



ORIGINAL RESEARCH PAPER

EFFECTS OF MECHANICAL LUMBAR TRACTION WITH MC-KENZIE EXERCISES VERSUS MECHANICAL TRACTION ALONE TO REDUCE PAIN & DISABILITY IN SUBJECTS WITH NON-SPECIFIC LOW BACK PAIN.

Physiotherapy

KEY WORDS: Non-specific low back pain, Numerical pain rating scale (NPRS), Oswestry disability index (ODI), Mc-kenzie exercises.

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ABSTRACT

Aim- The aim of study is to find out the efficacy of Mechanical lumbar traction with mc-kenzie exercises versus mechanical lumbar traction in Subacute Non-specific low back pain patients.

Methodology- The number of subjects was 30 (n=30) with both males and females and randomly divided into 2 groups (group A & group B).

Intervention- Group A received mechanical lumbar traction with mc-kenzie exercises and Group – B received mechanical lumbar traction for 3 weeks (6 days/week).

Outcome measures- The pre & post readings of outcome measures Numeric pain rating Scale (NPRS) & Oswestry Disability Index (ODI) was taken to find out the improvement in both the groups.

Result- Comparison of values of both the groups showed a highly significant in improving pain and decreasing in disability.

Conclusion- It is concluded that Mechanical lumbar traction with Mc-kenzie exercises in group A and group B are equally effective in reduction of low back pain, disability and increasing ROM.

INTRODUCTION

Nowadays Low back pain is a most frequent musculoskeletal problem that is seen in practices & affects all range of population. LBP may be defined as a pain, discomfort, aching, localized below the area of costal margins and the gluteal folds with or without leg pain (sciatica) (Omokhodion et al 2002)¹ Or as pain limited to the region between the glutei fold with or without leg pain (Manek and Macgregor 2005)².

Non-specific low back pain may be defined as a unknown pathology or unilateral pain with no referral below the knee may be caused by injury to muscles (strain) or ligaments (sprain), the facet joint, or in some cases, the sacroiliac joints³. According to its duration, low back pain may be:-

- a) Acute—define as a duration of an episode of low back pain persistent less than 6 weeks.
- b) Sub-acute - low back pain which persist for 6 to 12 weeks.
- c) Chronic - low back pain which persisting for 12 weeks or more.⁴

MATERIALS AND METHODOLOGY:-

Ethical approval was obtained from the board of studies of Jyoti Rao Phule Subharti College of Physiotherapy, Swami Vivekananda Subharti University, Meerut, Uttar-Pradesh (U.P), India.

A written informed consent was taken from all the participants in 2 groups on randomly selection. Both of experimental groups i.e., group A and group B have 15 participants in each.

Both males & females, Age between 20 to 35, pain duration > 6 weeks, NPRS less than 7 and spasm were included. Subjects with any congenital, traumatic, inflammatory, neoplastic causes, any radiculopathy, and any spinal surgery were excluded for the study. An appropriate reading of NPRS and ODI was taken on first day (day 1) and last day (day 21st).

PROCEDURE:-

Mc-Kenzie exercises i.e. flexion exercises and extension exercises repetitions and no. of sets depends upon patient's severity. Treatment duration is 3 weeks (6 days in a week).

Methodology of Mc-Kenzie Approach

I. Extension Exercises

A). Prone lying (Lying face down)

Lie face down with your arms beside your body and your head turned to one side. Stay in this position, take a few deep breaths and then relax completely for 2 or 3 min.

B). Prone lying in extension (Lying Face Down in Extension)

Place your elbows under your shoulders so that you lean on your forearms. This exercise used mainly in the treatment of severe low back pain. It is also one of the first-aid exercises. It should always follow Exercise A and is to be performed once per session.

C). Extension in Lying

Place your hands under your shoulders in the press-up position. Straighten your elbows and push the top half of your body up as far as pain permits. It is important that you completely relax the pelvis, hips and legs as you do. Once you have maintained this position for a second or two, you should lower yourself to the starting position

Once your arms are straight, remember to hold the sag for a second or two as this is a most important part of the exercise.



FIG. 1. Patient performing spinal Extension exercise.

D). Extension in Standing

Stand upright with your feet slightly apart. Place your hands in the small of your back with the fingers pointing backward. Bend your trunk backward at the waist as far as you can, using your hands as a fulcrum. It is important that you keep the knees straight as you do this. Once you have maintained this position for a second or two, you should return to the starting position. You should try to bend backward a little further so that in the end you have reached the maximum possible degree of extension.

II. Flexion Exercises

A. Flexion in Lying

Lie on your back with your knees bent and your feet flat on the floor or bed, hands around your knees and gently but firmly pull the knees as close to the chest as pain permits. Once you have maintained this position for a second or two you should lower the legs and return to the starting position. It is important that you do not raise your head as you perform this exercise, or straighten your legs as you lower them. Each time you repeat this movement cycle, you should try to pull your knees a little closer to the chest so that in the end you have reached the maximum possible degree of flexion. At this stage your knees may touch the chest. Flexion exercises must always be followed by a session of exercise-Extension in Lying.

B. Flexion in Standing

Stand upright with your feet well apart. Allow your arms to hang loosely by your side. You are now ready to commence Exercise. Bend forward and run your fingers down your legs as far as you can comfortably reach. Return immediately to the upright standing position. Each time you repeat this movement cycle, you must try to bend down a little further so that in the end you have reached the maximum possible degree of flexion and your fingertips are as close as possible to the floor.⁵

Mechanical lumbar traction:-

Procedure:-

The patient is in semi fowler position, braces or belt is attached around the iliac crest & the lower rib cage.

Position of patient:-

Hips and knees are in flexion approx 90 degree. The patient are treated with a traction apparatus that has a split table function, where lower part of the body rest on a mobile part of the bed that can slide away from the upper part when the traction force is delivered through a belt around a pelvis. It is mainly applied in caudal direction with the patient is in supine position.⁶

Here we use intermittent mechanical traction in this study. This type of traction involves a mechanical device with traction alternately applied and withdrawn every few second.⁷



FIG. 2. Mechanical lumbar traction given to the patient.

Group- B:-

Same exercises were received by the patient as in group A.

The ergonomic advices are given in both the group A & group B.

RESULT:-

The Paired t-test was applied to find out the significance difference between pre and post values of ODI and NPRS in group A and B respectively, which shows a significant difference in both the groups separately at 5% level of significance (p<0.05) (In table 2). Results were analyzed using student t- test (paired and unpaired) by using IBM SPSS version 20.0.

Table 1- Mean & Standard Deviation Of Pre & Post Scores Of Odi & Nprs In Group A & Group B.

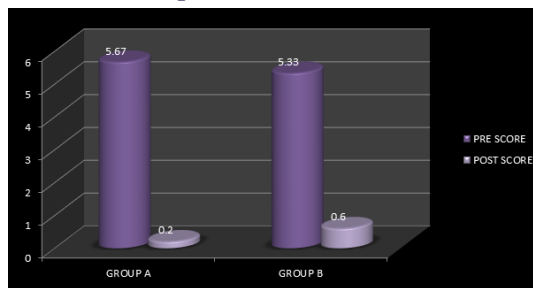
S.NO.	GROUPS	AGE (IN YEARS)	PRE SCORES (MEAN ± S.D.)		POST SCORES (MEAN ± S.D.)	
			ODI	NPRS	ODI	NPRS
1	GROUP A	23.13±2.10	45.67±4.17	5.67±.89	18.6±1.24	.2±.5606
2	GROUP B	21.8±2.04	43.2±2.81	5.33±.81	18.87±1.60	.6±.633

Table 2. Comparison B/w Pre To Post Scores For Odi & Nprs In Group A & Group B (by Paired "t" Test)

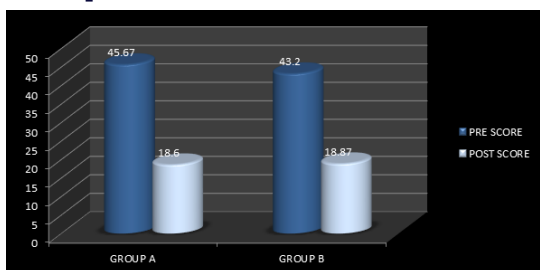
S. NO.	GROUPS	PROBABILITY OF PAIRED "t" TEST B/W PRE TO POST SCORES FOR	
		ODI	NPRS
1	GROUP A	.0000* (P<.05) Significant	.0000* (P<.05) Significant
2	GROUP B	.0000* (P<.05) Significant	.0000* (P<.05) Significant

* Shows A Significant Difference At .05 Level Of Significance. I.e. P<.05

The Bar Chart Diagram Of Average Pre Nprs & Post Nprs Scores In Two Groups



The Bar Chart Of Average Pre Odi & Post Odi Scores In Two Groups



DISCUSSION

The purpose of this study to find out the effectiveness between the Mechanical traction with McKenzie exercises versus McKenzie exercises alone in subjects with Mechanical Low Back Pain.

It has been observed that intermittent traction is very beneficial for pain reduction.⁸

Whereas **kisner and colby** concluded that traction has also been reported to decrease pain by providing muscles

relaxation, stimulation of mechanoreceptor and inhibition of reflex muscle guarding and also reduces tension in soft tissues & pressure on the vertebrae.⁹

But there is less empirical data to support that mechanical lumbar traction is effective in non specific low back pain. Helan A Clare et al were conducted a study to investigate the efficacy of Mckenzie therapy treatment of spinal pain and concluded that Mckenzie is effective in pain reduction & greater reduction in disability¹⁰ whereas according to H. Duane saunders stated that traction is beneficial for reducing extrinsic muscle guarding and muscle spasm and also used for mobilization of a hypo mobile segments.¹¹ It has been also observed that Beurskens compares high dose traction with sham (low dose) traction in Non-specific Low Back Pain and concluded that there is no significant difference between high dose and low dose traction (sham) in non-specific low back pain, both were equally effective in reducing pain.¹²

So, we concluded that both the groups are equally effective in treatment of mechanical low back pain so we can give either mechanical traction with mckenzie exercises or mckenzie exercises alone in Non Specific Low Back Pain in reducing pain and decrease the disability.

CONCLUSION

It is concluded that both Group A & Group B are equally effective in reduction of pain and decreasing the disability. But the result revealed a significance difference in pre to post readings of Dependent variables in both the groups i.e., Group A & Group B.

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