

# The Effectiveness of Trigger Point Release in Myofascial Pain of Calf Muscle

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## Abstract

**Introduction:** Myofascial pain syndrome is one among common disorder in the world population. In a study on patients with pain complaints, 31% had acute trigger points in all age groups and both sexes.

**Objective:** To find whether there is any additional benefit when trigger point release technique is given along with phonophoresis than phonophoresis alone in reducing myofascial pain of Calf muscle.

**Method:** The study is experimental in nature. Thirty samples were selected, using simple random sampling method and were divided into equal groups. Pretest measurement was taken for pain using visual analogue scale. After the pretest experimental group one, received phonophoresis with trigger point release techniques and experimental group two received phonophoresis alone once a day for a period of seven days. Posttest measurements were recorded for both the experimental groups at the end of the seventh days.

**Result:** The data was subjected to statistical analysis and the following results were obtain. Phonophoresis and Trigger point release technique is significantly effective in reducing myofascial pain of Calf muscle. Phonophoresis is also significantly effective in reducing myofascial pain of Calf muscle. Phonophoresis with Trigger point release technique is significantly more effective in reducing myofascial pain of Calf muscle than phonophoresis alone.

**Conclusion:** The results of the study makes us to conclude that Phonophoresis with Trigger point release technique is significantly effective in reducing myofascia pain of Calf muscle than phonophoresis alone.

**Key words:** Myofascial pain, Trigger point release, Phonophoresis, Ischemic compression, Unilateral stretch.

## Introduction

Myofascial pain syndrome is simply a medical term for muscle pain. The muscles in the body have a lot of different roles, they help the heartbeat, they help you lift, walk and even help you blink. The muscles most commonly involved in myofascial pain syndrome are the skeletal muscles that connect to the bones in your body.

Myofascial trigger points (tiny contraction knots) in overworked or poorly conditioned muscles are the most frequent cause of pain in the ankles, feet, and toes more particularly in calf muscles.

Myofascial pain syndrome is one among common disorder in the world population. In a study on patients with pain complaints, 31% had acute trigger points in all age groups and both sexes.

Janet travel, MD, developed the concept of myofascial pain syndrome in the 1950. She defined it as a regional muscle pain disorder that is characterized by a tender spot in the taut band of muscles that refers pain to areas overlying or distant to the tenderness.

Myofascial pain syndrome is a common source of discomfort and disability. Patients have dull, aching and deep pain, which can be constant or sporadic. The effect of pain causes restriction of range of motion, muscles weakness with sustained shortening of muscle fibers causing difficulties in daily activities.

The common method of treatment are myofascial release techniques, phonophoresis, tens, moist heat application, soft tissue release by manual method, active movement, progressive exercise program, slow passive stretching, relaxation therapy with ergonomics assistance, strain counter strain, acupuncture and superficial or subcutaneous dry needling.

Phonophoresis is movement of drug through skin into the subcutaneous tissue under the influence of ultrasound. High frequency sonic vibration may accelerate this process.

Trigger point therapy is a soft tissue manipulation done to desensitize trigger points, improve circulation and there by aid in pain reduction.

**Materials and Methods**

**Research Design:**

The study is experimental in nature. Thirty samples were selected, using simple random sampling method and were divided into equal groups. Pretest measurement was taken for pain using visual analogue scale.

After the pretest experimental group one, received phonophoresis with trigger point release techniques and experimental group 2 received phonophoresis alone once a day for a period of seven days.

Posttest measurements were recorded for both the experimental groups at the end of the seventh days.

**1. EXPERIMENTAL GROUP I:**

Day 1 -----  
 -- Day 7

Phonophoresis + Trigger point release

Pretest                      post test

**2. EXPERIMENTAL GROUP II:**

Day 1 -----  
 -----Day 7

Phonophoresis

Pretest                      posttest

**Criteria For Selection:**

**Inclusion Criteria:**

- Patients with myofascial pain for Calf muscle were only included.
- Patients with age 20-40 years were only included.
- Patients belonging to both sexes were included.
- Patients with exquisite spot tenderness of a nodule on a taut band were only included.
- Patients who were psychologically fit were only included.
- Subjects with unilateral involvement were only included.

**Exclusion Criteria:**

- Patients with dermatitis were excluded.
- Patients with any open wounds and scar over the Calf muscle were excluded.
- Patients with sensory deficits were excluded.

**Population:**

All the patients who fulfilled the selection criteria were taken as the population of the study.

### SAMPLE SIZE AND METHOD OF SELECTION:

Thirty samples were selected from the population using simple random sampling method.

#### VARIABLES:

1. Independent variables:

Phonophoresis.

Trigger point release.

2. Dependent variable:

Myofascial Pain.

### VALIDITY AND RELIABILITY OF THE TOOL USED:

Visual analogue scale is a valid and reliable tool to measure pain.

#### SETTING:

This study was conducted in the outpatient clinic, department of physical therapy, College of Applied Medical Sciences, Jazan University, Jazan.

### Methodology

Thirty samples were selected using simple random sampling method and were divided into two equal groups.

Both the groups underwent pretest assessment of pain using visual analogue scale, which consisted of a 10cm unmarked horizontal line with two end points, one end marked as 'No pain' and another end as 'maximum pain'.

No pain -----  
----- Maximum pain

The subjects were requested to place a mark on line which corresponded to the level of pain intensity he/she felt during the application of a mild passive stretch to Calf muscle.

After the pretest analysis of pain the experimental

group I were given phonophoresis with trigger point release techniques.

Patients were lying in prone position in a relaxed manner. The area was cleaned and frequency of 1MHZ with hydrocortisone gel 10% was given by direct contact method in a pulsed mode 1:1 with an intensity of 0.25-0.75 w/c for a 8 minutes duration once a day for a period of seven days.

After the phonophoresis the experimental group I were given trigger point release technique once a day for a period of seven days.

Trigger point release technique included

- Ischemic compression
- Unilateral stretching

#### Ischemic Compression

After locating the trigger point, a Firm digital compression was applied with a single finger pad. The pressure was gentle at the beginning and was gradually progressed deeper into tissues and clocked approximately up to 4 kilograms of force. It was performed very slowly to accommodate the patient's pain threshold level.

The compression was maintained for 5 seconds and released it for 2 -3 seconds. This same cycle was repeated till the patient has reported a reduction in local or referred pain or an increase in pain or until 2 minutes has passed without any change in pain level.

A small amount of talcum powder was applied over the trigger point, before the procedure in order to reduce the noxious Skin friction, after this method subjects were brought to the position of comfort.

#### Unilateral Stretching:

The patient was positioned in supine lying with the full knee bend and foot was grasped with one hand and other the hand over knee joint was stabilized. Then foot was taken for dorsiflexion and it was maintained strictly and slowly the leg was extended till the full knee extension. Then this stretch was maintained for

20 to 30 seconds and the cycle was repeated three to four times.

Post-test measurement of pain was collected at the end of seventh day in a similar manner as that of pretest measurement.

**Experimental Group II:**

**Phonophoresis:**

After the pretest analysis of pain the experimental group 2 were given phonophoresis in a similar fashion

as that of Experimental group I.

The posttest measurement of pain were collected at the end of the seventh day in a similar manner as that of pretest measurement and recorded.

**Findings**

The collected data were analyzed using paired ‘t’ test and independent ‘t’ test:

**Experimental Group 1:**

**Effectiveness of Phonophoresis and Trigger point release(paired ‘t’ test).**

**Table 1.1:**

Variable	‘t’ Cal value	‘t’ table value
Myofascial pain	26.39	2.26

The ‘t’ calculated value was matched with ‘t’ table value at 5% level of significance and found that ‘t’ calculated value is greater than ‘t’ table value. There is a significant reduction in pain following Phonophoresis and Trigger point release.

**Experimental Group 2:**

Effectiveness of Phonophoresis(paired ‘t’ test).

**TABLE 1.2:**

Variable	‘t’ Cal value	‘t’ table value
Myofascial pain	12.69	2.26

The ‘t’ calculated value was matched with ‘t’ table value at 5% level of significance and found that ‘t’ calculated value is greater than ‘t’ table value. There is a significant reduction in pain following Phonophoresis.

**INDEPENDENT ‘t’ TEST:**

**TABLE 1.3**

Variable	‘t’ – Cal value	‘t’ table value
Pain	3.26	2.101.

The 't' calculated value was matched with 't' table value at 5% level of significance and found that 't' calculated value is greater than 't' table value. Phonophoresis with Trigger point release technique is significantly more effective in reducing myofascial pain of Calf muscle than phonophoresis alone.

### Discussion

Phonophoresis with 10% hydrocortisone gel is significantly effective in reducing myofascial pain may be because of the following reasons. The possible mechanisms for the effectiveness of phonophoresis may be because it relies on more rapid particle movement and thus encouraging absorption of drug combined with the therapeutic effects of ultrasound.

The heat produced by ultrasound in large myelinated nerve fibers which may reduce pain through the gating mechanism. It is also stated that during the early inflammatory phase of repair macrophages and mast cells occupy the inflamed site and it has been shown that these cells are responsive to therapeutic ultrasound. Therapeutic ultrasound accelerates the inflammatory phase, resulting in a more rapid entry into the proliferative phase. The drug would have given an additional benefit of pain relief.

Byl. N. N (1995)<sup>1</sup>: Stated that phonophoresis is effective in reducing the tenderness of active myofascial trigger points.

Ø Trigger point release is significantly effective in reducing myofascial pain of Calf muscle may be because.

Trigger point release technique alters the dynamics of circulatory imbalance affecting trigger points and deactivate them. It also increases the pain threshold level and extensibility of soft tissues. The mechanical component is not addressed by the phonophoresis which is taken care by trigger point release. So this is an additional benefit.

HOU C. R, Tsai L. C, Cheng F. and Hong C. Z, (2013)<sup>2</sup>: concluded that ischemic compression therapy

provides immediate pain relief in myofascial trigger point.

Phonophoresis with trigger point release is significantly more effective in reducing myofascial pain than phonophoresis alone may be because of the following reason. Myofascial Trigger point release with phonophoresis technique alters the sensation of the trigger point and improves the extensibility of soft tissues, and helps in absorption of drug, which was not attained by the group treated by phonophoresis alone.

GERWIN.R.D (2005)<sup>3</sup> found that, trigger point release technique was significantly effective in reducing myofascial pain of Calf muscle than phonophoresis alone.

### Conclusion

The results of the study make us to conclude that Phonophoresis with Trigger point release technique is significantly effective in reducing myofascial pain of Calf muscle than phonophoresis alone

**Conflict of Interest:** None

**Source of Funding:** Self

**Ethical Clearance:** Taken from Department Research Committee

### References

1. Byl. N. N: The use of ultrasound as an enhancer for transcutaneous drug delivery: phonophoresis 1995. Jun; 75(6): 539-53. Doi: 10.1093/ptj/75.6.539
2. HOU C. R, Tsai L. C, Cheng F. and Hong C. Z: Ischemic compression after trigger point affects the treatment of myofascial trigger points. 2013 Annals of Rehabilitation Medicine, 26 Aug 2013, 37(4): 541-546
3. Gerwin, R.D: A Review of Myofascial Pain and Fibromyalgia—Factors That Promote Their Persistence. *Acupuncture in Medicine*, 2005, 23,

- 121-134.
4. Carol Manheim: The myofascial Release Manual 3rd edition. Basic Myofascial Release Techniques.2000 Page No 80-100.
  5. Esenyel et al: Treatment of Myofascial pain, AM J Physiotherapy Medical Rehabilitation2000Jan-Feb, No.79: Page No 48-52.
  6. Hong, changzen, et al: Immediate effect of various physical medicine modalities on an active myofascial trigger point, Journal of musculoskeletal pain,1993vol I, (2). The Haworth press.
  7. Hong CZ, Chen YN, Two-house DA., et al:Pressure threshold for referred pain by compression on the trigger point and adjacent area J Musculoskeletal pain 1996 4 (3): Page No 61-79.
  8. Lehmann J.F., de Lateur B. J.,:Therapeutic heat. In therapeutic heat and cold (Lehmann J.F. Ed) Baltimore: Williams and Wilkins,1982 Page No 404-562.
  9. Lewit D, Simons. DG. Myofascial: Pain: relief of pain of post isometric relaxation. Arch Physiotherapy Medical Rehabilitation,1984 No 65, Page No 452-456 Medline.
  10. John Low and Ann Reed: Electrotherapy explained principles and Practice,1988 Page No 163-166.
  11. Philip E. Green man: Principals of manual Medicine, Page 493.
  12. Robert I. Cantu., Alan J.Grodin: Myofascial manipulation theory and clinical application 2nd edition. Basic evaluation of the myofascial system. 2001Page No 140-163.
  13. Subash khatri: Basics of Electrotherapy, 2003Page 205.
  14. Treatment of Myofascial Pain: American Journal of Physical Medicine and Rehabilitation 2000 Feb vol: 43, No 1, Page No.323-6.
  15. Wadsworth., H, Chanmugan: Electro physical agents in physiotherapy. 1980 Australia: Science press.