**Effectiveness Of Suboccipital and Sternocleidomastoid Muscle Release And Muscle Energy Technique In Forward Neck Posture Individuals With Neck Pain**

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**ABSTRACT**

*Background and purpose*: Neck pain is the most common musculoskeletal disorders in the general population. With up to 37% of individuals developing persistent symptoms, neck pain is a condition that places a large economic burden on the health care system. The commonest reason remains the incorrect posture. Forward neck posture is a postural deviation reported in the patients caused by the biomechanical changes not only around cervical and thoracic but includes scapular position too.

*Objective:* To determine whether the myofascial release and the muscle energy technique are effective on forward neck posture patients with neck pain.

*Methodology:* A case series of5 patients with neck pain having craniovertebral angle (CVA) <48° and Neck disability index (NDI) >5 were included. The patients underwent 2-weeks of intervention of muscle release and muscle energy technique on sternocleidomastoid and suboccipital muscle. Outcome measures CVA and NDI.

*Result:* The comparison between pre-post treatment of CVA and NDI was done using t-test. There was a highly significant difference in CVA and NDI between pre and post treatment value after implementing muscle release and muscle energy technique (p<0.001) and (p<0.19) respectively.

*Conclusion:* This study concludes that by the application of muscle release and muscle energy technique on the individuals with forward neck posture and neck pain results in improvement in their CVA and reduction in neck pain. There was noticeable improvement in cervical range of motion and muscle power. Hence, the combination of the two interventions can be effective in managing the forward neck posture and neck pain.

*Keywords:* Craniovertebral angle, Neck disability index, muscle release and muscle energy technique.

**INTRODUCTION**

Neck discomfort is the most prevalent musculoskeletal condition that the general public experiences1. At some point in their life, almost two thirds of people experience neck pain, and middle-aged people are most likely to experience it2. Various factors can contribute to neck pain, but poor posture continues to be the most common cause3.

Patients with neck pain have been observed with forward-facing neck position.4 Forward head posture enhances flexion of the lower cervical and upper thoracic vertebrae as well as extension of the atlanto-occipital joint and the upper cervical vertebrae.5 The head is positioned forward when a bad posture is maintained for an extended period of time.6 Along with the weakening of the longus capitus, there is abnormal shortening of the levator scapulae, suboccipital, sternocleidomastoid, and upper trapezius muscles.7. In order to keep the eye level with the horizon, the sub occipital muscles are hypertonic when the head is positioned forward. As the sternocleidomastoid muscle experiences hyperactive tension, tone, and tiredness, this affects patients' disabilities and neck pain8. The load on the neck structures will rise as a result9.

Myofascial release is a manual treatment technique that stretches the fascia and releases the connection between the fascia, muscles, and bones10. Applying relaxation therapy to soft tissue causes a decrease in discomfort and tone. The muscle energy technique is another method. An advanced stretching technique is muscle energy technique.11 It is a type of therapy where a patient voluntarily contracts a muscle or muscles in a precise, controlled direction in opposition to a force applied by the practitioner.12 Because the client puts up the initial effort while the practitioner facilitates the process, it is unusual in its applicability. It is asserted to be useful for a number of things, including stretching shortened or contracted muscles, building up muscles, acting as a lymphatic or venous pump to help drain fluid or blood, and extending the range of motion of a restricted joint.13

This study is undertaken to find out if the application of myofascial release and muscle energy technique of sternocleidomastoid and suboccipital muscles is effective on the patients with forward neck posture with neck pain.

**OBJECTIVE**

1. To find out the effectiveness of Myofascial release (MFR) and Muscle energy technique (MET) on forward neck posture patients with neck pain.

**METHODOLOGY**

A case series was conducted in A.J hospital, Mangalore. All the subjects fulfilling inclusion criteria were included for this study using convenient sampling method.

1. Inclusion criteria:

Age - 20-25 years

Gender: Both male and female

Neck pain for more than 3 months,

NDI score =>5,

CV angle less than 48º.

1. Exclusion criteria: Recent history of trauma, Fall or injury to cervical, Operated case of the cervical or thoracic spine, Cervical radiculopathy, herniation or ste­nosis, Malignancy, Thoracic outlet syndrome, Dizziness, vertigo, cervicogenic headache, Vertebral-basilar artery syndrome.

Data collection: Subjects were recruited from A.J hospital and after initial assessment the participants who met the inclusion criteria were explained about the study and informed consent was taken. The procedure was explained to the participants and was subjected to clinical examination. Neck disability index scale was administered and responses were noted. In total, about 30 subjects were screened and out of which 5 the inclusion criteria. Par­ticipants were allocated to a 2-week inter­vention period, receiving 20-25 min of treatment and 3rd week participants were asked to come for follow-up. The interventions are summarized below.

**PROCEDURE:**

Subjects were included depending on their Neck disability index score and the degree of craniovertebral angle. These subjects were asked to score their neck pain by using Neck Disability Index. Measurement of NDI captures perceived disability in patients with neck pain. It was filled by the patient himself/herself. It took about 5 minutes to fill the scale. The CVA is measured by using the universal goniometer. Along with the CVA, cervical flexion, extension, lateral flexion and rotation were calculated. 5 subjects were included for the study and the treatments i.e. myofascial release followed by MET of suboccipital and sternocleidomastoid were given for 2 weeks (4 sessions per week). The subjects were asked to re-visit for the follow-up on the 3rd week after post-treatment. Subjects were assessed again for the Neck Disability Index score, Cranio-vertebral angle and range of motion of cervical flexion, extension, rotation and lateral flexion and noted down for the comparison.

**RESULT**:

The comparison between pre-post treatment of CVA and NDI was done using t-test. There was a highly significant difference in CVA and NDI between pre and post treatment value after implementing muscle release and muscle energy technique (p<0.001) and (p<0.19) respectively.

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| **Paired Samples Test** | | | | | | | | | |
|  | | **Paired Differences** | | | | | **t** | **df** | **Sig. (2-tailed)** |
| **Mean** | **Std. Deviation** | **Std. Error Mean** | **95% Confidence Interval of the Difference** | |
| **Lower** | **Upper** |
| **Pair 1** | **CVA pre-test – CVA post-test** | **-2.42800** | **.69348** | **.31014** | **-3.28907** | **-1.56693** | **-7.829** | **4** | **.001** |

The Table 1 shows Paired t-test on pre and post treatment of Craniovertebral angle

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Paired Samples Test** | | | | | | | | | |
|  | | **Paired Differences** | | | | | **t** | **df** | **Sig. (2-tailed)** |
| **Mean** | **Std. Deviation** | **Std. Error Mean** | **95% Confidence Interval of the Difference** | |
| **Lower** | **Upper** |
| Pair 1 | NDI pre-test  NDI post-test | **6.59000** | **3.88905** | **1.73924** | **1.76111** | **11.41889** | **3.789** | **4** | **.019** |

The Table 2 shows paired t-test on pre and post treatment of Neck disability index

**DISCUSSION:**

Poor head posture is generally accepted as one of the causes for neck pain because poor postural awareness and habitual poor postures may result in greater loading on the supporting structure and may cause sensitization and pain. It is represented by an increase in anterior cervical convexity, a decrease of craniovertebral angle and rounded shoulders. Abnormal shortening of muscles such as Levator Scapulae, suboccipital, sternoclei­domastoid, and Upper trapezius along with weakness of longus capitis exists.

A study was done by Kim et al reported that sub occipital release decompresses the vagus nerve running through the jugular foramen14. The trac­tion and pressure of therapist’s fingers along the posterior area of the neck and sub occipital muscles induces tissue stretching and relieve foramen tension. This can be respon­sible for an increased range of cervical motion along with a decrease of pain following treatment. Nagrale et al demonstrated significant levels of improvement in MET group for pain intensity at 2 and 4 week follow-up.15 Rajarajeswaran et al showed significant reduction in pain level in MET group.16

The study results showed that after the application of muscle release the tightness has reduced followed by muscle energy technique on suboccipital and sternocleidomastoid lead to increase in craniovertebral angle, improved cervical range of motion and muscle power.

**CONCLUSION:**

This study concludes that by the application of muscle release and muscle energy technique on the individuals with forward neck posture and neck pain results in improvement in their CVA and reduction in neck pain. There was noticeable improvement in cervical range of motion and muscle power. Hence, the combination of the two interventions can be effective in managing the forward neck posture and neck pain

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