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# Effectiveness Of Integrated Neuromuscular Inhibition Technique Along with Conventional Therapy for Upper Trapezius Trigger Points in Patients with Mechanical Neck Pain

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## Abstract

**BACKGROUND OF THE STUDY:** The Mechanical neck pain (MNP) refers to musculoskeletal disorders and pain along the axis of cervical spine and paraspinal musculature prevailing among 3-5% of the population worldwide. Upper trapezius trigger points is one of the common cause leads to neck pain, decreased cervical range of motion and functional activities. The prevalence ratio in India of male and female is 1:10. **AIM OF THE STUDY:** To evaluate the effectiveness of integrated neuromuscular inhibition technique (INIT) and neck isometrics and strengthening exercise along ultrasound therapy to reduce pain on upper trapezius trigger points in patients with mechanical neck pain. **METHODOLOGY:** This study consists of 30 patients with age group between 18 to 55 years and equally assigned into two groups. Group A (15 members) received INIT with ultrasound therapy, Group B (15 members) received neck isometrics and strengthening exercise with ultrasound therapy for a period of 3 session per weeks for 4 weeks. The evaluation of both groups was done by using NPRS and Neck disability index (NDI). **RESULT:** The posttest mean value of NDI in group A (10.07) is more than group B (11.47) and NPRS in group A(3.33) is more than group B(4.8). The study result shows significant improvement achieved in both groups by reduce pain and improving neck mobility. This study concluded that Integrated neuromuscular inhibition technique with ultrasound therapy is more effective than neck isometrics and strengthening exercise with ultrasound therapy in reducing pain and improving neck mobility.

**Keywords**

Mechanical Neck pain, Upper trapezius trigger points, INIT, Ultrasound therapy, NDI, NPRS.

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## INTRODUCTION:

The Mechanical neck pain (MNP) is one of the common musculoskeletal disorders in the area of cervico-thoracic junction that is exacerbated by neck movements. World health organization (WHO) has ranked neck pain at 4th position for years lived with disability among all the health conditions. the overall prevalence of neck pain range between 0.4% to

86.8% and trigger point prevalence range from 0.4% to 41.5% [4][5]. The International association for the study of pain states that neck pain as, "Pain perceived as arising from anywhere within the region bounded superiorly by superior nuchal line, inferior by an unoriginally transverse line through the tip of first thoracic process and laterally by sagittal plane tangential to the lateral border of the neck" [2].

**PREVALACE:**

Neck pain is common in all age groups of people but greatest numbers were between the ages of 18-50 years. Myofascial trigger points are considered as a major source of pain in 30% of individuals with musculoskeletal dysfunction [1]. The prevalence ratio in India of male and female is 1:10 and 3-5% of the population is affected worldwide. The common cause of activation of trigger points include prolong poor posture, lack of exercise, emotional distress.

**MECHANICAL NECK PAIN:**

Pain or discomfort in the neck region, exacerbated by neck movements or position, and relieved by rest or specific manual therapy techniques, without any evidence of systemic disease or neurological deficit (Gross et al., 2016).

**UPPER TRAPEZIUS TRIGGER POINTS:**

It is a hypersensitive area within the upper trapezius muscle that, when compressed produces referred Pain pattern, typically in the neck, shoulder and arm exhibit localized twitch response (Travell & Simson).

**INTEGRATED NEUROMUSCULAR INHIBITION TECHNIQUE (INIT):**

INIT is a manual therapy approach that involves the application of gentle, sustained pressure into the affected soft tissue, with the aim of inducing a state of relaxation and reducing tone in the muscle, thereby restoring normal proprioceptive function and reducing pain and inflammation (Chaitow,2010).

**METHODOLOGY:**

This study consist of 30 patients with upper trapezius trigger points were selected in this study of age group between 18 to 55 years on the basis of inclusion and exclusion criteria and equally assigned into two groups. Group A received INIT with ultrasound therapy, Group B received neck isometrics and strengthening exercise with ultrasound therapy for a period of 3 session per weeks for 4 weeks. The inclusion criteria are both male and female are included, patient with neck Pain, Limitation of cervical ROM, Neck disability index score ( 5-14 mild, 15-24 moderate), Jump sign +ve, Active myofascial trigger points, pain intensity between 4-8, Duration of pain less than 3 months and exclusion criteria's are Cervical spine surgery fracture in past 12 months, Whiplash injury in past 6 months, Neck disability score (25-34 severe, >34 complete), Malignancy, Cervical radiculopathy , Recent trauma to neck region.

Informed consent form was given to all subjects for receiving permission to participate in the study.

**TREATMENT TECHNIQUES:**

**INTEGRATED NEUROMUSCULAR INHIBITIION TECHNIQUE (INIT):**

INIT is a manual therapy approach that utilize a combination of gentle, sustained contractions and specific mobilization to inhibit abnormal neuromuscular activity, reduces muscle spasm and pain also restore normal muscle function and movement pattern. Combination of various manual therapy techniques coined together as the Integrated Neuromuscular Inhibition Technique (INIT) produced an effective multifaceted approach to myofascial trigger point release. This technique involves combining **Ischemic compression**, therapist applied an intermittent ischemic compression by using thumb and index finger (pincer grip). The pressure was applied in an interrupted pathway 5 seconds on and 5 seconds off then continuously for 60-90secs depending on the tolerability of patients. **Strain-counterstrain (SCS)**, The patient head was laterally flexed towards the affected side passively by one hand of the therapist. The other hand held the subject's forearm and moved the affected side shoulder passively to 90degree of abduction and external rotation. The position was maintained for 60-90 seconds. After 90secs the patient was bought back to original position passively and slowly and **MET** (muscle energy technique) The affected side shoulder was stabilized by one hand of the therapist and the other hand on the mastoid area at the side of the head. The patient was requested to move the stabilized shoulder and ear towards each other. The contraction was maintained for 10 sec with 20% of maximum voluntary contraction, followed by 5 seconds of relaxation in a single coordinated manner.

**CONVENTIONAL EXERCISE:**

Conventional exercise includes Shoulder shrugging, Shoulder blade squeeze,

Chin tucks, Upper trapezius stretch and Neck Isometrics for Neck Flexion, Neck Extension, Neck Lateral Flexors and Neck Rotators were performed.

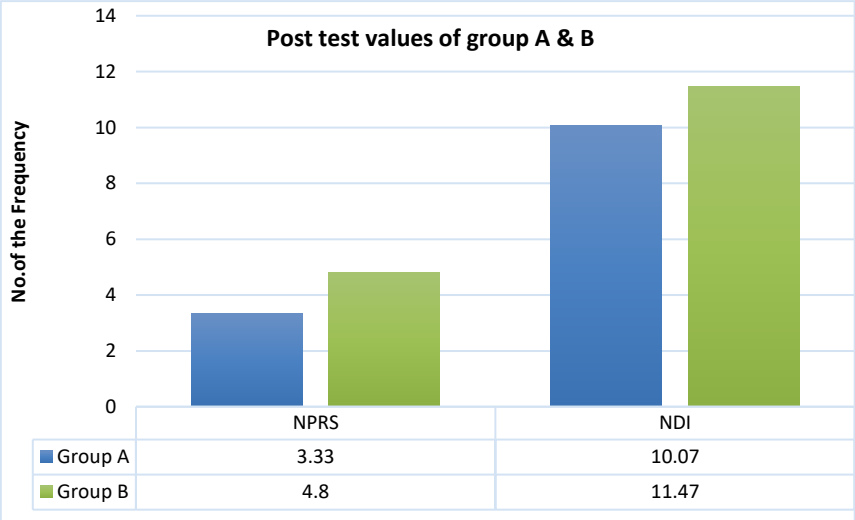
**ULTRASOUND THERAPY:**

Ultrasound refers to mechanical vibration which are essentially the same as sound waves but of higher

frequency, such waves are beyond the range of human hearing. Sonic waves are series of mechanical compression and rarefaction in the direction of travel of waves, hence they are called longitudinal waves. Production of mechanical waves or vibration due to the application of electro motive force (e.m.f) Many crystals can be used but most commonly used crystal are Quartz, which occurs naturally and synthetic ceramic materials such as barium titanate and lead zirconate titanate (PZT). These crystals deform and vibrate when subjected to varying potential difference. Method of application are concentric circles, overlapping circles, transverse strokes and figure of 8 pattern were been performed. Parameters of ultrasound used are Frequency of 1 MHZ used (for deeper penetration), Intensity 1 W/cm and continues Mode for 8 minutes Duration.

**RESULT:**

The statistical mean value of NDI in Group A in pre-test is 17.13and post-test is 10.07 and The mean standard deviation of Group B in pre-test is 15.86 and post-test is 11.46. P value and T value of group A is 0.000 and 17.326. P value and T value of group B is 0.000 and 17.290 and mean value of NPRS for Group A in pre-test is 6.53 and post-test is 3.53 Group B in pre-test is 6.53 and post-test is 4.53 P value and T value of group A is 0.000 and 17.748. P value and T value of group B is 0.000 and 10.247.




**DISCUSSION:**

The purpose of this study is to analyze the effects of INIT and neck isometrics and strengthening exercise along with ultrasound therapy to reduce pain among patients with upper trapezius trigger points which improve vascularity, and to decrease pain and improve neck mobility by eliminating the hypoxic condition by relieving the tension in the muscle and flushes out the inflammatory chemical substances. INIT is successful along with Ultrasound therapy when treating upper trapezius trigger points by reducing pain and symptoms. The proper application of manual treatment technique helps to alleviate the neck pain, which results in enhanced functional mobility of the neck. Dr. Pooja Wakde, Dr. Deepak Anap concluded that INIT was effective in decreasing the pain and disability, improving muscle strength and ROM in participants with sub-acute trapezitis.

**CONCLUSION:**

This study concluded that Integrated neuromuscular inhibition technique (INIT) along with ultrasound therapy was more effective than Neck isometrics and strengthening exercise along with ultrasound therapy in reducing neck pain and improving neck mobility and functional ability for upper trapezius trigger points in subjects with mechanical neck pain.

**LIMITATIONS AND SUGGESTIONS:**

**LIMITATIONS:**

This study had a small sample size, duration of the study was short ad focus only on short term outcome.

**SUGGESTIONS:**

Long term follow up is needed to evaluate whether there occurs any sustained or carryover effect after treatment, Scale randomized clinical trial that would include a large sample size and a follow up and Studies should be conducted on both acute and chronic cases.

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