*Original Article*

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# Effectiveness of Neck and Shoulder Stretching Program among Professionals Working from Home During Covid–19

**Bhavna Anand[1], Vasu Goyal[2]**

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**Abstract**

*Objective:* To study the effect of neck and shoulder stretching program among professionals working from home COVID– 19. *Methodology:* 40 subjects within age groups 20–45 years both male and female working from home with subclinical neck pain and shoulder pain participated in the study. Subjects who were working minimum 2 hours on computer with a pain duration of atleast 2 months and pain should be mild to moderate on VAS were included. Subjects were excluded if they had any cervical apin with traumatic causes, any history of fractures, history of dislocated cervical spine, rheumatoid arthritis or PIVD of cervical spine, has undergone cervical spine surgery or were undergoing treatment at the time of testing. Improvement were noticed on VAS score. *Results:* Significant results were observed among the subjects. We provide information to the subjects regarding the protocol which they need to follow. Subjects were given some ergonomical and postural guidelines which they need to follow and also subjects were given stretching exercise for neck and shoulder and aslo given isometric exercises for neck. After doing analysis we found that after following the guidelines and exercises for 15 days, subjects experienced less pain as they were experiencing before. *Conclusion:* Stetching program with postural correction tips is effective in relieving neck and shoulder pain if done continuously and it also relieves the stiffness among the subjects.

**Keywords:** Ergonomical Guidelines; Isometric Exercises; Subclinical Neck Pain.

## Introduction

Structure of neck is made up of vertebrea which originates from the skull and reaches till the upper torsal. Our head is supported by the bones, ligaments, and the mucles of the neck and they allow for the motion of the head. Any sort of abnormailities, inflamation or injury in the neck may lead to neck pain or stiffness. There are some people experience neck pain or stiffness occassionally but in most cases, it is mainly due to poor posture or may be due to overuse of the joint. Many a times, neck pain is not a very serious condition to be worried about and which can be relieved within few days by following a proper neck exercise or by performing neck stretching. But in rare cases, neck pain can be a serious condition due to any injury or illness which require proper doctors care.[8] Neck pain is very common musculoskeletal injury which is seen in the general population, especially seen in the office workers.[7] Poorly designed office workstation or poor ergonomics have also been a major reason for neck pain. Over and prolonged use of computer/ laptops/mobile phone and tablets leads to various kinds of health injury including upper extremity pain.[6,10]

It has been suggested by the scientists that the screen work that is beign done on desktop or laptop may lead to neck pain and upper extremity symptoms in office workers.[3,4] For example, awkward or poor body postures and repetitive

**Author Affiliation:** [1]Teaching Associate, [2]BPT Student, Amity Institute of Physiotherapy, Amity University, Noida 201301, UP, India.

**Corresponding Author: Vasu Goyal,** BPT Student, Amity Institute of Physiotherapy, Amity University, Noida 201301, UP, India.

**E-mail:** vasugoyal2898@gmail.com

body movements while screen work have been suggested as a major risk factors for musculoskeletal symptoms, as they may lead to increased tension in the msuclesof the forearm and neck/shoulder region.[5]

The ergonomics design of the workstation is applied in every office environment[2] and wherever you find yourself working either you are working from home or may be from any other place.[13] How we set up the working space has a huge impact on reducing the use of awkward or poor postures and also reduce the risk of injury over the body.[16]

Neck pain nowadays is a common problem affecting a vast number of people due to extensive use of computer or laptop at work or home, which causes increased pressure on musculoskeletal system of neck and upper back.[1] Longer duration of working hour in front of the computer or laptop leads to alteration in the posture like rounded shoulder and forward head posture, this faulty posture causes loss of normal lordotic curvature of the upper cervical spine which in turn increases muscle tension and shortening and eventually lead to neck pain.[14] Along with the faulty postures there are other associated factors which aggravate the problems in desktop or laptop users like duration of working hours on desktop, interval or breaks taken during working, setting of desktop, laptop, keyboard and mouse.[15]

*Need of the Study*

Various studies has been done but one of thestudy states, that there is an improvement in the VAS (Visiual Analog Scale) of the individual after performing a stretching exercise of neck and shoulder for a month among office workers in their neck and shoulder region.[20] But none of the study states that there is a improvement in neck disability or pain among office worker working from home after performing a stretching of neck and shoulder region[18] for 15 days. Hence, our study aims to show effectiveness of neck and shoulder stretching program among profesionals working from home during COVID 19.

*Methodology*

Study design was pilot study design. 40 subjects within age group of 20–45 years both males and females working proffesionally from their home with subclinical neck and shoulder pain participated in the study.

Subjects who were willing to participate and were who has computer related work experience for a minimum of 6 months to be working for not more than 20 years. Subjects who were selected were working for a minimum of 2 hours/day to not working for more than 18 hours a day and with a minimum duration of pain of atleast 2 months and also experiencing a pain ranging from mild to moderate in VAS in any of the region. They experienced symptoms of neck pain, but not receiving any treatment and so were classified as having minor musculoskeletal or "subclinical" neck pain. They also indicated their percieved pain on a 10 rating visiual analog scale (VAS) anchored with "no pain" (score 0) and "worst possible pain imaginable" (score 10).

Subjects were excluded if they had any cervical apin with traumatic causes, any history of fractures, history of dislocated cervical spine, rheumatoid arthritis or PIVD of cervical spine, has undergone cervical spine surgery or were undergoing treatment at the time of testing. They were not taking medication at the time of the study, thus study was approved by the ethical committee.

Dependant variables were VAS score and Neck Disablity Index. Independent variables were the treatment protocols.

Subjects who met the inclusion criteria were then randomized and then a brochure had been sent to them via E-mail indicating all the ergonical or postural guidelines and exercise and stretching protocol which they needed to follow for next 15 days.

*Procedure*

Informed consent was taken from the subjects. Pre readings of neck and shoulder region pain from VAS score were taken. Aslo working hours of subjects was also kept in mind.

The selected indiviauls based on the ilcusion criteria received a brochure indicating all the neccesary measures which they need to follow and also we provide them certain stretching exercises of neck and shoulder. Also we give them certain ergonomical guideliens which they need to follow while working. We advise them to follow the protocol strictly for continous 15 days.

We advice them to work in an environment with sufficent natural lighting and also advice them to create a work space at home i.e. using a table and chair with adequate support while working. We ask them to work in a neutral posture and also advice

them to take short intervals in between and during intervals perform stretching exercises whenever possible. Stretching help to reduce muscle soreness and fatigue.[11]

We advice them some stretching exercises for both neck and shoulder. These Exercises were Side bend, Neck rotation (left – right), Shoulder shrugs, Neck rotation (360 degree), Thorasic extension stretch and also advice them neck isometrics exercise which needs to be performed in all direction (forward, backwad and in both sides) and also advice them shoulder isometric exercises like scapular active range of motion, scaption and isometric shoulder internal and external rotaion.[17]

## Results and Data Analysis

**Table 1:** Showing mean and standard deviation with distinct parameters.[21]

| General Parameter | Mean ± SD |
|---|---|
| Age | 31.7 ± 6.63 |
| Height | 167.52 ± 8.98 |
| Weight | 69.25 ± 15.60 |

**Table 2:** Shows all the values before we provide them the guidelines for stretching program (pre sample).[21]

| Stats Parameter | Mean ± SD |
|---|---|
| Number of working hours on computer/ laptop/mobile | 2.92 ± 0.89 |
| Visiual Analog Scale reading for Neck pain | 4.82 ± 1.48 |
| Visiual Analog Scale reading for Shoulder pain | 3.45 ± 1.57 |

**Table 3:** Shows all the values after we provide them the guidelines for stretching program (post sample).[21]

| Stats Parameter | Mean ± SD |
|---|---|
| Number of working hours on computer/ laptop/mobile | 2.92 ± 0.89 |
| Visiual Analog Scale reading for Neck pain | 3.75 ± 0.95 |
| Visiual Analog Scale reading for Shoulder pain | 2.75 ± 1.15 |

**Table 4:** Showing difference in mean and standard deviation between before and after giving the sample stretching program for neck and shoulder region.[21]

| Test | Before | | After | |
|---|---|---|---|---|
| | Mean | Stdev | Mean | Stdev |
| Neck Region | 4.82 | 1.48 | 3.75 | 0.95 |
| Shoulder Region | 3.45 | 1.57 | 2.75 | 1.15 |

**Table 5:** Showing difference in mean and standard deviation between before and after readings of stretching exercise program.[21]

| Test | T Test (Paired) | T Test (Unpaired) |
|---|---|---|
| Neck Pain | 2.76 | 0.00023 |
| Shoulder Pain | 5.40 | 0.0172 |

## Result

The mean for before and after giving stretching program for neck region are 4.82 and 3.75 (Table 4) and respectively. The standard deviation for before and after giving stretching program for neck region 1.48 and 0.95 (Table 4) respectively. The calculated T-value (paired) is 2.76 and T-value (unpaired) is 0.00023. (Table 5) The mean for before and after giving stretching program for shoulder region are 3.45 and 2.75 (Table 4) respectively. The standard deviation before and after giving stretching program for shoulder region are 1.57 and 1.15. The calculated T-value(paired) is 5.40 and T-value (unpaired) is 0.0172. (Table 5)

Here, T- test shows significant difference in the mean of both neck as well as shoulder region. Which implies that after a treatment and stretching protocol provided for 15 days to the selected sapmle, the individual of sample shows significant improvement in their pain. This shows that if we add stretching in our daily life and if we use proper ergonomics at our home while working we can get relief from musculoskeletal abnormalities or pain.

## Discussion

The purpose of the study was to evaluate the effectiveness of neck and shoulder stretching program among professionals working from home during COVID–19 pandemic. Various studies has been done but one of the study shows the effectiveness of stretching program given to the selected sample. The sample was adviced to follow the streching protocol and guidelines for a contious 30 days and after 30 days the pain analyses of the samle was done. The sample was selected based on the pain in neck and shoulder region and then were given the stretching program for neck and shoulder. After 30 days the sample have experienced less pain in the neck and shoulder region and also they become more independent for their work.

The subjects included in the present study were computer users. It has been shown that computer users tend to have more protruded head bringing upper cervical vertebrae under extension moment and exaggerated anterior curve in lower cervical vertebrae. Further it has been shown that disorders originate from muscle degeneration and/ or impaired neuromuscular function resulting from chronic overuse and frequently accompanied by pain, muscle weakness and fatigue.In another study

28% lower extensor and 24% lower flexor muscle strength was observed in patients compared to the healthy volunteers.

Other study propose that proposed that the occurence of pain in the neck is very high in students with extended duration of computer or using the computer for long duration.[9] Therefore, preventive measures like ergonomic advice, postural advice and demonstration of neck exercises are to be integrated in workstations or schools[11] or college[12] can reduce musculoskeletal discomfort and also help in relieving neck pain.[13]

Other study show that there is significant difference in the pain over neck and shoulder region of the subejcts after performing stretching exercise of neck and shoulder for four weeks.[21] All selected subjects received a brochure containing information indicating the proper position and ergonomics which needs to be applied during daily work. Pain, functions of neck and the quality of life of the subjects were evaluated using visiual analog scale, neck disability index and questionnaire. When compared among two gropus the improvement was significantly greater in group among which people performed exercise more than 3 times per week as compared to other group which perform exercise less or equal to three times per week. The study concluded that a regular stretching performed for four weeks can decrease neck and shoulder pain.

Thus, present study shows that there is significant decrease in the pain after perfroming the stretching exerxise for 15 days. Performing stretching in the soft tissues in neck, shoulder and upper back such as levator scapulae, trapezius, upper deltoids and subscapularis; ligamnets and tendon can help us to mobilise the neck, and also it can increase the range of motion of neck. This is because doing stretching over time improves the flexibility of the muscles, tendons and ligaments present inside the neck, which is helpful in increasing the range of motion of the joints.[20] An improved range of motion amongst the patients can assist in improved movement and its ability to complete the daily life activities such as, reading, driving and working on computers/ laptops/ mobile phones/ tablet. Also performing the stretching exercises aids in decreased musclestiffness.[19]

## Conclusion

The result suggest that there is improvement in neck pain and neck movement in all the subjects after stretching protocol adviced for 15 days.

Stretching advised for neck and shoulder muscles, gave desired effects of increased flexibilty in neck and shoulder region and it aslo shows improvement in pain of the subjects.

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