

# Effect of Muscle Energy Technique versus Positional Release Technique on Pain and Functions in Patients with Trapezitis—A Comparative Study

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**Abstract:** *Research Background:* Mechanical neck pain affects 45-54% of general population at after carrying sitting posture for prolong period of time which may sometimes leads to conditions like trapezitis. Muscle energy technique is used for achieving tonus release in a muscle before stretching which involves the introduction of an isometric contraction to the affected muscle producing post isometric relaxation. Positional release therapy is a manual technique that restores a muscle to its normal resting tone. In this study we compared the effect of both the technique on trapezitis. **Aim and Objective:** To Compare the effect of MET versus PRT On pain and function in patient with trapezitis. **Method and procedure:** Ethical approval of the study was taken from institutional ethical committee. Patient having neck pain screened initially and subjects whoever fulfilled inclusion and exclusion criteria 30 subjects having trapezitis, both male and female between age 20-50 year were included, which again divided into two Group A Muscle Energy Technique (MET) and Group B Positional Release Technique (PRT). Pre-and Post-assessment of pain and function was done by using NPRS (Numerical pain rating scale) and NDI (Neck disability index) score. **Result:** On comparison both MET and PRT shows improvement in pain and function of neck mobility where  $p=0.000$  which was statistically significant. **Conclusion:** The study concludes Clinically Muscle energy technique was more effective than positional release technique in subjects having trapezitis with non-specific neck pain.

**Keywords:** MET, PRT, Trapezitis

## 1. Introduction

Neck pain is very commonly site of traumatic and Non-traumatic musculoskeletal pain. [1] Roughly two thirds of the general population have neck pain at some time in their lives and the prevalence is highest in middle age.[2].

Trapezitis is defined as inflammation of upper, middle and lower fibers of trapezius muscle Trapezius is a big diamond shaped muscle with 3 parts: the upper, middle and lower portions. Trapezius forms the slope of the shoulder. It arises from the back of the skull and from the spine of the C7 to T2 vertebrae. It attaches to the outer one third of the collarbone and acromion process and the spine of the shoulder border. It receives nerve supply from the accessory nerve and the C1 to C4 cervical nerve roots. Most patients who complain of neck pain or shoulder pain will be invariably showing the pain to be at slope between the base of the neck and the shoulder, in the region of upper trapezius. With pain and tightness in the trapezius, patient may have symptoms of headaches, dizziness, neck pain and mid-back pain. Upper trapezius muscle is designated as postural muscle and it is highly susceptible to over use. The pain is present during rest and is aggravated by activity it may be alive refer to other area from the site of primary inflammation. Passive range of motion may be painful and restricted due to pain and protective spasm in agonistic group of muscle recent studies have hypothesized that the trapezitis pathogenesis result from the over loading and injury of muscle tissue leading to involuntary shortening of localized fiber. The area of stressed soft tissue receive less oxygen, glucose hence subsequently accumulates high level of metabolic waste product the end result of this event is the development of trigger point. MET may be used to decrease pain, stretch

tight muscle and fascia, reduce muscle tonus, improve local circulation, strengthen weak musculature and mobilize joint restriction.

According to Leon Chaitow, mechanism of PRT intervention include aberrant neuromuscular activity mediated by muscle spindles known as Proprioceptive theory which is based on neurophysiologic regulation of muscle spindle activity and local circulation or in inflammatory reaction influenced by sympathetic nervous system[4,5].

MET is used for achieving tonus release in a muscle before stretching which involves the introduction of an isometric contraction to the affected muscle producing post isometric relaxation. Strain counter strain or also called as positional release technique involves identification of the active Trapezius followed by application of pressure until a nociceptive response is produced. The area is then positioned in such a manner as to reduce the tension in the affected muscle and subsequently the pain in the Trapezius. When the position of ease or pain reduction is attained, the stressed tissues are felt to be at their most relaxed and a local reduction of tone is produced.

Muscle energy technique is a direct technique originally developed. The purpose of this technique is to treat joint hypo mobility (stiffness) and restore proper biomechanical and physiological function to the joints. The result are prioritized to find the most dominant dysfunction, restriction. The dominant segmental is then specifically localized using the motion barrier concept. Different patient position, are utilized to engage the restriction before asking the patient to perform an isometric contraction to pull the restricted segment into a new motion barrier. The isometric contraction is performed in a precisely controlled direction against a

Volume 6 Issue 5, May 2017

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precisely controlled counterforce by the therapist. The result is improved spinal mobility without the need for passive manipulation. MET is effective for mobilizing restricted joints, relaxing hypertonic and spastic muscle as well as facilitating neuromuscular reorganization. It is an appropriate technique for patient whose symptoms are aggravated by certain posture or bodily position. Each treatment session begins and ends with a screening technique to assess the outcome of the manual techniques.

PRT- Therapy is a manual technique that restores a muscle to its normal resting tone. Alignment of trigger points allows identification of hypertonic muscles that are creating somatic dysfunction. Portion are placed in positioned that approximate the origin and insertion of the hypertonic muscle. The muscle spindle activation is inhibited thereby decreasing the amount of efferent impulses to the brain, this leads to ten efferent impulse to the same muscle. There efferent impulse were attempting to protect the tissue from being over structured. By interrupting this pathway the patient's muscle is allowed to relax and assume a normal resting tone. The process is completed by slowly and passively returning the patients to an automatically neutral position without firing of the muscle spindle[6,7,8].

The aim of this clinical trial is to compare the effects of two manual treatment regimens muscle energy technique and PRT on pain in subjects with trapezitis.

## 2. Methodology

Ethical approval of the study will be obtained from institutional sub-ethical committee. In this cross sectional study as per inclusion and exclusion criteria 30 subjects having trapezitis, both male and female between age 20-50 year were included, which again divided into two group. Group A Positional Release Technique and Group B Muscle Energy Technique. Pre-and Post-assessment of pain for all patients NPRS (Numerical pain rating scale), cervical ROM and NDI (Neck disability index) score[3].

### Data Analysis

#### 1) Pre & Post Treatment (Group A) effect of MET on NPRS

Mean	Std.dev.	SEM	P value
7.4	0.8281	0.2138	0.000*
1.533	1.06	0.2737	

#### 2) Pre & Post Treatment(Group B) effect of PRT on NPRS

Mean	Std.dev.	SEM	P value
6.8	0.7746	0.2	0.000*
1.4	1.352	0.3491	

#### 3) Post treatment comparison of NPRS Between Group A & Group B

Group	Mean Post	Std Dev	SEM	P value
A (15)	1.53	1.06	0.2737	0.00
B (15)	1.4	1.352	0.3491	

#### 4) Post treatment comparison of NDI score between two group

Group	MEAN	Std Dev	SEM	P value
	POST	POST	POST	
A(15)	11.13	2.416	0.6239	0.000*
B(15)	3.067	4.696	1.212	

## 3. Result

On comparison both MET and PRT shows significantly improvement in pain and function of neck mobility where p= 0.000 which was statistically significant.

## 4. Discussion

MET is commonly used for treating active trigger points in upper trapezius however the addition of ischemic compression and strain counter produced significantly greater results in upper trapezitis subjects with non-specific neck pain[9,10].

The benefit of PRT (position release therapy) approach over MET (Muscle energy technique) is removing restrictive barriers of movement in the body. This is accomplished by decreasing protective muscle spasm, fascial trigger point, joint, hypo mobility, pain, swelling and increasing circulation and strength[11,12,13]. PRT acts on the muscle spindle mechanism and its associated reflex mechanism which controls spasm to promote a more normal firing of the spindle and more normal level of tension in the muscle which results in a more normal relationship within the various soft tissues surrounding the areas in reduction of pain. PRT work to reduce the hyperactivity of the myostatic reflex arc and to reduce the afferent nerve impulses within the arc that may lead to an overflow of neurotransmitters into the associated dermatome, resulting in referred pain. This phenomenon is known as a facilitated segment. PRT sets the stage for normal process to occur more efficiently. Reduction in localized spasm increase range of motion, decrease pain allows normal circulation and improves lymph drainage and increases the potential for more normal biomechanics.

Also the MET technique showed significant results in treatment of trapezius muscle spasm. PIR refers to the subsequent reduction in tone of the agonist muscle after isometric contraction. This occurs due to stretch receptors called Golgi tendon organs that are located in the tendon of the agonist muscle. These receptors react to overstretching of the muscle by inhibiting further muscle contraction. This is naturally a protective reaction, preventing rupture and has a lengthening effect due to the sudden relaxation of the entire muscle under stretch. In more technical terms, a strong muscle contraction agonist equal counterforce triggers the Golgi tendon organ. The afferent nerve impulse from the Golgi's tendon organ enters the dorsal root of the spinal cord and meets with an inhibitory motor neuron. This stops the discharge of the efferent motor neurons impulse and therefore prevent further contraction the muscle tone decreases, which in turn results in the agonist relaxing and lengthening. The Golgi tendon organs react to both passive and active movements as therefore passive mobilization of a

joint may sometimes have a good and effect on relaxing the muscle as direct massage.

[12] Janet D Travell, David G Simon's Myofascial pain and Dysfunction; The trigger point manual .Volume 1(upper body) 2<sup>nd</sup> Edition 1983.

## 5. Conclusion

The study concludes Clinically Muscle energy technique was more effective than positional release technique in subjects having trapezitis with non-specific neck pain.

## 6. Contribution of Author

Both author contributed to the study since beginning of research like drafting abstract and working on field to collect the data till the analysis of the data to write appropriate discussion in reference to the results.

## 7. Conflict of Interest

None

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