



ORIGINAL RESEARCH PAPER

Physiotherapy

TO COMPARE THE EFFECT OF SOFT TISSUE MANIPULATION WITH LUMBOSACRAL ISOMETRIC EXERCISE VERSUS MC KENZIE EXERCISE WITH LUMBOSACRAL ISOMETRIC EXERCISE IN NON- SPECIFIC LOW BACK PAIN

KEY WORDS: STM- Soft Tissue Manipulation, ODI- Oswestry Disability Index, NPRS- Numeric Pain Rating Scale

Dr. Shivani Sharma

Assistant professor

Dr. Danish Nouman*

Assistant professor *Corresponding Author

Dr. Kayinat Hassan

Assistant professor

ABSTRACT

AIM - TO compare the effectiveness of soft tissue Manipulation VS McKenzie exercise along with LumboSacral isometric exercise in patient with mechanical Low back pain.

METHOD- 30 participants with age group between 18-35 years were taken among which 15 subjects in each group were selected (Group A & Group B). In Group A- 15 subjects were treated with Moist heat pack + soft tissue manipulation with lumboSacral isometric exercise. In Group B- 15 Subjects were treated with Moist heat pack + mckenzie exercise with lumboSacral isometric exercise. Outcome has been measured using Numeric Pain Rating Scale & Oswestry disability questionnaire.

RESULT- In this study, 30 females were studied. There is a significant difference between pre & post scores of group & group B. The paired 't' test was applied to find the significant difference between pre and post ODI and NPRS score in soft tissue manipulation and McKenzie exercise group respectively which shows a significant difference in both groups separately at 5% level of significance (p<.05)

CONCLUSION- The findings of the current study showed that both the group A & group B shows significant improvement in reduction of mechanical low back pain disability. But on comparing both intervention groups, group A give better result than group B.

INTRODUCTION

Mechanical low back pain has become a serious public health problem worldwide. It placing abnormal stress & strain on the LumboSacral muscle. The prevalence rate of low back pain is reported to be as high as 84%, and the prevalence of chronic non-specific low back pain is about 23%, with 11-12% of the population being disabled by low back pain(1) . Non-specific low back pain due to mechanical causes like muscle strain, ligament sprain due to sudden unaccustomed activities & improper postures(2) results due to poor posture, Most common causes of back pain due to poor posture which increases the strain on the disc & ligaments result faster disc degeneration are the poorly – designed seating ,inaccurate bending and lifting motions as required in different occupations(3). It is associated with pain, soreness and stiffness in lower back region . A bad posture and bad body positioning change the body mechanics which results in development of muscle trigger points (4).

The spasm pain cycle is a protective mechanism of the body to injury .While injury occurs the nociceptors around the injured area get stimulated and send signals to the brain through spinal cord where pain is perceived. Thus the brain sends signals to surrounding muscles & then muscle contract in order to protect the area. (5).

A variety of different types of exercise have been explored to treat low back pain, including aerobic exercises (6,7), core stabilization & muscular strength exercises (8,9) & flexibility programmes(10,11).

MATERIALS AND METHODS

This is experimental study design & comparative type. The study was conducted in physiotherapy OPD of Chatarpati shivaji subharti hospital, Meerut. 30 subjects of age group 18 years to 35 years were included in the study. The study duration was six weeks. The study was approved by institute ethics committee. Patients with History of fracture related pain, Degenerative disorder, Bone tumor, History of spinal or abdominal surgery, Neurological symptoms involving prolapsed intervertebral disc, radiculopathy & Bone infections were excluded from the study.

After initial examination, subjects who met study criteria & agreed to participate were assigned in two groups(group A & group B), informed consent was taken from the subjects prior to the treatment.

GROUP A

Moist heat pack: - Moist heat pack is given before and after the treatment in supine lying position.

Soft tissue manipulation is given in- Prone lying position.

Rational of pillow placement in prone lying --One pillow is kept under the abdomen--to flatten the back and to obliterate the lumbar lordosis by tilting the pelvis posteriorly. This help to relax extensor muscle of the spine. And another pillow is kept under lower legs- to support the legs to maintain knee in flexed position. It relieves the tension of hamstring muscle.

Soft tissue manipulation-- is given over the painful site (thoraco-lumbar, lumbar region). Duration of the treatment was 14 days 6 session per week for 20 minutes. Questionnaire was given to all subjects prior to the treatment and questionnaire was filled by subjects after the completion of 12 sessions.

Lumbosacral isometric exercise: -Position of the patient -supine lying, both the knee is fully extended or may be flexed accordingly to the patient's comfort. A rolled towel is placed under the lumboSacral region. The patient ask to press the towel by Isometric contraction of her/his spinal muscles of lower back and at the same time hold the contraction for 5-10 second. This exercise is done For 10 repetitions.

GROUP B

- Moist heat pack is given before and after the treatment in supine lying position
- **Mckenzie exercise**

Back extension (standing position)

The patient stands upright with feet slightly apart. Place the hands on the small of the back with fingers pointing backward. Bend backward (from the waist) as far as possible,

using the hands as a fulcrum. Keep the knee straight. Hold this position for 10 sec, then return to the starting position.

Prone lying on elbow

Prone lumbar extension exercise. Here the patient is prone. Both the hands are placed at the level of the shoulders. Gradually the upper body is pushed off the ground by straightening the arms. The hip should be placed firmly on the ground during this exercise.

Prone leg extension

Patient is prone; both the arms are folded under the chin, keeping the knees straight, lift legs alternatively and count ten.

Repetition: - 10 repetitions

Along with these exercises **Lumbo sacral isometric exercise** are done 10 times.

DATA ANALYSIS

All analysis was obtained using SPSS version 20.0. Demographic data of the patients including age and gender were summarized. The dependent variables for the statistical analysis were NPRS and ODI. A base line data was taken at the beginning of the study (**pre-test values**) and **after the completion of the treatment (post -test values)** to analyze the difference between the two treatments.

RESULT

The study sample comprised 30 patients, of which 15 were group A and 15 were group B. The diagnostic test for Non-specific back pain is positive in 30 patients. Questionnaires applied before and after therapy was 4 weeks. The mean & S.D and standard deviation of soft tissue manipulation and McKenzie exercise group pre ODI and NPRS score and post ODI and NPRS score respectively. The paired 't' test was applied to find the significant difference between pre and post ODI and NPRS score in soft tissue manipulation (group A) and McKenzie exercise (GROUP B) respectively which shows a significant difference in both groups separately at 5% level of significance ($p < .05$)

Table-1 Mean difference & standard deviation of pre & post NPRS and their difference between pre to post scores for group A group B

Group	Pre -treatment Mean ± SD	Pos t-treatment Mean ± SD
Group A	6.4 ± 1.121	1.33 ± 0.900
Group B	6.27 ± 1.033	2.33 ± 0.617

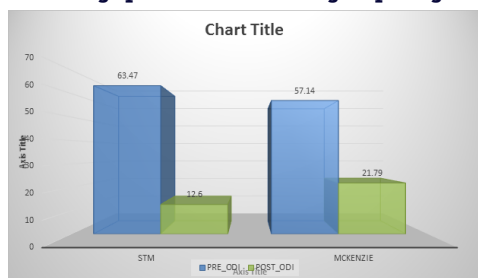
Table-2 Comparison between pre & post NPRS for Group A, Group B (by paired t-test)

Group A	0.000
Group B	0.000

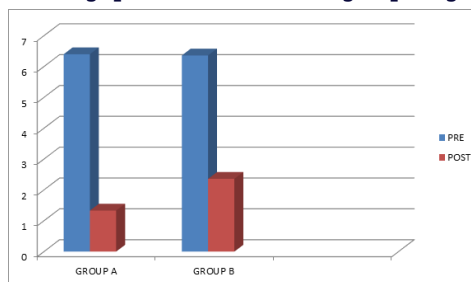
Table-3 Mean difference & standard deviation of pre & post ODI and their difference between pre to post scores for group A group B

Group	Pre -treatment Mean ± SD	Pos t-treatment Mean ± SD
Group A	63.47 ± 10.042	12.60 ± 2.284
Group B	56.27 ± 8.345	21.53 ± 4.307

Graph-1 average pre ODI & Post ODI group A & group B



Graph-2 average pre NPRS & Post NPRS group A & group B



DISCUSSION

The present study Aims to compare the effects of Soft tissue manipulation versus Mckeinzie exercise Mechanical low back pain in reducing of pain & disability.

The result of the study shows that both soft tissue & Mckeinzie exercise are effective but soft tissue is more effective as compare to Mckeinzie exercise

Our result is accordance with Furlan AD et al who assess the effects of massage therapy for people with non- specific low back pain & found massage is significantly effective. (12)

Another study of Young-Hee Lee et al who also supported that the heat & massage application provide relaxation to the autonomic nervous system. The different technique of massage have effect on sensory receptors, mainly touch & pressure which is present in the skin & soft tissue. (13)

These sensation are carried by the large diameter alpha beta fibres and inhibition of the pain perception is carried by A delta C fibres.

The stimulation of mechano- receptors block the pathway of the pain sensation by pre synaptic inhibition at the level of substansia gelatinosa of spinal cord. This could be the mechanism by which light pressure manoeuvre massage effleurage, stroking, hacking, pounding, wringing etc reduces pain.

Accordance to author robin Mckeinzie “stated that the Mckeinzie approach focused on pain patterns. For instance is pain localized to low back or does it radiates in leg or foot. A mckeinzie evaluation would look at repetitive movements and determines if these movement produces or abolish on low back pain. The mckeinzie approach encourages patient to take an active role in understanding and resolving their problems. (14,15)

CONCLUSION

The study shows that the parameters utilized for protocol were effective for improving mechanical low back pain and disability. This study revealed that both therapies are effective in reducing pain and disability, but on comparison soft tissue manipulation is more effective than McKenzie exercise in term of improvement of pain and disability at the level of 5% significance.

This technique has more advantages over functional abilities. Clinically it is important after mechanical low back pain to regain the sufficient functional abilities.

REFERENCES

1. Balague F, mannion AF et al, 2012
2. Essential orthopedics for physiotherapy, john ebnezar 2011
3. supreet bindra, sinha A.K.C et al, 2015
4. A study to find out the effectiveness of instrument assisted soft tissue mobilization, myofascial release on quadrates lumborum in mechanical low back pain: A randomized controlled study Dr. S Gerald Edwin raj, Dr. Mahendran P, Dr. R Nagarani and Dr. MK frankling shaju.
5. effectiveness of integrated soft tissue mobilization on the functional outcome in chronic low back pain patients Antony leo Aseer, Iyer Lakshmi Subramanian

- 6-. Chan C.W., Mok N.W., Yeung E.W. Aerobic exercise training in addition to conventional physiotherapy for chronic low back pain: A randomized controlled trial. *Arch. Phys. Med. Rehabil.* 2011;92:1681-1685.
- 7-. Shnayderman I., Katz-Leurer M. An aerobic walking programme versus muscle strengthening Programme for chronic low back pain: A randomized controlled trial. *Clin. Rehabil.* 2013;27:207-214
- 8-. Inani S.B., Selkar S.P. Effect of core stabilization exercises versus conventional exercises on pain and functional status in patients with non-specific low back pain: A randomized clinical trial. *J. Back Musculoskelet. Rehabil.* 2013;26:37-43.
- 9-. Stankovic A., Lazovic M., Kocic M., Dimitrijevic L., Stankovic I., Zlatavovic D. Lumbar stabilization exercises in addition to strengthening and stretching exercises reduce pain and increase function in patients with chronic low back pain: Randomized clinical open-label study. *Turk. J. Phys. Med. Rehabil.* 2012
- 10-. Gladwell V., Head S., Haggar M., Beneke R. Does a program of pilates improve chronic non-specific low Back pain? *J. Sport Rehabil.* 2006;15:338-350.
- 11-. Kuukkanen T., Malkia E. Effects of a three-month therapeutic exercise programme on flexibility in subjects with low back pain. *Physiother. Res. Int.* 2000;5:46-61.
- 12-. Furlan AD et al (2010) in the study "Massage for Low Back Pain" stated that Low-back pain
- 13- The heat & massage application provide relaxation to the autonomic nervous system- Young-Hee Lee, BitNa Ri Park & Sung Hoon Kim
- 14- The effect of mckenzie and brunkow exercise program on spinal mobility- Mujic skike E, et al.
- 15-. A systematic review of efficacy of Mckenzie therapy for spinal pain, Helen A clare, Roger Adams and Christopher G Mather