



## Effect of combining cervical traction and self-posture correction exercises on forward head posture in smartphone users—An experimental study

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### Abstract

**Topic:** Effect of combining cervical traction and self-posture correction exercises on forward head posture in smartphone users – an experimental study.

**Background:** Forward head posture (FHP) is a postural problem that is caused by several factors including sleeping with the head elevated too high, extended use of computers, laptops & cell phones. Maintaining a continuous posture leads to damage to the ligaments around the neck. In addition, such a posture is caused by muscle fatigue and decreased physical activity. In order to treat forward head posture, it is necessary to consider the correct posture, work environment, and exercise therapy. Cervical traction has been applied widely in restoring the cervical lordosis and to relieve neck pain due to muscle spasm, nerve compression and general soft tissues stiffness. Cervico-scapulothoracic strengthening and stretching exercises can improve cervical and scapulothoracic alignment properly and can also correct and prevent poor posture.

**Objective:** To find the effect of combination of cervical traction and self-posture exercise in forward head posture in smartphone users at the end of 4 weeks protocol

**Methodology:** Ethical clearance was obtained from the institution.

Informed consent was taken from the participants. Participants were screened according to inclusion and exclusion criteria. Purpose of study and procedure was explained to participants.

Pre-intervention measures were noted. Cervical traction and self-posture correction exercises were given for 3days/week. Post-intervention measure was taken at the end of 4 weeks

**Result:** Total 46 male and female of age group 18-25 years, with forward head posture volunteered to participate in the study. With no dropouts, 16 males (34.78%) and 30 (65.21%) females completed the 4 weeks protocol.

There was statistically significant difference in craniovertebral angle measurement post values in the intervention group. The mean post intervention score in craniovertebral angle is 2.522 in the experimental group.

**Conclusion:** The results of the study showed that 4 weeks of cervical traction along with self-posture correction exercises was found to be effective in increasing craniovertebral angle in forward head posture of smartphone users. It is suggested that researchers and practitioners consider this selected corrective program as a new method and replacement of former corrective exercises.

**Keywords:** forward head posture, cervical traction, self-posture exercises, smartphone users, craniovertebral angle

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### Introduction

Forward head posture (FHP) is the anterior positioning of the cervical spine, this posture is also called as text neck or scholar's neck <sup>[1]</sup>. It is a postural problem that is caused by several factors including sleeping with the head elevated too high, extended use of computers, laptops & cell phones <sup>[2]</sup>.

Nowadays, smartphones play an important role in the daily lives of a large number of individuals. Demographic profile of global distribution of Smartphone's usage is 72% in the age group of 18-25. The average hours spent on a mobile, per day for a user increased by around 4.5% from 3.7 hours in 2019 to 4.7 hours in 2021.

The time spent on mobiles in 2020 was about 4.5 hours per day. Such a usage level could result in musculoskeletal injuries <sup>[3]</sup>.

FHP is a common neck disease in contemporary society, and it is caused by sitting at a desk for a long time. Maintaining a continuous posture leads to damage to the ligaments around the neck. In addition, such a posture is caused by muscle fatigue and decreased physical activity. As a result, the weakness of the muscle decreases the lung capacity and increases pain and disease <sup>[1]</sup>.

Conventional treatment of mechanical non-specific neck pain includes patient education and physical exercises, primarily as preventive methods. In more acute or severe cases, spinal manipulation, physical therapy, or

medicinal or injection therapies may be applied. However, additional treatment options are needed, especially for patients with more severe pain or with low expectations of conventional treatment alone

In order to treat forward head posture, it is necessary to consider the correct posture, work environment, and exercise therapy. To improve this posture-heat, traction, and exercise have all been used. Various methods such as joint mobilization, stretching, isometric strengthening exercises, endurance exercises, and proprioceptive exercises have also been applied depending on the method and theory utilized by the therapist or the patient's condition <sup>[4]</sup>.

Cervical traction has been applied widely in restoring the cervical lordosis and to relieve neck pain due to muscle spasm, nerve compression and general soft tissues stiffness. Several mechanisms with focus on axial traction have been proposed for the possible therapeutic effects of traction.

The exercises recommended by Mackenzie and Kendall have also been used to treat forward head posture. McKenzie's exercise program involves repeated self-treatment exercises performed by patients, with a focus on extension exercises.

The exercise program includes joint motion exercises, manual therapy, and patient education. Kendall's exercise program focuses on the notion that unstable forward head posture can be corrected via alignment exercises, although this not only involves strengthening the deep neck flexors and shoulder retractors, but also stretching the chest muscles <sup>[5]</sup>.

Hence, after reviewing the available literature, the purpose of this study is to find out the combined effect of Manual cervical traction with self-posture correction exercises on forward head posture in smartphone users.

### **Materials and Methodology**

1. Study design: pre-post experimental study.
2. Sample size: 46
3. Sampling method: convenience non probability
4. Study population: forward head posture in smartphone users.
5. Study setting: physiotherapy opd in and around Pune.
6. Study duration: 6 months
7. Treatment duration: 4 weeks
8. Tools and materials: goniometer, paper, pen.
9. Consent form

### **Inclusion criteria**

1. Craniovertebral angle less than 45
2. Patient with forward head posture in smartphone users.
3. Both males and females.
4. Age: 18-25 years
5. Subject willing to participate in the study

### **Exclusion Criteria**

1. Patient with neck pain
2. Any recent cervical fracture
3. Any cord compression
4. Traumatic cervical injuries
5. Cervical spine injury
6. Who are already taking treatment for the same condition
7. Healing fracture over neck

### **Procedure**

- Ethical clearance was obtained from the institution.
- Informed consent was taken from the participants.
- Participants were screened according to inclusion and exclusion criteria
- Purpose of study and procedure was explained to participants.
- Pre-intervention measures were noted.
- Cervical traction and posture correction exercises were given for 3days/week.
- Post-intervention measure was taken at the end of 4 weeks.

#### **1. Manual Cervical Traction**

The patient is taken in supine with the head flexed at about 15-20 degrees.

Intermittent traction is applied for 10 minutes at alternating intervals of 10 seconds of sustained tension and 10 seconds with reduced or no tension. Application and release of tension is to be done smoothly and gradually to prevent rebound pain <sup>[1]</sup>.

## 2. Self-Posture Correction Exercises

- A. Deep-cervical flexor muscle (longus capitis, longus coli and scalmi) strengthening exercise was keeping chin closed your neck and held contract 10 sec hold, 10 times/set, 3 sets.
- B. Cervical flexor muscle strengthening exercise was keeping chin closed your neck and exert resistance of both hands-on forehead, 15 times/ set, 3 sets.
- C. Scapulothoracic (middle and lower trapezius) strengthening exercise was attaching your arms to the body with elbows flexing, convergence to contract of both shoulders, 10 times/set, 3 sets.
- D. Scapulothoracic (rhomboid, middle and lower trapezius) strengthening exercise was attaching your arms to the body with elbows flexing, convergence to contract of both shoulders and held both shoulders as W shape and stretched your both arms as V shape, 10 times/set, 3 sets.
- E. Neck exercise was stretching posterior neck muscle both left and right by tilted-head on left side which felt to posterior-neck muscle strained, your right-hand held with chair and your left-hand pressed on your head about 20 sec, 10 times/set, 3 sets <sup>[2]</sup>.

## Outcome Measure

### ▪ Craniovertebral Angle Measurement

The craniovertebral angle was measured in sitting position. The axis of the goniometer is placed at the C7 spinous process with stable arm placed horizontally at C7 level and movable arm at the tragus of the ear and the resulting angle was measured <sup>[4]</sup>.

## Conclusion

The results of the study showed that 4 weeks of cervical traction along with self-posture correction exercises was found to be effective in increasing craniovertebral angle in forward head posture of smartphone users.

It is suggested that researchers and practitioners consider this selected corrective program as a new method and replacement of former corrective exercises.

Thus, the null hypothesis which states that “there will be no effect of combining cervical traction and self-posture correction exercises on forward head posture in smartphone users at the end of 4 weeks” is rejected.

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