



# THE EFFECT OF KINESIOTAPING AND MYOFASCIAL RELEASE IN TREATMENT OF PLANTAR FASCIITIS – A COMPARATIVE STUDY

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## Abstract-

**Background:** Planter fasciitis is a syndrome that occurs due to Repeated trauma on planter fascia, originating from the medial Calcaneus. **Objective:** To compare the effectiveness of myofascial release (MFR) & kinesiotaping with ultrasound on pain and function in a patient with plantar fasciitis. **Method-** 30 subjects with planter fasciitis were selected according to the randomized sampling method and equally divided into 2 groups Group 1(n=15) and group 2(n=15). The first group received kinesiotaping with ultrasound. The second group received myofascial release with ultrasound. treatment was given for 4 weeks on alternate days. **Result:** There was a statistically significant difference of pre and post reading within the groups. Group A subjects who were treated with myofascial Release technique with ultrasound, when results were viewed on NPRS & FAAM, it showed significant improvement in the planter fascia symptoms in comparison to group B who were given kinesiotaping and ultrasound, while analysis of mean & standard deviation values with in the groups. Group A showed significant decrease in NPRS & FAAM as compared to group B. **Conclusion:** The finding of the study is that myofascial release with ultrasound is more effective in reduction of pain and improving function in planter fasciitis patients.

**Index Terms:** Planter fasciitis, MFR, kinesiotaping, NPRS, FAAM.

## I. INTRODUCTION

Planter fasciitis is a syndrome that occurs due to repeated trauma on planter fascia, originating from the medial calcaneus [1]. It is a strong band that is made up of connective tissue, from planter tuberosity it runs towards phalanges and divided into three bands, the medial, lateral and central band then inserted into proximal phalanges. The central band supports the medial and lateral bands anatomically and structurally. The degeneration of this fascia in planter fasciitis commonly occurs at its origin [2]. Individuals who have foot deformities like pes planus (flat foot) and pes cavus (high arch) deformity have a high risk of developing plantar fasciitis [1].

Other risk factors of plantar fasciitis are increased body mass index in the non-athletic population, increased age, reduced ankle dorsiflexion, reduced first metatarsophalangeal joint extension, prolong standing and tightness of the posterior leg muscles [2]. It is also known as **“Start-up Pain”** Because it occurs suddenly after a long time of sitting [3]. As per guidelines of (The American physical therapy Association) APTA, plantar fasciitis diagnosis criteria are pain in the medial side of calcaneus, limited ankle range of motion, foot posture is abnormal [3], positive windlass test and negative tarsal tunnel syndrome, entrapment of the first branch of lateral planter nerve and radiculopathy. Treatment of plantar fasciitis is done by different techniques like biomechanically (orthotics, footwear different modification and taping), stretching, MFR, ESWT and cortisone injections and surgical treatment [2,3].

MFR is a myofascial release technique used to increase the mobility of soft tissue by the application of slow and controlled mechanical stress on the affected area. This pressure is given by the fingers, thumb, elbow or forearm by the physiotherapist [4]. There are three types of MFR application – direct MFR, indirect MFR and self-myofascial release [5]. The purpose of the myofascial release technique is to regain the original length, decrease pain and increase the mobility of the affective part. It is superimposed that the affected fascia of one part of the body affects the fascia of another part of the body due to the connectivity between the fascia. So due to tension, the fascia compresses the nerve and blood vessels, the excessive pressure on the painful structure can be relieved by regaining the length and mobility of the fascia [4].

Kinesio tape was invented by Dr. Kase in 1970. Kinesiotape is a porous cotton fabric tape with adhesive capacity. It is stretched about 140% of its original length [6]. Kinesiotaping facilitates and inhibits muscle activity by lifting of skin, provide space for lymphatic fluid for moving and relieve muscle tension [7]. Then taping is used as a treatment method in plantar fasciitis. Taping decreases the tension of plantar fascia as it relieves pain and inflammation [8]. But there were very limited studies that has investigated the effect of kinesiotaping. It is noninvasive, cost effective and safe intervention as a part of Plantar fasciitis treatment [9]. The present study will compare the effectiveness of myofascial release (MFR) & kinesiotaping with ultrasound on pain and function in a patient with plantar fasciitis as to provide the working lifestyle of people easy and comfortable without any pain.

## II. METHODOLOGY

### 2.1. STUDY DESIGN

Comparative experimental study designed approved by the institutional Review Board of Gurugram University. Sampling technique used in this study was random sampling. The study was conducted from 15<sup>th</sup> August, 2022 to 30<sup>th</sup> August, 2022. We were recruited 30 subjects from Gurugram university, Gurugram. They were randomly divided into two groups named as Group A (Myofascial release with ultrasound) and Group B (kinesiotaping with ultrasound). Random sampling was done. Subjects diagnosed with planter fasciitis were included in the study. Inclusion criteria was both male and female subjects with age of 20-45 years, who were diagnosed with plantar fasciitis for more than 1 month and having heel pain with the first step of walking in the morning greater than 5 on 10 score on a visual analog scale with positive windlass test. This study excludes subjects who were less than 20 years of age and more than 45 years of age. Subjects who were taken manual therapy or electrical therapy. The participants who had tumors, recent fracture, rheumatoid arthritis, prolonged history of steroid use, severe vascular disease, open wounds, recent surgery to ankle joint or rear foot region (<6 months), impaired sensation, pack maker, and implants, inability to complete treatment, currently undergoing any other treatment for heel pain. Outcome measures were Numerical Pain Rating Scale (NPRS) and Foot and Ankle Ability Measure (FAAM). NPRS is a numeric pain rating scale. which is used for pain measurement. It is a segmented version of VAS in which patients select one number according to their pain intensity between 0-10, with 0 representing ‘no pain’ and 10 representing ‘pain at its extreme’. FAAM is a self-reported outcome measurement scale developed for foot and ankle-related impairments. It is 29 questions-related questionnaires divided into two parts. The first 21 is for the daily activity’s subscale for foot and ankle measurement and 8 item questionnaire is for sports-related impairments which is a special design for athletes. 5 points scored on every point where 0 is for unable to do and 4 is for no difficulty. The score of items is added together to find the total score and multiplied by 4 to get a highest potential score

## 2.2. DATA COLLECTION PROCEDURE

The data collection process began when all procedures of treatment is explained to the patient and ensured that all patients met inclusion criteria. All participants fill out the questions or answer the questions in the consent form and questionnaire.

Each participant has randomly divided into two groups one group of 15 participants received the myofascial release with ultrasound therapy and the other group of 15 participants received kinesiotaping with ultrasound therapy. The participants never experienced kinesiotaping in past. All treatment is applied in three sessions a week for four weeks. Then data is collected again by using FAAM [10]and NPRS [11].

### GROUP- A: MYOFASCIAL RELEASE WITH ULTRASOUND THERAPY

The patient was in a prone position lying on the edge of the table. Feet off the table through which dorsiflexion was easily done. The therapist sits on the Stoll near the foot and by the use of knuckles and thumb engages the soft tissue of plantar fascia just anterior to the calcaneus. Give some tension in the anterior direction and instruct the patient to lift their toes with direction.

Then ultrasound was given with output 1w/cm<sup>2</sup>, pulsed mode 1:4 ratio for 5 min with frequency 1MHz

### GROUP-B: KINESIOTAPING WITH ULTRASOUND THERAPY

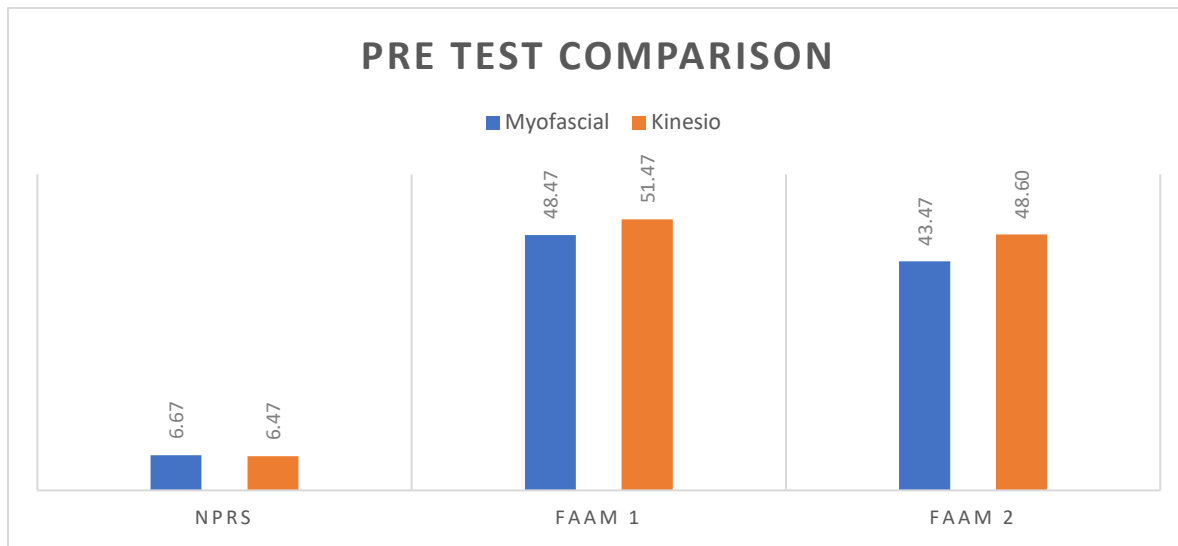
The tape Kinesio Tex, Kinesiotaping used for the procedure as it was waterproof, porous, and adhesive. The tape width of 5cm and thickness of 0.5 mm was selected. During the treatment, the patient was in a prone position with knee flexion at 90° of flexion and ankle joint at normal position. Then the tape was cut longitudinally into four equal width slices. The common end of the tape adheres to the calcaneal bone and then four slices were stretched and adhered to the forefoot. The tape has stretched the length of the tape was increased about 133 percent from its original length and ultrasound therapy was given with output 1w/cm<sup>2</sup>, pulsed mode 1:4 ratio for 5 min with frequency 1MHz.

**2.3. DATA ANALYSIS:** The data were collected and entered in Microsoft excel sheet and were analyzed using statistical package for social science (SPSS) version 26. Independent t- test were used to determine significant difference between the groups. Level of significance selected for the study was  $p < 0.05$  subtracting pretreatment scores from the post treatment scores.

## III. RESULTS

**Table 3.1. Comparison of myofascial and kinesio according to NPRS scale and FAAM with pre-test.**

Pre-test	Group	Mean	Std. Deviation	t-test	p-value
NPRS	Myofascial	6.67	1.35	0.422	0.676 <sup>NS</sup>
	Kinesio	6.47	1.25		
FAAM 1	Myofascial	48.47	8.53	0.967	0.342 <sup>NS</sup>
	Kinesio	51.47	8.45		
FAAM 2	Myofascial	43.47	8.60	1.63	0.114 <sup>NS</sup>
	Kinesio	48.60	8.64		



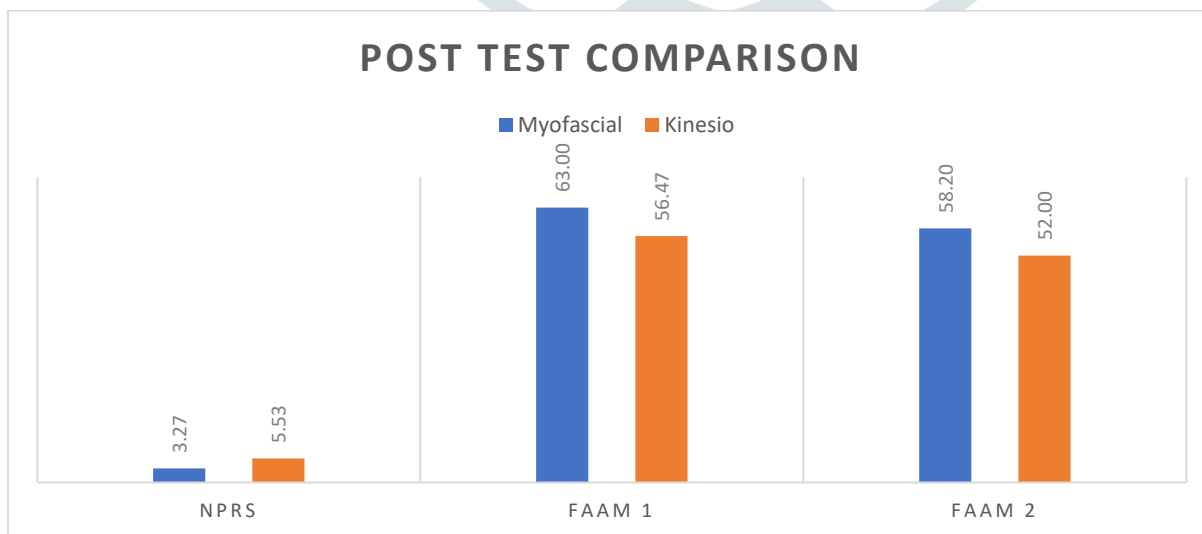
According to table and figure 3.1, it revealed that the comparison of NPRS and FAAM between the groups according to pretest analysis. At starting point, the average value for all the variables were same. Independent t-test was applied and the results were insignificant at 0.05 level of significance.

**Table 3.2. Comparison of myofascial and kinesio according to NPRS scale and FAAM with post-test.**

Post	Group	Mean	Std. Deviation	t-test	p-value
NPRS	Myofascial	3.27	1.58	3.66	0.001**
	Kinesio	5.53	1.81		
FAAM 1	Myofascial	63.00	8.12	2.215	0.035*
	Kinesio	56.47	8.03		
FAAM 2	Myofascial	58.20	8.15	2.217	0.035*
	Kinesio	52.00	7.13		

\*\*= Significant at 0.01 level of significance

\*= Significant at 0.05 level of significance



Similarly, in table and figure 3.2 shows that the post test of NPRS and FAAM between the groups. It was found that the results were significant at 0.01 and 0.05 level of significance by using independent t-test. The mean value of NPRS of myofascial was 3.27 with 158 SD and 5.53 mean and 1.81 SD for kinesio tapping group. For FAAM1, the mean was 63 of myofascial and 56.47 of kinesio

tapping. For FAAM2, the value was different for each group, i.e., 58.20 for myofascial and 52 for kinesio tapping with 8.15 and 7.13 SD respectively.

GROUP A – The pretreatment mean value of NPRS was 6.67 with SD 1.35 and the post treatment mean value was 3.27 with 1.58 SD. The pretreatment mean value of FAAM 1 was 48.47 with 8.53 SD and the post treatment mean value was 63 with 8.12 SD, and for FAAM 2 pretreatment mean value was 43.47 with 8.60 SD and post treatment mean value was 58.20 with 8.15 SD.

GROUP B – The pretreatment mean value of NPRS was 6.47 with 1.25 SD, the post treatment mean value was 5.53 with 1.81 SD. The pretreatment mean value of FAAM 1 was 51.47 with 8.45 SD, the post treatment mean value was 56.47 with 8.03 SD and for FAAM 2 pretreatment mean value was 48.60 with 8.60 SD, the post treatment mean value was 52 with 7.13 SD.

There was a statistically significant difference of pre and post reading within the groups. Group A subjects who were treated with myofascial Release technique with ultrasound, when results were viewed on NPRS & FAAM, it showed significant improvement in the planter fascia symptoms in comparison to group B who were given kinesiotaping and ultrasound, while analysis of mean & standard deviation values within the groups. Group A showed significant decrease in NPRS & FAAM as compared to group B.

#### IV. DISCUSSION

This study was done to examine effect of kinesiotaping and myofascial release with ultrasound in treatment of planter fasciitis. Result shows that there was statistically Significant improvement in pain between the groups A and B. This study shows that kinesiotaping and myofascial release is effective in treatment of planter fasciitis with ultrasound but myofascial release is more effective significantly. Anam Javed et al showed significant result that MFR is an effective therapeutic option in treatment of planter fasciitis which also support the findings of present study [4]. Same study Shubhangi Patil et al. effectiveness of myofascial release technique and taping technique on pain and disability in patients with planter fasciitis: Randomized Clinical trial also support our study findings.

#### V. CONCLUSION

Both myofascial Release and kinesiotaping are effective in treatment of planter fasciitis but myofascial release is more effective than kinesiotaping in 4-week intervention.

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