A COMPARATIVE STUDY BETWEEN THE EFFECTIVENESS OF MFR VERSUS STRETCHING WITH HOME BASED STRENGTHENING EXERCISE PROGRAM IN NON-SPECIFIC LOWBACKPAIN FOR COVID 19 -WARRIORS

Dr. Kartik Sukhwal[1] MPT Sports , **Garima Bhati**[2] Musculoskeletal

ABSTRACT

BACKGROUND: Low back pain is a highly prevalent health problem that is associated with enormous costs worldwide. In developed countries, episodes of back pain are a leading cause of work absence, accounting for over 25% of all conditions involving days away from work. About 90% of the patients with low back pain will receive the diagnosis 'non-specific low back pain' (NSLBP).The overall global prevalence for WRMSDs is 20%-30% and the region more often reported to be affected was the low back. The use of various non-pharmacological and non-invasive methods such as exercise, mobilization, and manipulation is well known in LBP treatment. Core stability exercise is a common exercise modality in the treatment of LBP. Core stability exercises improve the strength of deep muscles of trunk and low back disability with NSLBP. Myofascial release technique is another method among the possible management options in the treatment of chronic musculoskeletal pain. It has been demonstrated that myofascial release technique produces a significant improvement in both pain and disability. lack of structural change in nonspecific LBP, it can limit daily activities and cause temporary or permanent inability to work. Nonspecific LBP is caused by postural deviations. The characteristics of nonspecific LPB are heavy pain, worsening with exertion especially in the afternoon, relieved with rest, absence of neurological and muscle contraction, and antalgic posture, associated with inactivity and poor posture. Therefore main purpose of this study is to compare the effectiveness between MFR techniques and stretching tech with home based strengthening program in non-specific low back pain for covid 19 warriors. **AIMS AND OBJECTIVES**: To compare the effectiveness between MFR Versus Stretching with home based strengthening exercise program in non-specific low back pain for covid 19 worriers**. METHODOLOGY:** 40 patients with non-specific low back pain were randomly selected according to inclusion and exclusion criteria and

divide into two groups – Group A: MFR with home based strengthening exercise program, Group B: stretching with home based strengthening exercise program. **RESULT:** In our study both the group showed statistical significant but while comparing the group treated with MFR techniques showed significant effect on reducing the scores of our both the outcome measures (VAS & OLBPDQ) than the group treated with stretching exercises.. CONCLUSION: This study conclude that MFR techniques with home based strengthening exercise is more effective while comparing with stretching with home based strengthening exercise for non-specific back pain of COVID-19 warriors.

INTRODUCTION

Low back pain is a highly prevalent health problem that is associated with enormous costs worldwide[1, 2, 3]. In developed countries, episodes of back pain are a leading cause of work absence, accounting for over 25% of all conditions involving days away from work[4,5]. About 90% of the patients with low back pain will receive the diagnosis 'non-specific low back pain' (NSLBP), a term that signifies that no specific pathology or disease process has been identified by the clinician. Although pain improves rapidly in the first month with a typical episode of NSLBP, low levels of pain may continue for many months[6].

Work-related musculoskeletal disorders (WMSDs) are common in jobs requiring manual handling, heavy lifting, and/or repetitive motions[7] WMSDs are frequent among health care professionals due to patient handling and transfers [8].

Musculoskeletal disorders are present in 48% of work-related disorders and diseases among patients visiting a general practitioner.[9] Work-related musculoskeletal disorders[10] (WRMSDs) arise from repetitive work activities that normally are not hazardous, which become hazardous when the tissue loading exceeds its anatomical and physiological limits.[11] These situations often lead to development of overuse syndromes, persistence of symptoms thus becoming recurrent and/or chronic.[12] Tissue healing never actually gets accomplished since re-injury occurs due to repeated exposure to occupational risk factors.[13] The physical ergonomic features of work frequently cited as risk factors for MSDs include rapid work pace and repetitive motion, forceful exertions, non-neutral body postures, and vibration.[14] The overall global prevalence for WRMSDs is 20%-30% and the region more often reported to be affected was the low back.[15] According to the world health organization (WHO) technical report, the management of WRMSDs determine to a largest possible extent the global productivity and work performance of working-age adults.[16] Prevalence of WRMSDs had been

previously reported for children,[17] general adult population,[18] industrial workers,[19] computer professionals and lately though among healthcare professionals.[20] Studies reported prevalence of WRMSDs among nurses,[21] physical therapists,[22] physicians,[23] surgeons,[24] and dentists.[25]

Approximately 84% of people are reported to have an experience of back pain in their life time1). Although there is no obvious cause of low back pain, 90% of patients have been experienced back pain without certain pathology, referred to as non-specific low back pain (NSLBP)[26,27] .

Non-specific low back pain (NSLBP) is the most widespread form of LBP.[28] NSLBP is called LBP without recognizable specific underlying pathology.[29] The prevalence and burden of LBP increases with aging.[30] This situation is more common and complex in elderly people.[31,32] Because of the changes in fascia structures, dysfunction of deep muscles of back and trunk is common in chronic LBP.[33,34] Injuries of low back are mostly caused from the superficial back line (SBL).10 The SBL contains the plantar fascia, gastrocnemius muscles, hamstring muscles, sacrolumbar fascia, erector spinae muscles and epicranial fascia.[35] The deep muscles of back and trunk are attached to the superficial back line via thoracolumbar fascia.[36] These deep muscles and fascia of the trunk form a continuous musculofascial corset-like system.[33,37].

It is recommended for patients with NSLBP to remain physically active, as long periods of inactivity will adversely affect recovery[45,46]. A variety of different types of exercise have been explored to treat CLBP (chronic low back pain), including low-to-moderate intensity aerobic exercise[47,48], high intensity aerobic exercise [49,50], core stabilization and muscular strength exercises [51,52] and flexibility programmes[53,54]. However, the most effective form of exercise as a method of rehabilitation for NSCLBP is unknown [55] reflecting its complexity[49] and more research is required [56]. Physical activity (PA) to increase aerobic capacity and muscular strength, especially of the lumbar extensor muscles, is important for patients with CLBP in assisting them to complete activities of daily living[57]. However, different exercises have

been found to result in varying levels of effectiveness in reducing lower back pain[58]. In addition, too much or too little PA can be associated with low back pain suggesting that PA as an intervention for low back pain is complex.[59]

Exercise therapy is considered as one of the most effective treatments for CNSLBP[61,62]. Lumbar stabilization exercises have been shown to provide normal stability and coordination in lumbar muscles[64-68]. According to the

However, McGill has designed exercises in lumbo-pelvic region, based on the global muscle stabilization, in order to increase stability and coordination of the trunk muscles without any load on lumbar spine and to improve the function of the anterior, posterior, and lateral lumbar muscles[65,68] . Effects of stabilization exercises on pain, functional disability and lumbo-pelvic muscle function have been investigated in some studies[68,77] . These exercises are thought to increase the lumbar muscles function and improve pain and disability [70,72,74,75,77] . However, in some studies, a similar effect has been observed performing a non-specific exercise training[68,69].

Additionally, conventional physiotherapy exercises seem to increase the flexibility and strength in anterior or posterior lumbar muscles and improve the muscles function in patients with low back pain with a minimum load on the lumbar spine and more often are used to alleviate muscle spasm and pain[70-74]. Despite this abundance of studies of different exercise training on low back pain, a few of study is known about the effects of McGill stabilization exercises compared with other exercises training[68].
It can be divided into five categories: viscerogenic (e.g. abdominal diseases), vascular (e.g. abdominal aortic aneurysm), psychogenic (psychological factor inducing pain), neurogenic (nervous system injury), spondylogenic (e.g. disc herniation and osteoarthritis) [7].
LBP caused by musculoskeletal disorder can be congenital,degenerative, inflammatory, infectious, malignant, and mechanical postural.

Mechanical - or nonspecific - LBP is the most commonly reported by the population. The human body has a center of gravity, which keeps the balance between muscles and bones to maintain the integrity of structures and protect them against injury, in any position - standing, sitting or laying down. Despite the lack of structural change in nonspecific LBP, it can limit daily activities and cause temporary or permanent inability to work, being one of the main causes of absence at work in the Western world [1]. The incidence of nonspecific LBP is higher in workers subjected to heavy physical exertion, such as weight lifting, repetitive movements, and frequent static postures [9,10].

In literature, the nonspecific LBP prevalence is higher in females [11,12,13]. Some authors believe that the risks are higher in women than in men because of anatomical and functional peculiarities that, combined, may facilitate the emergence of low back pain. Women have lower height, less muscle mass and bone density, greater joint fragility, and lower adaptation to physical exertion [14]. Furthermore, the sum of the burden imposed by housekeeping increases this risk [15]. Therefore, almost all individuals have episodes of nonspecific LBP, and all age groups are considered at risk. Habitual or professional postures (remaining in a standing or sitting position for long periods of time), obesity, pendulous abdomen, visceroptosis, vicious foot, and muscle masses not sufficiently developed are all contributing factors to postural distortions.

In a systematic review, the authors concluded that none of the abnormalities identified by magnetic resonance imaging - such as reduction of disk space, degeneration or even herniated disc - was related to the cause of LBP, as these abnormalities were also present in asymptomatic individuals and did not coincide with the development of LBP [19,20].

Therefore main purpose of this study to compare the effectiveness between MFR technique and stretching with home based strengthening program in nonspecific low back pain for covid 19 warriors.

METHODOLOGY

In this comparative study 40 patients with nonspecific low back pain were randomly selected according to inclusion and exclusion criteria and divide into two groups – Group A: MFR with home based strengthening exercise program , Group B: stretching with home based strengthening exercise program. All patients participates in the study after voluntarily signed consent form. Study is held in Pacific institute of medical science, Udaipur for16 Weeks (30 minutes per day, 5days in a week.)

OUTCOME MEASURES

1. VISUAL ANALOGUE SCALE
2. OLBPD QUESTIONNAIRE

INCLUSION CRITERIA

a) Both Male and female patients.
b) Age of 20-50 years
c) Diagnosed with LBP

EXCLUSION CRITERIA

a) Neurological problems
b) Cardiovascular symptoms
c) Infections
d) History of spinal fracture or spinal surgery
e) Spondylolisthesis
f) Any systemic disease or TB of spine
g) Metal Implant in spine
h) Carcinoma

PROCEDURE

40 Patients with LBP subjects were randomly selected based on inclusion and exclusion criteria. Then divided into 2 groups Group A &Group B (20 subjects each group).

Subjects of Group A (20 subjects) received MFR with home based exercise program e and group B consist of 20 subjects who received Stretching with home based strengthening exercise program.

All the subjects were informed that they are under the experiment and prior constant of subject was sought before assessment. All the subjects' regimen including exercise level. Our study period was30 minutes per day 5 session/ week, total of 16weeks.

Group A

MFR WITH HOME BASED STRENGTHENING EXERCISE PROGRAM

FIGURE 1. QL RELEASE
FIGURE 2. ELBOW GLIDING
FIGURE 3 . ERECTOR SPINE FRICTION

GROUP B:

STRETCHING WITH HOME

BASED STRENGTHENING EXERCISE PROGRAM

- Hamstring Stretch
- Piriformis Stretch
- Knee to chest stretch
- Child Pose
- Cobra stretch
- Quadriceps stretch

HOME BASED STRENTHNING EXERCISE

1. Cat- Camel exercise.
2. Bridges.
3. Pelvic tilts.
4. SLR
5. Side Lying Abduction
6. Knee to chest

DATA ANALYSIS

Mean Standard deviation paired't' test and unpaired't' test performed for analysis of pre and post data evaluation within and between groups.

RESULTS & DATA INTERPRETATION

Analyses of pre and post test scores within and between the groups are tabulated with intervention of the result of the study.
Demographic data of mean value of age of participants

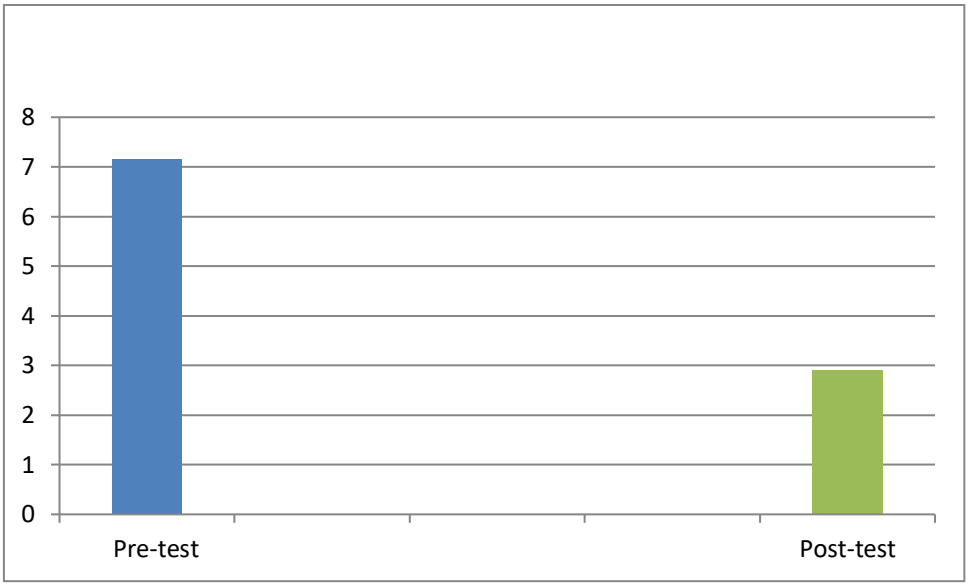
TABLE 1

A. WITHIN GROUPS:
GROUP A

VAS	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	P
Pre-test	20	7.15	0.875	0.1956	4.25	19	22.7574	<0.0001**
Post-test	20	2.9	0.788	0.1762				

**Significant

Graph 1



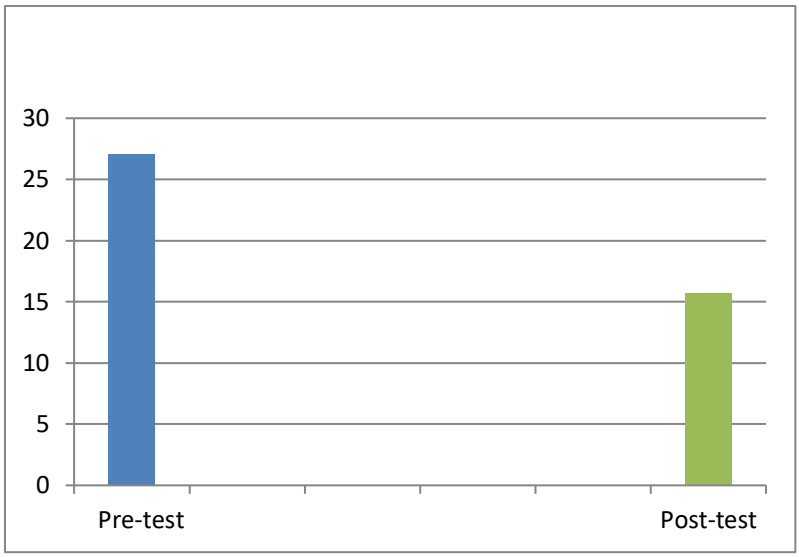
INTERPRETATION: The above table and graph shows the comparison of score for the **VAS** score within group A.

TABLE 2 GROUP A

OLBPDQ	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	p
Pre-test	20	27.05	541.0	0.7415	11.35	19	13.5012	<0.0001**
Post-test	20	15.7	314.0	0.567				

**Significant

Graph 2



INTERPRETATION:

The above table and graph shows the comparison of score for **OLBPDQ** within group A.

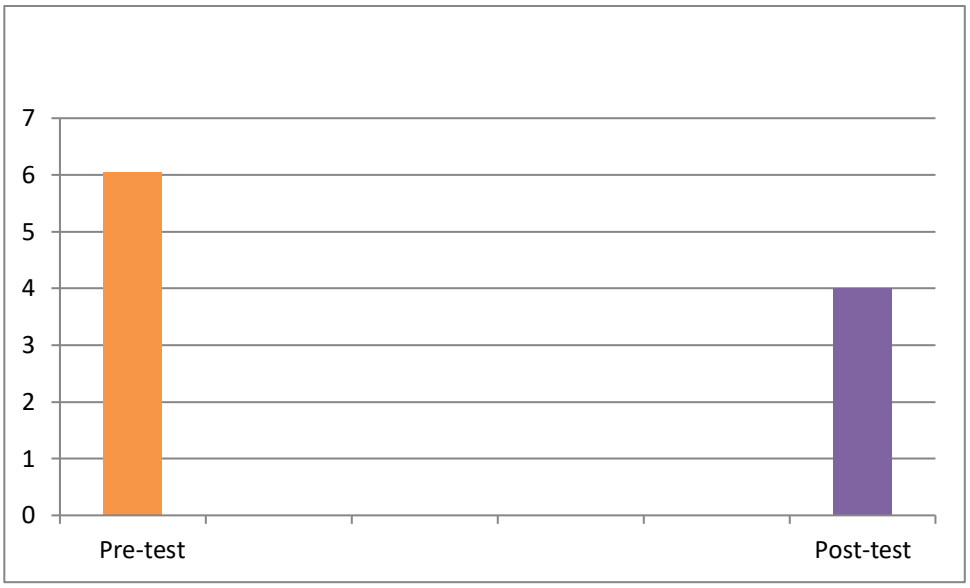
TABLE 3

GROUP B

VAS	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	p
Pre-test	20	6.05	0.825	0.1956	2.05	19	17.9673	<0.0001**
Post-test	20	4.0	0.725	0.1762				

**Significant

Graph 3



INTERPRETATION:

The above table and graph shows the comparison of score for the **VAS** within group B.

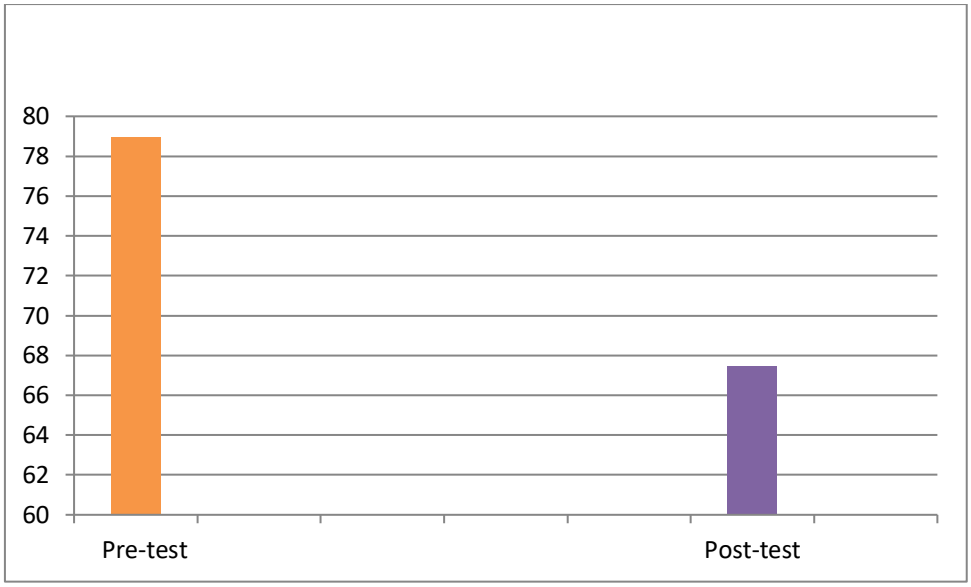
TABLE -4

GROUP B

OLBPDQ	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	P
Pre-test	20	19.4	5.2355	1.1706	5.5	19	9.7467	<0.0001**
Post-test	20	13.9	3.1271	0.6992				

**Significant

Graph 4



INTERPRETATION:

The above table and graph shows the comparison of score for **OLBPDQ** within group B.

B. BETWEEN THE GROUPS:

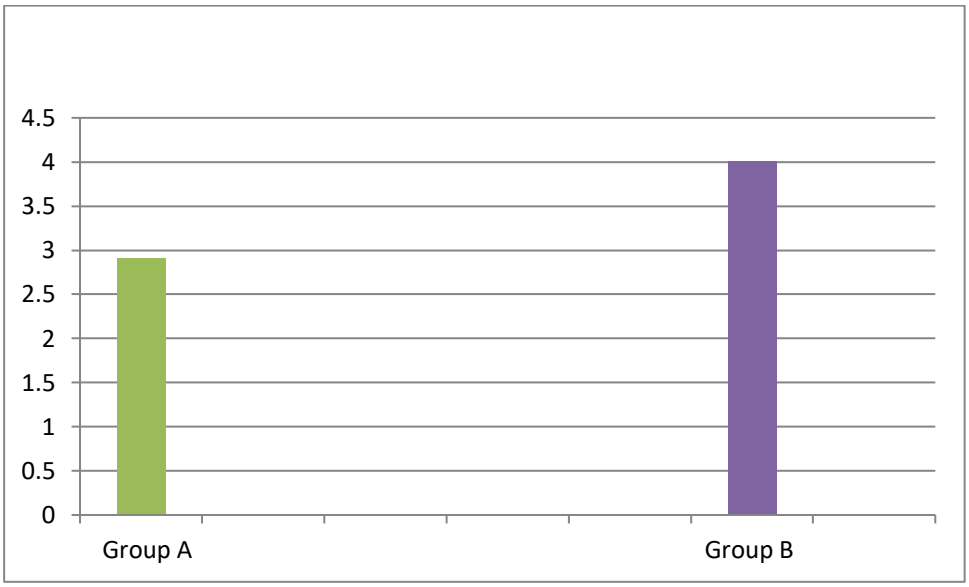
TABLE 5

VAS

VAS Post test value	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	P
Group A	20	2.9	0.7254	0.1817	1.1	38	0.4175	<0.0001**
Group B	20	4.0	0.788	0.2062				

**Significant

Graph 5



INTERPRETATION:

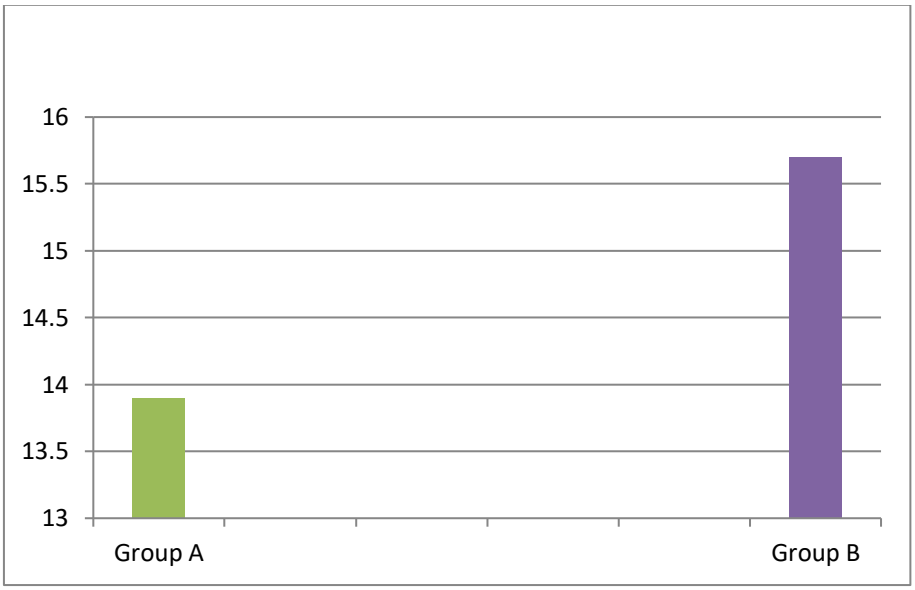
The above table and graph shows the comparison of post test score for the VAS between group A and group B.

TABLE 6

OLBPDQ Post test value	N	Mean	SD	Std. Error Mean	Mean Diff	df	t	P
Group A	20	13.9	3.1271	0.6992	1.8	38	1.993	<0.0001**
Group B	20	15.7	2.536	0.567				

**Significant

Graph 6



INTERPRETATION:

The above table and graph shows the comparison of post test score for **OLBPDQ** between group A and group B.

DISCUSSIONS

The statistical analysis showed that there was a significant effect for both groups ($p < 0.0001$) which means that both treatment groups were effective at reducing the mean over the course period of the study.

The primary outcome was the VAS score which was significantly decreased in both groups. But, there was statistically significant difference between the groups over time point. As secondary outcomes, the OLBPDQ score were significantly decreased in both groups. Considering the effects experienced in the clinical field, both VAS and OLBPDQ score was decrease statistically in-group, A which was treated with MFR techniques.

Myofascial release technique uses mechanical pressure which can reduce adhesion between tissue tissues and reduce muscle fiber tension. . Applying pressure to the muscle belly activates the autonomic nervous system by stimulating the interstitial type III and IV nerve receptors that respond to light touch; which ends in Ruffini fascia so that it responds to pressure by decreasing sympathetic activity, increasing gamma motor neuron activity and relaxing intra-fascial smooth muscle cells. In addition, the pressure exerted by physiotherapists can reduce ischemia that occurs due to increased local blood circulation to the skin and muscles, reducing parasympathetic nervous activity and release relaxation hormones and endorphins, remove waste metabolic waste and supply oxygen.(12) Parasympathetic stimulation changes serotonin, cortisol, endorphins, and oxytocin, reducing pain perception. Furthermore, the reduction of the parasympathetic reflex can decrease pain sensitivity by reducing stress on myofascial tissues by relaxing tension in soft tissue smooth muscle. (13)

Another study by Cathcart concluded that the myofascial release technique caused biomechanical changes in tissue elasticity that created increased tissue flexibility.(12) This increase in tissue flexibility is associated with increased joint area of motion. Namely, when applying manual pressure it is possible to elongate the sarcomere which shortens due to excessive muscle contraction. The occurrence of reactive hyperemia after applying ischemic compression causes an increased oxygen supply, decreases inflammation and reduces the production of nociceptive and inflammatory substances, thereby repairing damaged muscle fibers and increasing muscle strength and flexibility. (11)

Samani and colleagues conducted a study of giving myofascial release technique on 30 respondents with complaints of low back pain with nucleus pulposus hernia conditions by comparing the effect of conventional physiotherapy interventions (TENS and ultrasound) with conventional physiotherapy intervention combined with myofascial release technique. They concluded that the myofascial release technique was effective in reducing low back pain in disc herniation. (13) Static force stretches that do not relieve muscle spindle activation after 8 seconds can damage the spindle receptors and increase the risk of muscle tension or tearing. Golgi tendon organ (GTO), which is located in the tendon, reacts to changes in tension in the Proceeding International Conference of Innovation, Science, Technology, Education, Children andHealth (ICISTECH) ISBN: 978-623-6089-32-3 https://ahlimediapress.com/prosiding/index.php/icistech/ 393 muscles. If GTO senses excessive muscle contraction potentially damaging the associated soft tissue structures, excitation occurs and results in relaxation

or contraction failure. GTO stimulation blocks the muscle spindle and causes muscle relaxation. This phenomenon is called autogenic inhibition. Autogenic inhibition can also occur if emphasis is applied to the MFR technique so as to stimulate GTO. When stimulation passes a certain threshold of stimulation, it can inhibit muscle spindle activity and reduce spasm. (11)

According to Warren et al., the time needed to stretch a tissue is inversely proportional to the force applied. Muscle stretching is one of the advantages of GPR. Due to the holding of stretching positions in this technique, less force is required to produce gains in flexibility, thereby minimizing the risk of injury [28]. This lack of injury caused by GPR may also be explained by Hooke's law, which postulates that the degree of deformation is equal to the force applied multiplied by the application time [29]. Thus, the low intensity eccentric isometric force applied during the sessions is compensated by the prolong holding of the posture, leading to more effective stretching.

In our study both the group showed statistical significant but while comparing the group treated with MFR techniques showed significant effect on reducing the scores of our both the outcome measures (VAS & OLBPDQ) than the group treated with stretching exercises.

CONCLUSION

This study conclude that MFR techniques with home based strengthening exercise is more effective while comparing with stretching with home based strengthening exercise for non-specific back pain of COVID-19 warriors**.**

LIMITATIONS AND RECOMMENDATIONS

Limitation of the Study

- The Study was limited due to Shorter Duration of treatment.
- The Study was limited due to less number of Nonspecific(LBP) Patients
- The Study was limited age group between 18 - 50 years.
- The Study was limited to Nonspecific involvement in LBP patient.
- The Study was limited on Only MFR Versus Strengthening with home based Strengthening Exercise program for treatment of NON-specific LBP Patient.
- Only Covid-19 warriors were taken as sample

Recommendations – for further study

- It may recommended that treatment Course Could be more than 16 weeks, So that more results would be evaluated.
- It may recommended that study could be done on more than 40 Non-Specific LBP patients.
- It may recommended that Study Could be done on different age group.
- It may be recommended that different interventions may be chosen in NON Specific LBP patients.
- It may be recommended that study could be done on comparison between specific and non-specific LBP patients.
- It may recommended that evaluation of patient's condition may be taken in mid of the study duration to evaluate better results.

- Different type of professionals may be use in further study.

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