



THE EFFECT OF STRAIN COUNTER STRAIN TECHNIQUE VERSUS INTEGRATED NEUROMUSCULAR INHIBITORY TECHNIQUE ON NECK PAIN IN PATIENTS WITH UPPER TRAPEZIUS TRIGGER POINTS”

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Background: Neck pain is common disorder with a reported 6month prevalence rate of 54%. strain counter strain technique and INIT are positional intervention aimed at relieving pain. The study aimed to find the effect of strain counter strain technique and INIT on trigger point over upper trapezius of neck.

Method: The subjects with upper trapezius trigger point were selected and randomized into two group. Total 36 subjects, 18 subjects were allocated to each group. The study samples selected based on inclusion and exclusion criteria. Effects of intervention were recorded on VAS and NDI at baseline and after 2week. Dependant ‘t’ test was used to find the outcome of the study.

Result: Paired t test on the VAS and NDI among SCS group found significant (<0.001) improvement in the outcome with mean difference of 2.84 and 11.27 respectively. A paired t-test on VAS and NDI amongst INIT group found significant (<0.002) improvement in the outcome with a mean difference of 3.83 and 36.68 resp.

Conclusion: The study concluded that Integrated neuromuscular inhibitory technique was more effective than Strain counter strain in reducing pain in the upper trapezius of the neck and improve neck function among the patients.

Key words: Neck pain, Strain counter strain, INIT, Tenderness, VAS, NDI.

I. INTRODUCTION

Myofascial trigger points (MTrP) an important musculoskeletal derangement is characterized by specific reference zone of muscle tenderness. It is a hyperirritable spot along a taut band of skeletal muscle that triggers pain on compression or stretch giving rise to a typical referred pain pattern¹. MTrP are not limited to specific muscle groups, however, the most common site are levator scapulae, upper trapezius, sternocleidomastoid, scalene and quadratus lumborum all of which actively assist in stabilizing posture². The development of MTrP is hypothesized to result from overstressed or injured muscle fibers that are deprived of glucose, oxygen and other nutrients that eventually accumulate increased levels of metabolic waste products. The aftermath of the resulting pathogenesis is development of pain, altered tissue status and disability^{3,4}.

Neck pain is common disorder with a reported 6 month prevalence rate of 54%⁵. With upto 37% of individuals developing persistent symptoms, neck pain is a condition that places a large economic burden on health care system⁶. Neck complaints are common affecting 13% of adults at any one time and up to 30% males and 50% females in the course of a life time⁷.

MTrPs can develop from a no of conditions including genetics, aging and strenuous activity⁸. MTrPs can be brought on by macrotrauma or by cumulative microtrauma. Abnormal posture, repetitive motions and psychological stresses are example of cumulative microtrauma⁸⁻¹⁰. Formation and presence of MTrP is correlated with muscle pain, weakness and movement dysfunction¹⁰

The effectiveness of INIT was reported in 2 case series, which showed rapid results with decreased pain and stiffness^{11,12}. The manual technique strain counter strain is useful in the reduction of pain and promoting muscle relaxation has been stated by Kisner C, 1990. Although randomized clinical trial exist studying the efficacy of ischaemic compression and strain counter strain in neck pain and chronic myofascial pain syndromes, there is a lack of evidence regarding the integration of these techniques in individuals with nonspecific neck pain¹³⁻¹⁵.

Strain counter strain technique is applied passively on muscles to reduce pain and increase joint function in different regions of the body tender points¹⁶. Strain counter strain is found effective to reduce hypersensitivity of muscular tissue on palpation there by subjects can perform muscle strengthening programs to improve functions¹⁷. Chaitow explained how the combination of various manual therapy techniques coined together as Integrated Neuromuscular Inhibition Technique (INIT) produced an effective multifaceted approach to MTrP release. This technique involves combining MET, strain counter strain and ischemic compression in a single coordinated manner^{18,19}.

The objective of this study is to find out the effect of strain counter strain over INIT technique on neck pain.

RESEARCH METHODOLOGY

- Study design: Comparative study
- Sampling technique: simple randomised
- Duration of study: 6 month
- Duration of intervention: 2 weeks, per week 3 session on alternate days (six treatment session)
- Study setting: Physiotherapy OPD, MIMSR medical College, Latur
- Sample size: 36
- Participants were selected from Physiotherapy department of MIMSR college between ages ranged from 18-50 years. Each participant was screened initially by using simple selection criteria relevant to inclusion & exclusion criteria. Subjects were divided into two groups.
- All the procedures involved in the study was illustrated to the participants & consent was taken. Group A was given strain counter strain technique & Group B was of Integrated neuromuscular inhibition technique.

All the group subjects were involved for pre-test assessment.

GROUP A:

- Strain counter-strain technique was performed in the upright sitting position. Trigger points were located in upper trapezius muscle and pressure was applied till we get the sensation of pain, after that neck ipsilateral side flexion with contralateral rotation was performed, the shoulder in the same side need to be maintained abducted position. The technique done 3 times with each hold 30 sec & with 10 sec rest in between.

GROUP B:

- In Group B, INIT was given, in the area of upper trapezius where trigger points were marked. Then trigger point pressure release was applied by using pincer grip between thumb & index finger intermittently, until the patient report that the local or referred symptom has reduced. The pressure was applied in an intermittent manner initially & then continuously for 90 sec according to the patient tolerability. After this procedure the pressure was maintained without complaint of referred pattern. Patients head was passively laterally flexed towards affected side; the therapist then holds patients forearm & move the affected side shoulder passively to approx. 90° of abduction, while monitoring the trigger point pain with the other hand. Then the fine tuning was made with slight flexion or extension of shoulder so that maximum ease was achieved. This was performed for 3 times with 10 sec rest. The upper trapezius was stretched using muscle energy technique (MET). The patient was asked to take the shoulder towards the ear (shrug movement) & the ear towards the shoulder. The degree of contraction was mild & pain free. The contraction was sustained for 10 sec & upon complete relaxation of effort, the therapist then eases the head/neck into an increased degree of side bending & rotation, where it was stabilized, and the shoulder stretched caudally. The stretch was maintained for 10-30 sec and was performed 3 times with 10 sec hold in between. All the group subjects were included for post-test assessment to find out the score on VAS and NDI.

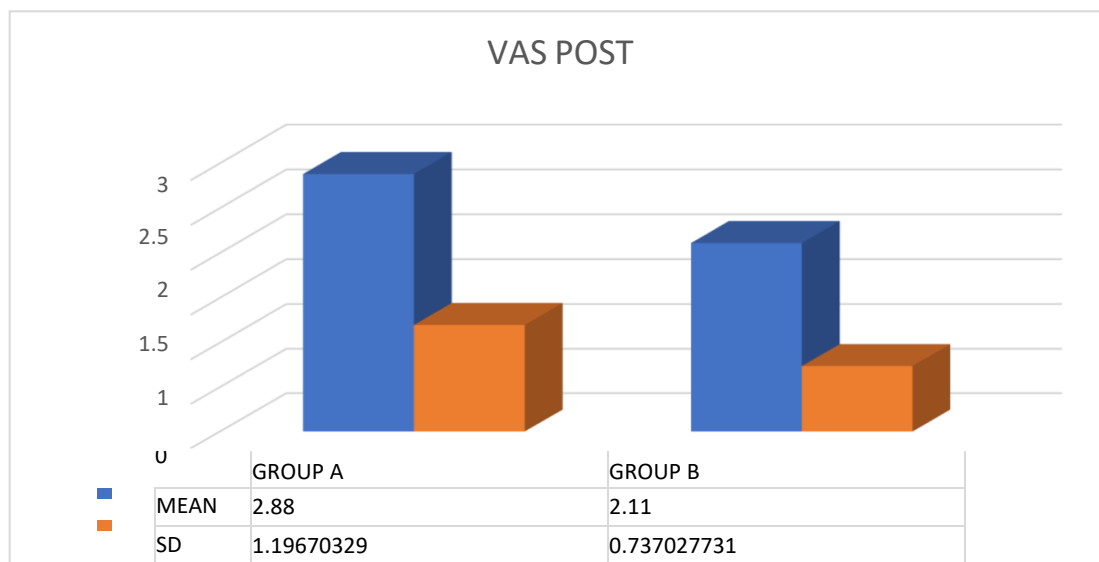
IV. RESULTS AND DISCUSSION

Comparison between post intervention measures of VAS of Group A and B:

Table 1: Comparison of VAS post test of Group A and B

Comparison of VAS of post Test					
	MEAN	SD	T-VALUE	P-VALUE	INFERENCE
POST TEST GROUP A	2.88	1.19	2.28	<0.02	SIGNIFICANT
POSTTEST GROUP B	2.11	0.73			

Graph 2: Graph of comparison of VAS – post test of Group A and B

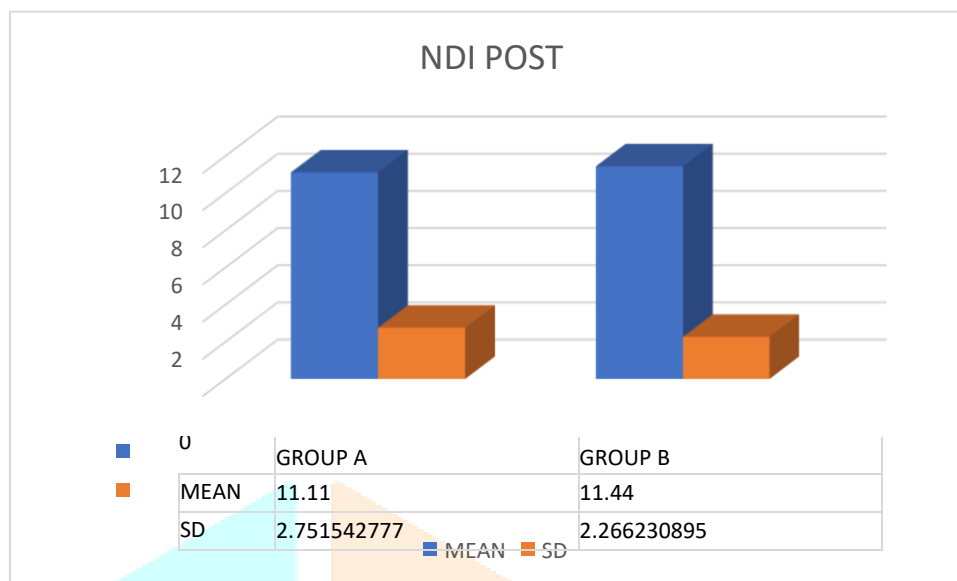


Comparison between post intervention measures of NDI of Group A and B:

Table 2: Comparison of NDI – post test of Group A and B

Comparison of NDI of post Test					
	MEAN	SD	T-VALUE	P-VALUE	INFERENCE
POST TEST GROUP A	11.11	2.75	2.50	<0.01	SIGNIFICANT
POST TEST GROUP B	11.44	2.26			

Graph 2: Graph of comparison of NDI – post test of Group A and B



Discussion:

Total 36 patients of both gender with non-specific neck pain participated in the study. Paired t-test on VAS and NDI among Strain counter strain (SCS) group found significant ($P < 0.001$) improvement in the outcome with a mean difference of 2.84 and 11.27 respectively. A paired t-test on VAS and NDI amongst Integrated neuromuscular inhibitory technique (INIT) group found significant ($P < 0.002$) improvement in the outcome with mean difference of 3.83 and 36.68 respectively.

There are many studies done on the upper trapezius trigger point to relieve neck pain. Nagraleet al. advocated that INIT was more favorable than METs delivered in isolation to relieve neck pain and improve function in patients with non-specific neck pain. They found significant improvement in pain intensity ($P < 0.01$) and neck disability ($P < 0.01$). The benefit of INIT was due to addition of ischaemic compression which equalizes length of sarcomere and SCS which causes (unopposed arterial filling) reduction in tone²⁹.

Similar findings were reported by Sabby et al. who concluded that the combination MET and SCS resulted in improved outcome of pain and ROM in patients with upper trapezius myofascial trigger point (MTrPs)³³. G Yathendra Kumar et al. 2015 investigated the effectiveness of MET, Ischaemic compression and SCS on upper trapezius trigger point. They found significant difference exist in groups after 2week in VAS, NDI and ROM and they concluded that MET is more effective than SCS and Ischaemic compression. MET causes hypoalgesic effect and sympatoexcitation which decreases pain²⁵. Study such as (Jibi Paul et al. 2018) done to find effect of SCS and stretching in patients with upper trapezius tenderness in neck pain. They concluded that both were effective in reducing pain and improving neck function but SCS was more effective than stretching when compared statistically, SCS causes relaxation of muscle and increase flexibility by decreasing tone³⁴.

As the prevalence rate is very high in neck pain, effective treatment is needed to relieve pain and increase its function. These results actively contribute to the growing body of knowledge and evidence in supporting use of INIT as part of treatment of myofascial trigger point.

The result of present study showed that significant reduction in neck pain and function in group B at the end of 2 week. The significant reduction in pain and improvement in function was due to stimulation of mechanoreceptors which has influence on pain gait and post isometric relaxation helps in reducing the tension by restoring full length of muscle increase tension by restoring full length of muscle. Therefore, the present study concluded that INIT is more effective than SCS in treating upper trapezius trigger point in patients with neck pain.

CONCLUSION:

This study supports that upper trapezius trigger point can cause neck pain and increased disability according to neck disability index. Individually both Strain counter strain and Integrated Neuromuscular inhibitory technique was found to be effective in reducing neck pain and reducing neck disability, however when both groups are statistically compared, significant difference was found in outcome measures. Hence, the alternate hypothesis has proved.

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