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Research Study *Medical research*

A study to analysis the effectiveness of exercise with ergonomic posture for software professionals

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ABSTRACT

Aim

The aim of the study to find out the effectiveness of Exercise with ergonomics posture for software professionals

Objectives

The purpose of this study to investigate the effects of exercise in forward head posture (FHP) and cervical mobility dysfunction in software professional.

Background of the study

Software workers spend a long period of time in front of a computer during working hours this will lead to forward head posture and cervical mobility dysfunction. This study the forward head posture in software professional and to create awareness about the ergonomic posture among them.

Methodology

Study design : Experimental study design.
Study type : Comparative pre and posttest type.
Study setting : first step physiotherapy clinic, Wissend technologies, Chennai
Study size : 30
Study duration : 3 weeks, subject ware treated daily for 30 mins
Age group : 25 – 40 years, both male and female

Materials

Universal goniometer
Neck disability index questionnaires'

Procedure

The thirty subjects will be randomly allocated into two groups - Group A & B. Group A will receive stretching, strengthening exercise. Group B will receive stretching, strengthening exercise with ergonomics advice.

Result

Group -B who receives strengthening and stretching exercise with ergonomic advice shows better outcome In comparative with group -A who receives strengthening and stretching exercise.

Keywords: neck pain,software professionals,forward neck posture, ergonomics

INTRODUCTION

One of the most common causes of neck, head and shoulder tension and pain is the forward neck posture**.** This can be a result of injuries like sprains and strains of the neck leading weak neck muscles.Long term abnormal neck posture leads to straining of muscles, arthritis, pinched nerves, disc herniations and instability. Poor health can result from stretching of the spinal cord. A major part of head, neck, and jaw and shoulder pain is due, at least in part, to the effects of poor posture including fibromyalgia syndrome, myofascial pain syndrome, temporomandibular joint dysfunction and chronic fatigue syndromes. Forward Head Posture (FHP) is a condition where the skull protrudes forward more than an inch over the vertebra (atlas) in the neck on which the head rests. In forward head posture, there is anterior tilting of the cervical spine.

METHODOLOGY

Study design - Experimental study design.Study setting- wissend technologies& first step physiotherapy clinic, Chennai. Here we taken 30 samples both male and female. The thirty subjects will be randomly allocated into two groups - Group A & B. Group A will receive stretching, strengthening exercise. Group B will receive stretching, strengthening exercise with ergonomics advice. Outcome measure are goniometry and Neck Disability Questionnaire.

To correct forward head posture, the muscles which need to be stretched comprise of upper cervical (capital) extensors semispinalis capitis, splenius capitis, longissimus capitis and suboccipital muscles. Lower cervical flexors sternocleidomastoid muscle, medial and anterior scalene muscles. Stretching the muscles present in front of the torso, which include pectoralis minor and pectoralis major.

The muscles which need to be strengthened in order to correct forward head posture comprise of Upper cervical (capital) flexors Rectus capitis anterior muscle, longus capitis muscle and suprahyoid muscles. Lower cervical extensors Semispinalis cervicis, splenius cervicis and longissimus cervicis. Strengthening of the muscles present in the back of the torso, which include the rhomboid muscle.

Treatment for Forward Head Posture also comprises of Stretching and strengthening exercises should also be implemented for the muscles present in the upper body, from the hips to all the way up to the back, chest, neck and head. Deep breathing exercises should be practiced as these also help in correcting the forward head posture by relaxing the tense muscles. Strengthening of the core muscles should be done.

ERGONOMIC POSTURE ADVICE FOR SOFTWARE WORKERS

When sitting at the computer table Feet should touch the floor, Hands should be bend at the elbow, Palms should be resting on the table while typing, keyboard and mouse should be in the easily accessible area, Monitor should be at the eye level not above or below it, Light should ideally come from above that is light should be in the ceiling, After every 20 mins just look at something that is 20 meters or further from you, This reduces the strain on the eye that comes from constantly staring at a nearby object, Mouse should be the size of the hand, Use a full sized keyboard ergonomic keyboard.

Do not use very thick pillows when sleeping at night. This disturbs the neck alignment when lying down. Always ensure that you are maintaining a good posture throughout the day.

When you are walking, walk as if there is a steel bar connected to the back of the head and spine. This helps in keeping the chin tucked in and ensures that you do not lead with your chin.

DATA ANALYSIS

GONIOMETRY MEASUREMENT

FLEXION

GROUP A

S.NO	PRE	POST
1	22	35
2	28	35
3	22	38

GROUP B

S.NO	PRE	POST
1	26	40
2	24	28
3	22	38

4	30	32
5	26	30
6	30	32
7	35	34
8	20	34
9	30	37
10	35	32
11	23	35
12	28	25
13	30	36
14	35	38
15	25	38
SD	**4.905779**	**3.514595**
MEAN	**27.93**	**34**

4	26	40
5	30	45
6	35	42
7	30	40
8	28	40
9	20	35
10	25	38
11	30	42
12	35	40
13	35	42
14	23	38
15	28	40
SD	**4.753946**	**3.858201**
MEAN	**27.8**	**39.2**

BETWEEN GROUP ANALYSIS OF THE POST TEST VALUES USING PAIRED T- TEST (FLEXION)

GROUP A	GROUP B	SIGNIFICANCE	P.VALVE
34	39	0.001	SIGNIFICANT

EXTENSION

GROUP A

S.NO	PRE	POST
1	28	35
2	20	38
3	22	35
4	35	32
5	28	38
6	26	39
7	25	36
8	25	35
9	28	40
10	30	40
11	27	39
12	25	38
13	26	38
14	27	40
15	30	38
SD	3.509172	2.32379
MEAN	26.8	37.4

GROUP B

S.NO	PRE	POST
1	30	45
2	25	42
3	26	43
4	28	42
5	30	45
6	28	40
7	23	40
8	26	36
9	20	40
10	25	40
11	25	40
12	20	35
13	28	40
14	23	40
15	22	40
SD	3.217512	2.722044
MEAN	25.26	40.53

BETWEEN GROUP ANALYSIS OF THE POST TEST VALUES USING PAIRED T- TEST (EXTENSION)

GROUP A	GROUP B	SIGNIFICANCE	P.VALVE
37.4	40.53	0.05	SIGNIFICANT

LATERAL FLEXION

GROUP A

S.NO	PRE	POST
1	26	30
2	28	35
3	35	38
4	30	33
5	26	35
6	38	39
7	25	30
8	35	30
9	25	28
10	30	35
11	45	38
12	30	35
13	28	33
14	25	40
15	35	40
SD	5.799836	3.906039
MEAN	30.7	34.6

GROUP B

S.NO	PRE	POST
1	28	40
2	22	40
3	26	40
4	30	45
5	30	45
6	25	40
7	28	35
8	30	35
9	35	30
10	30	30
11	25	35
12	25	30
13	30	35
14	35	40
15	40	40
SD	3.621365	4.952152
MEAN	28.6	37.3

BETWEEN GROUP ANALYSIS OF THE POST TEST VALUES USING PAIRED T- TEST (LATERAL FLEXION)

GROUP A	GROUP B	SIGNIFICANCE	P.VALVE
34.6	37.3	0.05	SIGNIFICANT

ROTATION

GROUP A

S.NO	PRE	POST
1	30	48
2	38	45
3	35	50
4	40	50
5	25	45
6	42	50
7	42	50

GROUP B

S.NO	PRE	POST
1	45	55
2	40	55
3	30	45
4	40	55
5	45	55
6	40	55
7	35	50

8	38	48
9	30	46
10	35	50
11	42	44
12	40	50
13	35	42
14	40	50
15	30	45
SD	5.316641	2.774029
MEAN	36.1	47.5

8	35	45
9	30	50
10	30	45
11	35	45
12	30	45
13	35	55
14	40	50
15	40	50
SD	5.232681	4.418576
MEAN	36.6	50.3

BETWEEN GROUP ANALYSIS OF THE POST TEST VALUES USING PAIRED T- TEST (ROTATION)

GROUP A	GROUP B	SIGNIFICANCE	P.VALVE
47.5	50.3	0.01	SIGNIFICANT

NECK DIABILITY INDEX

GROUP A

S.NO	PRE	POST
1	50	30
2	75	55
3	50	30
4	55	30
5	60	40
6	65	50
7	60	45
8	70	55
9	65	50
10	45	35
11	55	40
12	55	35
13	45	35
14	50	45
15	55	45
SD	8.823669	8.75595
MEAN	57	41.3

GROUP B

S.NO	PRE	POST
1	65	35
2	70	40
3	55	20
4	60	25
5	50	25
6	70	35
7	65	30
8	70	40
9	40	20
10	60	25
11	65	35
12	55	30
13	50	15
14	70	30
15	50	20
SD	9.347778	7.715167
MEAN	59.6	28.3

BETWEEN GROUP ANALYSIS OF THE POST TEST VALUES USING PAIRED T- TEST (NECK DIABILITY INDEX)

GROUP A	GROUP B	SIGNIFICANCE	P.VALVE
41.3	28.3	0.0001	SIGNIFICANT

RESULTS

Table 1
This table analyzed the data's of range of motion of neck flexion. The post test valves group B have significant difference with p value 0.001.

Table 2
This table analyzed the data's of range of motion of neck extension. The post test value of group B has significant difference with p value 0.05.

Table 3
This table analyzed the data's of range of motion of neck lateral flexion. The post test value of group B had significant difference with p value 0.05.

Table 4
This table analyzed the data's of range of motion of neck rotation. The post test value of group B had significant difference with p value 0.01.

Table 5
It analyse the result of post test value of group A and group B using neck disability index, there was a significant value between group A and group B at p value has 0.0001. Group B shows significant improvement than Group A.

CONCLUSION AND DISCUSSION

In conclusion, group B those who underwent stretching and strengthening exercise along with ergonomic advice has a more effective change on comparing with group A who received stretching and strengthening exercise alone. Both the groups showed a significant improvement of reduced pain, increased range of motion and good alignment in cervical posture. But group B has better effect than group A.

Source of Funding

This research project was to study the causal relationship between neck pain and forward neck poor posture and how ergonomics and exercise therapy approaches involves in the treatment aspects.

Conflicts of Interest

None declared.

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