

**TO COMPARE THE EFFECTIVENESS OF  
LONGWAVE DIATHERMY WITH MYOFASCIALRELEASE  
AND ULTRASOUND THERAPY WITH MYOFASCIALRELEASE  
FOR PAIN AND FUNCTION IN PATIENTS WITH  
PLANTAR FASCIITIS**



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1.

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## **CERTIFICATE**

This is to certify that the dissertation title To Compare the effectiveness of long wave diathermy with Myofascial Release and ultrasound therapy with Myofascial release for pain and function in Patients with plantar fasciitis is a bonafide record of work done under my guidance Supervision in the partial fulfilment for the degree of Master of Physiotherapy, Specialty Advance orthopedics physiotherapy (M.P.T. II APRIL-2016) by **Mr. S.T.Manigandan (Register Number-271410222)** Post graduate Student of Madha College of Physiotherapy.

**GUIDE**

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**PRINCIPAL**

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# CHAPTER - 1

## INTRODUCTION

The Plantar fascia is the thick tissue on the bottom of foot. It connects the heel bone to the toes and creates the arch of the foot. When this tissue becomes swollen or inflamed it is called plantar fasciitis.

The plantar fasciitis also known as plantar fasciitis or Jogger's heel is a disorder that results in pain in the heel and bottom of the foot. The pain is usually most severe with the first step of the day or following a period of rest. The cause of plantar fasciitis is not entirely clear. Risk factors include overuse such as from long period of standing an increase in exercise and obesity.

It is also associated with inward rolling of the foot and life style that involves little exercise. Plantar fasciitis is a disorder of the insertion site of the ligaments on the bone characterized by micro tears collage breakdown and scarring as inflammation plays a lesser role many feel the condition should be renamed plantar fasciosis. The other condition with similar symptoms includes osteoarthritis, anklyosing spondylitis, heel pad syndrome and reactive arthritis. Between 4% and 7% of people have heel pain at any given time and about 80% of these cases are due to plantar fasciitis, approximately 10% of People have the disorder at some point during life time when plantar fasciitis occurs the pain is typically sharp and usually (Unilateral 70% of case). Heel pain worsens by bearing weight on the heel after long periods of rest. Typical signs and symptoms of plantar fasciitis include a clicking or snapping sound significant local swelling and acute pain in the role of the foot. Rare but symptoms includes numbness, tingling, swelling or radiating pain risk factors for plantar fasciitis includes excessive running, standing on hard surfaces for prolonged period of the time high arch of the feet the Presences of a leg length in equality and flat feet.



## **1.1 LONG WAVE DIATHERMY**

Long wave diathermy is a kind of machine that can be used to give treatment to the patients with the help of a treatment head and a particular independent long wave diathermy cream which is used as a coupling media to apply in between patient's skin and treatment head, long wave diathermy uses 1 megahertz(MHZ) alternating current frequency.

## **1.2 ULTRASOUND THERAPY**

Ultrasound therapy is a high frequency sound waves can be treat deep tissues injuries by stimulating blood circulation and cell activity. It is thought that it can help reduce pain and muscle spasm, as well as promotes healing. The frequency of ultrasound is usually 1.0-3.0 megahertz (MHz).

## **1.3 MYOFASCIAL RELEASE**

Myofascial release is a soft tissue therapy for the treatment of skeletal muscle immobility and pain.

Myofascial release is known as a deep technique that addresses the fascia and surrounding tissues that connects all muscle bones and internal organs.

Myofascial release is a technique that best performed slowly the main goal is to increases tissue pliability in an effort to enables between tissues. It does not require the uses of lotion or cream to aid to release and is performed slowly and patiently. Example the therapist should check tissue pliability in all angles between in which direction the restriction is occurring.

Myofascial release

- Softening
- Lengthening
- Broadening
- Separating the fascia

## **1.4 AIM OF STUDY**

To compare the effectiveness of long wave diathermy, ultrasound therapy and myofascial release in patients with plantar fasciitis.

## **1.5 NEED OF THE STUDY**

There are few studies made on long wave diathermy with myofascial release in many musculo skeletal conditions.

Need to evaluate the treatment using long wave diathermy and myofascial release in treatment of plantar fasciitis hence need of the study exists.

To achieve a faster and better response.

To reduce the number of physiotherapy sessions.

## **1.6 OBJECTIVE OF THE STUDY**

- To evaluate the effect of long wave diathermy and myofascial release for pain and function in plantar fasciitis.
- To evaluate the effect of ultrasound therapy and myofascial for pain and function in plantar fasciitis.
- To compare the effectiveness of long wave diathermy therapy with myofascial release and ultrasound therapy with myofascial release in plantar fasciitis.

## **1.7 HYPOTHESIS**

### **1.7.1 NULL HYPOTHESIS (H<sub>0</sub>)**

There is no significant difference between longwavediathermy with myofascial release and ultra sound therapy with myofascial release in plantar fasciitis patients on pain and function

### **1.7.2 ALTERNATE (H<sub>1</sub>)**

There is significant difference between long wave diathermy with myofascial release and ultra sound therapy with myofascial release in plantar fasciitis patients on pain and function

## **CHAPTER - 2**

### **REVIEW OF LITERATURE**

1. H. Froseth et al: Concluded that their study showed that the method of treatment using long wave diathermy, Resulted is both subjective and objective improvement in a signification number of the treated patient suffering from typical epicondylitis symptoms .of the 28 patients treated, 21 reported that they felt better after the treatment.
2. Hanna Larsson: Found that active rest is a good treatment method for MTPS and also that electro static radiation with longwavediathermy can help reduce the pain sensation associated with medial tibial pain syndrome.
3. Dr. Bo.Martinsen M.D et al: Concluded that patients experienced long wave diathermy as a comfortable means of treatment but only to be used as an isolated treatment in cases of clearly related acute and simple neck myalgia.
4. Julia Maria D et al., (2009) did a study on comparison of radial shockwaves and conventional physiotherapy for treating plantar fasciitis. At the end they found both treatments were effective for pain reduction and for improving function and they concluded that the conventional therapy including ultrasound is found to be more effective than shock wave therapy in plantar fasciitis.
5. Mark D.Klaiman et al., (1998): American College of sport medicine concluded their ultrasound results in decreased pain and increased pressure tolerance in these selected soft tissue injuries. The addition of phonophorisis with fluocinamide does not argument the benefit of ultra sound used alone.

6. Karl B.Landorf et al., (2008): La Trobe University Australia made a study on “plantar heel pain and fasciitis.” In their systematic review they presented information related to the effectiveness and safety of some intervention is plantar heel pain. In that they concluded that ultrasound is one of the safety and effective intervention for plantar heel pain
7. Rita A. Wong et al., (2007) Conducted a therapeutic ultrasound use by physical therapists according to the survey the respondents indicated that they were likely to use ultrasound to decrease soft tissue inflammation, increase tissue extensibility, enhance soft tissue remodeling, increase soft tissue healing, decrease pain etc. they concluded that ultrasound continues to be a popular adjunctive modality in orthopedic physiotherapy.
8. Ceyda Akin el at., (2010) have found that ultrasound treatment for lateral epicondylitis improved pain and activities of daily living also resulting in high patient satisfaction.
9. A Blinder et al., (1985) stated that ultrasound enhance the recovery in most patients with lateral epicondylitis and came to the conclusion about the effectiveness of therapeutic ultra sound in soft tissues lesions.
10. Yadav Apeksha O et al., (2012) compared the effect of therapeutic ultra sound Vs Myofascial release technique in treatment of plantar fasciitis. In their prospective experimental study 30 patient were involved in eachgroup.In that they concluded that ultrasound and myofascialrelease technique were found to be effective in plantar fasciitis.
11. Leos Navratil et al., (2001) have done the study on comparison of the analgesic effect of ultrasound and low level laser therapy in patients suffering from plantar fasciitis. Ultrasound and low level laser were used in 181 patients suffering from plantar fasciitis. From their study they found that complete disappearance if pain was seen in 50% to 60% of patients treated with ultrasound and partial improvement in 16% of patients.

12. Jorge Elizondo Rodriguez et al., (2013): Used foot and ankle disability index for the assessment of pain and function in plantar fasciitis patient and it is found to be reliable and valid tool for assessing pain and function plantar fasciitis patients.
13. Mark D Klaiman et al., Stated that visual analogue scale is proved to be an effective technique for monitoring subject pain levels and it visual analogue scale has shown to be a valid technique for pain evaluation.
14. Mark D.Klaiman Joseph A.Sherder, Jerome V.Danoff, Jeonne E.Hicks, William J Pesce and James ferland, phonophoresis versus ultrasound in the treatment of common musculoskeletal conditions. *Medicine and & science in sports and exercise* 1998 sep (30) 91349-1355
15. Hong C-Z, chen-C Pon CH, YUJ, Immediate effect of various physical medicine modalities of pain threshold of an active myofascial trigger point. *J .Musculo skeletal pain* (1993).
16. Pro F.Luca Vaianti Riccardo Gazzalo MD, Jonatanngatti MD, Adriano Dimaltero MD, The Role of Long wave diathermy, in lower limb FLAPS, PAOLO Resch, Physiotherapist, Studio Movimento Resch, and Milan, Italy.
17. Mr.P.Sivasankar, MPT Professor, KG College physiotherapy Coimbatore, Effect of ultrasound therapy and myofascial release on pain and function in patients with plantar fasciitis this study concluded that ultrasound therapy and myofascial release in effective is reduction of pain and improvement of function is patients with plantar fasciitis.
18. Mr. Paul Higgins (Department of Rehabilitation science, university of Hard ford, USA. ( A Survey of Physical therapist of treat plantar fasciitis) The study concluded that evidence based approach is a necessity to validate the effectiveness of treatment option available.

19. Mr. Joel Brook, DPM F.A.C.F.A.S., DAMIEN M, Dauphine, DPM F.A.C.F.A.S., Jaryl Korpinen, DPM, F.A.C.F.A.S., Ian M. Rawe, PhD. (Pulsed Radio frequency Electromagnetic field therapy for plantar fasciitis. The Study results showed that overnight wear of the PRFC device was effective at significantly reducing morning Pain.
20. Mr. Shashwat prakash, Anand Misra Hisar, India. Effect of Manual therapy versus conventional therapy in patient with plantar fasciitis-A Comparative Study In this study provide evidence that manual therapy is superior approach in improving pain and disability.
21. Ajimsha MS, et al., .Foot (Edinb) 2014, Effectiveness of myofascial release in the management of plantar heel pain a randomized controlled trail ,this study provides evidence that myofascial release is more effective than a control intervention for plantar heel pain.

## **CHAPTER - 3**

### **DESIGN AND METHODOLOGY**

#### **3.1 STUDY DESIGN**

Experimental Study design

#### **3.2 STUDY SETTING**

- Madha Medical College and hospital, Department of Physiotherapy, Kovur, Chennai.
- Pearl Physiotherapy centre, (OMR) Sholinganullur, Chennai.

#### **3.3 STUDY DURATION**

Four weeks

#### **3.4 SAMPLE SIZE**

30 (Thirty patient were selected)

#### **3.5 SAMPLING TECHNIQUE**

Convenient Sampling Technique

30 Sub acute plantar fasciitis patients divided in to 2 groups -Group A &Group B

GROUP A-longwave diathermy with myofascial release : 15 subjects

GROUP B-Ultrasound therapy with myofascial release : 15 subjects



## **3.6 SAMPLING CRITERIA**

### **3.6.1 INCLUSION CRITERIA**

- Clinically diagnosed sub acute plantar fasciitis
- Age group 20-80 years
- Male and female
- Plantar fasciitis which is mechanical origin.
- Plantar fasciitis due to improper foot wear.
- Plantar aspect of one or both heels.

### **3.6.2 EXCLUSION CRITERIA**

- Calcaneal spur.
- Calcaneal periostitis.
- Valgus deformity and other causes of heel pain.
- Metal implants in foot.
- Fat pad syndrome.
- Diseases such Rheumatoid arthritis, ankylosingspondylitis, Reiter syndrome.
- Plantar Fascia Rupture.
- Foot infections.

### **3.7 VARIABLES**

#### **3.7.1 INDEPENDENT VARIABLE**

- Longwavediathermy.
- Ultrasound therapy
- Myofascial release

#### **3.7.2 DEPENDENT VARIABLE**

- Pain
- Function

### **3.8 MATERIALS USED**

- Plints and pillows
- Treatment couch
- Data collection sheet
- Pen
- Stop watch
- Consent form

### **3.9 TOOL USED**

- Visual analog scale
- Foot function index questionnaire

### 3.10 PROCEDURE

Thirty patients diagnosed as having plantar fasciitis by the orthopedic will be included for their study.

The patients will be informed about the nature of the study and formal written informed consent was obtained from the patients.

The pain level and functional status of plantar fasciitis will be recorded before and after the study in the both groups by using VAS (Visual analog scale) for pain and Foot functions index (FFI) questionnaire for function.

Long wave diathermy with myofascial release will be given to group A and ultrasound treatment with myofascial release will be given to group B for 10 minutes per day, three days in a week and totally for four weeks.

At the end of fourth week the patients will be retested to compare the pain and function.

The difference in the pre-treatment session score and post treatment session score will be checked. All participants were advised to use MCR footwear and home exercises also taught.

<b>PROTOCOL</b>	<b>GROUP A LWD&amp;MF</b>	<b>GROUP B UST&amp;MF</b>
Treatment	3 Times	3 Times
Frequency	3 Days Per Week	3 Days Per Week
Duration	4 Weeks	4 Weeks

## **Group A**

15 patients will be treated by long wave diathermy with myofascial release with following Parameters.

Parameters	:	Long wave diathermy Unit
Pulsed Mode	:	1: 3
Duration	:	10 Minutes a day
Frequency	:	1.0HZ
Treatment Protocol	:	3 times a week for 4 weeks

Myofascial release technique is also applied.

## **Group B**

15 Patients will be treated by Ultra Sound Therapy with myofascial release with following parameters.

Parameters	:	Ultrasound Unit
Pulsed mode	:	1:8
Frequency	:	1:0Hz
Intensity	:	1.2 to 1.5 w/cm <sup>2</sup>
Duration	:	10 Minutes
Treatment Protocol	:	3 times a week for 4 weeks

Myofascial release technique in also applied

## Long Wave Diathermy



**Pic.3.1 (a)**



**Pic. 3.2(b)**

## Ultrasound Therapy



**Pic 3.3**

## Myofascial Release



**Pic 3.4**

# CHAPTER - 4

## DATA ANALYSIS

### 4.1 STATISTICAL METHOD

The following statistical tools were employed to analyze the data and testing of hypothesis

The scores were obtained by using VAS and FFI. All the dependent variable with in group A and group B was analyzed using paired test. All the dependent variable between the group A and group B was analyzed using independents t test statically significance was set at P <0.05) level

$$\text{Mean } \frac{\sum x}{n}$$

$$\text{Standard deviation } S = \frac{\sqrt{\sum(x-\bar{x})^2}}{n-1}$$

$$\text{Paired Test } t = \frac{\sum D}{\sqrt{\frac{n \sum D^2 - (\sum D)^2}{(n-1)}}}$$

When, D = Mean difference

N = number of sample

Independent 't' test

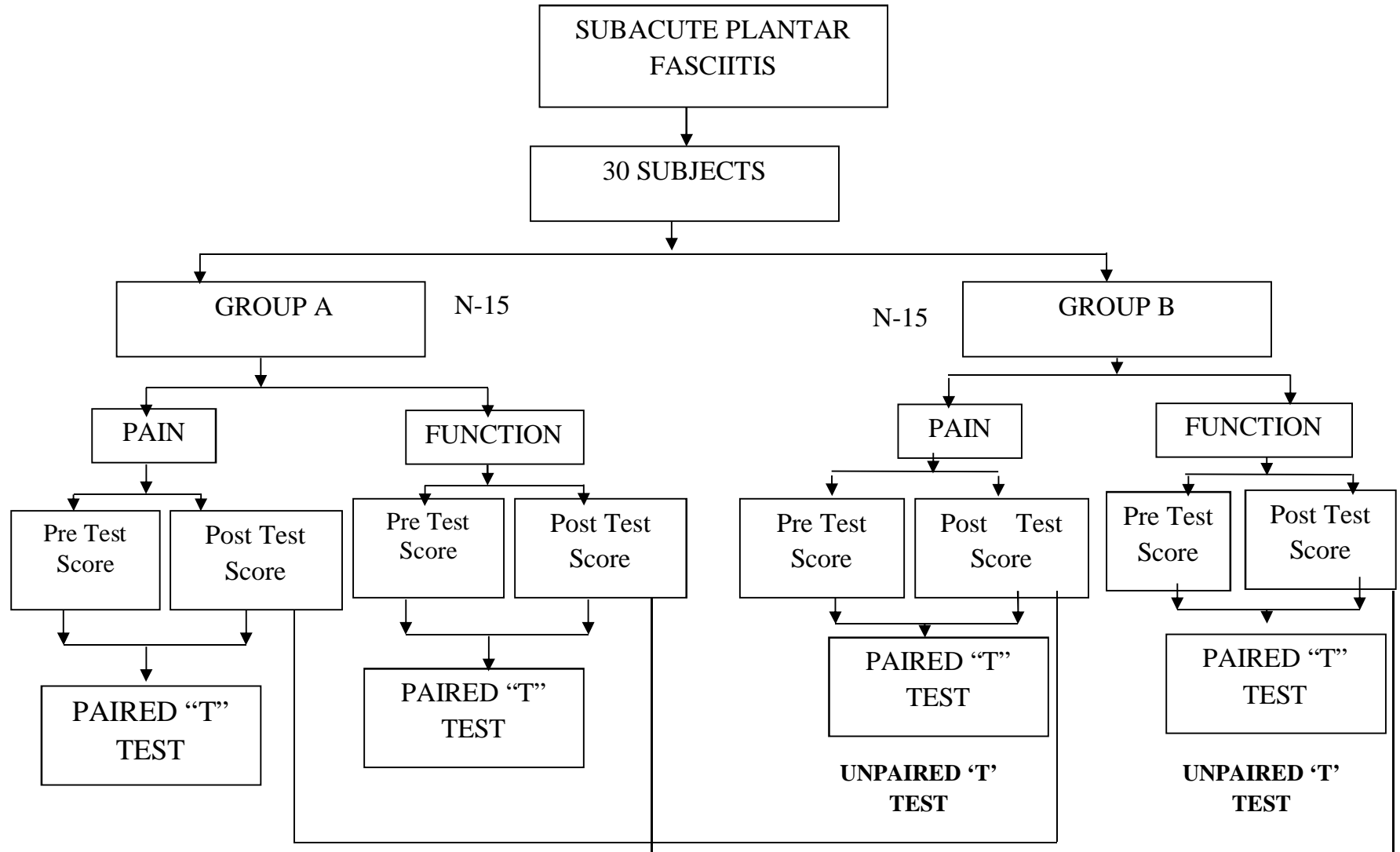
$$T = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{S^2_1}{n_1} + \frac{S^2_2}{n_2}}}$$

$$T = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{((N_1-1)S_1^2 + (N_2-1)S_2^2)}{N_1+N_2-2} \left(\frac{1}{n_1} + \frac{1}{N_2}\right)}}$$

N<sub>1</sub> N<sub>2</sub> - size of sample of two groups



## 4.1 FLOW CHART



## DATA ANALYSIS

**TABLE 4.1**

**Comparison of pre test& post test values of VAS and FFI in GROUP A**

VARIABLES	PRE-TEST			POST TEST		
	MEAN	SD	SEM	MEAN	SD	SEM
VAS	4.27	0.827	0.214	2.38	0.463	0.119
FFI	0.32	0.73	0.18	0.18	0.28	0.07

**Table4. 1 shows descriptive measures of pretest and post test values of VAS Scale and FFI in GROUP A**

The mean value of VAS Scale in Post Test is 2.38 with standard deviation (SD) of 0.463 and standard error mean (SEM) of 0.119 which is less than the mean value of the pretest 4.27 with standard deviation (SD) is 0.827 and standard error mean (SEM) is 0.214.

The mean value of FFI in the post test is 0.18 with standard deviation (SD) of 0.28 and standard error mean (SEM) 0.07 which is less than the mean value of the pretest FFI 0.32 with standard deviation (SD) is 0.73 and standard error mean is 0.18.

**TABLE 4. 2**

**Comparison of pretest and post test values of VAS and FFI in GROUP B**

<b>VARIABLES</b>	<b>PRE-TEST</b>			<b>POST TEST</b>		
	<b>MEAN</b>	<b>SD</b>	<b>SEM</b>	<b>MEAN</b>	<b>SD</b>	<b>SEM</b>
<b>VAS</b>	4.23	0.72	0.18	3.39	0.45	0.18
<b>FFI</b>	0.36	0.87	0.02	0.27	0.76	0.19

**Table4. 2 shows the descriptive measures of the pre-test and post test values of VAS Scale and FFI in GROUP B**

The mean value of VAS Scale in post test is 3.39 with standard deviation (SD) of 0.45 and standard error mean (SEM) 0.18 which is less than the pretest mean value 4.23 with standard deviation (SD) of 0.72 and standard error mean (SEM) 0.18.

The mean value of FFI in the post test 0.27 with standard deviation (SD) of 0.76 and standard error mean (SEM) 0.19 which is less than the Post test FFI mean value 0.36 with standard deviation (SD) 0.87 and standard error mean (SEM) 0.02.

**TABLE 4.3**

**Paired “T” test the analysis of GROUP A**

<b>Variables</b>	<b>Paired difference</b>						
	<b>95% confidence interval of difference</b>						
	<b>Mean</b>	<b>SD</b>	<b>Sem</b>	<b>Lower</b>	<b>Upper</b>	<b>Difference</b>	<b>T -value</b>
<b>VAS</b>	1.88	0.89	0.231	1.39	2.38	14	8.16
<b>FFI</b>	0.13	0.07	0.018	0.09	0.17	14	7.51

**The above table4.3 shows the statistical outcome of paired “T” test analysis of VAS and FFI in GROUP A**

In group A, the mean of VAS is decreased with paired difference of 1.88 with standard deviation (SD) of 0.89 and standard error Mean (SEM) of 0.231.

The change in 95% of confident interval is 1.39 to 0.09.

In group B, the mean of FFI is increased with paired difference of 0.13 with standard deviation (SD) of 0.07 and standard error mean (SEM) 0.018.

The Change in 95% of confident interval is 0.09 to 0.17.

**TABLE 4.4**

**Paired t test analysis of GROUP B**

Variables	Paired difference 95% confidence interval of difference						
	Mean	SD	Sem	Lower	Upper	Difference	T -value
VAS	0.84	0.36	0.093	0.63	1.04	14	8.98
FFI	0.09	0.04	0.011	0.07	0.12	14	8.12

**The above table4.4 shows the statistical outcome of paired “ T ” test analysis of VAS and FFI in GROUP B**

The mean value of VAS in decreased with the paired of 0.84 with standard deviation (SD) of 0.36 and standard error mean (SEM) 0.093.

The Change in 95% of confident interval is 0.63 to 1.04.

The Mean value of FFI in decreased with the pained difference of 0.09 with standard deviation (SD) of 0.04 and standard error mean (SEM) 0.011.

The change in 95% of confident interval is 0.07 to 0.12.

**TABLE 4.5**

**Comparison of post test score of VAS on Group A and Group B**

<b>Variable</b>	<b>Mean</b>	<b>SD</b>	<b>SEM</b>	<b>MD</b>	<b>95% Confident Interval</b>	<b>T- Value</b>	<b>Significant</b>
Group A	2.38	0.46	0.11	1.0133	1.3571	6.039	.000
Group B	3.39	0.45	0.18		To 0.6696		

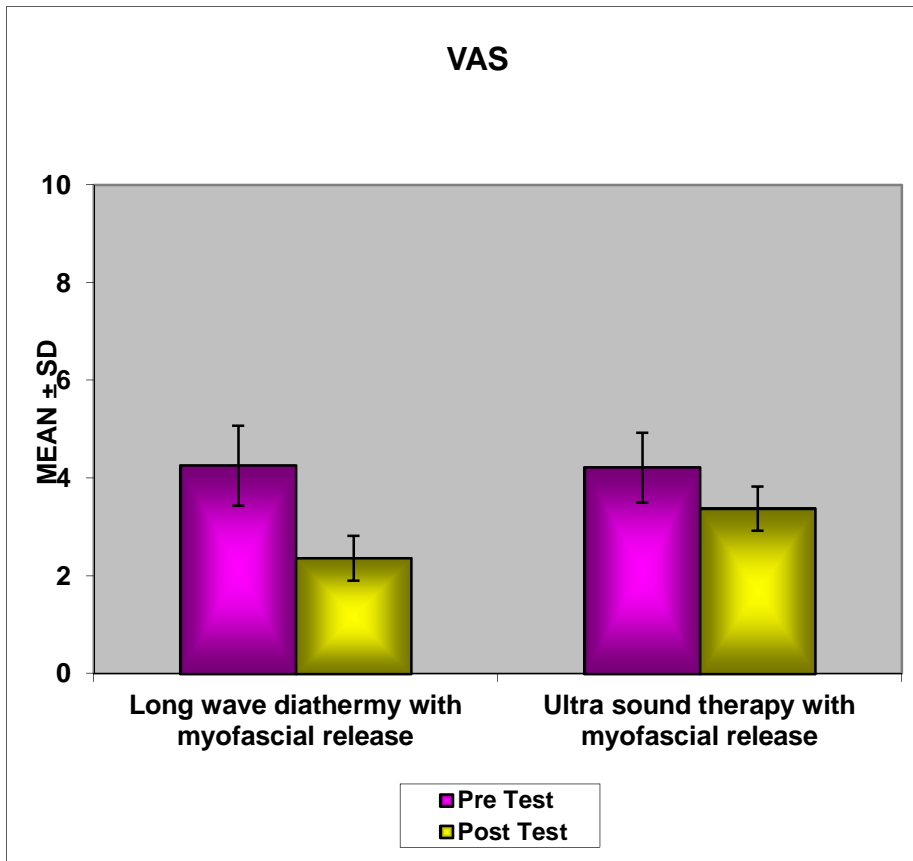
**The Statistical outcome measure of Post test score of VAS for group A and group B**

The VAS of group-A a mean value of 2.38 and group B an mean value of 3.39 with mean difference 1.0133

The 95% of confident interval is 1.3571 to 0.6696 with “T” Value of 6.039 which is statistically significant with (P<0.005).000

### GRAPH 4.1

#### COMPARISON OF POST TEST SCORE OF VAS ON GROUP A AND GROUP B



**TABLE 4.6**

**Comparison of post test score of FFI on GROUP A and GROUP B**

<b>Groups</b>	<b>Mean</b>	<b>SD</b>	<b>SEM</b>	<b>MD</b>	<b>95% Confident Interval</b>	<b>T Value</b>	<b>Significant</b>
Group A	0.18	0.28	0.07	0.8667	0.042	4.109	0.001
Group B	0.27	0.76	0.19		0.021		

**The Statistical outcome measure of Post test score of FFI for group A and group B**

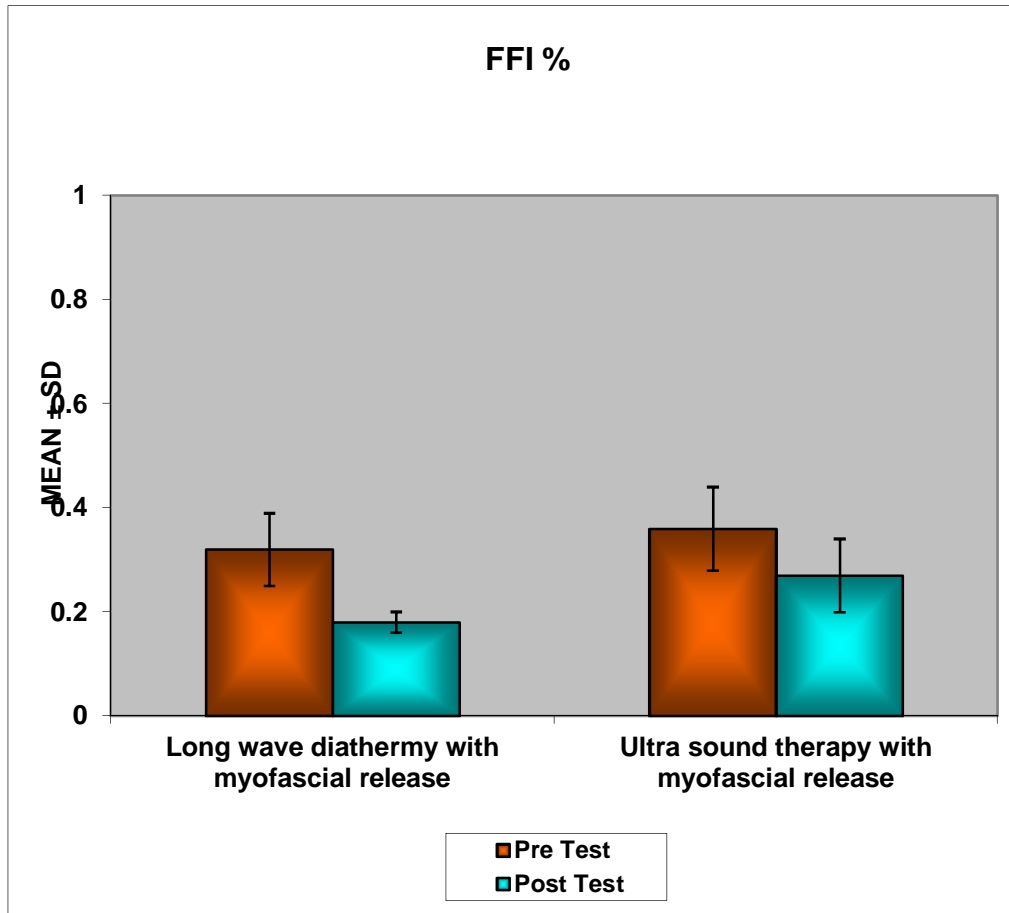
The VAS of group-A a mean value of 0.18 and group-B a mean value of 0.27 with mean difference 0.8667

The 95% of confident interval is 0.042 to 0.021 with “T” value of 4.109 which in statistically significant with (P<0.05) 0.001



## GRAPH 4.2

Comparison of post test score of FFI on GROUP A and GROUP B



## **CHAPTER - 5**

### **RESULT**

- The Mean Value of Post test score of VAS Scale in Group A is 2.38
- The Mean Value of Post test score of VAS Scale in Group B is 3.39
- When we Compared the mean values of post test scores of VAS Scale ,mean value of Group A is lesser then Group B and there is Statistical significant difference exist with “P” value  $<000(P<0.05)$ .
- The Mean Value of Post test score of FFI Scale in Group A is 0.18
- The Mean Value of Post test score of FFI Scale in Group B is 0.27
- When we Compared the mean values of post test scores of FFI Scale, mean value of Group A is lesser then Group B and there is Statistical significant difference exist with “P” value  $<0.001(P<0.05)$ .

## **CHAPTER - 6**

### **DISCUSSION**

- The aim of the study was to compare the effects of long wave diathermy with myofascial release and ultra sound therapy with myofascial release on plantar fasciitis the study was conducted on 30 subjects with two groups of 15 in each group.
- Group A 15 subject was intervene with long wave diathermy with myofascial release, were as group B was intervene with Ultrasound therapy with myofascial release. Out comes measures include pain intensity by VAS and function disability by foot function index(FFI) which was measure prior to treatment and end function disability by foot function index (FFI) which was measure prior to treatment and end of four weeks.
- The inter group comparison of VAS Score was done by using paired T Test which showed “P” value significant after four weeks of treatment. Comparison of FFI of both group A and group B “P” value significant.
- Statistical analysis shows when comparing VAS Score between group A and group B there was significant reduction of pain in both the groups. This significant change is pain reduction in group A (Mean value 2.38) when compared to group B (3.39) Shows pain reduction.
- Statistical analysis shows when comparing FFI Score of both group A and group B shows improvement in functions with significant change in group A with mean value of 0.18 with group B 0.27
- Hence statistically it proves that long wave diathermy with myofascial release was more effective than ultrasound therapy with myofascial release in treatment of plantar fasciitis.

## **CHAPTER - 7**

### **LIMITATIONS & RECOMMENDATION**

- The sample size for study is small. Bigger sample might have led to some difference in results.
- The study was done in short duration your 4 weeks.
- The long terms study may led to different in the out comes
- No Control group was used
- Under taking all measurements is an inherent strength of the current study although it is accepted that the introduced human error may be potential threat to reliability of the reading.
- Outcome measures used in this study of subjective not objective.

## **CHAPTER - 8**

### **CONCLUSION**

This is randomized trail study which was conducted to study the effect of long wave diathermy and ultrasound therapy with myofascial release for reduction pain and improving functional disability in patient with plantar fasciitis.

This study showed there was significant reduction in pain in patient with plantar fasciitis and improvement in functional activity as result of both longwavediathermy and ultrasound therapy along with myofascial release when the post test improvement. Compared between two groups. The group which was treated with long wave diathermy with myofascial release showed advantage over the group treated with ultrasound therapy with myofascial release difference between effect was statically significant has a result we concluded that long wave diathermy with myofascial release are more effective then ultra sound therapy with myofascial release in reducing pain and improving function disability in plantar fasciitis.

## CHAPTER - 9

### APPENDIX - I

#### INFORMED CONSENT FORM

I ----- agree to participate in the research study conducted by S.T.MANIGANDAN M.P.T SECOND YEAR MADHA COLLEGE OF PHYSIOTHERAPY entitled TO COMPARE THE EFFECTIVENESS OF LONG WAVE DIATHERMY WITH MYOFASCIAL RELEASE AND ULTRASOUND THERAPY WITH MYOFASCIAL RELEASE FOR PAIN AND FUNCTION IN PATIENTS WITH PLANTAR FASCIITIS.

I acknowledge that the research study has been explained to me and I understand that to participate in the research means that I am willing to

Provide information about my health status to the researcher(s)

Allow the researcher (s) to have access to my professional records pertaining to the purpose of the study

Participate in training program for duration of four weeks

Make myself available for follow up

Understand and follow the home advices that will be provided

I have been informed about the purpose procedure (s) measurement (s) and risks (s) involved in the research and have been clarified

I provide consent to the researcher to use the information video recording (s) for research and educational purpose only.

I understand that my participation in voluntary and can with draw at any stage of the research and educational purpose only.

I understand that my participation in voluntary and can with draw at any stage of the research project.

Name of Participant

Signature

Date

## **APPENDIX - II**

### **PLANTAR FASCIITIS ASSESSMENT**

Name

Age

Gender                      Male / Female

Occupation

Marital Status

Chief Complaints

Past Medical History

Present History

Personal History

Socio economic History

#### **VITAL SIGNS**

- Heart rate
- Pulse
- Blood Pressure
- Respiratory rate
- Temperature

## **PAIN ASSESSMENT**

- Site
- Side
- Duration
- Type
- Nature
- Aggravating Factor
- Relieving Factor
- Severity
- VAS

## **ON OBSERVATION**

- Build of Patient
- Attitude of the Patient
- Body type
- posture
- Marked Swelling
- Gait
- Walking aids

## **ON INSPECTION**

- Marked edema
- Mal alignment
- Muscle Spasm



## **ON PALPATION**

- Tenderness
- Swelling
- Warmth
- Muscle Spasm

## **ON EXAMINATION**

- Motor Assessment
- Sensory Assessment

## **MOTOR ASSESSMENT**

- Muscle tone
- Range of motion – Active range of motion  
Passive range of motion
- Muscle Power
- Tendon function

## **SENSORY ASSESSMENT**

- Light touch
- Deep Touch
- Temperature
- Proprioceptive sensation

## **FUNCTION STATUS OF PLANTAR FASCIITIS**

VAS :

FFI :

Special Test :

## INVESTIGATION

- X- Ray
- Ultra Sound Scans
- MRI
- Pathology Tests

VARIABLES	PRE TEST	POST TEST
VAS		
FFI		

**Signature of Investigator**

**Signature of the subject**

## APPENDIX - III

### MASTER CHART

#### GROUP A

S. No	VAS - Pre Test	VAS - Post Test	FFI % - Post Test (Week 1)	FFI % - Post Test (Week 4)
1	5	2.2	0.28	0.17
2	4	2.3	0.22	0.12
3	5	2.9	0.42	0.16
4	4	3.1	0.26	0.19
5	4	1.9	0.25	0.16
6	3	1.9	0.38	0.18
7	4	2.1	0.45	0.20
8	6	2.6	0.36	0.21
9	5	2.3	0.27	0.18
10	4	3.0	0.39	0.16
11	5	1.7	0.41	0.23
12	6	2.5	0.29	0.22
13	3	3.0	0.33	0.19
14	4	2.4	0.26	0.21
15	4	1.8	0.27	0.20

## GROUP B

S.No	VAS - Pre Test	VAS - Post Test	FFI % - Pre Test (Week1)	FFI % - Post Test (Week 4)
1	6	4.5	0.59	0.43
2	5	4.3	0.32	0.19
3	5	3.4	0.40	0.33
4	3	3.0	0.27	0.20
5	4	3.1	0.33	0.29
6	4	3.0	0.41	0.33
7	4	3.6	0.39	0.30
8	4	3.4	0.36	0.31
9	4	3.0	0.38	0.30
10	4	3.5	0.41	0.33
11	4	3.1	0.32	0.22
12	4	3.1	0.43	0.29
13	4	3.4	0.28	0.23
14	5	3.4	0.22	0.12
15	4	3.1	0.42	0.21

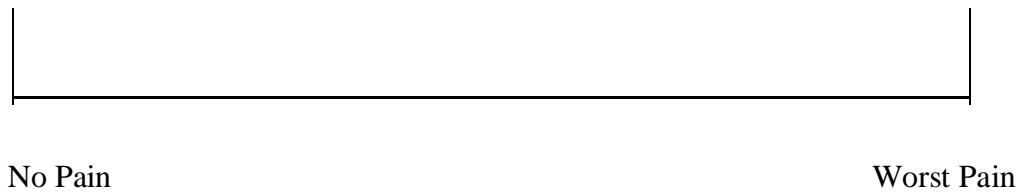
## APPENDIX - IV

### VISUAL ANALOGUE SCALE

VAS is a subjective measure of pain. It consists of a 10cm line with two end points representing 'No Pain' and 'worst pain' Patients are asked to rate their pain by placing a mark on the line corresponding to their current level of pain. The distance along the line from the 'on pain' marker is then measured with a ruler giving a Pain score out of 10.

#### **Interpretation of score:**

The Score can be used as a Baseline Assessment of pain with follow up measures providing an indication of whether pain is reducing. The scores can also be used to evaluate treatment effectiveness.



## APPENDIX - V

### FOOT FUNCTION INDEX QUESTIONNAIRE

Patient Name: \_\_\_\_\_ Date: \_\_\_\_\_

This questionnaire has been designed to give you therapist information as to how your therapist information as to how your foot pain has affected your ability to manage in everyday life. Please answer every question. For each of the following questions, we would like you to score each question on a scale from 0 (no pain or difficulty) to 10 (worst pain imaginable or so difficult it required help) that best describes your foot over the past WEEK. Please read each question and place a number from 0-10 in the corresponding box.

No Pain 1    2    3    4    5    6    7    8    9    10  
 Worst Pain Imaginable

**Pain Subscale: How severe is your foot Pain:**

Foot Pain at its Worst?	
Foot Pain Morning?	
Pain walking barefoot?	
Pain standing barefoot?	
Pain walking with shoes?	

Pain Standing with Shoes?	
Pain Walking with orthotics?	
Pain standing with orthotics?	
Foot pain end of day	

**Disability Subscale: How much difficulty did you have:**

Difficulty walking in house?	
Difficulty walking outside?	
Difficulty walking 4 blocks?	
Difficulty Climing stairs?	
Difficulty descending stairs?	

Difficulty standing tip toe?	
Difficulty getting up from chair?	
Difficulty Climbing curbs?	
Difficulty walking fast?	

**Activity Limitation Subscale: How much of the time do you:**

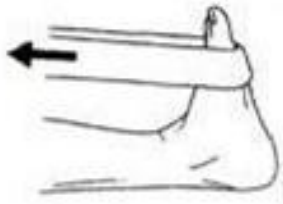
Stay inside all day because of feet?	
Stay in bed because of feet?	
Limit activities because of feet?	

Use assistive indoors?	
Use assistive device outdoors?	

# APPENDIX - VI

## HOME PROGRAMME

**Towel Stretch**



**Gastroc Stretch**



**Soleus Stretch**



**Intrinsic Muscle Stretch**



**Plantar fascia Stretch**



**Strengthening**

**Single Leg Toe Curling**



## CHAPTER - 10

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