International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 07 Issue: 09 | September - 2023 SJIF Rating: 8.176 ISSN: 2582-3930

COMPARISON OF THE EFFECTIVENESS OF POSTURAL EXERCISES WITH INTERFERENTIAL THERAPY AND ISOMETRIC EXERCISES WITH INTERFERENTIAL THERAPY FOR MEHANICAL NECK PAIN ON IT PROFESSIONALS

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Abstract - Mechanical neck pain is defined as generalized neck pain provoked by sustained neck postures, neck movement and pain on palpation of cervical musculature without pathologies. Mechanical neck pain is experienced by 30 % to 50 % of the general population.

Objective: 1. To find the effect of postural exercises with interferential therapy for mechanical neck pain on IT professionals with NPQ and Pressure algometer. **2.**To find the effect of isometric exercises with interferential therapy for mechanical neck pain on IT professionals with NPQ and Pressure algometer.

Method:

STUDY DESIGN: Quasi Experimental study.

SAMPLING TECHNIQUE: Convenient Sampling technique.

SAMPLE SIZE: 40.

Result: From statistical analysis made with the quantitative data revealed statistically significant difference between the Group A and Group B and also within the group. The post-test mean value of NPQ in experimental group was 35.365 and conventional group was 44.515. The post mean value of PRESSURE ALGOMETER in experimental group was 8.65 and in control group was 6.15 Thus experimental group has high statistical difference than control group.

Conclusion: According to the findings of this study, postural exercises with IFT in the experimental group was found to be more beneficial than isometric exercises with IFT in control group in lowering pain and leading to faster recovery in participants with mechanical neck pain.

***Key Words*:** mechanical neck pain, IT professionals, NPQ scale, Pressure algometer, postural exercises, isometric exercises

1.

INTRODUCTION

Mechanical neck pain is defined as generalized neck pain provoked by sustained neck postures, neck movement and pain on palpation of cervical musculature without pathologies. Mechanical neck pain is experienced by 30 % to 50 % of the general population.[1] Neck pain peaks in the middle age and is higher in woman than in man. Neck muscle strains are frequently caused by poor posture. Long lengths of time spent on a computeror phone can result in forward head posture, in which the head extends forward from the spine. The longus colli muscle frontally and the semispinalis cervicis and cervical multifidus muscles backwards form a muscular sleeve that supports the cervical segments. [2-5] Worldwide, community-based studies found that between 15% and 44% of people experience neck pain annually. The prevalence of neck pain-related impairment has been reported to range from 7% [6] to 11% globally over a one-year period.[7] Office workers have a higher incidence of neck pain than the overall population.[8] Worldwide, between 15% [9]and 34.4% of administrative workers reported having neck pain within the previous year.[10] The longuscolli muscle, in particular, plays an important role in maintaining and straightening the cervical lordosis. The longus capitis muscle, which attaches to the cranium and spans the upper cervicalmotion segments anteriorly, and the subocciptal extensor, semispinalis, and splenius capitis muscles, which attach to the cranium and span the upper cervical motion segments posteriorly, support the craniocervical region.[11]

The sternocleidomastoid, longus colli, and longus capitis govern neck flexion, the splenius capitis, semispinalis, suboccopitals, and trapezius work together to control extension, and the scalenes, sternocleidomastoid, and fibres from the trapezius work together to control lateral bending.

The causes of neck pain mainly include Anomalies of bones and joints, Trauma Poor posture, Degenerative joint disease, Tumor/ neoplasm, Neck musculature strain, Psychological stress, Others or ideological.[12,13] IT professionals are at such a high risk. Today, the majority of office workers utilize computers while they work. An average person spends 40 hours per week looking at a laptop. Additionally, eight hours of non-stop sitting can cause back and neck pain, especially if you don't take breaks. Since there has been an increase in remote job employees, there is a good risk that the office setup is not ergonomic, which can cause neck pain.Poor workplace ergonomics, improper sleeping posture, lack of exercise, overweight and excessive typing/talking on the phone, all contribute to this.Poor posture may be caused by the way your workstation is set up or by weaker or less-durable neck and upper back muscles. According to a study, people who have neck pain have weaker deep neck flexor muscles. These are tiny deep spinal muscles that are crucial for maintaining proper neck alignment. The deep neck shock absorbers will

disengage and weaken while sitting for extended periods of time in a poking neck position.

Interferential therapy works on the principle of interference of two medium frequencycurrents in the deeper tissues, to produce the effect of low frequency current which primarily works by acting on the Pain gate mechanism. Contrarily, interferential therapy is characterized by the interaction of two medium-frequency currents [1–10 kHz] that result in a low-frequency [1 kHz] signal. Through the use of electrode pads, interference therapy is administered transcutaneous in either a bipolar or quadripolar fashion nevertheless, it is unknown how IFT modulates pain in a precise way. It has been suggested that one potential mechanism for triggering analgesic effect is the targeted activation of smaller or larger diametric afferent fibers using various dosages of amplitude modulated frequency [AMF]. The descending pain suppression system (DPSS), physiological nerve conduction blockade, enhanced circulation, and placebo process make up the other proposed mechanism.[13] Compared to asymptomatic office workers, those with neck pain had a tendency to move from and to scapular protraction more frequently. These modifications were linked to the intensity of neck pain through altering the behaviour of the upper trapezius (UT) muscle.[14] According to clinical theory, abnormal scapular posture and any alterations in axioscapular muscle movement may cause or exacerbate painful neck problems by placing undue mechanical stress on the structures in the cervicobrachial region that are sensitive to pain [15]. As a result, scapular postural correction techniques have been recommended as part of the treatment for people who experience neck pain.[16] Regular neck stretching activities have also increased neck function in addition to relieving discomfort.[17] Stretching aims to increase the flexibility of muscles and ligaments, increase joint mobility or biomechanical capacity, and prevent injuries. Enhance cervical muscle function and perception of neck and head position via isometric strength training, which involves isometric contraction against light resistance to the forehead, occiput, and temporal area.[18]

The Oswestry Questionnaire was modified to create the Northwick Park Neck Pain Questionnaire (NPQ).[19] Nine five-part questions are used to grade the patient's symptoms. This study validates the NPQ and suggests using it in clinical practice and research. The focus of physiotherapy evaluations may be range of motion rather than the underlying impairment.PPT on the cervical muscles was measured using a portable digital pressure algometer. The device operates at 100 sample rate with an accuracy of 70.75 N. When force (applied pressure) is perceived as pain, pressure-pain thresholds (PPTs) happen at the minimal transition point.[20] Diagnoses of myofascial pain, dysfunction syndrome and myofascial pain syndrome defined by tender myofascial trigger points are made using pressure-pain threshold tests in clinical settings to determine "hot spot" tenderness.[21] The phrase "algometer" may refer to pressure tolerance testing, which measures the highest pressure that a person can withstand. However, the term does not necessarily refer to the

aim of PPT testing, which measures the pressure at which a person feels pain for the first time.[22] Although isometric exercises with IFT have been shown to be a beneficial therapeutic for IT people with mechanical neck pain, postural exercises with IFT has also shown more significant results. The goal of this study was to show that Postural exercises with IFT has more effectiveness than Isometric exercises with IFT for Mechanical neck pain at IT professionals.

2. Body of Paper

METHODOLOGY:

A total of 40 people were chosen based on the inclusion and exclusion criteria, and after explaining the treatment's safety and ease of use to the participants, written agreement was obtained. Randomly selected participants were divided into the Experimental Group and the Control Group. All subjects had pre-test evaluation using the NPQ questionnaire and Pressure Algometer, and the same procedures were repeated for the post-test at the conclusion of 4 weeks. The Pressure Algometer and the Northwick Park Neck Pain Questionnaire were used to evaluate every individual as a pretest, and the same test was used again as a post-test at the conclusion of the four-week intervention regimen Interferential treatment will be administered to both groups for the first 10 minutes at a frequency of 90–130 HZ. Electrodes are positioned using the cross-fire method, and intensity is dependent on the patient's level of tolerance. Experimental Group - postural exercises along with IFT. The experimental group was given postural exercises for 3 sets each per session and each set consists of 15 repetitions with IFT given. This treatment strategy is applied for five days in a week and performed for 4 consecutive weeks. Control group was given generalized isometric exercises with IFT alone. The treatment strategy was provided for five days in a week and performed for 4 consecutive weeks.

INCLUSION CRITERIA:

Both Male and Female IT professionals under 20-35 age and have neck pain with VAS score more than 5.

EXCLUSION CRITERIA:

1. Any skin pathology over the area where electrodes are placed
2. Recent spinal fracture
3. Shoulder dislocation
4. Any fracture in scapula, humerus & clavicle bone

STATISTICAL ANALYSIS:

A paired t-test was used to analyze the significant changes between pre-test and post-test measures. When employing the unpaired t-test to look at significant differences between two groups, the significance threshold of p 0.05 was determined to be statistically significant. Both pre and post values for Northwick Park Neck Pain Questionnaire (NPQ) and Pressure algometer were analyzed using paired and unpaired t tests.

RESULT: From statistical analysis made with quantitative data indicated statistically significant differences in the values of Group A and B. Table 1 compares the post-test of Group A and B; Group B's post-test value was 44.515, whereas Group A's post-test value was 35.365. As a result, with a p-value of 0.0001, the findings are judged and statistically significant.

TABLE 1: Post-test values of Group A and Group B

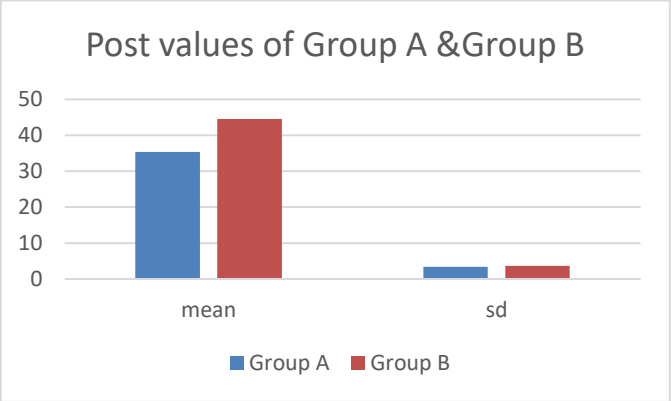
PARAMETER	MEAN	SD	T	P
GROUP A	35.365	3.377	36.2059	<0.0001
GROUP B	44.515	3.652	32.3302	

The Above data showed that

The mean average of post-test value of group A found to be 35.365

The mean average of post-test value group B found to be 44.515

GRAPH 1: Group A & Group B comparison of post-test values.



DISCUSSION:

The purpose of the study is to compare the effectiveness of the postural exercises with IFT and the isometric exercises with IFT. The comparison is recorded over the course of a week. Northwick Park Neck Pain Questionnaire and Pressure Algometer were used to gauge the outcomes. Positive effects were significantly greater in the postural exercises with IFT than the isometric exercises with IFT. The main findings of this study are, treatment of postural exercises with IFT to a group showed a increase rate of reduction of neck pain than the treatment of isometric exercises with IFT to the other group. Both groups showed improved neck movements and significant reduction of pain. Neck muscle strains are frequently caused by poor posture. Long lengths of time spent on a computer or phone can result in forward head posture, in which the head extends forward from the spine. The longus colli muscle frontally and the semispinalis cervicis and cervical

multifidus muscles backwards form a muscular sleeve that supports the cervical segments. Numerous investigations of the physical and lifestyle aspects linked to neck pain have been conducted, and the results offer evidence that can help direct clinical practice and future study. It has long been believed that neck position plays a significant role in the development of mechanical neck pain. People who spend most of the day on a desktop or laptop suffer from neck pain according to some reports. Interferential therapy produce the effect of low frequency current which primarily works by acting on the Pain gate mechanism. By using this the pain gate mechanism is changed and that improves the pain reduction. The postural exercises work on the correction of abnormal posture caused in the desktop workers. The isometric exercises work on only stabilizing the neck region. The goal of this study was to compare the effectiveness of postural exercises with interferential therapy and the isometric exercises with interferential therapy for mechanical neck pain on IT professionals. This contrast is shown throughout the course of four weeks. The Northwick Park Neck Pain questionnaire (NPQ) and the Pressure Algometer were used to determine the outcome measures. According to the statistical analysis, the difference between the pre-test and post-test score for both group A and B is significant.40 Individuals pre and post-test values are identified independently, and their respective mean values for both groups are determined. Using descriptive and inferential statistics, the collected data is tabulated and evaluated. The mean and standard deviation are applied to all parameters. Significant differences between pre and post treatments data were analyzed using a paired t-test. For both group A and B, the unpaired t-test was employed to examine significant differences in post-test values between the two groups. There has been numerous research on the treatment of mechanical neck pain due to various reasons.

According to Walker, Michael J (2008), an impairment-based MTE program resulted in clinically and statistically significant short- and long-term improvements in pain, disability, and patient-perceived recovery in patients with mechanical neck pain when compared to a program comprising advice, a mobility exercise, and subtherapeutic ultrasound. According to Dr. Khaled FOUDA (2018) adding muscle energy technique in the form of PIR to the conventional physical therapy treatment program of chronic MNP was more effective in reducing pain and functional disability and increasing cervical ROM than the traditional treatment program alone. According to Richa Mahajan (2012) muscle energy technique and static stretching were effective in alleviating the mechanical neck pain in terms of decreasing pain intensity and increasing active cervical range of motion as there was no significant difference between the two groups, however MET was superior than static stretching in decreasing pain intensity and increasing active cervical range of motion.

The goal of this study is to compare the effectiveness of postural exercises with interferential therapy and isometric exercises with interferential therapy for mechanical neck pain on IT professionals. Both groups experienced considerable modifications. According to statistical

analysis, Group a with postural exercises with interferential therapy more effective reduction of neck pain than Group B with isometric exercises with interferential therapy.

This study concludes that postural exercises with Interferential therapy brings about a significant reduction of pain in patients with Mechanical neck pain.

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3.CONCLUSION:

According to the findings of this study, Group A with Postural exercises with Interferential therapy in the experimental group was found to be more beneficial than Group B with isometric exercises with Interferential therapy in control group in reducing pain for Mechanical neck pain on IT professionals. As a result, it is suggested that this procedure to be used in clinical practice to reduce neck pain.

ACKNOWLEDGEMENT

I thank all the participants involved in this study.

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