

Effect Of Muscle Energy Technique Versus Positional Release Technique On Pressure Pain Threshold And Muscle Activity Among Young Adults With Upper Trapezius Myalgia

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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 Upper Trapezius Myalgia. 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 it's normal resting tone. In this study we compared the effect of both the technique on Upper Trapezius Myalgia.

Aim and Objective: To Compare the effect of MET versus PRT On pain and function in patient with Upper Trapezius Myalgia. **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 Upper Trapezius Myalgia, 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 Upper Trapezius Myalgia with non-specific neck pain

Keywords: MET, PRT, Upper Trapezius Myalgia

1.INTRODUCTION

Neck pain is very commonly site of traumatic and Nontraumatic 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]. Upper Trapezius Myalgia 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 rustable to over use. The pain is present during rest and is aggregated 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 do pain and protective spasm in agonistics group of muscle recent studies have hypothecated that the Upper Trapezius Myalgia 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 Proprio-ceptive 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 as 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 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 inhabited 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 Upper Trapezius Myalgia.

MATERIALS AND METHODOLOGY:

The present study adopts an experimental research design aimed at evaluating the effectiveness of Muscle Energy Technique (MET) and Positional Release Technique (PRT) in reducing pain and neck disability among individuals with upper trapezius myalgia. A total of thirty participants who met the selection criteria were randomly allocated into two experimental groups, Group A and Group B, using the lottery method, with each group comprising 15 participants. Pre-intervention assessments were conducted using the Numerical Pain Rating Scale (NPRS) and the Neck Disability Index (NDI) to evaluate baseline pain and disability levels. Following the pre-test, Group A received Muscle Energy Technique, and Group B received Positional Release Technique. Both interventions were administered for duration of four weeks, with sessions lasting fifteen minutes per day. Post-intervention assessments were carried out using the

same tools to evaluate the outcomes. The inclusion criteria for the study were males and females aged between 20 and 50 years, diagnosed with upper trapezius myalgia, and deemed medically and psychologically fit. Participants with other illnesses or those who did not consent to the study were excluded. The entire population of eligible individuals at the Department of Physiotherapy, Aarupadai Veedu Medical College and Hospital, Puducherry, served as the study population. The independent variables in the study were Muscle Energy Technique and Positional Release Technique, while the dependent variables were pain and neck disability, assessed using the NPRS and NDI. Both tools are validated and reliable for measuring musculoskeletal pain and functional disability. The study was conducted within the Department of Physiotherapy at Aarupadai Veedu Medical College and Hospital, Puducherry.

6. Methodology&Procedure

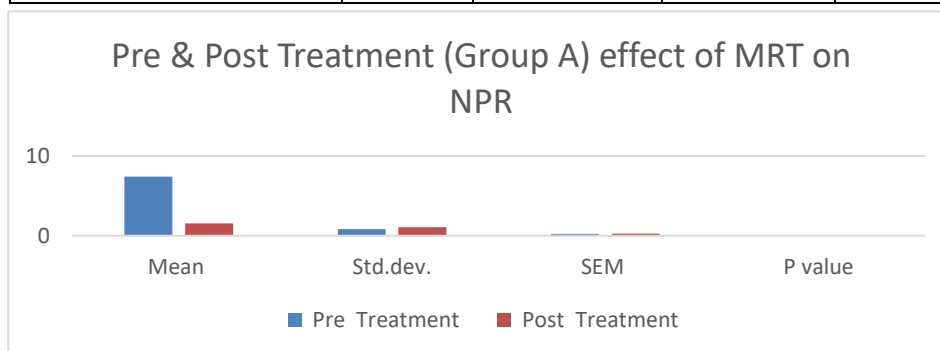
Ethical approval of the study will be obtained from institutional sub-ethical committee. In this cross sectional study as per inclusion and exclusion criteria 30 subjects having Upper Trapezius Myalgia, both male and female between age 20-50 year were included, which again divided into two group. Group A Muscle Energy Technique and Group Positional Release Technique. Pre-and Post-assessment of pain for all patients NPRS (Numerical pain rating scale), cervical ROM and NDI (Neck disability index) score [3]. perform the PRT by positioning the participant in specific postures that target muscle trigger points or tight areas (e.g., upper trapezius). Apply gentle pressure and hold the position to facilitate muscle release and relaxation for approximately 15 minutes

apply MET to the participant. MET involves palpating and releasing tension in the muscle by combining precise pressure with active movements performed by the participant

7. Data Analysis

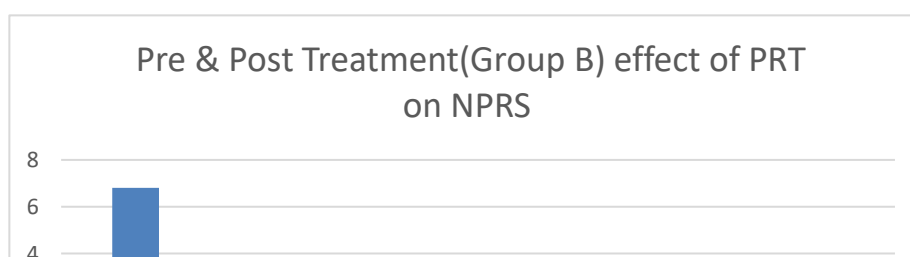
1) Pre & Post Treatment (Group A) effect of MET on NPRS

Treatment (Group A)	Mean	Std.dev.	SEM	P value
Pre-Treatment	7.4	0.8281	0.2138	0.000*
Post Treatment	1.533	1.06	0.2737	



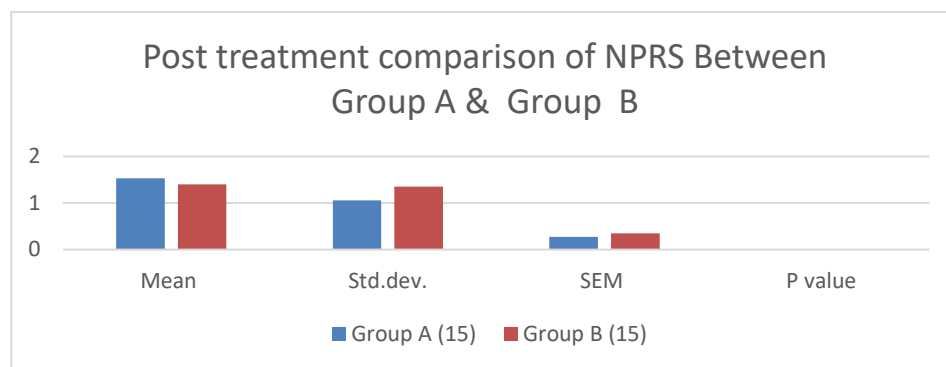
2) Pre & Post Treatment(Group B) effect of PRT on NPRS

Treatment (Group B)	Mean	Std.dev.	SEM	P value
Pre -Treatment	6.8	0.7746	0.2	0.000*
Post Treatment	1.4	1.352	0.3491	



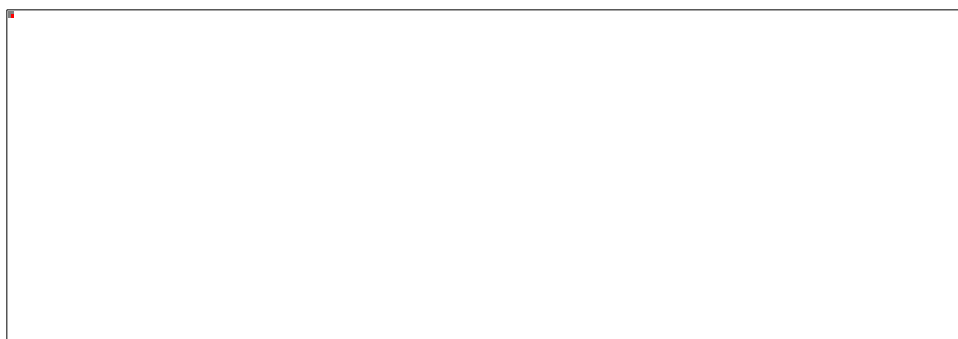
3) Post treatment comparison of NPRS Between Group A & Group B Group

Group	Mean	Std.dev.	SEM	P value
Group A (15)	1.53	1.06	0.2737	0
Group B (15)	1.4	1.352	0.3491	



4) Pre & Post Treatment (Group A) effect of MET on NDI

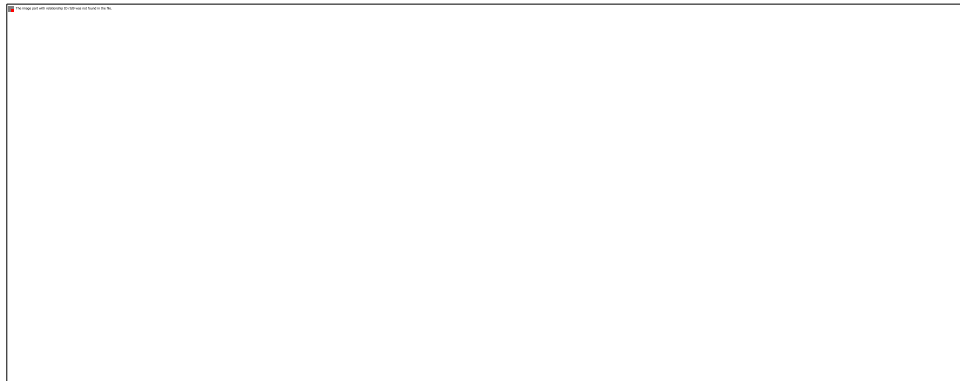
Treatment (Group A)	Mean	Std.dev.	SEM	P value
Pre -Treatment	7.8	0.926	0.1838	0.000*
Post Treatment	11.13	2.416	0.6239	



5) Pre & Post Treatment (Group B) effect of PRT on NDI

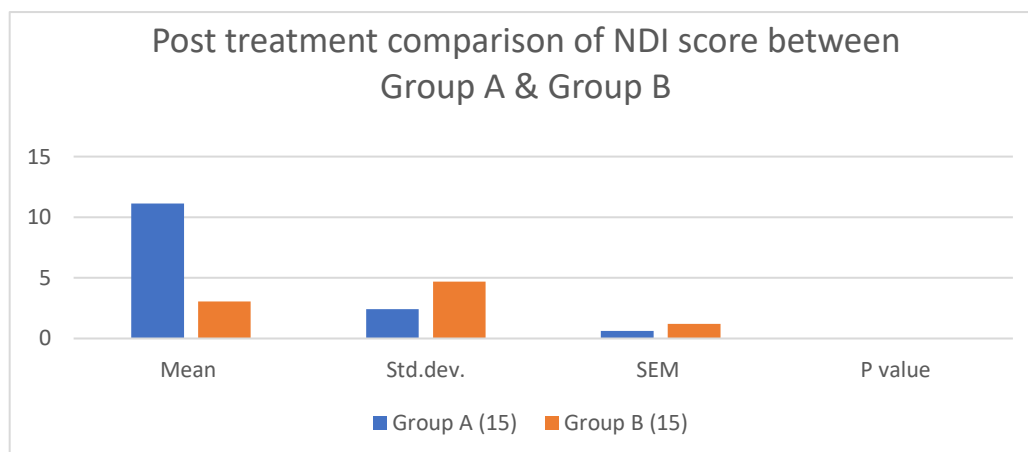
Treatment (Group B)	Mean	Std.dev.	SEM	P value
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Pre -Treatment	7.1	0.8246	0.312	0.000*
Post Treatment	3.067	4.696	1.212	



6) Post treatment comparison of NDI score between two group

Group	Mean	Std.dev.	SEM	P value
Group A (15)	11.13	2.416	0.6239	0
Group B (15)	3.067	4.696	1.212	

**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.

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 Upper Trapezius Myalgia 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.

CONCLUSION

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

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