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THE EFFECT OF NEURODYNAMIC SLIDER TECHNIQUE AND CORE STABILIZATION ON PAIN AND FUNCTIONAL DISABILITY AMONG PATIENTS WITH SCIATICA.

Dr. Kalphidaa. M. K.*	MPT(Cardio)., (Ph.D)., Associate Professor., Sree Abirami College of Physiotherapy, Coimbatore. Affiliated by The Tamil Nadu Dr. M.G.R. Medical University, Chennai. *Corresponding Author
Dr. R. Jayabharathi.	MPT(Ortho)., Ph.D., Professor Cum Principal., Sree Abirami College of Physiotherapy, Coimbatore. Affiliated by the Tamil Nadu Dr. M.G.R. Medical University, Chennai.
Ms. Swapna Sharon. C.	BPT Intern., Sree Abirami College of Physiotherapy, Coimbatore. Affiliated by The Tamil Nadu Dr. M.G.R. Medical University, Chennai.
Ms. Yamunavani. R.	BPT Intern., Sree Abirami College of Physiotherapy, Coimbatore. Affiliated by The Tamil Nadu Dr. M.G.R. Medical University, Chennai.

ABSTRACT **Background:** Sciatica is a common and disabling condition characterized by radiating pain along the sciatic nerve, often leading to functional limitations and reduced quality of life. Conservative physiotherapy interventions such as neurodynamic techniques and core stabilization exercises are widely used, yet comparative evidence regarding their effectiveness remains limited. Aim: The aim of the study is to find out the Effect of Neurodynamic Slider Technique and Core Stabilization on Pain and Functional Disability in patients with Sciatica. **Methodology:** A pre-test, post-test experimental study design was employed. A Criterion-based simple convenient sampling was utilized to recruit patients diagnosed with sciatica, who were then divided into two treatment groups (n=20). Group A received a Neurodynamic Slider Technique (n=10), while Group B received Core Stabilization (n=10). The assessment of pain and functional disability was assessed using Visual Analogue Scale (VAS) and Oswestry Disability Index (ODI). **Result:** A four-week intervention on sciatica was studied in two groups (Group A, n=10; Group B, n=10). Both groups showed significant improvements in the Visual Analogue Scale and Oswestry Disability Index (paired t-tests <0.05). There was a significant difference between the groups. Subjects in Group – A shows better improvement as that of Group – B. **Conclusion:** The study's findings indicate substantial improvements in both Groups, Group A which followed neurodynamic slider technique, and Group B, which received Core stabilization. Additionally, the results reveal a statistically significant difference between the outcomes of Group A and Group B. Notably, Group A exhibited a greater degree of improvement compared to Group B.

KEYWORDS : Sciatica, Neurodynamic Slider Technique, Core Stabilization, Pain, Functional Disability, Visual Analogue Scale (VAS), Oswestry Disability Index (ODI).

INTRODUCTION

Sciatica is a non-specific term commonly used to describe symptoms of pain radiating downward from the buttock over the posterior or lateral side of the lower limb. An alternative term for sciatica that is often used is 'lumbar radiculopathy'.

Sciatica strikes 12.2% to 43% of people at some point in their existence, with the prevalence varying from 2.2 to 34.2% per year and the estimated point prevalence rate ranging from 1.6% to 13.4% (Konstantinou et al., 2008).

The hallmark of sciatica is pain that radiates from the lower back or buttocks down the back of one leg. In many patients the pain limits the ability to perform daily routine at work and at home, thereby limiting their functional activity.

Physiotherapy plays a vital role in the conservative management of sciatica. Neurodynamic techniques aim to restore normal mobility and physiology of the nervous system by promoting neural sliding and reducing intraneural pressure. Core stabilization exercises focus on strengthening deep trunk muscles such as the transversus abdominis and lumbar multifidus to improve spinal stability and reduce mechanical stress on neural structures.

Neurodynamic conceptualized by Michael Shacklock, which refers to the integrated biomechanical, physiological and mechanical functions of the nervous system. Neurodynamic is now a more accepted term referring to the integrated biomechanical, physiological and morphological functions of the nervous system. The effects of mobilization treatment have been demonstrated to enhance pain relief and functionality.

Core Stabilization exercises help to condition the stabilization component of the spine and mobilizer muscles which work in unison to support the spinal column during movement. The stabilizer groups of muscles are responsible for controlling the intersegmental movement and providing a stable background for appendicular skeleton motion.

Methodology

A convenient comparative study design was used. Twenty subjects diagnosed with sciatica were recruited based on inclusion and exclusion criteria. Participants were conveniently divided into:
Group A (n = 10): Neurodynamic Slider Technique
Group B (n = 10): Core Stabilization

Study Design

This study employed a quasi-experimental pre-test and post-test study design. Participants were assessed at baseline and after the intervention period to evaluate changes in pain and functional disability. The design was chosen to determine the effectiveness of therapeutic interventions in a clinical setting where randomization was not feasible, allowing comparison of outcomes within and between intervention groups.

Study Setting

Department of Orthopedics and Department of Physiotherapy, Sree Abirami Hospital, Coimbatore.

Intervention duration was 6 weeks. Pain was assessed using the Visual Analogue Scale (VAS), and functional disability was measured using Oswestry Disability Index (ODI). Pre- and post-intervention values were analyzed using paired t-tests within groups and unpaired't' tests between groups. Twenty subjects with sciatica were selected using convenient sampling and divided into two groups (n=10 each).

Selection Criteria

Inclusion Criteria

- Age between 30–50 years
- Both genders
- Positive Straight Leg Raise > 35°
- VAS score > 4
- ODI score > 10%

Exclusion Criteria

- Severe spinal pathology, fractures, tumors, infections
- Spinal instability or advanced disc prolapse
- Previous spinal surgery
- Neurological deficits or systemic illness

Procedure:

Group A (Neurodynamic Slider Technique)

Neurodynamic technique or neural mobilization is multidimensional manual technique which helps to improve neural and non-neural tissue function. Neurodynamic Slider (NS) is a type of neural mobilization where one end of the neural tissue is elongated and another end is slackened. The participants were taught with One Ended Slider Technique and as a progression Two Ended Slider Technique was given.

The Neurodynamic Slider technique was carefully crafted to meet the specific needs and capabilities of the patient and was given to the patients for four weeks, with the primary objective of improving their pain and functional disability. Protocol was given for 20 minutes per day.

Group B (Core Stabilization)

Core stabilization exercises focus on improving the stability and function of the muscles supporting the spine and pelvis. Transversus abdominis, lumbar multifidi, and other paraspinal, abdominal, diaphragmatic, and pelvic musculature are targeted in core stabilization exercises. Exercises such as Side plank on knees, Bird Dog, Curl up and Glute bridge were given to the patients.

The core stabilization exercises program was carefully crafted to meet the specific needs and capabilities of the patient and was given to the patients for four weeks, with the primary objective of improving their pain and functional disability. Protocol was given for 20 minutes per day.

Data Analysis and Results

Pain (Visual Analogue Scale):

Both groups showed significant post-test reduction in pain ($p < 0.05$). Group A demonstrated a greater reduction compared to Group B, indicating superior improvement with Neurodynamic Slider Technique.

Functional Disability (Oswestry Disability Index):

Both groups showed significant post-test reduction in functional disability ($p < 0.05$). Group A demonstrated a greater reduction compared to Group B, indicating superior improvement with Neurodynamic Slider Technique.

RESULTS

Statistical analysis revealed significant improvement in both pain and functional disability in Group A and Group B ($p < 0.05$). Inter-group comparison showed that Group A demonstrated significantly greater improvement in post-test Visual Analogue Scale and Oswestry Disability Index compared to Group B ($p < 0.05$).

Pain (Visual Analogue Scale):

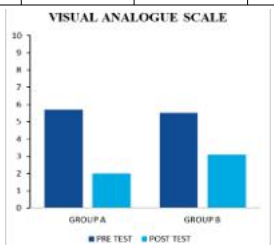
Groups	Pre - test Mean ± SD	Post - test Mean ± SD	t value	p value
Group A	5.70 ± 1.16	2.00 ± 0.67	17.3353	<0.05
Group B	5.50 ± 1.08	3.10 ± 0.88	14.6969	<0.05

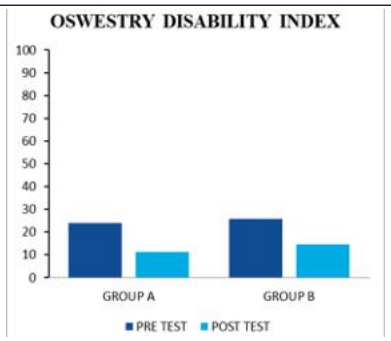
Functional Disability (Oswestry Disability Index):

Groups	Pre - test Mean ± SD	Post - test Mean ± SD	t value	p value
Group A	23.90 ± 2.18	11.20 ± 1.52	22.3195	<0.05
Group B	25.90 ± 2.18	14.50 ± 2.27	20.2940	<0.05

Group Post – Test Comparison

Outcome	Group A Mean ± SD	Group B Mean ± SD	t value	Significance
Visual Analogue Scale(VAS)	2.00 ± 0.67	3.10 ± 0.88	3.1608	Significant
Oswestry Disability Index (ODI)	11.20 ± 1.52	14.50 ± 2.27	3.9289	Significant





DISCUSSION

The results of this study indicate that both neurodynamic slider techniques and core stabilization exercises effectively reduce pain and disability in patients with sciatica. However, neurodynamic slider techniques produced superior outcomes.

Neurodynamic mobilization improves nerve excursion, reduces intraneural edema, enhances axoplasmic flow, and alleviates neural hypoxia. Slider techniques, in particular, minimize excessive tensile stress while promoting neural mobility, making them well tolerated and clinically effective.

Core stabilization exercises improve spinal control by enhancing deep trunk muscle activation and intra-abdominal pressure. While effective, their impact on neural symptoms may be indirect compared to neurodynamic approaches.

The findings align with previous studies reporting superior outcomes with neurodynamic mobilization in managing sciatica-related pain and disability.

CONCLUSION

Both Neurodynamic Slider Technique and Core Stabilization exercises significantly improve pain and functional disability in patients with sciatica. However, Neurodynamic Slider Technique is more effective and should be considered a preferred physiotherapy intervention in sub-acute sciatica.

Limitations

- Small sample size
- Restricted age group (30–50 years)
- Short-term follow-up

Recommendations

- Future studies with larger sample sizes
- Long-term follow-up
- Inclusion of chronic sciatica and additional outcome measures.

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