

## RESEARCH REPORT

# EFFECTS OF ULTRASOUND AND MASSAGE IN MYOFASCIAL TRIGGER POINT OF TENSOR FASCIA LATAE MUSCLES IN LATERAL KNEE PAIN

### ABSTRACT

#### OBJECTIVE

To determine the effectiveness of ultrasound and massage in myofascial trigger point of Tensor fasciae latae muscle in lateral knee pain.

#### STUDY DESIGN

Experimental Design

#### STUDY SETTINGS & PARTICIPANTS

Research was conducted at Outpatient Department of tertiary care hospital.

#### INTERVENTIONS

Patients were taken from the physical therapy OPD of tertiary care hospital by non probability purposive sampling technique. The sample size is (n=44) and equally divided into two groups. Each group (n=22).group A received massage technique and group B received ultrasound therapy. Patient's pain was evaluated on (VAS) and Global Rating of change scale before and after 3 weeks of treatment.

#### RESULTS

The average pain score on VAS before the application of treatment was  $6.82 \pm 1.220$  and after procedure it was  $2.05 \pm 1.58$   $p < 0.00$ . For Group B: the average pain score on VAS before and after procedure were  $6.82 \pm 1.220$  and  $3.86 \pm 1.32$   $p < 0.00$  respectively. Group A: the mean GROCS score baseline treatment were  $4.23 \pm 1.152$  and  $5.82 \pm 1.097$   $p < 0.00$  respectively. Group B: the mean GROCS score baseline treatment was  $4.82 \pm 1.181$  and after treatment was  $3.59 \pm 1.260$   $p < 0.00$ .

#### CONCLUSION

The results showed that there is no significance difference between the ultrasound therapy and massage technique in regards to the treatment of myofascial trigger point (MTrP) of tensor fasciae latae muscle in lateral knee pain.

#### KEY WORDS

Myofascial pain, trigger point, VAS, Global Rating of change scale, Ultrasound, Massage

#### Bushra Sharif

Physiotherapist  
Physiotherapy Department  
Trauma Orthopedic Clinic  
Dr.bushra789@hotmail.com

#### Shamma Tabassum

Internee Physiotherapist  
Liaquat National School of  
Physiotherapy  
Liaquat National Hospital  
Shamma.tabassum68@gmail.com

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## INTRODUCTION

Myofascial trigger point (MTrP) is a hypersensitive distinct nodule in a tightly pulled band of skeletal muscle. It can cause referred pain when pressed. Myofascial pain syndrome (MPS) is a common musculoskeletal pain disorder generated by myofascial trigger point (MTrP)<sup>1,2</sup>. Trigger points on the tensor fasciae latae (TFL) muscle usually causes discomfort on the lateral and front side of the thigh and pain felt inside the knee. In some individual cases it can extend towards the hip and be felt as far down as the calf muscle. Individuals who experience with active tensor fasciae latae tightness and trigger points usually struggle walking with a fast pace initially and in some special cases may cause limping. The trigger point pain in TFL is often wrongly identified with trochanteric bursitis<sup>3</sup>.

Once the TFL becomes tight and ischemic it can develop myofascial trigger points. Patients suffering from TFL pain usually walk slowly and put their body's weight on other limb to avoid pain on effected leg but this can create other problems as they are keeping pelvis level biomechanically incorrect which can cause more problems up in the pelvic and lumbar areas. Due to active and painful trigger points patients may also experience difficulty in sleeping on the same side as with active trigger points<sup>3</sup>.

The TFL muscle functions primary during the stance phase of gait to control the pelvic and knees movements. This muscle assists with glutemedius and gluteminimus to stabilize the pelvis and some posterior fibers assist in stabilizing the hip<sup>3,4</sup>. Myofascial pain of tensor fasciae latae continue to result in most popular pain complain amongst young and middle age population that require special attention. The Physiotherapy units have implemented various interventions in attempts to provide best treatment in order to ease myofascial pain of tensor fasciae latae-muscles<sup>4</sup>.

In most cases, these interventions aim to reducing the myofascial pain of TFL, reduce the chances of reoccurrence of pain and advocating the regular exercises.<sup>5</sup> As a result of the vast diversity in the techniques employed, different researchers have drawn different conclusions as to the effective measures that should be implemented. While some previous studies shown that the effective treatment for TFL pain management can be achieved by ultrasound<sup>1</sup>, others believe that by using ischemic compression technique with transverse friction massage for myofascial pain points would show a significant improvement in pain management<sup>2,6</sup>, while some believe that hydrotherapy best way to treat trigger point<sup>7</sup>. However, it has been noted that the overall effectiveness of these interventions is more limited and therefore, there is need to conduct more research to identify better strategies<sup>8</sup>.

Increase the work load in both male and female gender and fast walking, a high percentage of young and middle age people contribute to complain of myofascial tensor fasciae latae pain.

Over the past few decades, studies have revealed that there is need for more research to be conducted to find out better strategies in the management of myofascial pain of tensor fasciae latae<sup>9</sup>. Therefore, this study aims is providing best treatment for pain management of TFL pain. Moreover, while several studies conducted in the past show that in most cases ultrasound with different

intensity exposure. Very few, if any, research studies have assessed the combination of ultrasound and ischemic compression when giving treatment of myofascial trigger points and pain management<sup>3,10</sup>.

In another research study that was conducted to find weather the primary effects of pain from tensor fasciae latae muscle could be relieved with therapeutic massage by releasing painful trigger points and elongating the TFL muscle, found that both instances of treatments were shown to have an immediate effect on active MTrPs<sup>5</sup>. According to one study there is no constantly positive method to use for a diagnosis, but trigger point release is the method for treatment used widely<sup>11,12</sup>.

The study shows that in regards to ischemic compression and activator trigger point therapy, both have an equal and immediate clinically important effect on TFL trigger point pain<sup>13</sup>.

Another study looked at ways to reduced MPS symptoms by comparing spray-stretch alone with warming to the spray with stretch therapy and it found that re-warming was more effective that just spray-stretch alone<sup>13</sup>. In this study two different techniques massage and ultrasound are used and hot pack and stretching are common therapy for both group.

The basic aim of this project is to answer the following query. Does the comparison of ultrasound and massage therapy for release trigger point provides better and immediate treatment effect in myofascial trigger point pain of Tenser fasciae latae muscles<sup>14,15</sup>.

## METHODOLOGY

### Inclusion Criteria

- Aged 20-35years.
- Acute and chronic diffusing knee pain.
- Mechanical knee pain.
- Acute complain of touch in lateral side of knee and thigh.
- Medically stable.
- Both genders (male and female).

### Exclusion Criteria

- No previous injury.
  - Not entirely lost their physical abilities, ROM and strength.
  - Unstable co-morbides (Related to cardiovascular or respiratory).
  - Skin diseases and lesions in the area of tensor fascia latae muscle.
- Medial side of knee joint pain referred in front of the lower leg.
- Cardiovascular patients fitted with Pacemakers.
  - Fibromyalgia.
  - Patients taking analgesics and anti-inflammatory drugs during therapy.
  - Infection or neoplastic disorders.
  - Besides, at these age range.

### Research Design

Experimental Design.

### Sampling Technique

Non probability, purposive sampling technique.

**Sample Size**

Sample size is (n=44) individual. It equally divided into both groups (n=22) individual.

**Study Setting**

Research was conducted at Physiotherapy Department of tertiary care hospital.

**Duration of Study**

Six months

**Data Collection Procedure**

The study was conducted on the 44 patients including male and female with age range 20-35 years. All participants were suffering from myofascial trigger point in tensor fasciae latae muscle. The consent was sought from the subject before participating into the study, the study will approved by the ethics committee of the institution. All patient's prior to medical history and their detailed history encompassing the information on the complaints systems. Pretreatment patient was analyzing on VAS scale<sup>16</sup> and Global Rating of Change (GRC). After 3 week patient were be re-evaluate through the same outcome measure.

Group A treatment option were be massage and in Group B ultrasound were be given ,intensity set at 1.5w/cm2 and duration were be 5 min. Hot pack and stretching were be common therapy for both groups. A treatment session was for 30 minutes, 3 days in a week for 3 weeks. Participants were being re-evaluated after completed 9 sessions.

**Data Analysis Procedure**

To analyze data, means and standard deviation of all quantitative parameters for effect were calculated for other qualitative parameters like pain by using statistical package for social science (SPSS-20).

**Data Collection Tool**

Global Rating of change scale and VAS scale <sup>17,18</sup>.

**Table 1:**

Diagnostic Criteria of MPS (Travell and Simons) <sup>14</sup>	
MAJOR CRITERIA	MINOR CRITERIA
Discomfort with palpable tightly stretched bands	Discomfort with palpation of trigger point
Referred discomfort from trigger point	Local twitch response
Hypersensitivity on tightly stretched bands	Decrease in pain with stretching of muscle <sup>14</sup> .
Lower range of motion <sup>14</sup>	

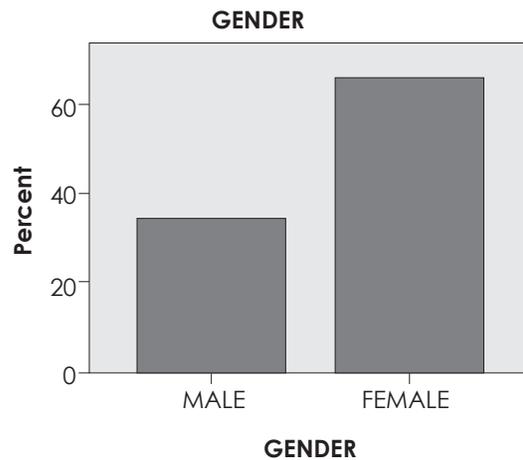
**ETHICAL CONSIDERATION**

Data was handled confidentially and subjects were fully informed about the study objectives. Informed consent was taken from each subject, purpose of the study was explained to them and ethical considerations were taken care of all patients.

**RESULT AND ANALYSIS**

Sample of 44 patients were included in the study. It was seen that out of 44 randomly selected patients, 15 (34.1%) were male while 29 (65.9%) were female patients.[mean age 29.25yearsSD 3.63 (range 20-35 years)] (Table: 02). Patients were divided into two groups equally. Each group have n=22 patients. Group A was treated by Massage Technique while Group B was treated by Ultrasound Technique. Hot pack and stretching exercises were given to both groups as common therapy and to minimize the biasness.

**FIGURE 01:**



**TABLE 02:**

	Frequency	Percent
Massage technique	22	50
Ultrasound technique	22	50
Total	44	100

Group A: the mean pain score on VAS pre treatment was 6.82 ± 1.220 and post treatment was 2.05 ± 1.58p<0.00 (Table 3 A).Group B: the mean pain score on VAS pre treatment was 6.82 ± 1.220 and post treatment was 3.86 ± 1.32 p<0.00 (Table 3A).Group A: the mean GRC score baseline treatment was 4.23 ± 1.152 and in post treatment was 5.82 ± 1.097p<0.00 (Table 3B).Group B: the mean GRC score baseline treatment was 4.82 ± 1.181and after three weeks treatment was 3.59 ± 1.260 p<0.00 (Table 3B).

TABLE 03A: VAS

Groups	Before the treatment Mean (SD)	After the treatment Mean (SD)	p-value
Group A (Massage Technique)	6.82(1.220)	2.05(1.58)	<0.00
Group B (Ultrasound Technique)	6.82(1.220)	3.86(1.32)	<0.00

TABLE 03B: VAS

Groups	Before the treatment Mean (SD)	After the treatment Mean (SD)	p-value
Group A (Massage Technique)	4.23(1.152)	5.82(1.09)	<0.00
Group B (Ultrasound Technique)	4.82(1.181)	3.59(1.260)	<0.00

## DISCUSSION

The result demonstrate that there is no significant difference between the Massage technique and Ultrasound technique for the management of myofascial trigger point (MTrP) of tensor fasciae latae muscle in lateral knee pain<sup>17,18,19</sup>. The difference between pre treatment and post treatment has been shown on Visual analogue scale (VAS) and Global Rating of Change (GRC). Stretching of the affected muscle is believed by some authors<sup>20,21,22</sup> found the post-isometric relaxation technique to be effective in decreasing trigger point sensitivity and intensity of pain. The technique involved stretching the muscle having the trigger point followed by an isometric contraction against minimal resistance<sup>23,24,25</sup>.

A limitation of our study is that it may be possible that either the massage ischemic pressure or the ultrasound therapy and sustained stretching produced the results independently. This study could be replicated with one group performing only massage, one group performing only ultrasound therapy, hot pack and stretching should be eliminated for both groups.

Results of ultrasound therapy imaging established that significant tissue abnormalities and morphological changes are correlated with MTrPs. Differences in echogenicity and stiffness of the MTrP related to the surrounding tissue suggest a disruption of normal muscle fiber structure and a change in local tissue characteristics. The hypoechoic

and trigger point may be indicative of contraction knots resulting from increased muscle fiber contraction and recruitment, local injury and/or localized areas of ischemia.<sup>26,27</sup>

The ultrasound techniques given in this research can be used to identify anatomical and physiological abnormalities associated with MTrPs. To identify the abnormalities, and their characterizations, will help to establish the objective, diagnostic criteria, which would be expected to be more reliable, sensitive and specific than only physical examination. By making changes in these objective measures in response to treatment, such as adjustment in the blood flow and/or difference in the size and stiffness of trigger points can be used as outcome of treatment<sup>28</sup>.

## CONCLUSION

The study concluded that there is no significant difference between the Massage technique and Ultrasound therapy for the treatment of myofascial trigger point (MTrP) of tensor fasciae latae muscle in lateral knee pain. The analysis shows that the post effects of the massage technique and Ultrasound technique had the same effect, which means that the myofascial trigger point (MTrP) of tensor fasciae latae muscle can be either treated by the Massage technique as well as ultrasound technique. This provided the evidence of effective treatment in the age of managed care, which places significance on shorter treatment times and less number of clinic visits.

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