.01 will be considered statistically significant.

Table 1: Shows the Comparison of Pre- and Post-mean Values Between Groups A and B

Outcome Measure	Group A Mean (SD)	Group B Mean (SD)	Group A Median	Group B Median
NPRS PRE	8.0 (0.92)	7.9 (0.64)	8.0	8.0
NPRS POST	4.15 (0.67)	3.6 (0.60)	4.0	4.0
Plantar Flex PRE	18.9 (1.29)	18.55 (1.15)	19.0	18.0
Plantar Flex POST	24.15 (0.93)	26.85 (2.18)	24.0	26.0
Dorsi Flex PRE	13.65 (0.67)	13.95 (0.89)	14.0	14.0
Dorsi Flex POST	15.55 (0.83)	16.75 (0.79)	16.0	17.0
FFI PRE	170.7 (12.69)	164.35 (11.58)	173.0	165.0
FFI POST	91.4 (12.15)	77.9 (5.76)	90.0	78.0



Graph 1: Shows The Comparison of Pre- and Post-mean Values Between Groups A and B

Both interventions produced significant improvements; however, the Myofascial Release (Group B) technique demonstrated superior therapeutic efficacy. In Group A, Numeric Pain Rating Scale (NPRS) scores decreased from 8.00 to 4.15 ($Z = -3.98$, $p < 0.001$), plantar-flexion range of motion increased from 18.90° to 24.15°, dorsiflexion improved from 13.65° to 15.55° (both $p < 0.001$), and Foot Function Index (FFI) scores declined from 170.70 to 91.40, indicating reduced pain and disability with improved ankle mobility. Group B achieved greater gains: NPRS scores dropped from 7.90 to 3.60 ($Z = -4.01$, $p < 0.001$), plantar flexion rose from 18.55° to 26.85° ($Z = -3.96$), dorsiflexion from 13.95° to 16.75° ($Z = -4.03$), and FFI scores decreased from 164.35 to 77.90 ($Z = -3.92$). Inter-group analysis confirmed Myofascial Release superiority, showing significantly lower post-treatment NPRS scores (3.60 vs 4.15; $Z = -2.52$, $p = 0.012$),

greater plantar-flexion range (26.85° vs 24.15°; $Z = -4.92$, $p < 0.001$), increased dorsiflexion (16.75° vs 15.55°; $Z = -3.85$, $p < 0.001$), and lower FFI scores (77.90 vs 91.40; $Z = -3.58$, $p < 0.001$). These results demonstrate that Myofascial Release provides superior clinical and statistical benefits, achieving greater reductions in pain and disability and more substantial improvements in ankle range of motion and overall foot function compared with the alternative intervention.

5. DISCUSSION

Plantar fasciitis involves fascia degeneration from microtears, causing pain. Heel spurs may form, but aren't always painful. Risk factors include obesity, poor footwear, abnormal foot mechanics, and ageing.⁽⁵⁾

A total of 45 subjects with chronic plantar fasciitis were screened for 6 months; 5 were excluded based on the criteria, leaving 40 subjects ($n=40$) who met the criteria. These subjects were randomly assigned to two groups of 20 each: Group A received Kinesio taping with stretching, while Group B received Myofascial release with stretching.

Dong-Ho Kim et al. conducted a randomised trial comparing Dynamic Taping(2021)⁽⁹⁾ (DT) and Kinesiology Taping (KT), both combined with physiotherapy, in plantar fasciitis patients. The DT+PT group showed significantly greater improvements in Foot Function Index (FFI) and Y-Balance Test (YBT) scores than the KT+PT group ($p < 0.05$), though both outperformed the control group. No significant difference was found between DT and KT for pain and foot pressure, but both were more effective than no taping. Qasim Ali et al.(2024)⁽¹²⁾ conducted a cross-sectional study on 100 young female medical students, finding 66% experienced heel pain linked to frequent use of high-heeled, hard-soled shoes—indicating footwear as a major risk factor. Tsai C.T. et al.(2010)⁽¹³⁾ concluded that one week of continuous Kinesio Taping may relieve pain more effectively than physical therapy alone. Mokhtari et al. (2025)⁽⁹⁾ found that both Kinesio Taping and dry needling reduced pain, improved function, and decreased plantar fascia thickness in plantar fasciitis patients.

Bibhuti Sarkar et al.(2018)⁽¹⁴⁾ conducted a double-blind randomised trial comparing Muscle Energy Techniques (MET) and Myofascial Trigger Point (MTrP) release in 45 chronic plantar fasciitis patients. MTrP release plus stretching was more effective than MET in reducing pain and tenderness ($p < 0.05$). Ajimsha et al. (2014)⁽¹⁰⁾ Conducted a study to assess the immediate effects of myofascial release (MFR) on first-step pain and functional activity levels in patients with plantar fasciitis. MFR effectively reduced first-step pain, indicating its potential as a beneficial intervention for improving mobility and reducing discomfort in plantar fasciitis patients. Satish C. Pant et al.(2018)⁽¹¹⁾ compared MFR and static stretching in 30 patients, both showing significant pain and function improvements, with MFR possibly more effective. Zhao J et al.(2023)⁽¹⁵⁾ reported that extracorporeal shock wave therapy (ESWT) combined with Kinesio Taping (KT), alongside ultrashort wave therapy and stretching, improved pain and function more effectively than KT alone, which showed limited effects. Combined ESWT and KT therapy demonstrated positive outcomes for plantar fasciitis treatment.

6. CONCLUSION

The present study concluded that both the subjects who received Kinesio taping(Group A) and the Myofascial release (Group B) had shown improvement in terms of pain, range of motion and foot functional activities. However, Group B had shown more significant improvement when compared to Group A. Therefore, the Myofascial release can be used as an effective means of treatment in subjects with chronic plantar fasciitis.

7. Limitations of the Study

- The sample size for this study is small in both experimental groups, which was not enough for the study to generalise the results to the whole population.
- There was no long-term follow-up to measure the actual long-term effect of myofascial release was not explored or explained study.
- This study was done on subjects with 25 to 40 years old of age only.

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