



## A COMPARITIVE STUDY OF NERVE GLIDING EXERCISE VS SELF MOBILIZATION FOR SCIATICA WITH LOW BACK PAIN

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### ABSTRACT

**Background:** The effect of self-mobilization techniques and nerve gliding exercises for the sciatic nerves helps the patients with lower limb radiating pain. Low back pain is the most common condition which prevails among this decade. To relieve pain and the progression of the condition by using the self-mobilization and nerve gliding exercises are used. **Objectives:** The objectives of the study are to compare the effects of self-mobilization and nerve gliding exercises for low back pain. **Methodology :** Study design is Experimental study. 50 members of sciatica with low back pain were selected and divided into two groups, 25 in each (Group A and Group B). group A were treated with Nerve gliding exercise and group b were treated with self-mobilization exercises, daily 15 min for about 3 months. Pain assessment was done before and after the treatment by using Numerical pain rating scale and the readings were statistically analyzed. **Result:** Group A (nerve gliding) pre mean value was 6.76 and post mean value was (3.96) and GROUP B (self-mobilization) pre mean value was 6.32 and post mean value was (5.28). and p- value for GROUP A was 0.0001 and p-value for group B was 0.0008. **Conclusion:** This study shows the nerve gliding exercise and self-mobilization exercise was effective for low back pain. But comparing the both techniques the nerve gliding exercise was more effective than self-mobilization in reducing the symptoms and improving the Quality of Life in persons with sciatica.

### KEY WORDS

Self-mobilization exercise, nerve gliding exercise, sciatica, low back pain, numerical pain rating scale

### INTRODUCTION

Low back pain is experienced by 80% of the population at least once and is one of the most common causes of visiting a hospital. Such low back pain triggers symptoms of the lower limbs such as radiating pain and is associated with decrease in strength and flexibility of the lumbar and lower limb muscles.

The 4th and 5th lumbar vertebrae and 1st sacral vertebra, where low back pain largely occurs, are neurologically areas where peripheral nerves of the lower limbs pass, and dynamic problems of this area trigger weakening of the muscles of the hip and knee joints due to neurological disability; when this occurs

over a long period of time, it triggers changes in vertebrae posture, decreasing joint range of motion and causing joint degeneration, and in order to prevent this, maintenance of appropriate posture and of range of motion through normal muscle tone is important.

When muscle are shortened for a long period of time, they trigger muscle atrophy, a reduction in cross-sectional area, a decrease in myomeres, accumulation of connective tissues, and an increase accumulation of fat in the tendons and bring about proliferation of connective tissues within the articular capsule, union between to cartilage surface and connective tissues, atrophy of the cartilage, and mal alignment of the

ligaments, and the resultant abnormal stiffness of the joints and musculoskeletal changes such as restricted range of motion restrict patients' functional movement and movement of the joints

Sciatic neuralgia is defined as the pain distribution of the sciatic nerve due to pathology of nerve itself. Radicular pain is defined as pain perceived as arising in limb of trunk caused by ectopic activation nonciceptive afferent fibers in spinal nerve or its roots or other neuropathic mechanisms. Sciatic may cause confusion as it has been used to describe any pain, including referred felt in leg along the distribution of the sciatic nerve [5]

Nerve mobilization techniques have been recently used as a method as adjust radiating pain related to disc diseases, and in particular, mobilization techniques for the sciatic nerve improve mobility of the sciatic nerve. Decreases mechanosensitivity of the nervous system and heighten the compliance of the nerves tissues, relieving low back pain.

Through such mobilization technique, damages to the sciatic nerve may be removed, pain may be alleviated and range of motion may be increased, and dynamic damage to the sciatica nerves may be removed, pain may be alleviated, and range of motion may be increased, and dynamic adaptability of the nervous system may be heightened, helping to patient to use their bodies without resistance

When tension is applied to the nervous system during the mobilization techniques for the sciatica nerves, the cross section of the nerves decreases, and the therefore small blood vessels that cross the epineurium are obstructed, thereby adjusting the amount of blood to the nerve fibers.

This affects the axonal transport system and increased flexibility of these shortened nerves and surrounding joint structures leads to increases muscle strength as improved flexibility of the sciatica nerve decreases mechano sensitivity of the nervous system, which in turns heightens compliance of the nerve tissue. [1]

#### METHODOLOGY

- **STUDY DESIGN** : Experimental study
- **STUDY TYPE** : Comparative study
- **STUDY SETTING** : Clinical based study (SUPRIYA PHYSIOTHERAPY)
- **SAMPLE SIZE** : 50 samples.
- **SAMPLE METHOD:** convenient sampling.
- **STUDY DURATION:** 6 weeks

#### INCLUSION CRITERIA

- Age 30-50
- Both male & female
- Slump test positive
- SLRT 1

#### EXCLUSION CRITERIA:

- Un co-operative patient.
- Recent previous surgery in lower limb
- Lower limb contracture

#### OUTCOME MEASURE

NPRS [Numerical pain rating scale]

#### PROCEDURE

50 subjects of sciatica with low back pain were identified according to inclusion and exclusion criteria. They were divided randomly into 2 groups, 25 in each. Group A was treated with Nerve gliding exercise and Group B was treated with Self mobilization exercises for about 3 months. Pain assessment was taken before starting the treatment and after the course of the treatment.

The pain scores of pre and post treatment was noted and analyzed statistically.

**GROUP A:** 25 persons are given nerve gliding exercise and for 15 minutes in 5-10 repetitions.

The technique used was straight leg raise neural mobilization technique. For application of this technique, the participant was in supine lying position and the therapist raised the treated leg in standard straight leg raise till either pain in the back or leg hindered the movement then the affected leg was lowered a few degrees from this point. After that, the therapist applied a series of oscillatory movement in ankle dorsi flexion direction to mobilize the sciatic nerve. The straight leg raise technique was given for approximately 10 minutes including 30 sec oscillations and 1 min rest in each session.

**GROUP B:** 25 persons are given self-mobilization exercise. Exercise for 15 minutes in 5-10 repetitions.

The patient completely flexed one knee and the hip joint and maintained them towards the chest and held the other knee with both hands. Lied in a supine position, maintained neutral posture of the lumbar region, raised the pelvis from the floor with the other hip and knee joints flexed at 90 degrees.

Raising the opposite arm and leg in a quadruped posture. In a quadruped position, the patient slowly raised the opposite arm and leg with neutrality of the lumbar region maintained. The patient-maintained respiration constant for six seconds and then took a rest

for 10 seconds. The patient repeated this motion 15 times.

#### DATA ANALYSIS

The statistical analysis were performed by Unpaired t Test was used to compare the pre and post values of Active Knee Extension Test.

The unpaired t method tests the null hypothesis that the population means related to two independent, random samples from an approximately normal distribution are equal.

The formula for unpaired t test is given below:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{s^2 \left( \frac{1}{n_1} + \frac{1}{n_2} \right)}}$$

Where,

x1 = Mean of first set of values

x2 = Mean of second set of values

S1 = Standard deviation of first set of values

S2 = Standard deviation of second set of values

n1 = Total number of values in first set

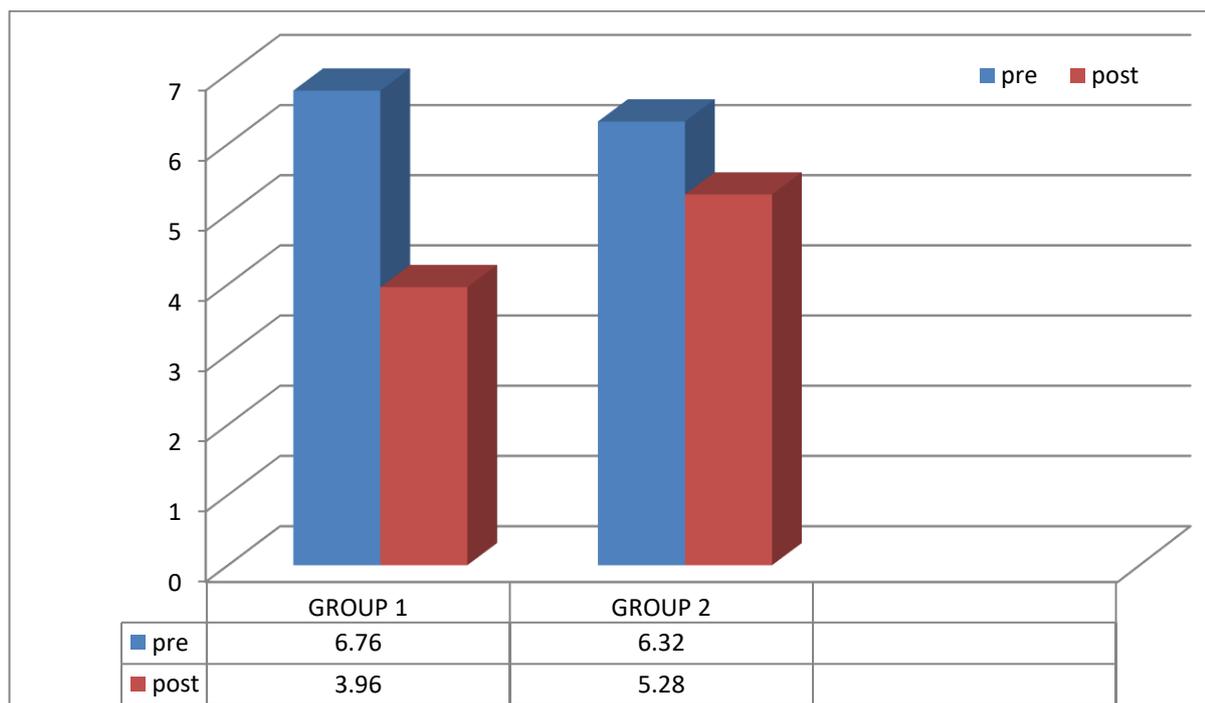
n2 = Total number of values in second set

$$s^2 = \frac{\sum_{i=1}^{n_1} (x_i - \bar{x}_1)^2 + \sum_{j=1}^{n_2} (x_j - \bar{x}_2)^2}{n_1 + n_2 - 2}$$

Where x bar 1 and x bar 2 are the sample means, s<sup>2</sup> is the pooled sample variance, n<sub>1</sub> and n<sub>2</sub> are the sample sizes and t is a student t quantile with n<sub>1</sub>+ n<sub>2</sub>-2 degrees of freedom.

**Table 1 shows the pre and post mean value of group A (Nerve gliding exercises) and group B (self-mobilization exercises)**

	PRE-MEAN	POST MEAN	PRE-STANDARD DEVIATION	POST DEVIATION	STANDARD	P-Value	T-Value
GROUP A	6.76	3.96	0.78	0.61		0.0001	14.142
GROUP B	6.32	5.28	0.95	1.10		0.0008	3.585



Graph 1 shows that, the pre and post mean value of the group A (nerve gliding exercises) and group B (self-mobilization)

## RESULT

As a result, Group A (nerve gliding) pre mean value was 6.76 and post mean value was (3.96) and GROUP B (self-mobilization) pre mean value was 6.32 and post mean value was (5.28). and p- value for GROUP A was 0.0001 and p-value for group B was 0.0008.

## DISCUSSION

This study compared the effect of nerve gliding and self-mobilization on pain and quality of life in 50 subjects with sciatica. The result of the study shows that both the nerve gliding and self-mobilization was found effective for reducing the pain in sciatica.

The application of self-mobilization technique for sciatic nerve has positive effects on pain and physical and mental activities. selfmobilization technique are important in therapy to decrease the mechanical stress caused by restriction of range of motion of hip joint. Due to increase the tension of hamstring resulting from stimulation of sciatic nerve but it is desirable to improve the causes through direct mobilization. Therefore, lower mobilization technique for sciatic nerve recommended as therapeutic method for patient with radiating pain reduce the burden on the waist by increasing the flexibility as a result of extension of hamstring and triggering good result. That reduce the

over sensitivity and stimulation of sciatic nerve caused by radiating pain in the lower limb. This technique are therapeutically recommended for patients with sciatica. Nerve gliding technique helped in the restoring movements between the nerve and surrounding structure through the gliding movements.

## LIMITATION

- Duration of the study was short
- There was no long term follow up.
- Small sample size.

## RECOMMENDATION

- Taping and yoga are recommended for further study.

## CONCLUSION

Low back pain is experienced by 80% of the population at least once and is one of the most common causes of visiting a hospital. Such low back pain triggers symptoms of the lower limbs such as radiating pain and is associated with decrease in strength and flexibility of the lumbar and lower limb muscles.

These study shows the nerve gliding exercise and self-mobilization exercise was effective for low back pain. But comparing the both techniques the nerve gliding exercise was more effective than self-mobilization in

reducing the symptoms and improving the Quality of Life in persons with sciatica.

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