

A comparative study of posture alteration and stretching program to reduce neck pain in teachers

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ABSTRACT

Introduction and Aim: Teaching is the world's most serviceable profession all over the world. Teachers required an appropriate mixture of mental, physical, technical and tactical ability. Prolong extension of their neck during teaching may cause increase load in muscles which may lead to disturbances in their daily activities. Hence, the aim of this study is to compare the effectiveness of posture alteration and posture alteration with stretching to reduce neck pain in teachers. To compare the effectiveness of posture alteration and posture alteration with stretching to reduce neck pain in teachers.

Materials and Methods: Once the study had been approved by institutional review board, 30 volunteers were selected based on inclusion criteria. It was a comparative study and was carried out for duration of 4 weeks, in which the individuals were randomly selected and divided into two groups (each of 10 individuals). Group A was treated with posture alteration and Group B was treated with posture alteration along with stretching. Goniometry and vas were used as pre and post- test to evaluate the effectiveness of treatments that were given to the individuals.

Results: On comparing the mean values of goniometry and visual analog scale (vas) by using pre and post method to the treatment, the group B has shown highly significant improvement in the pain reduction and significant improvement of functional activities in both the groups.

Conclusion: Hence, the results suggest that stretching training was more advantageous for reducing pain and tenderness. Stretching training program incorporates specific exercises according to the needs of individual's performance as a part of the overall training program.

Keywords: Goniometry; visual analog scale; posture alteration; stretches.

INTRODUCTION

Neck pain is a common condition that are affecting around a sixth in women and quarter of men among the teachers of India (1). Neck problems is not life threatening, but they do cause pain and stiffness, often resulting in utilization of healthcare resources, absenteeism from work and disability (2). Therefore, there is a need to determine the most cost-effective intervention for neck pain. Many conservative interventions are available for treating neck pain, including analgesics prescribed by general actioners, physiotherapy and other therapy (3). Only little information is available from randomized controlled trials on effectiveness of these treatments (4). The neck pain is caused by strain or stress over the back-neck muscles (5). The back-neck muscles are trapezius, splenius capitis, semispinalis capitis, longismus capitis (6). Proprioceptive neuromuscular facilitation (PNF) is a pre-contraction stretching that involves in contracting the muscle that is being stretched or antagonist before stretching. Although there are various techniques like most contract and relax or hold and relax techniques it suggests 75-100% of maximum

contraction (7). The increase in motion range are often seen on both sides, indicating a possible neurological relationship, and making it optimal for the neck contracting at lower forces is also more appropriate for painful conditions. Nonetheless, if they have pre-conditions, then they should check with their health care provider first (8). Different types of stretching are all an effective way to increase flexibility however; different stretches may have varying effects on different individual (9). So, this is another method of stretching that may not work for your particular condition, as stretching programs often need to be individualized (10). This also involves in some trial and error method, so it was always good to start slow. The less flexible, the longer you may need to hold the stretch (11). There are some indications that PNF stretching may reduce pain and increase function in some individuals (12). If your normal stretching is not producing the results that you would like, then this may be a good method to try (13). It can also be added to other conservative measures to combat neck pain from postural stress to injury recovery (14). The teachers teamed by simple convenient sampling is

based on inclusion and exclusion criteria. In addition, off-season female teachers of age group from 25-35 years, who are not been trained in specific exercise program in past six months are included in the study. Any history of recent fracture, acute inflammation, hyper mobility of joints, malignancy, osteoporosis, vertebra bacillary insufficiency, meningitis, any pathological condition of spine, upper extremity, back injuries were excluded. Materials such as stopwatch, measuring tapes, goniometry, pen and pencil were used.

METHODOLOGY

A comparative study was done to find the effectiveness of posture alteration and posture alteration with stretching to reduce neck pain in teachers. Thirty female teachers were recruited based on inclusion and exclusion criteria. The subjects were grouped into Group A - subjects undergoing only for neck posture alterations. Group B - subjects undergoing both neck posture alterations and stretching.

Procedure

The subjects were instructed that in case any subject discontinued the training program or if developed any pain or injury in upper limb or back during the exercise program then they will be excluded from the study. Each group was given posture alterations during their work time and free time for about 4 weeks. Physiotherapists will demonstrate postural alterations in front of each group. Physiotherapists also demonstrate the exercises in front of group B before

starting the stretching warm up were given for each session.

Intervention

PNF stretching

- Actively reach your head toward the sky and forward as you gently lower your head, bringing your chin to your chest. Hold this for one breath (15).
- Sit or stand with your right hand around your neck and your fingers and thumb on the muscles on either side of your throat. You may place your left hand on top of your right for support. Start with your hands close to your chin and begin with your chin at your chest (16).
- Sit or stand with good posture. Continue looking forward as you extend your neck up toward the sky and then tip your left ear toward your left shoulder. Think of reaching up and to the left and avoid “crunching” your left side. Use your left hand to gently pull your neck toward your left shoulder. Actively point your right fingers downward toward the floor to anchor your shoulder (16).

Posture alteration

- Tuck the chin in a little to keep the head level while writing on the board (17).
- Use pillow which is short and fluffy (17).
- Adjust your seating and sit erect (18).

Table 1: Comparison between pre-test and post-test of neck rom in group A

Group A	Pre-test		Post-test		T test	Significance
	Mean	SD	Mean	SD		
Flexion	31.80	3.34	32.60	2.82	1.666	0.118
Extension	32.06	3.01	33.06	3.04	5.123	0.000
RT. LF	34.00	3.07	35.13	3.20	3.20	0.000
LT. LF	35.06	3.10	36.33	3.28	3.28	0.000

Table 2: Comparison between pre-test and post-test of neck rom in group B

Group B	Pre-test		Post-test		T test	Significance
	Mean	SD	Mean	SD		
Flexion	28.60	4.27	36.73	3.53	17.42	0.000***
Extension	31.73	3.32	38.36	2.43	12.68	0.000***
RT. LF	33.53	2.44	39.40	1.64	21.43	0.000***
LT. LF	33.46	3.50	39.06	3.19	22.00	0.000***

RESULTS

Group A and Group B participated effectively in postural training and stretching program for 4 weeks to improve range of movement of neck. Group A underwent posture alterations and Group B underwent posture alteration and stretching. On comparing the mean values of Group A and Group B, the post-test

values of both the Groups showed significant differences but Group B showed more significant value than Group A i.e., $p \leq 0.001$.

DISCUSSION

The main aim of the study was to compare the effectiveness of posture alteration and posture

alteration along with stretching between Group A and Group B. There is increasing evidence of posture abnormalities and reduced range of movement in neck among teachers. Either teachers used to spend most of their time in particular posture in sitting or standing with neck flexed without their awareness, this lead to lot of problems such as neck pain, altered neck posture, decreased functional activities. Hence, this study aimed to make them aware about this, so that they can improve their health.

Posture is very important for maintaining proper blood flow, flexibility, good nerve conduction and for muscles to do their functions. People, who correct their posture or maintain their posture, experience less neck related problems. In addition, stretching also helps to improve blood flow, improves flexibility of joints muscle properties, and improves range of movement.

Group A showed mild changes due to posture alteration. Group B showed significant changes in neck due to posture alteration along with stretching. The data analysis and the statistics has brought to check the effectiveness of posture alteration and stretching exercises on both groups in the study. On comparing the mean values of both groups in the table-1 and table-2, showed that posture alteration along with stretching has an effect in improving the neck range of movement. Overall data supported alternate hypothesis that posture alteration with stretching was more effective hence null hypothesis rejected.

Precautionary measures of the therapy:

For PNF stretching: Do warm up before stretching, stretch in a slow and relaxed manner, avoid forcing the joint beyond the comfortable range of motion and breathe normally.

For postural alteration: During postural correction patient should not have physical discomfort, treatment room must have privacy and comfortable temperature. There is no adverse effect of this therapy. Those who suffer from cervical spondylosis, surgery over neck, tumors along the course of the nerve, chronic upper limb pain, fractures over neck, osteoporosis of cervical spine should not practise these stretching exercises.

CONCLUSION

Goniometry readings show a significant increase, which was taken in pre-test treatment and post-test treatment. The posture alteration and PNF stretching shows the improved range of motion and decrease pain and numbness and stiffness.

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