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To compare the immediate effect of PRT vs tens on pain in trapezitis

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ABSTRACT

Aim

The purpose of this study is to find the comparison between immediate effect of Positional Release Technique Vs TENS on pain in Trapezitis.

Objectives-

To determine effect of PRT & TENS on upper trapezitis.

To find out whether the application of Positional Release Therapy alone can reduce pain and improve function in patients with trapezitis.

To find out the immediate effect of high frequency (conventional TENS) in pain reduction in patient with upper trapezitis.

Conclusion

The result of this study showed that PRT and tens both are beneficial in reducing pain in patients with trapezitis. Although PRT is more effective than tens in reducing pain in trapezitis as compared to TENS.

Keywords – positional release technique, TENS, Numerical pain rating scale, Trapezitis.

INTRODUCTION

Trapezitis is defined as the inflammation of trapezius muscle leading to stress pain which is present even during rest and is aggravated by activity. This pain may be referred to other area from the primary site of inflammation. The upper trapezius muscle is designated as a postural muscle of neck and it is highly susceptible to overuse. The percentage of Indian population to be affected with neck pain depends on the work environment and

posture that is acquired all day long. [1] The upper trapezius muscle are designated as postural muscle and it is highly susceptible to overuse. Trapezius muscles help with the function of neck rotation, lateral flexion and extension. Any position which places trapezius in a shortened state for a period of time without rest may shorten the fibers and lead to dysfunction and restricted movements of neck. [2] The most commonly prescribed intervention for the treatment of neck pain by general practitioners is rest, followed by analgesics [7].

Myofascial pain syndrome is characterized by myofascial trigger points (MTrPs) in a palpable taut band of skeletal muscle and referred pain to a remote location. The pathophysiology of myofascial pain syndrome and formation of MTrPs result from injured or overstressed muscle fibers, leading to involuntary shorting and loss of oxygen and nutrient supply, with increased metabolic demand on local tissues. MTrP is a painful or sensitive spot in a palpable taut band of skeletal muscle fibers. An active trigger point is one with spontaneous pain or pain in response to movement, whereas a latent trigger point is a sensitive spot that causes pain or discomfort only in response to compression [2].

Positional Release technique (PRT) is a soft tissue technique, also known as Strain Counter strain (SCS) is a gentle manual treatment for muscle pain and spasm which involve resetting muscle tone and enhancing circulation. This approach involves identification of the active TPs, followed by the 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 reduce pain in the TP. When the position of ease/pain reduction is attained, the stressed tissues are felt to be at their most relaxed and a local reduction of tone is produced. [3]

TENS is a simple, noninvasive modality in physiotherapy that is commonly used to control both acute and chronic pain arising from several conditions. It was introduced into clinical practice in 1972 as an adjunct to other pain therapies. The mechanism of the action of TENS is still not completely understood. Analgesia may be produced by the modulation of nociceptive input in dorsal horn of the spinal cord by peripheral electrical stimulation of large sensory afferent nerves. This is the 'gate control theory' of pain. Alternatively, electrical stimulation of certain receptor sites in the dorsal horn of the spinal cord may release endorphin, in turn, producing analgesia that can be reversed by naloxone. [4] TENS with amplitude of current at a comfortable low intensity just above the threshold for duration of 20 minutes with pulse duration of 150ms & frequency of 100 Hz is given over trigger point [6]. Transcutaneous electrical nerve stimulation currently is one of the most commonly used forms of electroanalgesia [8]. The chief advantage is that it is a non-invasive and non-toxic

form of pain management, which is based, in part, on the Gate Control Theory of pain. [9] It is thought to activate the large diameter, myelinated A-beta fibers which have a low threshold for electrical stimulation. [10]

AIMS AND OBJECTIVES

Aims

To compare the immediate effect of Positional Release Technique Vs TENS on Trapezius.

Objectives-

1. To determine of effect of PRT & TENS on upper trapezius.
2. To find out whether the application of Positional Release Therapy alone can reduce pain and improve function in patients with trapezius.
3. To find out the immediate effect of high frequency (conventional TENS) in pain reduction in patient with upper trapezius.

Study Design

Comparative Study.

Source of data

Dr. Ulhas Patil Medical College and Hospital.

Sampling method

Random sampling

Sample size

Sample size was 30 based on the selection criteria.

Criteria for sampling

Inclusion criteria

1. Subjects with Neck pain.
2. Age between 20-40.
3. Both male and female were included.

Exclusion criteria

1. Disc pathology
2. Degenerative lesion involving cervical spine.
3. Neurological disorder involving cervical spine.
4. Previous upper limb injury or surgery
5. Patients who have received physiotherapy treatment in last six months.

Outcome measures

NPRS

Materials used for study

- Pen
- Paper
- TENS
- NPRS scale
- Chair

Procedure

The study was conducted after obtaining the approval from the institutional ethical committee (IEC). 30 subjects (aged 20 to 40 years years) with a TrP in the upper trapezius muscle on one or both sides participated in the study. Patients were recruited from Dr. Ulhas Patil College of Physiotherapy Jalgaon. Patients were interviewed by an experienced clinician to ascertain that they met the inclusion criteria: active TrP in the upper trapezius muscle, no shoulder injury or surgery in the upper limbs. Further more, patients who had received any non-pharmacological treatment (physical therapy, relaxation) within 6 months prior to the study were not considered for the study. Informed consent was obtained from all subjects.

These participants were divided into 2 groups by Random sampling. Thus participants were assigned to 2 groups alternatively. A group of 15 participants and B group of 15 participants.

Among the selected participants only 30 participants completed the study and were included in the analysis. One participant was excluded due to falling on the affected shoulder during the study period. One participant was unable to complete the study due to family problems. Other 2 participants quit due to unknown reasons.

Measurements

Numerical pain rating scale – Purpose. The NRS for pain is a unidimensional measure of pain intensity in adults (19 –21), including those with chronic pain due to rheumatic diseases (3, 8). Although various iterations exist, the most commonly used is the 11-item NRS (22), which is described here. Content. The NRS is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0–10 integers) that best reflects the intensity of their pain (21). The common format is a horizontal bar or line (23). Similar to the pain VAS, the NRS is

anchored by terms describing pain severity extremes (3, 20, 21).

Number of items. The pain NRS is a single 11-point numeric scale (3). Response options/scale. An 11-point numeric scale (NRS 11) with 0 representing one pain extreme (e.g., “no pain”) and 10 representing the other pain extreme (e.g., “pain as bad as you can imagine” and “worst pain imaginable”) (20,21). Recall period for items. Varies, but most commonly respondents are asked to report pain intensity “in the last 24 hours” or average pain intensity (24). Purpose. The NRS for pain is a unidimensional measure of pain intensity in adults (19 –21), including those with chronic pain due to rheumatic diseases (3, 8). Although various iterations exist, the most commonly used is the 11-item NRS (22), which is described here. Content. The NRS is a segmented numeric version of the visual analog scale (VAS) in which a respondent selects a whole number (0–10 integers) that best reflects the intensity of their pain (21). The common format is a horizontal bar or line (23). Similar to the pain VAS, the NRS is anchored by terms describing pain severity extremes (3, 20, 21).

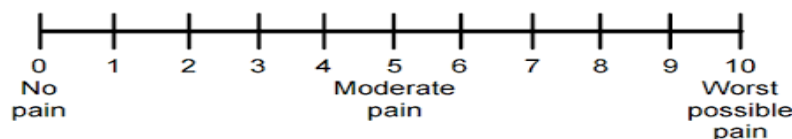
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Number of items. The pain NRS is a single 11-point numeric scale (3). **Response options/scale.** An 11-point numeric scale (NRS 11) with 0 representing one pain extreme (e.g., “no pain”) and 10 representing the other pain extreme (e.g., “pain as bad as you can imagine” and “worst pain imaginable”) (20,21). Recall period for items. Varies, but most commonly respondents are asked to report pain intensity “in the last 24 hours” or average pain intensity (24). The NPRS for pain is a unidirectional measure of pain intensity. The NPRS is a segmented numeric version of VAS in which a respondent selects a whole number (0–10) that best reflects their intensity of pain. The common format is a horizontal bar or line. An 11 point numeric scale with 0 representing one pain extreme (No pain) and 10 representing other extreme pains (pain as bad as you can imagine)

0–10 Numeric Pain Rating Scale



Intervention

At the beginning of the treatment all participants were given a brief explanation on anatomy and biomechanics of the cervical spine and a short description of the etiology and pathology of cervical spine.

Procedure for application of TENS

15 patients & duration of the treatment 20 min and check the immediate result with NPRS scale. Patient was positioned in relaxed prone lying. One electrode is placed on trapezius trigger point another electrode on the radiating pain and then asked him to relax for 1 minute finally passive stretching of trapezius is given, followed by pain assessment by using Numerical Pain Rating Scale.

TENS in trigger point with amplitude of current at a high intensity for duration of 20 minutes with pulse duration of 150ms & frequency of 80–100 Hz is given over trigger point. In this study shown effect of conventional physiotherapy treatment in

patient with musculoskeletal condition. And check a difference in pain in pre and post by use in NPRS.

The general condition of the patient was assessed before subjected to the treatment. Patients were treated with high frequency TENS those who have acute condition. Parameter: Frequency: - 80 to 100 Hz Intensity: - As per patient tolerance

1. Pulse duration: - 150 ms
2. Duration: - 20 min

Procedure for application of PRT

While the patient was lying in the supine position, the therapist placed the trapezius muscle in a specific position as follows: the patient's head was flexed laterally toward the TrP and his/her shoulder was abducted to approximately 90°. In that position, the therapist monitored the TrP with her index finger and maintained that position until release was felt. This could take from 5 to 20 min.

In case of multiple tender point first highest tender point was treated. The therapist was sitting

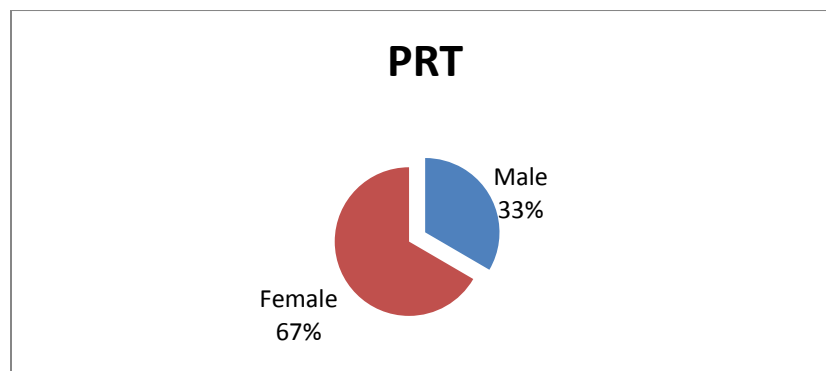
at the head side of the table and scapula of the subject elevated by taking the shoulder or scapular superior and medial to the ear, neck was rotated to the opposite side, extended and side bend to the same side to be treated. Selected tender point (TP) was palpated and patient was instructed to relax. Then passively turning and release of muscle tension was done through either the neck or shoulder movements. Pressure over the trigger point was applied by therapist thumb and was slightly released but maintained light contact over

the TP to monitor the response. This position was maintained for 90 seconds. It was held longer if active trigger point was felt a therapeutic pulse, tissue tension changes or movement. After the release, subject was put back to neutral position.

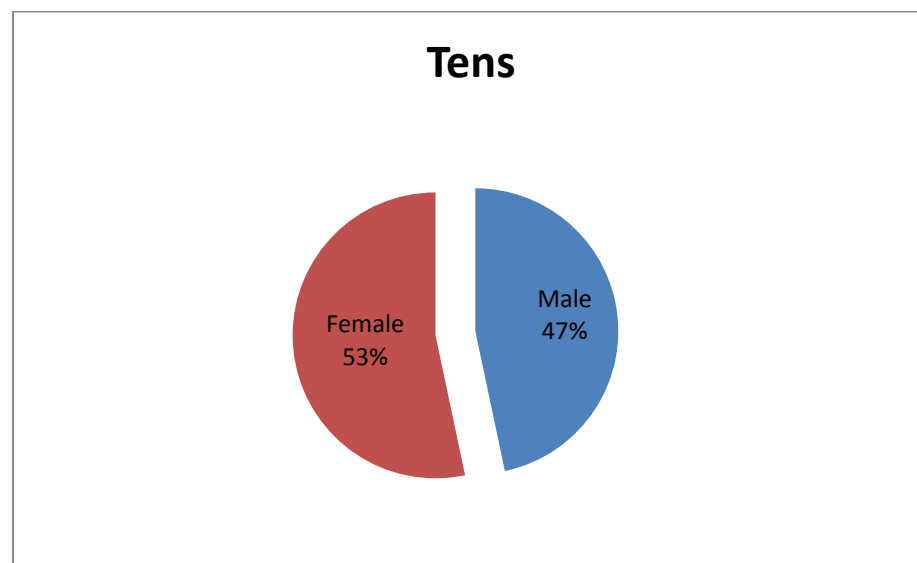
Before starting with the treatment session, presence of any contraindication was checked. The skin resistance and excessive hair was removed. Pain relief of symptoms was compared with pre and post treatment score of NPRS.

Statistical Analysis

Gender Distribution in Group A for PRT



Gender Distribution in Group B for TENS

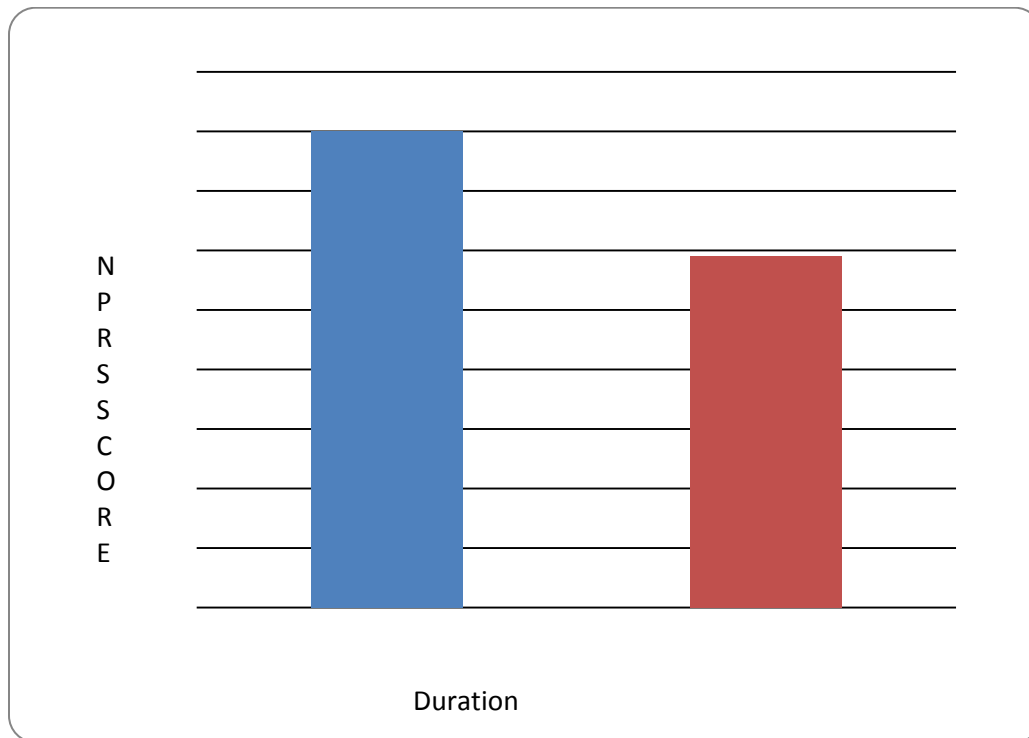


Application of paired t test for Pre and Post NPRS score of Group A. Mean and S.D. of NPRS score.

Table No.1 - Comparison of Pre and Post NPRS score of group A

Group	Pre- treatment mean \pm S.D.	Post – treatment mean \pm S.D.	t value	p value	Result
Group A	8 \pm 0.75	5.93 \pm 1.387	9.057	P < 0.0001	Extremely significant

After the application of PRT, there is extremely significant difference in NPRS score for group A.

**Comparison of Pre & Post treatment score of group A**

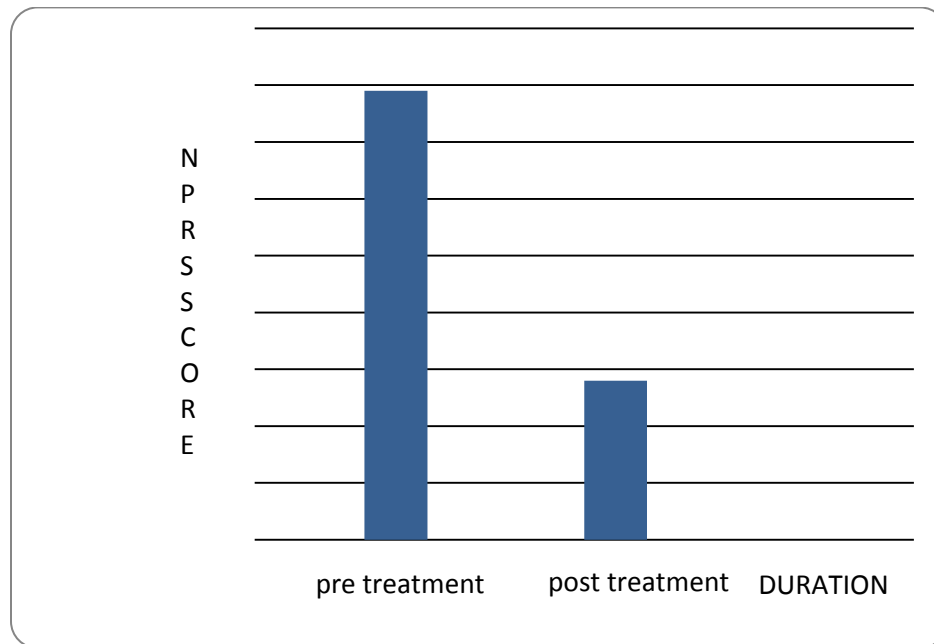
Application of paired t test for Pre nad Post NPRS score of Group B.

Table No.2 - Comparison of Pre and Post NPRS score of group B

Group	Pre- treatment mean \pm S.D.	Post – treatment mean \pm S.D.	t value	p value	Result
Group B	7.73 \pm 1.03	3.73 \pm 1.03	12.35	P < 0.0001	Extremely significant

After the application t test, there is extremely Significant different in trapezius spasm and NPRS scores for pre and post NPRS score in group B.

Comparison of Pre & Post treatment score of group B

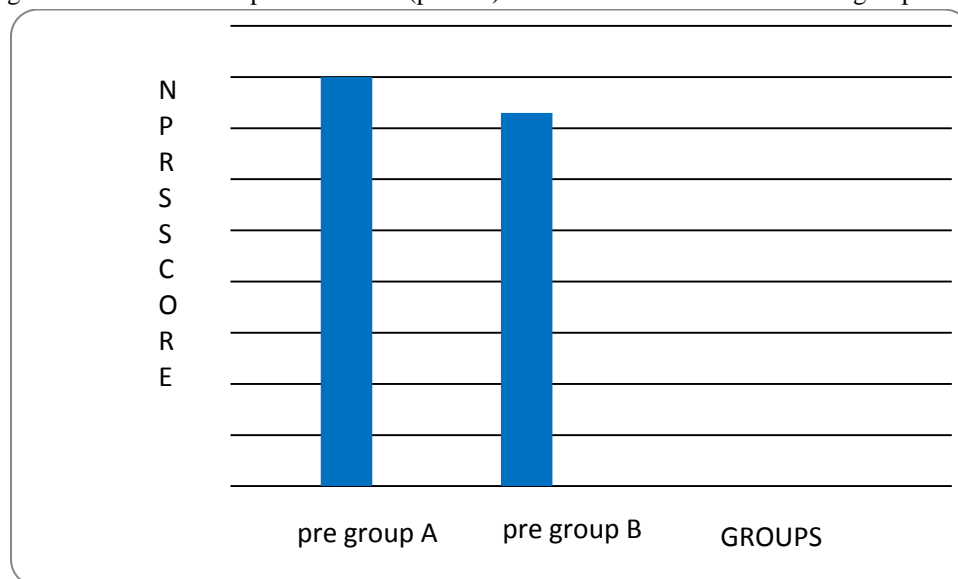


Application of Unpaired t test for comparison of pre NPRS score of Group A & B.

Table No.3 - Comparison of Pre treatment score of group A & group B
Unpaired test Pre A & Pre B

Group	Pre – treatment mean \pm S.D.	t value	p value	Result
Group A	8 \pm 0.7559	0.8069	0.4265	Not significant
Group B	7.73 \pm 1.033			

There is no significant difference in pre- treatment ($p > 0.05$) of NPRS score between the two groups.



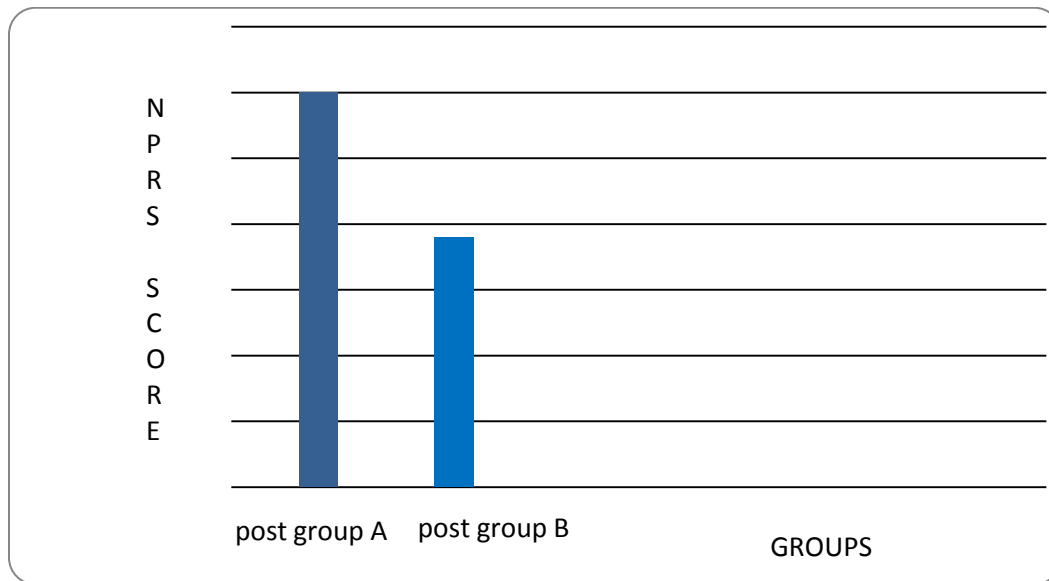
Comparison of Pre Treatment score of group A & B

Application of Unpaired t test for comparison of post NPRS score of Group A & B.

Table No.4 - Comparison of Post treatment score of group A & group B Post NPRS score of group A & group B

Group	Post – treatment mean \pm S.D.	t value	p value	Result
Group A	5.93 \pm 1.387	4.927	$P < 0.0001$	Extremely significant
Group B	3.73 \pm 1.03			

After the application of unpaired 't' test, there is extremely Significant difference in NPRS scores for post treatment group A & B.



Comparison of Post treatment score of group A & group B

DISCUSSION

PRT

In study group A, the improvement in pain, cervical Range of motion and functional disability could be an effect of positional release technique and trapezius stretch. PRT aims at removing restrictive barriers of movement in the body. This is accomplished by decreasing protective muscle spasm, facial tension, joint hypomobility, pain, and swelling and increasing circulation and strength. As a result the patient begins to move more easily, with less pain and discomfort.

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 a more normal level of tension in the muscle, which results in a more normal relationship within the various soft tissue surrounding the area.

Reduction in localized spasm increase range of motion, decreases pain, allows normal circulation and improves lymph drainage and increases the

potential for more normal biomechanics. PRT strongly complements traditional therapy regimens by allowing them to be more effective.

TENS group B is effective in decreasing myofascial pain measured with a NPRS. In this study we are using the parameters for moderate acute pain is 150ms, 80-100hz and for severe acute pain is 50ms, 100hz to reduce the myofascial pain and trigger points. Both showing a decrease in myofascial pain.

In this study we found that the use of 150 ms, 80-100hz this parameters of TENS reduces the acute pain and increases the range of motion.

The authors Francisco Jose Saavedra and Maria Teresa Cordeiro propose that PRT may be an effective treatment for pain relief in the upper trapezius muscle with a TrP. This suggests that this technique may be used as an alternative or an adjunct to other therapies. The effectiveness of this type of treatment should be confirmed in further clinical studies. It is concluded that Positional

release technique significantly found more effective along with trapezius stretch in improving pain, functional disability and cervical range of motion than trapezius stretching alone for subjects with subacute trapezititis. It is recommended that implementation of positional release technique alone or with trapezius stretch is clinically beneficial in the treatment of trapezititis.

In TENS context to this study, acute effect of TENS must be taken into consideration in physiotherapy practice for management of acute or chronic musculoskeletal related soft tissues injuries. This study is mainly to concentrate on

acute pain to determine Conventional TENS is more effective to reduce the Trapezitis. This is combined with passive stretching to get the normal range of motion.

CONCLUSION

The result of this study showed that Prt and tens both are beneficial in reducing pain in patients with trapezititis. Although Prt is more effective than TENS in reducing pain in trapezititis as compare to TENS.

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