A COMPARATIVE STUDY ON EFFICACY OF MCKENZIE EXERCISES VERSUS SCIENTIFICALLY JUSTIFIED LOW BACK REHABILITATION EXERCISES IN THE MANAGEMENT OF MECHANICAL LOW BACK PAIN PATIENTS

A dissertation submitted in partial fulfilment of the requirement for the degree of

MASTER OF PHYSIOTHERAPY

(ELECTIVE – SPORTS PHYSIOTHERAPY)

To

The Tamil Nadu Dr. M.G.R. Medical University

Chennai-600032

MAY 2018

(Reg. No. 271650021)

RVS COLLEGE OF PHYSIOTHERAPY

(Affiliated to the Tamil Nadu Dr.M.G.R Medical University, Chennai – 32)

SULUR, COIMBATORE – 641 402TAMIL NADU, INDIA

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INTERNAL EXAMINER

EXTERNAL EXAMINER

A dissertation submitted in the partial fulfilment of the requirement for the degree of **Masters of Physiotherapy-May 2018** to the Tamilnadu Dr. MGR Medical University, Chennai.

CERTIFICATE

Certified that this is bonafied work of Ms.S.GNANA DEEPIKA of R.V.S. College of Physiotherapy, Sulur, Coimbatore submitted in partial fulfilment of requirements for Master of Physiotherapy Degree course from the Tamilnadu Dr. M.G.R Medical University under the Registration No. 271650021

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ACKNOWLEDGEMENT

I, thank **GOD** for providing me the wisdom and knowledge to complete my study successfully.

With due respect, I Would like to thank The **Chairman, managing trustee** andthe**Secretary of RVS Educational trust**, for providing me an opportunity to be a part of this esteemed institution.

I would like to express my deep senseof gratitudeto my principal **Dr R. Nagarani**, **M.P.T, MA, Ph.D.**, for her support, encouragement and suggestion for the completion of this project.

My special and sincere thanks to **Dr.B.Kannabiran, MPT.,PhD**., professor, RVS College of Physiotherapy, for rendering valuable suggestions, constant guidance and support for the progress of my work and fruitful outcome of this study.

I immensely thank all the faculty members of Physiotherapy department for their kind advice and encouragement.

I humbly acknowledge all the love, support and care I received from my parents **Mr.V.S Sivasubramaniyam** and **Mrs.Saraswathy Sivasubramaniyam** throughout my life in making me what I am now.

I would like to express thanks to my friends for their help to complete the study.

S.GNANA DEEPIKA

DECLARATION

I hereby declare and present my project work.**"A COMPARATIVE STUDY ON EFFICACY OF MCKENZIE EXERCISES VERSUS SCIENTIFICALLY JUSTIFIED LOW BACK REHABILITATION EXERCISES IN THE MANAGEMENT OF MECHANICAL LOW BACK PAIN PATIENTS"** The outcome of original research work under taken and carried out by me under guidance of **Dr.Kannabiran,M.P.T.,PhD.,** Professor, R.V.S. College of physiotherapy, Sulur, Coimbatore, Tamilnadu.

I also declare that the material of this project has not formed in anyway the basis for the award of any other degree previously from the Tamil Nadu Dr. M.G.R Medical University, Chennai.

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Introduction

I INTRODUCTION

Low back pain is the commonest problem human body suffers with second to common cold back pain leads to loss of time for work, loss of productivity, health care costs, financial compensations and various psycho social problems. Pain with no referral below knee may be caused by injury to muscle (strain) or ligaments, joints or in some cases, because of attachment of muscles to the sacroiliac joint.This is called Mechanical low back pain **(David J. Magee).**

Low back pain can vary from dull pain that develops gradually to sudden, sharp or persistent pain felt below the waist. unfortunately, almost everyone, at some point during life will experience low back pain that may travel downward into the buttocks and sometimes into one or both lower extremities. The most common cause is muscle strain often related to heavy physical labour, lifting or forceful movement, bending or twisting in to awkward positions, or standing in one position too long**(Richard G. Fessler, MD,phD).**

LBP ranks first among the leading causes of disability globally, 22.8 % had sought medical care 11.6% had consultations with a family doctor, and 6.4 % with specialist. lifetime prevalence of low back pain is reported to be as high as 84% and best estimates suggest that the prevalence of chronic low back pain is about 23%, with 11-12 % of the population being disabled by it**(Airaksinen O, Brox JI, et all 2006).**

Lower back pain (LBP) cause mostly do not realize that TIGHT HIP FLEXORS are source of low back pain. It is not very common to have both LBP and healthy, conditioned hip flexors, except in instances of disease or injury. In cases of mechanical low back pain (which involves muscular imbalance), tight hip flexors are often among the cause of the condition (**Cedraschi C, et al 2008).**

Tight hip flexors are not suspected until mobility and injury happen. some of the muscles which include the psoas major, iliacus, hamstring's, and tensor fascia latae. Significance of these muscles have not been realized until they begin to weak and cause mobility issues. They become weaker and tightened due to lack of use which leads to pain and reduced mobility of the joints **(Sherwin Nicholson, Hons.2006).**

Myofascial fascial release is an alternative treatment to treat skeletal muscle immobility and pain by relaxing contracted muscles, improving blood and lymphatic circulation and stimulating the muscles.Fascia is a thin, tough, elastic type of connective tissues that wrap most structures in the human body, including muscles. osteopathic theory proposes that this soft tissue can become restricted due to overuse or inactivity, injury often result in pain, muscle tightness and diminished blood supply **(T.DiGiovanna EL 2005).**

When muscles and fascia get injured they become tight to protect the part from further damage and tearing, according to researches the shortness and tightness of hip flexors causes one side of u r body, such as buttocks, to become uneven, cause hip and low back pain. myofascial release on this affected area done by using compression forces to smooth the

fibres and fascia along the muscles gradient. the amount of pressure used depends on yoursensitivity and degree of the injury **(John F. Barnes, 2014).**

Stretching is form of physical exercise and treatment in which a specific muscle or tendon or muscle group is deliberately stretched or flexed in order to improve the muscles felt elasticity and achieve comfortable muscle tone. increasing flexibility through stretching is one of the basic tenets of maintaining physical fitness its very common and essential to stretch before and after exercise to reduce risk of injury and increase performance

(prentice, William E. 2003).

Stretching the tight hip flexors and joints decreases your risk of low back and knee pain.Self stretching of these tightened muscle helps to loosen the tight muscles which helps your muscles to relax and increase the blood flow which in turn lengthens the muscles and nutrients to your cartilage and muscle reduces low back pain **(de NM, Kampar SJ 2011).**

1.1 Statement of the study

A study to compare and find out the effectiveness of Myofascial release andStretching exercises to reduce pain and improve lumbar range of motion in Mechanical low back pain patients.

1.2 Objectives of the study

- To find the effectiveness of Myofascial release in the management of pain and range of motion in patients with Mechanical low back pain.
- To find the effectiveness of Stretching exercises in the management of pain and range of motion in Mechanical low back pain patients.

- To compare the effectiveness of Myofascial release and stretching exercises in the management of pain and range of motion in Mechanical low back pain patients.

1.3 Need of the study

- This study aimed to provide awareness of chronic Mechanical low back pain to common people.
- To popularize the Self -Myofascial release and Self- Stretching exercise as the effective management for Mechanical low back pain among physiotherapists.

1.4 Hypothesis

- It is hypothesized that there may be significant differences in pain scale and range of motion followed by Myofascialrelease.
- It is hypothesized that there may be significant differences in pain scaleand range of motion followed by Stretching exercises.
- It is hypothesized that there may not be significant differences in pain scaleand range of motion followed by Myofascial release and Stretching exercises.

1.5 OPERATIONAL DEFINITION:

MECHANICAL LOW BACK PAIN

Low back pain is a common disorder involving the muscles, nerves, and bones of the back. Pain can vary from dull constant ache to sudden sharp feeling. The condition may be further classified by the underlying causes as either mechanical, non- mechanical pain **(Mansuov EG (2012).**

MYOFASCIAL RELEASE

Myofascial release is an alternative medicine therapy that claims to treat skeletal muscle

immobility and pain by relaxing contracted muscles, improving blood and lymphatic circulation, stimulating stretch reflex in muscles(**Lisa Ganfield, OTR/L, CHT2008).**

STRETCHING

Stretching is a form of physical exercise in which a specific muscle or tendon (or muscle group) is deliberately flexed or stretched in order to improve the muscles felt elasticity and achieve comfortable muscle tone(**Gregory S 2004).**

Review of Literature

IIREVIEW OF LITERATURE

Section A: Studies related to mechanical low back pain.

Section B: Studies on the effect of Self Myofascial release on tight hip flexors to relieve pain and

increase range of motion among Mechanical low back pain patients.

Section C: Studies on the effect of Self stretching on tight hip flexors to relieve pain and

increase range of motion among Mechanical low back pain patients.

Section D: Studies on the effect of reliability and validity on quality of Visual Analogue Scale on low back pain.

Section E: Studies on the effect of reliability and validity on quality of Goniometer

Section A: Studies related to mechanical low back pain.

Heymans *et al.,*(2005)a study was conducted on scientifically justified low back rehabilitation exercises for mechanical low back pain with 3,584 patients were included in this updated review the result indicates that there is a moderate evidence suggesting that scientifically justified low back rehabilitation exercises have better short and intermediate term effects on pain and functional status than other treatments for patients with recurrent mechanical low back pain. There is moderate evidence suggesting that myofascial release for chronic mechanical low back pain in occupational setting are more effective than other treatment.

Casazza *et al.,*(2012)mechanical low back pain is a common disorder involving the muscles and bones of the back it affects the 40% of people at some point in their lives low

back pain is classified by duration as chronic more than 12 weeks. This condition may be further classified by the underlying cause.

Dettori *et al.,* (2000)stated that this is the most common type of back pain the majority of the cases of sudden onset low back pain are classed.this is the type of back pain that most people will have at some point in their life. It's called non-specific because it's usually not clear what is actually causing pain in other word there is no specific problem are disease that can be identified as cause pain. The severity of the pain can vary from mild to severe.

Section B: Studies on the effect of Self Myofascial release on tight hip flexors to relieve pain and increase range of motion among Mechanical low back pain patients.

Harvis J *et al.,(*2003) conducted a study on effect of Myofascial Release therapy on low back pain that has threatened quality of life. 37 patients with Mechanical low back pain were selected from a community set-up. Selected subjects were treated with myofascial release for 6 weeks. The paired 't' test was used to find out difference between variables. The result showed that there was significant improvement in pre-test and post-test variables. The study concludes Myofascial release therapy very effective in reducing pain.

M.S.Ajimsha (2013) did a study on effect of low back pain, it's a comparative study between myofascial release and specific back exercise. 80 patients have been selected for the study, therapist certified with myofascial release have been asked to treat40 patients, rest were treated with specific back exercise. it's a randomised, controlled, single blinded trial. this study provides evidence that MFR when used as anadjunct to SBE is more effective than a control intervention for LBP in selected group.

Arguisuelas MD (2016) conducted double-blind, randomized parallel sham-controlled trial with concealed allocation to investigate the effects of a myofascial release on low back pain, disability and fear-avoidance beliefs in patients with Mechanical low back pain. 54 patients were selected, who were receiving four sessions of fascial treatment, each lasting for 30 minutes to control group and measured with VAS and Rolland's Morris. This study provides Myofascial release therapy produced significant improvement in both pain and range of motion.

Section C: Studies on the effect of Self stretching on tight hip flexors to relieve pain and increase range of motion among Mechanical low back pain patients.

Sherier, Ian (2004) did astudy wherethepurposeof articles was to evaluate the clinical and basic science evidence for stretching reduces low back pain and improves performance. 23 patients examined to effect of aself-stretch and suggested that there is benefit for the stretching. for the subjects regular stretching was given for lower limb and performances were regarded in regular basis. It proves regular stretching improves performance and reduces pain.

Shaylene Swanepoel (2006) conducted a study on sacroiliac manipulation compared to stretching of the post oblique sacroiliac joint, it improves flexibility. The study designs chooser was a randomised, clinical trial consisting of 30 patients between age group of 18 to 45 of mechanical low back pain, subjects divide in to 2 groups. Group 1 receives manipulation and group 2 receives stretching. stretching and objective readings were taken

The study concludes both are effective but states stretching gives immediate relief compared to manipulation

Jill A.Hayden2005 did a study on Stretching to treat low back pain. It is a randomized , controlled trials was done on 43 patients for 8 sessions of age group 30 to 40 , the conclusion of the study is consist of individually designed programs. Stretching exercise were given under the supervision of therapist it improves pain and function in chronic non – specific low back pain, the conclusion is improvement in pain compared with other conservative methods .exercise therapy that consist of stretching or strengthening deliveredto patients with supervision may improve pain and function chronic low back pain.

Section D: studies related to reliability and validity of visual analogue scale.

Bonston*et al.,*(2013)conducted a study on variety of pain measurement with 68 out patients with low back pain, and proved that visual analogue scale for disabilities is moderately good. Because weak correlation disability in instruments and strong correlation with the visual analogue scale for pain.

Boonsta*et al.,* (2008) conducted a study to determine the reliability and validity of VAS in chronic musculoskeletal pain aged over 18 years. The study population consist of 52 patients in the reliability study and 344 patients in the validity study. The conclusion of the study was that the validity of VAS was moderate to good and it's reliability was questionable.

Olaegun, Mahew*et al.,* (2014) conducted a study to determine the intra-class and inter class correlation VAS and schematic differential patients with low back pain. 25 patients with chronic low back pain patients were selected for the study two testers independently rated the pain experienced by the patient. The results suggested that visual analogue scale is reliable and valid for clinical rating of low back pain.

Donald *et al.,*(1983) conducted a study to find out the validation VAS as ratio scale measurement for chronic and experimental pain and they concluded that VAS sensory intensity response to experimental pain. VAS sensory intensity response to different level of chronic and experimental pain matchesto 3 level of chronic pain,were all internally consistent,there by demonstrating valid use of VAS chronic pain and experimental pain.

Section E: Studies related to reliability and validity of goniometer.

Berryman *et al.,* (2010)described that lumbar range of motion can be measured using a universal goniometer and it is a reliable tool for measuring lumbar range of motion. He described that the lumbar range of motion in direction can be measured.

Sullivan *et al.,* (2007) studied that the reliability and validity of goniometer in 45 subjects.It was concluded from the study that the ROM measurements taken with the universal goniometer of the lumbar spine, generally have good to excellent reliability. Reliability does not vary depending on the joint and motion being measured.

Gajdosik *et al.,* (1987) conducted a study to determine the reliability and validity of goniometer in 15 subjects. It was concluded from the study that the goniometer can be used to measure ROM and concluded that this is fundamental evaluation procedure.

Methodology

III METHODOLOGY

3.1 Study setting

The study was conducted in R.V.S. College of Physiotherapy outpatient department, Sulur, Coimbatore.

3.2 Selection of subject

20 subjects withMechanical low back pain who fulfilled inclusion and exclusion criteria were selected and randomly divided into 2 groups.

- Group A- Stretchingexercises
- Group B- Myofascial release

3.3 Variables

3.3.1 Dependent variables

- Pain
- Range of Motion

3.3.2 Independent variables

- Myofascialrelease
- Stretching exercises

3.4 Measurement tools

Variables	Tools
Pain	VAS
ROM	Goniometer

3.5 Study design

Pre-test and post-test experimental study design

3.6 Inclusion criteria

- Subjects with low back pain atleast 3 months with no apparent cause
- Both sexes are included
- Subjects of 25-35 age group are included

3.7 Exclusion criteria

- Spinal tumours
- Fractures
- Inflammatory diseases
- Previous spinal surgery
- Nerve root compression
- Cardio respiratory illness
- Pregnancy

3.8 Orientation to the subjects

Before collection of data all the subjects were explained the purpose of the study.the investigator had given a detailed orientation about the various test procedures such as VAS to measure the pain and goniometry to measure range of motion. The concern and full cooperation of each participant was sought after complete explanation of the condition and demonstration of the procedure involved in the study.

3.9 Materials used

Goniometer, Marker, Exercise mat, and Foam roller.

3.10 Test administration

a) Pain assessment by visual analogue scale (VAS):

The visual analogue scale (VAS) is a subjective measure of pain. It consists of a 10cm line with two end points representing ‘no pain’ and ‘worst pain imaginable’. During the visit, the patients are asked to rate their pain by placing a mark on the line corresponding to their current level of pain.

3.11 Treatment Procedure

SELF MYOFASCIAL RELEASE FOR TIGHT HIP FLEXORS PATIENT POSITION

Subject lies in the prone position on the floor mat, instruct to place foam ball just High up towards hips, on the inside of the hipbone. transfer your body weight on the ball, relax as much as possible and let the ball push inside your pelvis, this feels externally uncomfortable if the hip flexors are very tight. Subject should be asked to breathe deeply and stay in that spot until you feel that the muscle start relaxing. hold on these spots for 30 to 90 seconds.

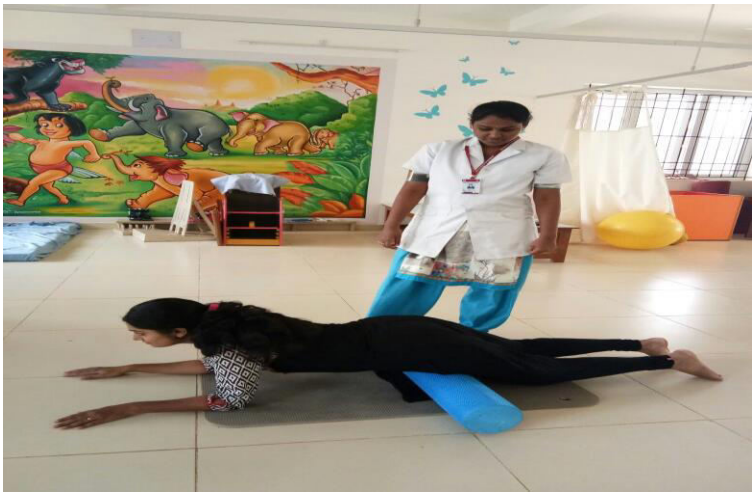

Figure 1 Self Myofascial release for tight hip flexors

SELF STRETCHING RELEASE FOR TIGHT HIP FLEXORS

Subject should be in the kneel position, where the side which is going to be stretched remains kneels position and the opposite leg placed 90 degreesperpendicular to the hip joint, subject should make back strong and leaning forwards with help of quadriceps, good stretch should be felt in lower abdomen sustain stretch for 20 to 30 seconds.

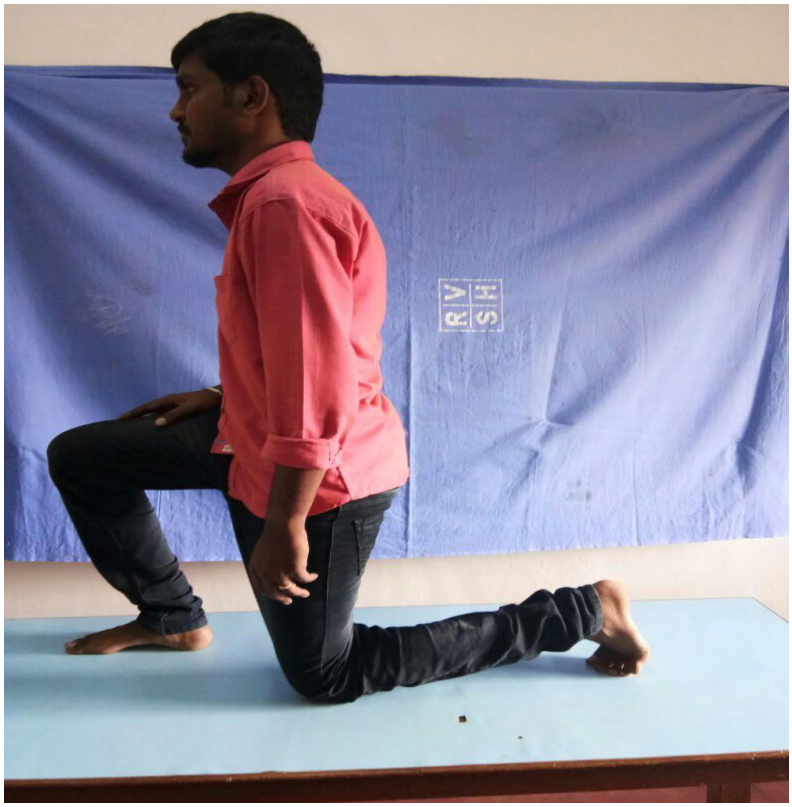

Figure 2 Position of Self stretching for tight hip flexors

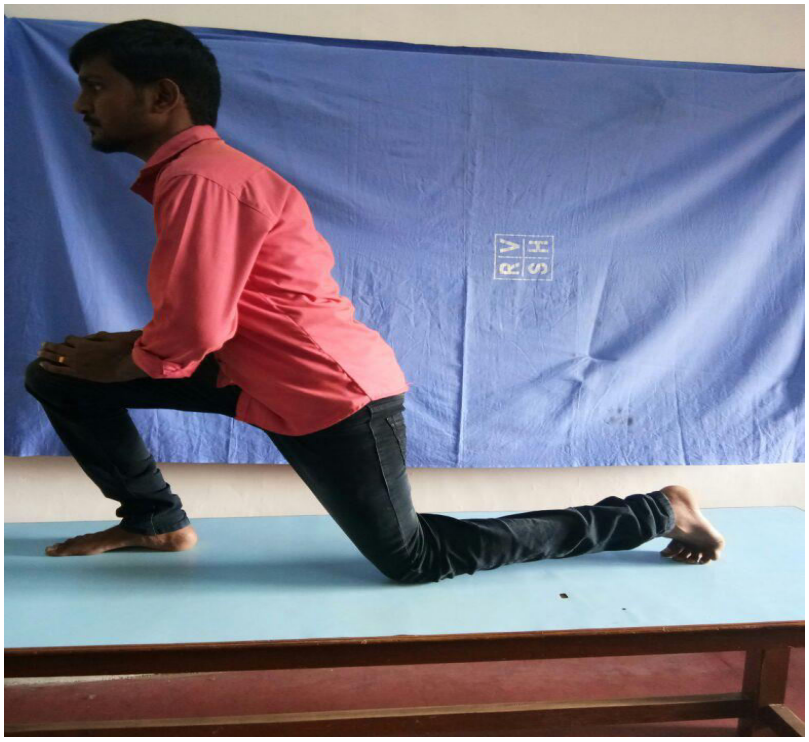

Figure 3 Self stretching for tight hip flexors

3.12Collection of data

A total of 20 subjects aged between 25-35 years who fulfilled inclusion and exclusion criteria were selected. They were given treatment for 4 weeks. Before and after 2 weeks of treatment intervention, ROM and pain was evaluated by VAS and goniometer values were recorded.

3.13 Statistical technique

Collection of data were analysed by paired 't' test to find out significance difference between pre-and post-test value for experimental groups and further unpaired 't' test was applied to find out difference between group.

Data Analysis & Result

IV STATISTICAL ANALYSIS AND RESULTS

4.1 Data analysis

This chapter deals with the systematic presentation of the analysed data followed by the interpretation of the data.

a) Paired‘t’ test

$$\bar{d} = \frac{\sum d}{n}$$

$$s = \sqrt{\frac{\sum d^2 - \frac{\sum (d)^2}{n}}{n - 1}}$$

$t = \frac{\bar{d}\sqrt{n}}{s}$

Where,

d – Difference between pre test and post test values

$\bar{d} = \frac{\sum d}{n}$ – Mean of difference between pre test and post test values

n – Total number of subjects

s – Standard deviation

b) Unpaired t' test

$$s = \sqrt{\frac{\sum(x_{1-}\bar{x}_2)^2 + \sum(x_{2-}\bar{x}_2)^2}{n_1 + n_2 - 2}}$$

$$T = \frac{\bar{x}_{1-}\bar{x}_2}{S}\sqrt{\frac{n_1 n_2}{n_1 + n_2}}$$

Where,

S = Standard deviation

n_1 = Number of subjects in Group A

n_2 = Number of subjects in Group B

$\bar{x}_1$ = Mean of the difference in values between pre-test and post-test in Group A

$\bar{x}_2$ = Mean of the difference in values between pre-test and post-test in GroupB

Table 1

Mean value, mean difference, standard deviation and paired 't' value between pre-andpost test scores of pain among Group A.

Measurement	Mean	Mean Difference	Standard Deviation	Paired 't' value
Pre-test	7.4	1.3	0.48	8.55*
Post-test	6.1			

*0.005 level of significance.

In a group A for pain score is calculated paired 't' value is 8.55 and the Table 't' value is 3.25 at 0.005 level of significance. Since the calculated 't' value is greater than the Table 't' value there is significant difference in pain following Stretching exercises.

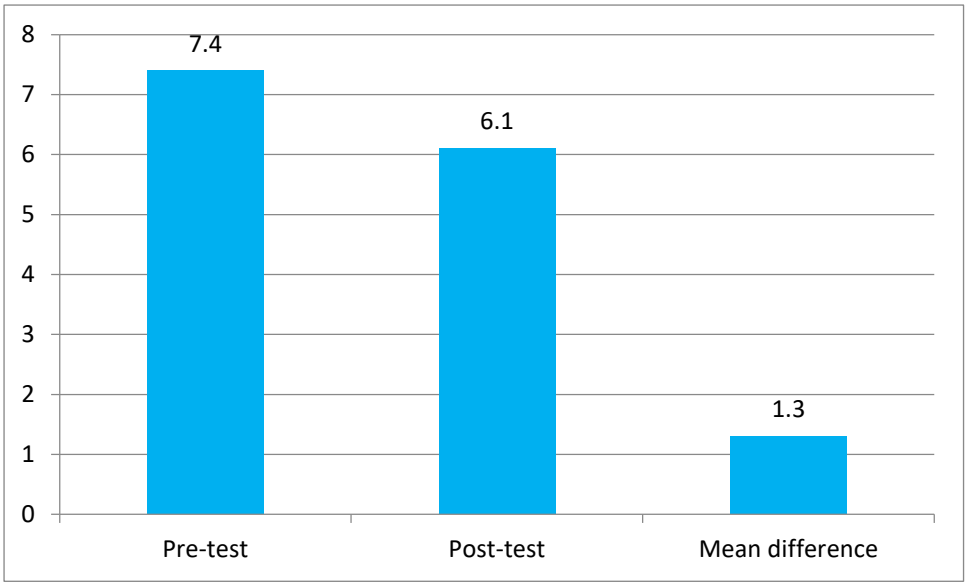

Figure:1Graphical presentation of pre-test and post-test mean values of pain among Group A.

Table 2

Mean value, mean difference, standard deviation and paired 't' value between pre and post test scores of pain among Group B.

Measurement	Mean	Mean Difference	Standard Deviation	Paired ‘t’ value
Pre-test	7.3	2.4	0.7	10.83*
Post-test	4.9			

*0.005 level of significance.

In a group B for score of pain the calculated paired‘t’ value is 10.83 and the Table ‘t’ value is 3.25 at 0.005 level of significance.Since the calculated‘t’ value is greater than the Table ‘t’ value there is significant difference in pain following Myofascialrelease.

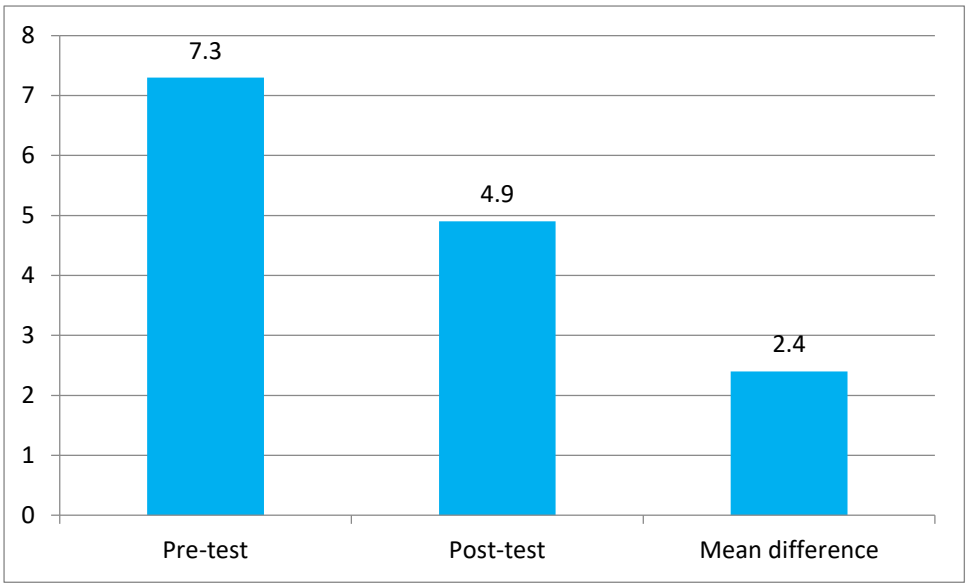

Figure: 2Graphical presentation pre-test and post-test mean values of pain among Group B.

Table 3

Mean value, mean difference, standard deviation, sand unpaired ‘t’ value of pain between Group A and Group B.

S.No.	Groups	Improvement		Standard deviation	Unpaired 't' test
		Mean	Mean Difference		
1	Group-A	1.3	1.1	0.63	3.9*
2	Group-B	2.4			

*0.005 level of significance.

In a group A and B for pain score the calculated unpaired 't' value is 3.9 and the Table value is 2.278 at 0.005 level of significance. Hence the calculated t' value is greater than the Table 't' value there is significant difference between Stretching and Myofascial release in improving pain among Mechanical low back pain subjects.

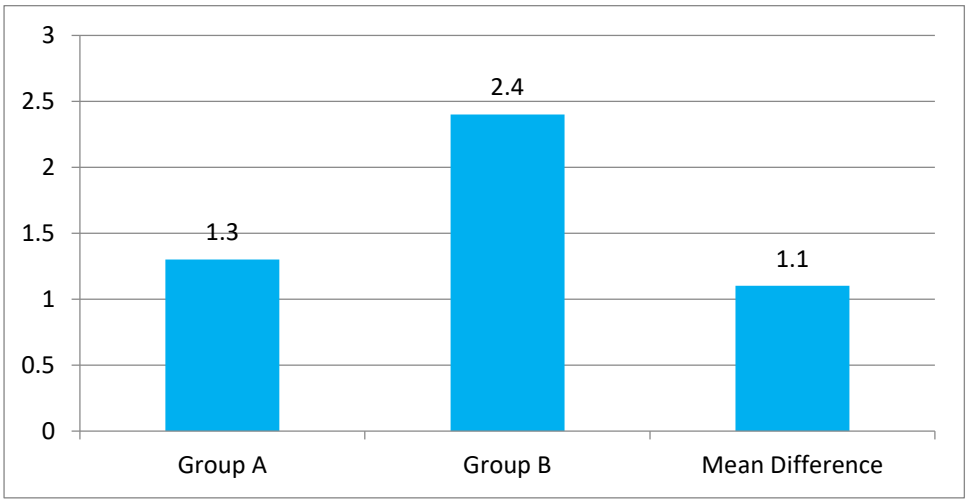

Figure: 3Graphical presentationmean value, mean difference, standard deviation, and unpaired't' value of pain between Group A and Group B.

Table 4

Mean value, mean difference, standard deviation and paired 't' value between pre and post test scores of range of motion – lumbar flexion among Group A.

Measurement	Mean	Mean Difference	Standard Deviation	Paired ‘t’ value
Pre-test	68.2	3.2	0.79	12.8*
Post-test	71.4			

*0.005 level of significance.

In a group A for range of motion for-lumbar flexion the calculated paired‘t’ value is 12.8 at 0.005 level of significance and the Table‘t’ value is 3.25 at 0.005 level of significance. Since the calculated t’ value is greater than the Table‘t’ value there is significant difference in lumbar flexion range following Stretching exercise.

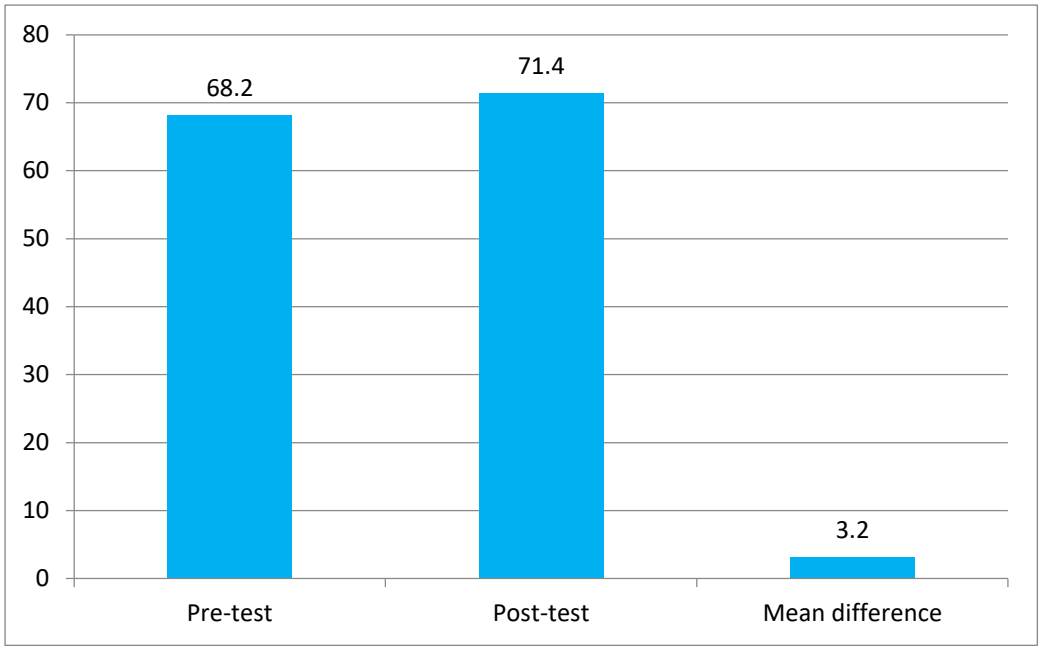

Figure: 4Graphical presentationpre-test and post-test mean values of range of motion – lumbar flexion among Group A.

Table 5

Mean value, mean difference, standard deviation and paired ‘t’ value between pre and post test scores of range of motion – lumbar flexion among Group B.

Measurement	Mean	Mean Difference	Standard Deviation	Paired ‘t’ value
Pre-test	67.2	4.6	0.96	15.14*
Post-test	71.8			

*0.005 level of significance.

In a group B for range of motion-lumbar flexion the calculated paired‘t’ value is 15.14 at 0.005 level of significance and the Table ‘t’ value is 3.25 at 0.005 level of significance. Since the calculated‘t’ value is greater than the Table‘t’ value there is significant difference in lumbar flexionrange following Myofascial release .

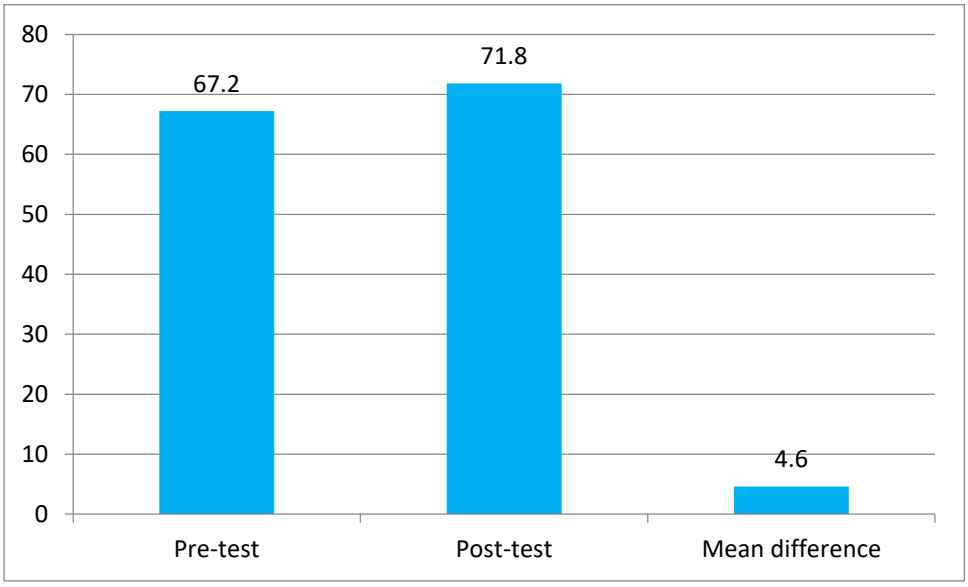

Figure: 5Graphical presentation pre-test and post-test mean values of range of motion – lumbar flexion among Group B.

Table6

Mean value, mean difference, standard deviation, and unpaired ‘t’ value of range of motion – lumbar flexion between Group A and Group B.

S.No.	Groups	Improvement		Standard deviation	Unpaired 't' test
		Mean	Mean Difference		
1	Group-A	3.2	1.1	1.3	13.16*
2	Group-B	4.3			

*0.005 level of significance.

In a group A and B for range of motion-lumbar flexion the calculated unpaired' value is 13.16 at 0.005 level of significance and the unpaired Table 't' value is 2.278 at 0.005 level of significance. Since the calculated't' value is greater than the Table't' value there is significant difference between self – stretching exercise and Myofascial release exercise.

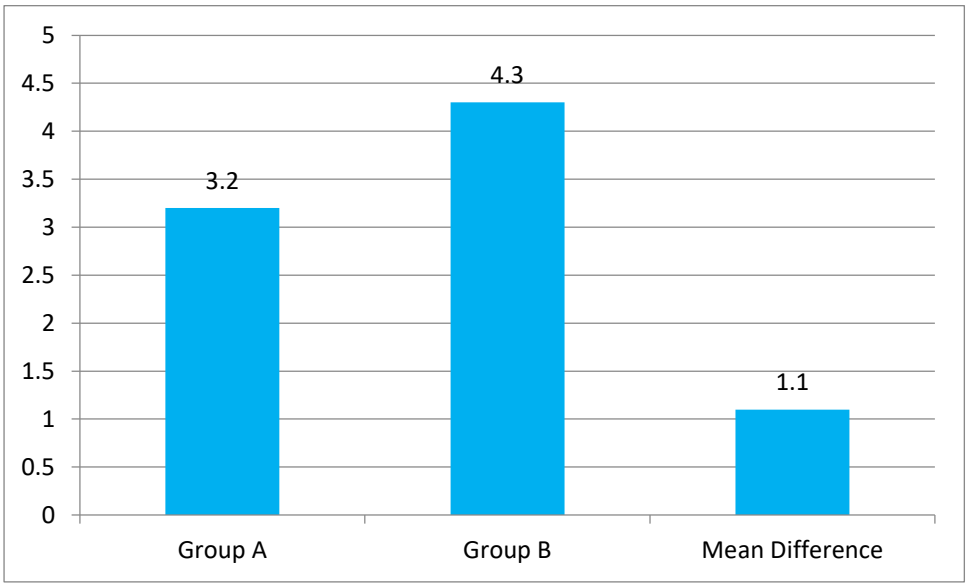

Figure: 6Graphical presentationMean value, mean difference, standard deviation, and unpaired 't' value of range of motion – lumbar flexion between Group A and Group B.

4.2 Results:

Group A was treated with Self – Stretching exercise and Group B was treated with Myofascial release .

Analysis of dependent variable pain in Group A: The calculated paired‘t’ value is 8.55 and the Table‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated‘t’ value is greater than the Table‘t’ value there is significant difference in pain following self- stretching exercises.

Analysis of dependent variable pain in Group B: The calculated paired‘t’ value is 10.83 and the Table‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated‘t’ value is greater than the Table‘t’ value there is significant difference in pain following Myofascial release.

Dependent variable pain between Group A and Group B: The calculated unpaired‘t’ value is 3.9 and the Table value is 2.278 at 0.005 level of significance. Hence the calculated‘t’ value is greater than the Table ‘t’ value there is significant difference between Self stretching exercises and Myofascial release exercises in improving pain among Non-specific low back pain subjects.

Analysis of Range of Motion – Lumbar flexion in Group A: The calculated paired ‘t’ value is 12.8 at 0.005 level of significance and the Table ‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the Table ‘t’ value there is significant difference in lumbar flexion range following Self stretching exercise.

Analysis of Range of Motion – Lumbar flexion in Group B: The calculated paired ‘t’ value is 15.14 at 0.005 level of significance and the Table ‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the Table ‘t’ value there is significant difference in lumbar flexion range following Myofascial release.

Analysis of Range of Motion – Lumbar flexion between Group A and Group B: The calculated unpaired ‘t’ value is 13.16 at 0.005 level of significance and the unpaired Table ‘t’ value is 2.278 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the

Table ‘t’ value there is significant difference between Self – stretching exercise and Myofascial release.

Analysis of Range of Motion – Lumbar extension in Group A: The calculated paired ‘t’ value is 8.33 and the Table ‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the Table ‘t’ value there is significant difference in Range of Motion following Self -Stretching exercises.

Analysis of Range of Motion –Lumbar extension in Group B: The calculated paired ‘t’ value is 12.69 and the Table ‘t’ value is 3.25 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the Table ‘t’ value there is significant difference in Range of Motion following Myofascial release.

Analysis of Range of Motion – Lumbar extension between Group A and Group B: The calculated unpaired ‘t’ value is 4.46 and the Table ‘t’ value is 2.278 at 0.005 level of significance. Hence the calculated ‘t’ value is greater than the Table ‘t’ value there is significant difference between Self -Stretchingexercises and Myofascial release in improving Range of Motion among Mechanical low back pain subjects.

V DISCUSSIONS

This study is to find out the effectiveness of Self – stretching exercise and Self - Myofascial release in reducing pain and improving Range of Motion on patients with Mechanical low back pain.

GROUP A receives Scientifically justified low Self stretching exercises daily for 4 weeks. Post treatment values of group A graphical representation reduction in pain and increase in Range of Motion.

This is attributed t the effect of Scientifically justified low back rehabilitation exercises in reducing pain and improving Range of Motion.

GROUP B receives Myofascial release exercises once in a weak for 4 weeks. Post treatment values of group B graphical representation reduction in pain and increase in Range of Motion and Range of Motion.

When comparing two groups, there is significant difference in reduction in pain and improving Range of Motion. Group B graphical representation more improvement in reducing pain and improving Range of Motion than Group A.

Myofascial releaseis claimed to bring about improvements in pain reduction, Range of Motion and Range of Motion immediately following the treatment. Myofascial release for Mechanical low back pain has been described in reviews and non-peer-reviewed literatures.

Hence the hypothesis first and second are accepted 3rd is rejected.

VICONCLUSION

The study was conducted to investigate the effectiveness of Self stretching exerciseand Self - Myofascial release among Mechanical low back pain subjects.

20 patients with Mechanical low back pain was included in this study and divided into two groups, Group A and Group B, each consist of 10 subjects.

Group A was treated with Self-stretching exercises, Group B was treated with Self - Myofascial release. Pain, Range of Motion was assessed before and after intervention by visual analogue scale and goniometer respectively.

From the statistical results it can be concluded that there was reduction of pain and improvement in Range of Motion in both the groups. But when comparing the two groups, its founds that Myofascial release was more effective than the Self-stretching exercises.

LIMITATIONS:

The study was conducted with limited number of subjects.

The study did not include a follow up programme.

This was a time bound study.

SUGGESTIONS:

A longer duration study can be done.

Study can be conducted for larger population.

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ANNEXURES

ANNEXURE I

PHYSIOTHERAPY ASSESSMENT

1) **Subjective Examination**

    a) **Name :**

    b) **Age :Yrs :**

    c) **Sex :** ☐ **M** ☐ **F**

    d) **Occupation :**

2) **History collection**

    a) **Present Medical history**

    b) **Past Medical history**

3) **Objective Examination**

    a) **On observation**

        - **General body weight**
        - **Musculature**
        - **Deformity**
        - **Tropic changes**
        - **External appliances**

    b) **On palpation**

        - **Temperature**
        - **Swelling**
        - **Local tenderness**
        - **Oedema**
        - **Muscle spasm**

c) On examination

Pain assessment (VAS)

- **Onset**
- **Duration**
- **Site**
- **Type**
- **Nature**
- **Aggravating factor**

  Reliving factor

Motor examination

Muscle power assessment

4) Diagnosis

- **X-ray**

Physical examination

ANNEXURE-II

Table7 -Pre andPost test values of pain in Group A.

S.No.	Pre-test	Post-test
1	9	7
2	8	6
3	6	5
4	8	7
5	7	5
6	8	7
7	8	7
8	7	6
9	6	5
10	7	6

Table - 8 Pre andPost test values of pain in Group B.

S.No.	Pre-test	Post-test
1	8	5
2	9	6
3	7	4
4	8	6
5	6	4
6	7	5
7	7	4
8	6	4
9	9	6
10	6	5

Table 9 -Pre andpost test values of range of motion – lumbar flexion in Group A.

S.No.	Pre-test	Post-test
1	65	68
2	67	71
3	61	65
4	66	69
5	74	76
6	75	78
7	63	67
8	69	73
9	72	75
10	70	72

Table 10Pre andpost test values of range of motion – lumbar flexion in Group B.

S.No.	Pre-test	Post-test
1	69	72
2	68	73
3	62	68
4	61	65
5	73	77
6	75	80
7	64	68
8	71	76
9	66	70
10	63	69

Table 11-Pre andpost test values of range of motion – lumbar extension in Group A.

S.No.	Pre-test	Post-test
1	25	28
2	23	25
3	18	21
4	12	15
5	17	21
6	19	20
7	21	23
8	24	25
9	16	19
10	23	25

Table12 -Pre andpost test values of range of motion – lumbar extension in Group B.

S.No.	Pre-test	Post-test
1	16	21
2	24	28
3	12	18
4	20	25
5	22	25
6	28	25
7	18	24
8	19	21
9	17	21
10	21	25

ANNEXURE:

PATIENT CONSET FORM

I ..... voluntarily consent to participate in the research named on “A STUDY ON THE EFFECTIVENESS OF SELF-STRETCHING EXERCISE VERSES MYOFASCIAL RELEASE ON PAIN, RANGE OF MOTION IN PATIENTS WITH MECHANICAL LOW BACK PAIN PATIENTS”.

The researcher has explained me the treatment approach in brief, risk of participation and has answered the questions related to the study to my satisfaction.

Signature of patient Signature of researcher

Signature of witness

Place:

Date:

ACKNOWLEDGEMENT

I thank ***GOD***for providing me the wisdom and knowledge to complete the study successfully.

With due respect,I would like to thank ***The chairman,ManaginngTrustee and the secretaryof R.V.S Educational Trust***,for providing me an opportunity to be a part of this esteemed institution.

I would like to express my deep sense of gratitude to my principal ***Dr R.Nagarani,MPT,MA,Phd***, for her support,encouragement and suggestion for the completion of this project.

I immensely thank all the faculty members of physiotherapy department for their kind advice and encouragement.

I humbly acknowledge all the love,support and care I received from my parents ***Mr. S.M. Saravana kumar***and ***Mrs. Geetha Saravana Kumar*** throughout my life in making me what I am now.

S. YAMINI