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# COMPARING THE EFFICIENCY OF TENS WITH STRETCHING EXERCISE AND ULTRASOUND THERAPY WITH SOFT TISSUE MANIPULATION IN TRAPEZITIS IN SCHOOL STUDENTS

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## ABSTRACT

Trapezitis is an inflammatory pain caused by the trapezius muscle that causes severe neck pain. Trapezius is a classic strain pain and the most common musculoskeletal disease. This is usually caused by excessive tension or tension in the trapezius muscle. The upper trapezius muscles are called postural muscles and are very sensitive to overload. Some studies show that shoulder and neck pain is more common in children and adolescents in developing countries. Therefore, identifying and understanding pain in childhood and adolescence is necessary to prevent such problems.

**STUDY PURPOSE:** To compare between the efficacy of TENS with stretching and Ultrasound Therapy with STM in Trapezitis in school students.

**METHODOLOGY:** Random sampling method was used in an experimental study with 30 school Students aged 15-18 years in one secondary school, Meerut, U.P. We excluded participants under 15 years of age. Patients are divided into 2 groups: GROUP A and GROUP B (15 students each).

**RESULT:** Results were analyzed by t-test (paired and unpaired). All groups A and B completed all treatment sessions for 3 weeks, 3 days per week. Pre-intervention readings were recorded before starting the protocol, and post-intervention readings were also recorded. after all the protocol. The results showed that both groups were effective in reducing pain and disability in patients with trapezius, which is statistically significant; however, inter-group comparisons showed that group B had a statistically significant difference compared to group A in the reduction of pain and disability.

**CONCLUSION:** When the post interventions were compared between the two groups ,the group which was treated with UST along with STM showed advantage over the group treated with TENS along with statics stretching. The difference between the effects was statistically significant.As a result we conclude that UST along with STM are more effective than TENS along with static stretching in reducing pain and improving functional disability in school going students with Trapezitis

**INTRODUCTION:** Trapezitis is an inflammatory pain caused by the trapezius muscle that causes severe neck pain. Trapezius is a classic strain pain and the most common musculoskeletal disease. This is usually caused by excessive stress or strain on the trapezius muscle. The upper trapezius muscles are called postural muscles and are very sensitive to overload. Muscle tension can reduce neck ROM. Decreased movement can negatively affect the mobility of cervical joints. Limited ROM increases soft tissue tension and a pain-spasm cycle occurs that can be difficult to break. Low activity of the upper trapezius is often observed during sitting and standing, which is associated with head posture and is a common source of tension. and neck pain in people who work behind desks and computers or who spend many hours behind the wheel. The trapezius is often shortened due to poor ergonomics, which causes the muscle to shorten. Trapezitis is mainly caused by stress and tension, repetitive movements, forward head position, sitting without back support, working without arm support, prolonged head bending, use of thick pillow, tight pectoral muscle, severe neck cramp. Overload and damage of muscle tissue causes involuntary shortening of local fibers. Under stress, soft tissues receive less oxygen, glucose and nutrients, after which a lot of metabolic waste accumulates in them. The end result of this sequence of events is altered tissue condition, pain and the development of trigger points (TrP). It is a hyperexcitable point associated with a tight band of skeletal muscle that hurts on compression, palpation and/or stretching and usually produces a characteristic referred pain. Active TrPs cause clinical symptoms and the transmitted pain they cause causes pain in patients. Occult TrPs may not be the immediate source of pain, but may cause other muscle dysfunction such as fatigue, limited range of motion, and pain from muscle contraction or compression. The stress that causes this condition is often a combination of muscle tension and contraction. Reaching to the side to reach an object while keeping the head tilted in the opposite direction can cause such an attack. A typical example is someone on the floor reaching to pick up an object that has rolled under a table, or someone sitting in the front seat of a car reaching to pick up an object from the back seat. Abduction of the arm requires fixation of the scapula with a knife. The trapezius and tilting the head to the side stretch the muscle at the same time. A knot or spasm occurs in the muscle, which can be better described as a segmental spasm in the muscle.

**MANAGEMENT**

Each subject was analyzed based on the exclusion and inclusion criteria and divided into two different groups:

GROUP A and GROUP B. Each subject was evaluated for pain (NPRS) and neck disability (Neck Disability Index).

**Pain Rating -** Each subject was shown the NPRS and asked to select an integer (0-10 integer)

from a flat bar to reflect the severity of discomfort. 0 means discomfort and 10 means extreme pain.

**Estimation of NDI**- Subjects were asked to complete a neck injury index to measure neck injury before treatment. It was completed by the subjects themselves.

Both NPRS and NDI estimation were taken before the fiorst treatment and after the last treatment delivered.

**GROUP ALLOCATIONS**

GROUP A- Received TENS and static stretching.

GROUP B- Received US therapy with STM

30 Subjects (n=30) were selected based on inclusion exclusion criteria and then every subject were haphazardly partitioned into two equivalent groups, GROUP A (n=15) and GROUP B (n=15).

**GROUP-A** subjects got TENS and static stretching for trapezitis.

First, each subject in Group A was asked to complete a parental consent form, as all subjects are less than 18 years of age.

They were then asked to complete the NPRS and NDI for pain and disability.

Subjects were then subjected to static stretching of the upper trapezius fibers (5 sets of 20 seconds) followed by TENS (15-minute burst mode)

**GROUP B** Subjects got UST and STM for trapezitis.

First, each subject in Group B was asked to complete a parental consent form, as all subjects are under 18 years of age.

They were then asked to complete the NPRS and NDI for pain and disability.

Subjects then received STM over the upper trapezius fibers and then UST.

The treatment was carried out for 3 consecutive weeks, 3 days a week.

After the whole treatment on last day, all the subjects from both groups A and B are approached to fill NPRS and NDI structure again to see the distinction pre and post treatment.

**APPLICATION OF TENS**

**Patient Position** – sitting on a a stool/ chair with back support

**Electrodes Placement**- covering the muscle belly of upper fibers of trapezius with 2 electrodes on whichever side the pain is occurring to the subject.

**Duration and Mode-** 10 minutes with Burst Mode TENS

**APPLICATION OF STATIC STRETCHING**

**Patient Position**- Sitting on a stool/ chair with back support

**Therapist Position-** standing behind the subject

**Procedure**- Place one hand over the tip of the shoulder and other hand on the temporal region and covering the ear lobe of the subject.

Now lateral flex the neck away from the holded shoulder.

**Holding Time –** 20 seconds

**APPLICATION OF ULTRASOUND THERAPY**

**Patient Position-** Sitting on a stool/ chair with back support

**Therapist Position-** Standing behind the subject

**Duration-** 1 watt/cm$^2$ for 4 minutes covering the TrPs.

**APPLICATION OF STM**

**Patient Position-** Sitting on a stool/ chair with back support

**Therapist Position-** Standing behind the subject

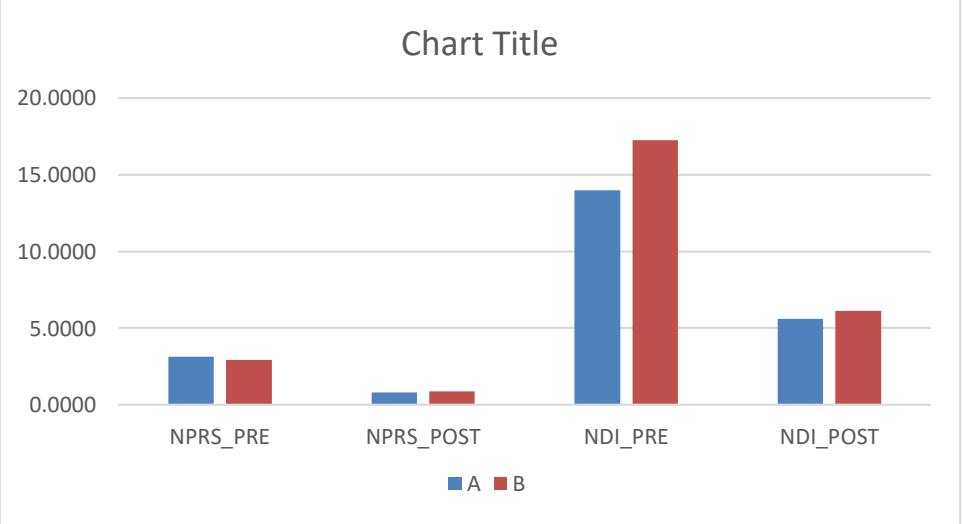
**Techniques-** Kneading, Picking up, wringing up

## METHODOLOGY

**Sample Size**: 30 students
**Study Design:** experimental study design
**Sampling Method:** random sampling method
**Inclusion Criteria:** students of classes $9^{th}$ to $12^{th}$ , Both male and female student , Students in the age group 15-18years, Unilateral trapezitis
**Exclusion criteria:** Those with age less than 15 years , students who have had recent surgeries,Recent injuries or fractures.
**Duration of Study:** 3 weeks 3 alternate days /week
**Data Analysis:** The measurable test utilized for information investigation was t-test. The paired t- test was utilized to think about the pre and post intercession scores for NPRS and NDI for each group independently.
**Tools used in the study:** Numeric Pain Rating Scale (NPRS), Neck Disability Index (NDI)

**RESULTS -**Results were analysed using t test (paired and unpaired).
The entire group A and B completed all sessions of treatment for 3 weeks 3 days per week .
Before the protocol was started pre interventions readings were noted down and also the post readings were noted down after the whole protocol.
The results showed that both the groups were effective in reducing pain and disability in patients with trapezitis which is statistically significant; however the inter group comparison showed that in group B there is statistically significant difference in the reduction of pain and disability then group A

**THIS GRAPH IS SHOWING THE PRE AND POST INTERVENTION MEAN SCORE OF NPRS & NDI GROUP A & B**



The paired t test was used to determine the significance difference between pre and post NPRS and NDI values in groups A and B, which revealed a significant difference in both groups, while the unpaired t tes t was used to determine the significance difference between the two groups.

**DISCUSSION**: In this present study, pain and neck disability are taken as parameters and evaluated using the Numerical Pain Rating Scale (NPRS) and Neck Disability Index (NDI). There are many ways to treat trapezius, the aim of this study was to compare the effectiveness of TENS with stretching and the effectiveness of UST with STM in the treatment of trapezius in school children. Various electrotherapies and manipulative procedures aim to reduce pain and muscle spasms, increase muscle strength and restore mobility. The most popular and widely used treatments for trapezius include TENS, UST, stretching exercises and soft tissue manipulation. However, few studies have confirmed the effects of these therapeutic interventions. Therefore, the aim of the study is to investigate the effect of TENS with static stretching and the effect of UST with STM. A total of 30 subjects who met the inclusion and exclusion criteria were randomly assigned to one of two groups of 15 subjects each. Group A was treated with static tension TENS therapy and group B was treated with STM with UST. Before the start of treatment and at the end of the treatment program, pain intensity was assessed with the NPRS scale and functional disability with the NDI in both groups. The result of this study showed that both groups showed significant improvement, but when the two groups were compared, group B showed greater pain and functional improvement in trapezius students. In group A, the mean of NPRS before intervention is 3.133 and the mean of NPRS after intervention is 0.8000. The pre-intervention NDI mean is 14 and the post-intervention NDI mean is 5.6. On the other hand, group B has a pre-intervention NPRS mean of 2.933 and a post-intervention NPRS mean of 0.8667. Although both groups showed statistically significant results, group B showed a significant post-intervention difference compared to group A. Thus, it statistically shows that US combined with STM was more effective than TENS and static stretching for trapezius in school students,

**CONCLUSION:** This is a randomized experimental trial comparing the effectiveness of TENS stretching and ultrasound therapy with soft tissue manipulation for trapezius in school children. This study showed that patients with trapeze had a significant reduction in pain. as a result and ultrasound therapy with soft tissue therapy.When the post-intervention results of the two groups were compared, the group treated with US and STM showed an advantage over the group treated with TENS combined with static stretching. The difference between effects was statistically significant.As a result, we conclude that US combined with STM is more effective than TENS and static stretching in reducing pain and improving functional disability in school students with trapezius.

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