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# To study the effect of pectoralis stretching vs self-stretching on protracted shoulder a comparative study

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## ABSTRACT

***To study the effect of pectoralis stretching vs self-stretching on protracted shoulder a comparative study Sample size: 50 patients (25 in each group), Study Design: Comparative Study, Study setting: A 500 bedded tertiary care teaching hospital with well-equipped medical and surgical intensive care unit and musculoskeletal department, Sample and Sampling method: 50 patients were randomly selected and assigned to 2 groups, as Group 1(Control group), Group 2 (Study group) in equal numbers.***

**Keywords:** *Pectoralis stretching, Self-stretching exercise, Patients.*

## 1. INTRODUCTION

The cranium, cervical spine and shoulder girdle from the functional unit for maintaining natural head posture.

Different components of this unit are linked to each other forming a kinematic chain. Impairment in one or more components of the unit may lead to the altered biomechanics of the cervical or shoulder region which can result in forwarding head posture (PROTRACTED SHOULDER) and slouched shoulders. Slouched shoulders are basically a complication of forwarding head posture. By protracting shoulder blades, slouched posture narrows thoracic outlet and compresses nerves and blood vessels in cervical area which is known to trigger pain in shoulder and along the arm.

When resting posture is altered more energy is required to perform or control movements resulting in increased stress on the surrounding structures, (eg. PROTRACTED SHOULDER puts increased stress on cervicothoracic spine) thus produces muscle imbalances.

## 2. AIMS AND OBJECTIVE

- To determine effects of pectoralis stretching on protracted shoulder
- To determine effects of pectoralis self-stretching on the protracted shoulder

## 3. MATERIAL AND METHODOLOGY

Material : A measuring tape, plinth.

Study Design : Experimental design.

Study Setting : Kiran Pandav College of Physiotherapy, Nagpur.

Sample Size :

= 50 subjects

= Two groups- control group – 25 subjects

 

= Treatment group – 25 subjects

= 19-40 yrs of age

**Inclusion Criteria:**

- Persons working for a prolong period of time (8-12hrs) in sitting posture (forward head with stooping upper back)
- Persons sitting without back support for 8-12 hrs.

**Exclusion criteria:**

- Persons having any injury or shoulder joint pathology --Persons having upper respiratory and lower respiratory tract disease.

**Procedure**

The subjects of forwarding head posture are selected and the tightness of pectoralis minor is measured by asking the subjects to stand against the wall bare feet with arms by the side of the body and looking straight ahead. Normally ear, shoulder, hip, knee, and ankle should sit in a vertical alignment. In other words, if you drop a plumb line from your ear it should pass through all these points. The distance is measured by using a tape from two points viz a) from external auditory meatus to the wall b) from posterior lateral acromion process to the wall. Patients were randomly divided into two groups viz Group A) Control group and Group B) Treatment group.

The length of pectoralis minor is measured after the duration of 7 days, 14 days and 21days.

**Treatment**

For Control group:

Group-A: Ergonomic exercises which include-

Hot fomentation, Pectoralis minor stretching, PIR, Trapezius stretching

Chin tucking exercises, Shoulder bracing exercises, Cryotherapy

For Treatment Group-B: Passive exercises with home ergonomic program-Hot Fomentation, MET, Pectoralis minor stretching, PIR, Trapezius stretching, Chin tucking exercises, Shoulder bracing exercises, Massage, Cryotherapy

**DATA ANALYSIS AND GRAPHICAL REPRESENTATION TREATMENT GROUP**

| DAYS | MEAN | | T- value | | P -Value |
|---|---|---|---|---|---|
| | External auditory meatus | Acromion | External auditory meatus | Acromion | |
| 7th day | 12.6 | 8.84 | 4.55 | 3.59 | <0.001 |
| 14th day | 11.22 | 8.2 | 5.91 | 4.91 | <0.001 |
| 21st day | 9.66 | 7.56 | 9.05 | 5.21 | <0.001 |

**CONTROL GROUP**

| DAYS | MEAN | | T- value | | P -Value |
|---|---|---|---|---|---|
| | External auditory meatus | Acromion | External auditory meatus | Acromion | |
| 7th day | 12.6 | 8.84 | 0.14 | 0.32 | >0.05 |
| 14th day | 11.22 | 8.2 | 0.03 | 0.04 | >0.05 |
| 21st day | 9.66 | 7.56 | 0.002 | 0.08 | >0.05 |

 

## 4. RESULT

From the study, it is found that the subjects under control group show no significant improvement as the t value at the 21st day is 0.08 from acromion and 0.02 from external auditory meatus.

In the treatment group the t value from acromion at 21st day is a 5.21 and from external auditory meatus is 9.05 which shows that the study is highly significant.

## 5. DISCUSSION

The treatment group showed a significant improvement in protracted shoulder and slouched shoulders. On comparison, the treatment group showed highly significant improvement as they were passively mobilized. As already documented by various researchers, passive stretching and strengthening programs have given better results than active one.

PIR exercises are given prior to stretching as it provides relaxation to muscle and prevents it from soreness and injury. It constitutes hold-relax of the contracted muscle, bringing about the relaxation of the muscle. This relaxed muscle (improved length) allows further passive stretching thereby increasing the length of the shortened musculotendinous unit.

Strengthening exercise improves the ability of the contractile tissue to produce tension and improves the maintenance of muscle length, power, and endurance. It also increases the strength of connective tissues, tendons, ligaments and thus decreases the stress on joints during physical activity and reduces the risk of soft tissue injury. Strengthening exercises bring about increased recruitment of the redundant muscle fibers in the earlier days, thus could be the reason of increased strength observed in first week.

## 6. CONCLUSION

The subjects who are under treatment group found a reduction in PROTRACTED SHOULDER as measured from external auditory meatus.

## 7. LIMITATIONS AND SUGGESTIONS

**Limitation:**

- Due to lack of isometric dynamometer, the stretch force applied could not be measured.
- Also, increase in strength could not be documented.

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