

The Effect of Myofascial Release Technique Versus Static Stretching on Inter-Scapular Pain in Young Healthy Adults

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Abstract: Background: Upper back pain is very common these days due to prolonged hours of sitting work. People usually have long working hours on laptops or computers due to which they are more prone to upper back pain or injury.

OBJECTIVES: To compare the effectiveness between static stretching versus myofascial release on inter-scapular pain in young healthy adults.

METHODS: Forty people participated in this study. Twenty participants were in the myofascial release group i.e., Group A, while twenty participants were there in the static stretching group i.e. Group B. Participants received the treatment three times in a week with at least 48 hours between treatments. Age, weight and height were calculated before starting the treatment. Numerical Pain Rating Scale (NPRS) was used to measure pain during pre and post treatment.

RESULTS: Twenty participants from static stretching and twenty participants myofascial release (MFR) the follow up period. Comparison of the post treatment analysis of NPRS of group A and group B, the pain score was different in both the groups with mean value 2.65 and 0.99 SD in group A and 6.40 & 1.35 SD in group B. t-value value was calculated by independent t-test and it was found as 10.01 and the result was highly significant at 0.01 level of significance.

CONCLUSION: Both groups show significant results to rhomboid pain but myofascial release shows much better results than static stretching. Myofascial release technique was much more effective technique than static stretching in decreasing pain increasing performance.

Keywords: Static stretching, Myofascial release technique, NPRS, Inter-scapular pain.

I. INTRODUCTION

As you know COVID-19 was declared a pandemic by WHO (World Health Organization). A nationwide lockdown occurred in India in which the majority of

people have faced changes in work patterns and lifestyles both, which we had never experienced before. Even the cop is still not allowed to have an offline mode. Owing to this many people in India are using many electronic gadgets like laptops, desktops, mobile phones, etc. For cooperate meetings, web meeting, and panel discussions video conferencing were done and people work from home in many public and private sectors [1]. Continuous working on their laptops and computers which leads to bad postures. Prolonged mal posture of the head on the neck may cause muscle fatigue, pain, and stiffness because of steady contraction of the muscle-tendon unit and deviation from normal body posture [2]. People working on laptops and computers continuously complain about neck pain, back pain and most commonly inter-scapular pain. Some of the more common causes of inter-scapular pain are poor posture living a sedentary lifestyle or routinely sitting for long periods with poor posture can cause structural changes in the back and neck. The muscles can become deconditioned and weak are more common rhomboid major and rhomboid minor muscle, levator scapulae muscles major cause the inter-scapular pain. Improper lifting technique lifting a heavy object without keeping the spine aligned can put undue stress on the upper back, inter-scapular area. Clinical reports indicate that upper thoracic pain occurs with repetitive or prolonged bending, twisting or sitting activities such as in industrial work involving combinations of these movements [3]. Sustained and repeated muscle activity such as stereotypic computer postures may be responsible for complaints of occupational muscle pain even at a very low force levels [4]. So, this study was purely based on treating inter-scapular pain. Also,

this study will compare the effects of myofascial release and static stretching in relieving the pain.

Myofascial release is a massage technique in which therapist providing the pressure on the muscle tissue; the individual uses their own body weight to create pressure on the muscle tissue [5]. MFR has been used to break up the scar tissues and relax the muscles for past many years. This technique stretches the muscle and warms the fascia, causing it to become more fluid like and therefore decreases adhesions and scar tissues [6]. Fascia becomes fluid and soft when warmed and moved, but if it sits without movement, it can become rigid with overuse, illness, trauma or other movements and adhesions may form between the fascia and muscle tissue causing pain and immobility.

Performing myofascial release may be done through massages or through tools, usually done by therapist, but more commonly self-myofascial release is performed [7]. Myofascial release techniques are used to help alleviate musculoskeletal pain. Myofascial release's ability to alleviate pain may relieve muscle spasm, which can be attributed to the application of direct pressure as well [8]. This technique has been used in rehabilitation setting to help correct muscle imbalances, improve joint range of motion, relieve muscle soreness and joint stress, and help maintain normal functional muscular strength [5].

Static stretching has been commonly used to alleviate muscle tension and as a warm up [6]. Static stretching is one of the safest and most commonly performed stretching methods used to increase muscle length [9]. Many stretching methods have been used to help individuals increase flexibility in muscles and joints. Three of most common stretching methods are static, dynamic and ballistic. The most widely known, static stretching involves a slow and constant stretch with the end position held for 15-30 seconds [5]. Each of these forms of stretching are effective in elongating muscles and increasing range of motion; each can be carried out on various manners- that is, manually or mechanically, passively or actively, and by a therapist or independently by a patient.

Static stretching is well accepted as an effective form of stretching to increase flexibility and range of motion and has considered a safer form of stretching than ballistic stretching for decades. Other terms used for static stretching interchangeably are sustained, maintained, or prolonged stretching [10].

The present study will compare the effects of both myofascial release and static stretching on Rhomboid muscles pain only.

The prolonged sitting postures have been significantly implicated in the development of musculoskeletal problems during computer work [11]. In the present study, we are trying to compare the effects of static stretching and myofascial release on inter-scapular pain to make the working lifestyle of people easy and comfortable without any pain.

II. METHODOLOGY

A. STUDY DESIGN: Comparative experimental study designed approved by the institutional Review Board of Gurugram University.

Total 40 participants were taken. They were randomly divided into two groups named as Group A (Myofascial release) and Group B (Static stretching). Random sampling was done. Study was done in Gurugram, Haryana. The study was conducted from 24th July 2022 to 24th September 2022. This study includes participants who were young healthy adult males, females and others. Subjects who were in the aged group of 25- 35 years. People who were working from home. This study excludes participants who were less than 25 years of age and more than 35 years of age. Participants who had recent injury to upper back and injury of upper back less than one-year, recent fractures, recent surgeries. Participants who were recreational athletes were not included. Instruments used in study were couch, towel, pen, marker, paper, chair and stepper. Outcome measures was Numerical Pain Rating Scale. NPRS is the scale, that ranges from 0-10, with 0 representing 'no pain' and 10 representing 'pain at its extreme'.

B. DATA COLLECTION PROCEDURE: A total number of 40 participants were randomly selected using simple random sampling. The study was conducted at Gurugram. Whole procedure was explained to the subjects and the informed consent was taken prior to any testing. The subject fulfilling the inclusion and exclusion criteria were included in the study. All the subjects included in the study undergo basic assessment and assigned randomly into two groups named as Group A (Myofascial release) and Group B (Static stretching). The baseline measurement was evaluated. Both groups followed the

protocol and data was collected at the baseline. Participants received the treatment three times in a week with at least 48 hours between treatments.

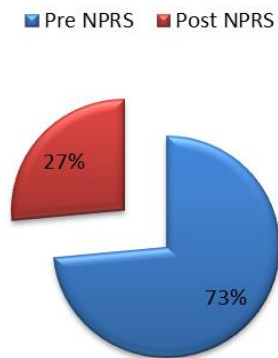
C. DATA ANALYSIS: The data were collected and entered in Microsoft excel sheet and were analyzed using statistical package for social science (SPSS) version 28. Data was analyzed for find out the effects of myofascial release and static stretching on inter-scapular pain. The mean and standard deviation of age, height and weight were calculated and hence comparison was calculated.

III. RESULTS

Table.1. Distribution of group A subjects according to NPRS scale.

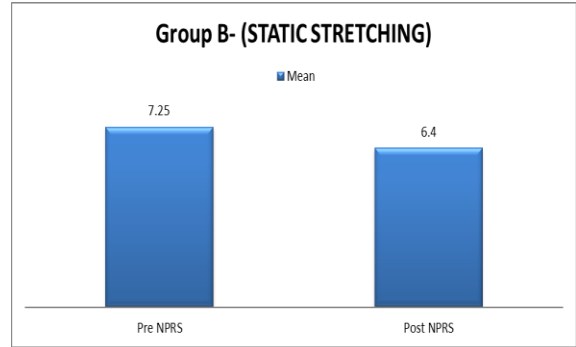
Group A	Mean	Std. Deviation	t-value	p-value
Pre NPRS	7.35	0.98	22.76	<0.0001**
Post NPRS	2.65	0.98		

Group A (MYOFASCIAL GROUP)



In the present study, table 1 depicts the comparison of NPRS within the group A. The mean value of pre NPRS was 7.35 with 0.98 standard deviation and for post NPRS the value was found to be 2.65 Mean with 0.98 SD. Paired t-test was applied for comparison with t-value 22.76 and the result was highly significant at 0.01 level of significance. Table.2. Distribution of group B subjects according to NPRS scale

Group B	Mean	Std. Deviation	t-value	p-value
Pre NPRS	7.25	0.85	2.99	0.007*
Post NPRS	6.4	1.35		



In this present study, table 2 and figure 2.1 revealed the comparison of NPRS within the group of B. The mean value of pre NPRS was found to be 7.25 with 0.85 standard deviation and for post NPRS, it was found to be 6.40 average with 1.35 SD. Paired t-test was applied for comparison with t-value 2.99 and the result was significant at 0.01 level of significance.

VI. DISCUSSION

The purpose of the study was to compare the effects of myofascial release and static stretching on inter-scapular pain in young healthy adults. This study examined passive myofascial release and static stretching in the participants with pain in rhomboid muscles. The most important finding was that individuals in both the myofascial release and static stretch groups showed decrease in their pain levels. Both groups showed significant results but myofascial release in comparison to static stretching gives much better results in relieving pain.

The findings in this study are comparable to effects of stretching programs in other studies using myofascial release to decrease pain and increase range of motion. The effects of myofascial release vs static stretching on hamstring range of motion (Patrick m. Keys 2014 [1]). The study found a significant increase in range of motion by both the groups. The study hypothesized that self-myofascial release would have greater affect than stretching during acute stretching program on hamstring range of motion, but they found that range of motion increased similarly using both techniques. There were few research studies on myofascial release and like the present study they showed significant results in decreasing pain with MFR. There were new techniques and equipment were introduced into health and fitness industry ever year. But a new technique of myofascial release i.e., self and passive MFR has

recently become more popular and there were very few studies looking at its efficacy.

In the present study, we compare the well-known, static stretching, to the new technique of MFR. Our objective was to compare the effects of myofascial release and static stretching on rhomboids muscle pain. We found an acute response to myofascial release by the rhomboids muscle group and to static stretching. This study found that myofascial release would have a greater affect than static stretching during the program of rhomboids muscle pain.

V. LIMITATION OF THE STUDY

1. Sample size was too small, which should be revised to a larger number of subjects.
2. Treatment time was too small, which should be revised.
3. Home exercise program was not taught to the patients.

VI. FUTURE SCOPE OF THE STUDY

1. Study can be done on a wider Sample
2. Specific genders could also be taken in the study.
3. Different subjects and age groups can be studied.

VII. CONCLUSION

The study concluded that both groups show significant results to rhomboids pain but myofascial release show much better results than static stretching. Myofascial release is a very effective technique in decreasing pain increasing performance but there are few research studies been done to look at its efficacy. So, further research should continue to examine more benefits of myofascial release to improve and increase the muscle functioning.

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