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*Research Article*

# Comparison of Mulligan Traction Leg Rises vs. Slumps Stretching on Pain, Functional Disability in Passive Leg Rises and Lumbar Radiopathy

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Lumbar Spine Disorder ranks 5th in the category of diseases, with 37% of the cost directly attributed to physical therapy services. Interventions therefore require effective, safe and low-cost treatments. Conservative treatment for sciatica is aimed at reducing pain, but improving SLR coverage may have a beneficial effect on restoring normal range of motion and reducing the weakness caused by lower back dysfunction. The aim of the study was to compare the effect of Mulligan Traction Leg Rises and Slum Stretching with Conventional Therapy, to determine which technique is best for treating dysfunction caused by pelvic radiculopathy. An experimental study was conducted on 40 pelvic radiculopathy patients by simple randomization. They were randomly assigned to 2 groups of 20, Group A were given Mulligan traction leg raises and Group B was given stretching with conventional therapy in two groups for 6 consecutive days. Outcome Measures NRS, Passive SLR, Oswestry Disability Index. Mulligan Traction Leg Rises and Slumps Stretching are equally effective in reducing pain and functional disability, while Mulligan Traction leg slides are more effective in increasing the SLR angle of neural mobilization.

*Keywords:* Lumbar radiculopathy, Mulligan traction leg rise, slumps extend.

## 1. Introduction

According to Sharma SC, et al: Back pain (LBP) is about 23.09% in India and 60-80% in life expectancy. The onset of LBP is most common in the 30-50 age group, where males and females show similar affection. The population under the age of 45 is most affected [1]. It is defined as nervous tension when it exceeds the normal range of motion. Lumbar disc syndrome causes abnormal physical or mechanical reactions on the structures of the nervous system, leading to sciatica [2]. Sciatica is leg pain in the distribution of one or more lumbosacral nerve roots, regardless of the neurological deficit after the second decade of life, with intra-disc changes leading to necrosis, a sequence of annulus fibrosis.

In later stages, even slight pressure with abnormal displacement or external deviation of the nucleus pulpus can cause internal damage, leading to rupture of the nucleus pulpus by annulus fibrosis, usually in the posterior-lateral direction. Consequences include sacroiliac joint dysfunction, piriformis syndrome, sprain of the piriformis or severe stiffness, nerve entrapment due to edema, compression of the adjacent hip, swelling and hematoma around the affected tendon [3,4]. The main symptom is pain and it may be different4. Hip means irritating pain in the nerves of the back of the thigh, which can be persistent or intermittent, aggravated by certain activities such as coughing, sneezing, sitting, bending, prolonged standing or getting up from a sitting position. The pain can be in the buttocks, back or back. Knees, and feet. Arbitrary radiation of pain causes a decrease in energy, a decrease in reflexes, and a sensation in the nerve

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roots [4]. Walking dysfunction (toe walking, foot drop, knee flexion), paresthesia, dysthesia Frequent neurological symptoms (e.g. inflammation or tingling in the foot., Pins and needles in the feet and legs. Used for altered neurodynamics. Restoring the relative mobility of the nervous tissue and surrounding mechanical interface, reducing internal stress and regaining proper physical function [5]. Despite being aware of such benefits, very little work is available in the form of RCTs that can provide conclusive evidence of the benefits of using neurodynamics techniques for back pain populations. A recent systematic review identified only 10 RCTs, which discussed the therapeutic effect of neuropathy. Neural dynamics techniques are used in the example of altered neurodynamic or altered neural tension. Its goal is to restore the relative mobility of the nervous tissue and the surrounding mechanical interface, reducing internal stress and restoring proper physical function. 5 Despite being aware of such benefits, very little work is available in the form of RCTs that can provide conclusive evidence of the benefits of using neurodynamics techniques for back pain populations. A recent systematic review identifies only 10 RCTs that discuss the therapeutic effect of neuropathy [5].

## 2. Slumps Stretching

The slumps test can be used as a treatment technique when the canal structures are moved through large pain free amplitude or to stretch the structures strongly.

*Mulligan Traction Leg Riase*

The traction leg raise technique is said to be a painless intervention that has immediate benefits with limited hip flexion range in patients with low back pain [7]. Conservative treatment for sciatica is primarily intended to reduce pain but improving SLR coverage may have beneficial effects on restoring normal range of motion and reducing the level of weakness caused by lower back dysfunction [8]. There is limited research on the effect of Mulligan Traction Leg Rise and Stretch on symptomatic patients. The role of the physiotherapist in symptomatic patients is to reduce pain as soon as possible and reduce their functional disability. The immediate effects of the two methods have been proven differently. The aim of this study is therefore to compare the techniques with the benefits for rapid relief of pain, improvement of SLR follicles and functional disability.

## 3. Materials and Methods

Research work on Physiotherapy OPD and IPD was conducted at Bhasaheb Sardesai General Hospital, Talegaon (Pune). The 55 patients with pelvic radiculopathy were divided into two groups by random sampling, with 26 in the Mulligan traction leg raises and 29 in the slumps stretching group, while there were 15 dropouts during the study, with 20 subjects in each group. It was an experimental study carried out for 6 consecutive days. Ingredients Pen, Paper, Consent Form, Numeric Rating Scale, Goniometer and Oswestry Disability Index Scale.

## 4. Inclusion and Exclusion Criteria

*Participants were included in the study if the following criteria were met:*

(1) pelvic radiculopathy (2) age 18-60 (3) SLR test positive (4) NRS between 2-6 (5) early diagnosis of unilateral or bilateral radiation. Pain in the sciatic nerve distribution with all subjects (6) Both men and women (7) Oswestry disability index greater than 10%. (8) Participants were ready to participate in the study.

*Participants were excluded:*

(1) History of spinal surgery in the last 6 months (2) Motion restriction due to knee and ankle deformities (3) Patients with sensitive skin, cardiac pacemaker, clinical conditions such as pregnancy, TENS is contraindicated (4) Infection, tumor, osteoporosis Severe spinal conditions such as osteoporosis, spinal fractures (5) inability to hold the slips stretching position, reproduction of symptoms in the cervical curvature in the slips test (6) Patients with cervical headache, VBI, spinal deformity and ankylosing spondylitis.

## 5. Procedure

Subjects were taken according to inclusion-exclusion criteria and divided into two groups. Allocation was made by random sampling chit method. Group A received TENS, Lumbar Stabilization Exercises and Mulligan Traction Leg Rises, as well as Group B

TENS, Lumbar Stabilization Exercises and Slum Stretching.

*Application Of Transcutaeous Electrical Nerve Stimulation (TENS)*

Participants were placed in a lying position and treated with high-frequency, short-pulse, high-intensity, bursts of TENS using pad electrodes for 30 min per day.

*Lumbar Stabilization Exercises*

Includes static back, static hamstrings, static glute with 10 seconds hold with 10 repetitions.

### *5.1. Mulligan Traction Leg Raise*

Mulligan traction leg rise is given to patients in a supine position on a low sofa or floor. The doctor bends the knees and stands next to the patient. The therapist places the distal leg (both adjacent to the malleolus) and strengthens the grip with the other hand elbow. The therapist applies longitudinal traction along the long axis of the foot and lifts the patient's leg from the bed to the position below the pain threshold. While maintaining this traction, the therapist simultaneously extends their knees to provide flexion of the affected side (SLR). Traction is then sustained, and leg is raised as far as possible, provided there is no pain. External rotation and/or abduction at the hip can be added, if patient complains of pain. Hold the new available end range for 10 seconds, do not relive the traction till the leg returns to the starting position. Repeat this maneuver 3 times, only if pain free, and the therapist is able to increase the range of motion [8].

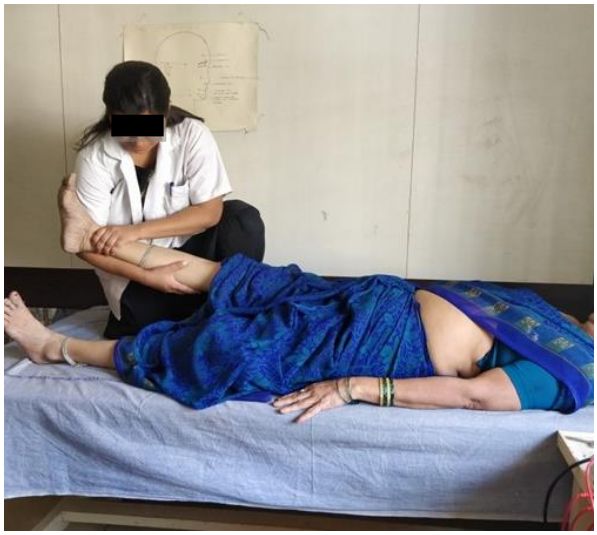

**Fig. 1. Mulligan Traction Leg Raise**

### *5.2. Slumps Strecthing*

This technique is performed with the legs bilaterally against the wall in a cot or sitting position on the bed. The therapist applied pressure on the cervical spine flexion with one hand and extended the knee with the other hand to the point where the patient's pain recurred. The position lasted for 30 seconds. Depending on the patient's response, there may be 3-5 repetitions per session. Patients were excluded in case of adverse reactions. Treatment was provided for six consecutive days. After the session, final readings of all outcome measurements were taken and the subjects were released from treatment [2].

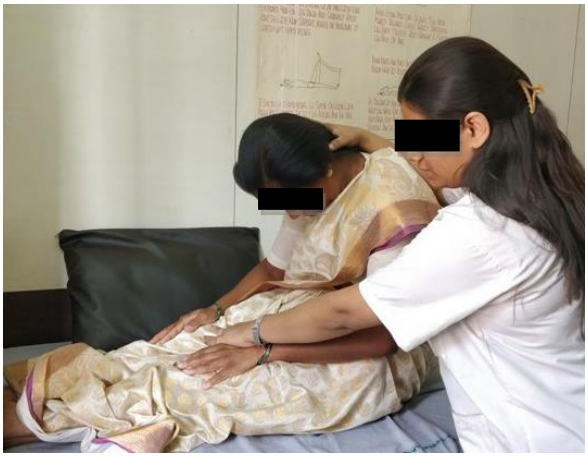

**Fig. 2. Slumps Strecthing**

## 6. Results and Discussion

The current study was conducted to compare functional disability in Mulligan traction leg rise vs. slips stretching pain, passive leg rise and lumbar radiculopathy. The study included 40 subjects, including 26 women and 14 men. Both the groups were given conventional treatment i.e TENS and lumbar stabilization exercise (static back, static hams, static glutei). Each patient received a total of six sessions. In the study NRS, ROM of SLR, Oswestry disability indicators are tools used to assess the treatment effect on functional disability in patients with pain, dysfunctional leg growth, lumbar radiculopathy.

Statistically the results showed that the average post-treatment score of NRS in Group A and Group B in Group A and Group B was 7.4 and 7.45, respectively, using the non-parametric test provided by Man Whitney, 0.9783 P value. Believe it and how it looked in the third and sixth seasons.

**Table 1. Comparison of Inter Group Mean of NRS**

| S. No. | Group | N | Mean & SD | | |
|---|---|---|---|---|---|
| | | | 1st Session | 3rd Session | 6th Session |
| 1 | MTLR | 20 | 7.4 | 5.3 | 2.4 |
| | | | 1.391 | 1.380 | 1.569 |
| 2 | SLUMPS | 20 | 7.45 | 4.85 | 1.85 |
| | | | 1.05 | 1.424 | 1.49 |
| P VALUE | | | 0.9783 | 0.2894 | 0.3086 |

But there was a significant improvement in NRS scores in both groups after treatment, i.e. p value <0.0001 at the end of the sixth session using Wilcoxan, a non-parametric test considered most important.

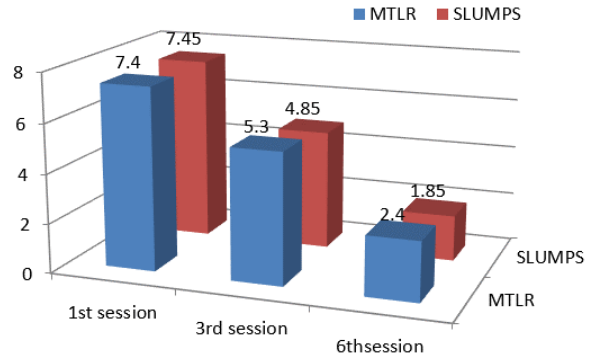


**Fig. 3. Comparison of Inter Group Mean of NRS**

Similarly within the group significant difference was seen in the ROM of SLR shown by p value<0.0001( extremely significant.) the median after treatment was 72.35 and the Mulligan and Slump group were 65.25, respectively.

**Table 2. Comparison of Inter Group Mean of Passive ROM of SLR**

| S. No. | Group | N | Mean & SD | | |
|---|---|---|---|---|---|
| | | | 1st Session | 3rd Session | 6th Session |
| 1 | MTLR | 20 | 36.955 | 50.95 | 65.25 |
| | | | 12.41 | 12.56 | 9.60 |
| 2 | SLUMPS | 20 | 43.6 | 57.1 | 72.35 |
| | | | 13.65 | 11.83 | 8.26 |
| P VALUE | | | 0.1128 | 0.1657 | 0.0168 |

The p value is given as 0.0168, which is considered important. This suggests that slump stretching is better than Mulligan Traction Leg Rise in improving the SLR's ROM. Individually post treatment (6th session) both the groups were effective in improving the score of oswestry disability index given by the p value<0.0001 which was extremely significant.

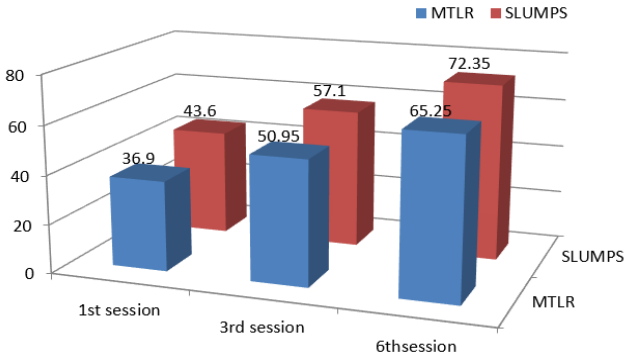


**Fig. 4. Comparison of Inter Group Mean of Passive ROM of SLR**

The average scores of the Oswestry Disability Index in the first session were 44.21 and 40.3 in Group A and Group B, respectively, while in the third and sixth sessions the p value which was not considered significant was given by 0.3506.

**Table 3. Comparison of Inter Group Mean of Passive ROM of SLR**

| S. No. | Group | N | Mean & SD | | |
|---|---|---|---|---|---|
| | | | 1st Session | 3rd Session | 6th Session |
| 1 | MTLR | 20 | 44.21 | 29.5 | 19.53 |
| | | | 10.71 | 6.93 | 7.83 |
| 2 | SLUMPS | 20 | 40.3 | 29.1 | 16.25 |
| | | | 11.79 | 11.61 | 7.23 |
| P VALUE | | | 0.3506 | 0.4731 | 0.1673 |

When we compared post 6th session treatment there was not quite significant improvement in both the groups given by p value 0.1673 considered not important.

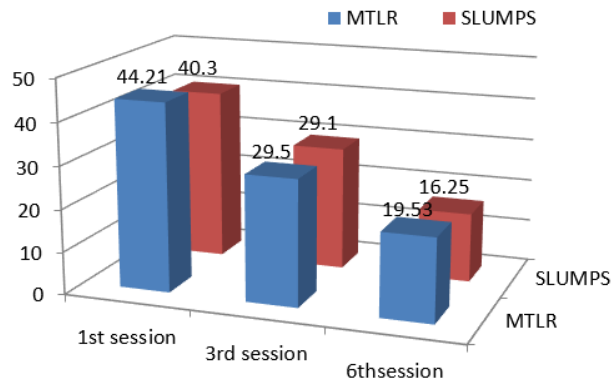


**Fig. 5. Comparison of Inter Group Mean of Oswestry Disability Index**

There were graphical and statistically significant reductions in pain, an increase in passive straight leg growth, and a decrease in the Oswestry Disability Index scores in both groups, but When we compared the two groups no statistical difference was seen for pain and functional disability, only Passive SLR of slumps stretching was considered quite significant than mulligan group. Although both methods are equally effective in reducing pain and improving functional disability, this suggests that patients with lumbar radiculopathy with the exception of slum stretching have more inactive follicles of SLRs than in the Mulligan group.

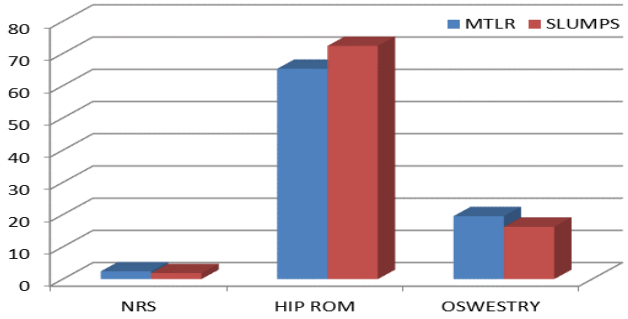


**Fig. 6. Comparison b/w Post Treatment Score of NRS, Passive ROM of SLR, Oswestry Disability**

Nerve motility showed a decrease in pain. During neural motility, which is an oscillatory technique such as the Mulligan traction leg rise, it involves nerve extension and contraction, which temporarily increases intra-neural pressure, followed by a period of relaxation [9]. This repetitive pumping action increases the spread of local inflammatory products in and around the nerve, reducing hypoxia and reducing pain. In traction leg raises that stretch the nerve as well as relieve pain, certainly the symptoms do not worsen or are induced directly by leg raise traction. In this technique the muscle is stretched to a bearing length and that position keeps the muscle at its greatest tolerable length. Previous studies by Larson and Paul have shown an improvement in traction in pain-resistant straight leg growth. In addition, a recent study by C. Bairlin [7] found that the straight leg range traction technique significantly improved the SLR angle, with a similar explanation for the improvement in range. It is strongly supported that Mulligan Traction Leg Rise be used successfully to reduce pain and improve the ROM of SLRs.

Slump stretching has been found to be effective in treating low back pain. It has been hypothesized that it reduces patients' pain by reducing intranural edema. Benusicet et al. Neural stress techniques have been found to result in the formation of C-fiber mediated hypoalgesia. Stretching slumps are associated with inhibitory effects on the sympathetic nervous system, the stimulation of which affects the stretching capacity of the nerve. Stretching slips is also responsible for reducing scar tissue associated with nerve tissue and surrounding structures. The regression equation has also been found to affect posterior myofacial chain flexibility by increasing the tibio-torsal joint angle and finger-floor distance, which may be another possible mechanism in the overcorrection of the range.

Slumps stretching is still better than mulligan traction leg raise becauseit can be performed by the patient himself. Also this techniques is simple and less time consuming and cost effective than the conventional treatment.

## 7. Conclusion

Mulligan Traction Leg Rise and Slump Stretching are both equally effective in reducing pain and functional disability. Slump stretching is a more effective nerve mobilization technique in increasing the SLR angle than the Mulligan traction leg rise.

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