



EFFECTIVENESS OF SCAPULAR STABILIZING REVERSAL TECHNIQUE ON PAIN AND NECK POSTURE AMONG YOUNG ADULTS HAVING UPPER CROSS SYNDROME AT THE END OF 4 WEEKS- AN EXPERIMENTAL STUDY.

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ABSTRACT

Objective: To relieve pain and improve neck posture in individuals caused by upper cross syndrome by the treatment of scapular stabilizing reversals technique for 4 weeks. **Material & Method:** Total 45 subjects having upper cross syndrome were selected as per inclusion & exclusion criteria. Subjects were explained about the intervention & written consent was taken. The Initial evaluations of the subjects were done by using Image J software and Visual Analog Scale. Subjects were given scapular stabilizing reversals technique. **Result:** The scapular stabilizing reversals technique was effective in reducing pain and improving neck posture associated with upper cross syndrome. **Conclusion:** The scapular stabilizing reversals technique was effective in reducing pain and improving craino vertebral angle associated with upper cross syndrome.

KEYWORDS : Scapular stabilizing reversals, Pain, Craino vertebral angle ,upper cross syndrome.

INTRODUCTION

Posture may be defined as “attitude of the body”. Ideal posture is when the body parts, muscles and bones are aligned and work together in harmony, protecting the body from injury or progressive deformity, regardless of the attitude.^[1]Upper Crossed Syndrome is characterized as common postural dysfunction pattern of the musculature around shoulder girdle/cervico-thoracic region.^[2] The main postural muscle imbalances that lead to restricted range of motion (ROM), dorsally are tight upper trapezius and levator scapulae, whereas anteriorly weakness of deep neck flexors and posteriorly middle and lower trapezius weakening and lengthening are responsible.^[3]

Forward head posture is a forward inclination of the head with cervical spine hyperextension and is associated with shortening of the upper trapezius, semispinalis capitis and, the cervical erector spinae and the levator scapulae musculature^[4].

Forward head posture results in reduced craniocervical angle, cervical spine range of motion and increased incidence of neck and shoulder pain due to muscular imbalances^[5]. Rounded Shoulder Posture is a forward deviation of the shoulders associated with a protracted position of the scapula as caused by a muscular imbalance between a shortened pectoralis minor and a lengthened middle trapezius.^[4]

Janda described the simultaneous occurrence of Forward head posture and rounded shoulder as upper-crossed syndrome^[6]. Poor posture is common during adolescence, and the popularization of personal computers has led to sustained and frequent periods of sitting behind monitors.^[7] prevalence among age group of 17 to 25 years was found to be 37.1%^[8]

Proprioceptive neuromuscular facilitation (PNF) as a physical therapy technique can improve function by stimulating proprioceptive sense in muscles, tendons, ligaments, and joints. The purpose of PNF concept is to enhance mobility, muscular strength and endurance, neuromuscular control and joint coordination.^[9]Stabilizing reversals is characterized by alternating isotonic contractions opposed by enough resistance to prevent motion. The command is a dynamic and the therapist allows only a very small movement.^[10]

MATERIALS & METHODOLOGY

Source of Data: college students

Study design: Experimental study

Sampling Method: Convenient sampling

Study duration: 6 months

Intervention: 5 sessions per week for 4 weeks

Criteria**Inclusion Criteria:**

- Age group between 18-24 years
- Both males and females
- VAS score between 3-5
- Pain \geq 3 months

- Lectures/ work / studying in a day for \geq 4 hours

Diagnostic criteria:

- 1.(Forward head) Craniocervical angle $<$ 50°
- 2.(Rounded shoulders) Distance between the couch and tip of shoulder $>$ 2.5 cm

Exclusion criteria:

- No neurological symptoms
- Scapula and upper limb fractures
- Patients with other upper limb musculoskeletal disorders
- Patients with cognitive impairments
- Patient with visual and auditory deficits
- Diagnosed Rheumatoid Arthritis
- Cervical Instability
- Trauma to cervical spine within past 1 year
- Cervical spine surgery within past 1 year
- Cervical radiculopathy
- Cervical disc pathology
- Congenital spinal deformities
- Subjects on analgesics or steroids for pain relief

Exercise Protocol

The scapular muscle stabilizing exercises are performed using stabilizing reversal PNF technique. The therapist gives the verbal instruction, “push against my hand”, and isotonic contraction of the scapular muscles in the diagonal. The isotonic exercises are performed using manual resistance provided by the therapist to perform anterior elevation and posterior depression of the scapular when the patient is in a side lying position with the affected side facing upward.^[10]

Participants perform 3 sets of 15 repetitions at maximal resistance provided by the therapist. Rest intervals 60 seconds were provided between sets.

The contraction of the muscles is maintained for 10 seconds in the diagonal i.e. anterior elevation and posterior depression.

Anterior Elevation**Grip**

Place one hand on the anterior aspect of the glenohumeral joint and the acromion with your fingers cupped. The other hand covers and supports the first. Contact is with the fingers and not the palm of the hand.

Elongated Position

Pull the entire scapula down and back toward the lower thoracic spine (posterior depression) with the inferior angle rotated toward the spine. You should see and feel that the anterior muscles of the neck are taut.

Command

Shrug your shoulder up toward your nose.

End Position

The scapula is up and forward with the acromion close to the patient's

nose. The inferior angle is moved away from the spine. In the end position, the muscular activity moves the scapula in this direction.

Posterior Depression Grip

Place the heels of your hands along the vertebral border of the scapula with one hand just above (cranial to) the other. Your fingers lie on the scapula pointing toward the acromion

Elongated Position

Push the scapula up and forward (anterior elevation) with the inferior angle moved away from the spine

Command

Push your shoulder blade down to me.

End Position

The scapula is depressed and retracted with the glenohumeral complex posterior to the central anteroposterior line of the trunk.



Figure- Resistance to anterior elevation and posterior depression.

Stretching Of Pectoralis- Pectoralis minor stretching

Patient position: In supine lying.

Physiotherapist:

Retracts the patient shoulder and depresses the shoulder. Hand should be cupped around shoulder to allow firm, uniform pressure that helps to rotate the shoulder girdle back. Done 3 times with 30 seconds hold.

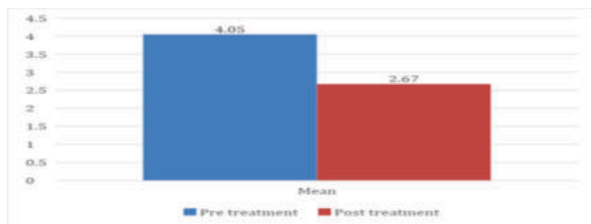
Pectoralis Major Stretching

Patient position: In lying Physiotherapist: abduct the patients arm to 90 degree and flex the elbow to 90 degree and the therapist will extend the shoulder and externally rotate the shoulder. Done 3 times with 30 seconds holds.

Data Analysis

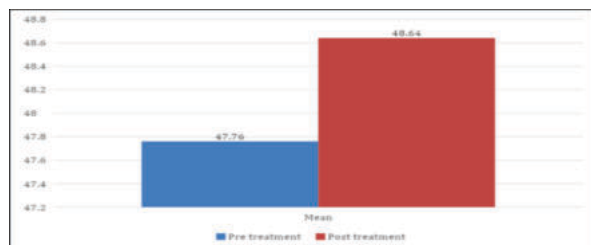
- Data analysis of pre and post values was done using paired t-test.

(1) Visual Analog Scale



Graph-1 Mean of VAS

(2) Crainovertebral Angle



Graph-2 Mean of CRAINOVERTEBRAL ANGLE

RESULT

The comparison of VAS values Pre and Post Treatment P value was <0.001 which is considered extremely significant. The pre-treatment mean was 4.02 with SD of 0.68 while post-treatment mean was 2.67 with SD of 0.70. The t value was 11.92.

The comparison of CVA values Pre and Post Treatment P value was <0.001 which is considered extremely significant. The pre-treatment mean was 47.76 with SD of 1.09 while post-treatment mean was 48.64 with SD of 0.91. The t value was 8.74.

DISCUSSION

Upper Crossed Syndrome is characterized as a common postural dysfunction pattern of the musculature around the shoulder girdle/cervico-thoracic region. The present study was done to see the effectiveness of scapular stabilizing reversals on pain and neck posture in young adults suffering from upper cross syndrome at the end of 4 weeks.

In this study 45 individuals that were selected according to the inclusion and exclusion criteria underwent the protocol for 4 weeks, 5 days/week. The average age was 21.72 years of the study group. The individuals were diagnosed and selected on the basis of craniovertebral angle and pectoral minor length test. At the end of the protocol there were statistically significant improvements in pain and the craniovertebral angle.

Scapular stabilizing reversals were performed on the individuals for 5 days / week in side lying position in anterior elevation and posterior depression diagonals 15 reps/ 3 sets were given on each side followed by pectoral stretching done for 30 secs 3 reps In rounded shoulders there is abduction and rotation of the scapula. The PNF diagonals were chosen to correct this change and to also see the biomechanical changes in forward head posture. In a study performed by Jung-Ho Lee et al. on The Effect of Proprioceptive Neuromuscular Facilitation Therapy on Pain and Function concluded that PNF techniques stimulated both the myoreceptors and the exteroceptors, promoted motor-skill memory, and triggered neurophysiological changes. In addition, the neurophysiological changes must have increased functional activities by more accurate control of muscle activities.

Scapular stabilizing reversals helped reduce the compensatory movement on the muscles that resulted from abnormal posture by increasing activities of the lower trapezius muscle and serratus anterior and effectively improved the muscles around the neck by stabilization of scapula. Furthermore, as activation of the lower trapezius muscle increases a tilt in the scapula occurs and reduces the upper rotation angle through scapula alignment. As activation of the serratus anterior increases it decreases the activation of the upper trapezius muscle and helps in the proper alignment of the scapula.

A study conducted by Jeong-II Kang on the Effect of scapular stabilization exercise on neck alignment and muscle activity in patients with forward head posture concluded that scapular stabilization exercise lead to the improvement of the general improvement of the upper body resulted in improvement of the round shoulder and backbone in upper crossed syndrome.

This co relates with the findings present in this study. At the end of the study the participants showed significant reduction in pain and an increase in the craniovertebral angle. Hence this study can be used to improve the neck posture and reduce the pain in individuals suffering from upper crossed syndrome.

CONCLUSION

In this study the scapula stabilizing reversals in diagonals anterior elevation and posterior depression showed significant results among young adults having upper cross syndrome.

Hence the conclusion of the study is that scapular stabilizing reversals technique improves pain and neck posture among young adults having upper cross syndrome.

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