



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**

'A Bridge Between Laboratory and Reader'

www.ijbpas.com

EFFECT OF NEURAL FLOSSING TECHNIQUE VS CONVENTIONAL THERAPY ON PAIN AND PARAESTHESIA IN DRIVERS WITH ACUTE SCIATICA - A COMPARATIVE STUDY

SUGANDH D^{1*} AND PATEL G²

1: (MPT) Scholar, Ahmedabad Physiotherapy College, Opp. Kabir Enclave, Bopal
Ghuma Road, Ghuma, Ahmedabad- Parul University

2: Principal, Ahmedabad Physiotherapy College, Opp. Kabir Enclave, Bopal Ghuma
Road, Ghuma, Ahmedabad- Parul University

***Corresponding Author: Dr. Divya Sugandh: E Mail: 2207192020002@paruluniversity.ac.in**

Received 16th Jan. 2024; Revised 20th Feb. 2024; Accepted 13th July 2024; Available online 1st May 2025

<https://doi.org/10.31032/IJBPAS/2025/14.5.9008>

ABSTRACT

Background

- Sciatica is used to describe leg discomfort, weakness, and tingling numbness which radiates to the foot and is characterized by a sharp, burning sensation. Michael Shack lock demonstrates the Neural Flossing Technique, which lengthens and stresses the tissue, breaks the bands of scar tissue, and enhances mobility. Drivers due to Prolonged sitting, physical workloads, lifting heavy objects, and prolonged unpleasant postures have all been linked to Sciatica.

Aim

- The aim of this study is to compare the effect of neural flossing technique vs conventional therapy on pain and paraesthesia in drivers with acute sciatica.

Material and Methods

40 subjects were included in this study having age 35-50 years, subjects were divided into two groups 20 in each group. Group A received Neural Flossing Technique and Group B received Conventional Therapy

Result: -

A significant statistical decrease was found in the pain and paraesthesia.

Conclusion: -

Neural Flossing techniques are more effective than conventional exercise in terms of reducing pain intensity and decreasing paraesthesia. the slider technique has a greater effect The Findings of the current study concluded that the neural flossing techniques combined with conventional therapy should be included in treatment of patients with acute sciatica among drivers.

Keywords: Neural Flossing technique, Drivers, Acute Sciatica

INTRODUCTION: -

Early Greek doctors and scientists named the condition sciatica after the Greek word "ischion," which was then translated into Latin. These terms referred to hip discomfort, but it was not until the early 1900s that the disease of the lumbar disc was described and it was believed that the symptom originated from spinal structures [1].

Sciatica is a term for leg discomfort, numbness, and tingling. Sciatica is a disorder that leads to sciatic nerve root pathology, a painful condition that affects 40 percent of those with low back pain and 1.6 percent to 43 percent of the general population each year. Sharp, searing pain that extends to the foot is a common sciatica symptom. Aches (pain) and paraesthesia (buttock, thigh, lower leg, and foot) will be experienced by patients in the sciatic nerve distribution, which is located with the lumbosacral nerve root. Standing, bending, or prolonged sitting can frequently make sciatica pain worse [5].

Herniated or bulging lumbar intervertebral discs, as well as excessive bone development, are causes of sciatica. Lumbar

spinal stenosis is notably noticeable in the elderly population. Sciatic nerve, bone spurs, lumbo-pelvic aneurysms, and piriformis syndrome can all be made worse by spondylolisthesis, lumbar muscle spasm, and/or irritation [5-8]. On occasion, bone spurs can develop on the spinal bones, which can result in tumor, exert pressure on the nerve, or result in diseases like diabetes mellitus. Age, obesity, occupation, and extended sitting are some of the most common causes of sciatica [9].

Michael Shacklock demonstrates the Nerve Flossing Technique [3]. It is an active process that offers a conservative treatment option that is advantageous from a mechanical and physiological standpoint. By manipulating every joint and body part, the nerve flossing technique drives the nerves through the tissues as far and as quickly as possible [5]. It is the combined movement of two joints, with one movement lengthening the nerve bed because there may be an increase in nerve tension and the other action simultaneously shortening the nerve bed and unloading the nerve. The sciatic nerve travels along muscles and bones when

it becomes entrapped because scar tissue accumulates along the nerve fibres [6]. The neural flossing treatment enhances mobility, lengthens the tissue, and actively breaks the bands of scar tissue. In the context of nerves, the term "flossing" refers to the idea of gently moving or stretching the nerve to treat symptoms brought on by nerve irritation or compression [8].

The most typical occupation for drivers is driving. 10% professional drivers experience sciatica [24]. If the nociceptors are the ones who mediate the pain, then the sensory neuron will warn us by providing stimuli to the skin, and the signals will convert those stimuli into electrical signals before sending them to the higher centres [25]. The dorsal root ganglion houses nociceptors, which are the main somatosensory neurons. They will split into two axons at that point, with the central branch innervating the second-order neuron in the dorsal horn of the spinal cord and the peripheral branch innervating the skin [26]. The thalamus and mesencephalon, which are linked to the somatosensory neurons, will receive projections from the second-order neurons. Acute pain may become chronic if the stimulation continues due to the processes of peripheral and central sensitization [27]. A few chronic pain syndromes, including sciatica, are characterised by central sensitization, which is defined by an increase in the excitability

of neurons within the central nervous system [28]. Sciatica is caused in part by peripheral and central sensitization. Drivers are affected by a variety of issues as a result, including sleep apnea, issues with their physical and mental health, psychological anguish, and more frequent night driving shifts. Because they spend most of their time driving, long-distance truckers have the highest rates of contamination and accidents [29].

Men who drive a car for more than half of their working hours are thought to have a three-fold increased risk of developing sciatica [31]. Short-distance intra-city drivers must navigate heavily congested routes and be constantly vigilant. This causes the driver additional trouble. Additionally, they frequently drive when fully laden with commuters, which is an additional risk for concentration divergence. These drivers constitute a particularly fascinating population for research, considering the nature of their profession and their potential for back issues [32].

MATERIAL AND METHODOLOGY:

- It is the comparative study with 40 sample size, data for the drivers was collected from the transport office Ahmedabad, this protocol was performed for 6 days a week for 3 weeks.

INCLUSION CRITERIA: [4, 8, 14, 16]

- AGE :35-50 years, Gender: - Male.
- Patient willingness to participate.
- SLR test positive (35 to 70)
- Subject with acute sciatica pain less than 6 weeks due to other pathology.
- Subject with Bilateral leg involvement.
- Drivers who are driving heavy vehicle for more than 6 hrs continuously in a day.

EXCLUSION CRITERIA: [4, 5, 8, 11]

- Patients with Spinal fracture, Tumours, Spinal stenosis.
- Patient with any post spinal surgery.
- Patient with history of any neurological condition
- Patient with history of cardiovascular involvement
- Patient with any infection or inflammation of spine.
- Patient with history of a major psychiatric illness.

PROCEDURE: [4, 6, 8]

After the approval from the ethical committee this study was conducted at Transport Office at Ahmedabad.

Patient diagnosed with acute sciatica with the help of SLR test.

The patient with pain less than 6 weeks due to any above-noted pathology.

The patient who had fulfilled the inclusion and exclusion criteria was informed in detail and a written consent form was taken, the patient was allotted into two groups by Lottery Method.

Group A (20 subjects) Neural Flossing + Conventional Therapy

Group B (20 subjects) Conventional Therapy

All the affected subject was assessed with the NPRS, SBI Scale and SLR test pre intervention and post intervention was taken after 3 weeks.

GROUP A: -

Neural flossing technique of sciatic nerve (10 times with 3 sets each 5 minutes rest) with conventional physiotherapy treatment.

This technique was performed actively by the subjects sitting on a chair. The participant bent the knee backwards under the chair and flex the head at the same time and held the position for 5 seconds. Then the participant extended out the leg on the side and at the same time extended the neck. As the nerve became less sensitive, he increased the stretching effect by extending the toes of his foot upward toward the shin and held the position for 5 seconds.



Conventional therapy includes:

1. Cryotherapy for 10mins.
2. Soft tissue mobilization (effleurage) on spasm area- 5min.
3. McKenzie exercise. (10 repetitions with 5 second hold and 5 sec relax-3sets).
4. Abdominal curls up. (10 repetitions with 5 sec hold and 5 sec relax-3sets).
5. Stretching of tight muscles (hamstring, piriformis) (3 repetitions with 30 second hold and 5 second relax-3sets).
6. Ergonomic advice (Exercise regularly, Lift objects safely, avoid sitting or standing for extended periods)

GROUP B: control group

1. Cryotherapy for 10mins.

2. Soft tissue mobilization (effleurage) on spasm area- 5min.

1. McKenzie exercise. (10 repetitions with 5 second hold and 5 sec relax-3sets)
2. Abdominal curls up. (10 repetitions with 5 sec hold and 5 sec relax-3sets).
3. Stretching of tight muscles (hamstring, piriformis) (3 repetitions with 30 second hold and 5 second relax-3sets).
4. Ergonomic advice (Exercise regularly, Lift objects safely, avoid sitting or standing for extended periods).

- This exercise is carried out for 6days a week for 3 weeks and pre and post treatment is assessed at the end of 3rd week.



STATISTICAL ANALYSIS:

The collection of demographic data from all subjects was taken. The demographic information includes age, weight, height, body mass index (BMI), radicular pain duration, and gender. Additionally, pre-, and post-treatment measurements of pain intensity using the Numeric Pain Rating Scale (NPRS), Straight Leg Raise (SLR) test, and Sciatic Bothersomeness Index (SBI) scale were recorded.

Once the data was collected, the data was entered into the statistical software SPSS version 29.

The Shapiro-Wilk test was used to check the normality distribution in both the groups. The data was normally distributed so accordingly paired t test was used to compare within group and between group unpaired t test was used.

Level of Significance: The significance level was set at 5%, indicating that the researchers considered a $p < 0.05$ as statistically significant.

RESULT: -

Table 1: Gender Distribution in Group A and Group B

GENDER	GROUP A	GROUP B
MALE	20	20

Table 2: - Age Distribution in Group a And Group B

AGE	MEAN	SD
GROUP A	36.45	3.61
GROUP B	37.05	3.15

Table 3: Between Group Analysis of NPRS, SLR, SBI SCALE

BETWEEN GROUP	GROUP- A		GROUP - B		t- VALUE	P VALUE
NPRS	0.5	0.76	1.5	0.01	4.2	0.002
SLR	3.45	2.94	3.85	0.01	1.2	0.02
SBI SCALE	1.46	1.02	2	0.01	2.2	0.02

DISCUSSION: -

The purpose of this study is to evaluate the effectiveness of Neural flossing combined with conventional therapy for drivers with acute sciatica.

Neural Flossing Technique with conventional therapy indicating great improvement in all the outcomes (NPRS, SLR, SBI Scale) showed greater improvement among drivers with acute sciatica. which means that the alternate

hypothesis is accepted and the null hypothesis is rejected.

Neural flossing technique combined with conventional therapy showed significant difference in decreasing pain in Group A when compared to Group B.

Large amplitude movements are used in nerve flossing with the goal of moving the nerve through its whole range of motion. By doing so, it may influence the nerve mechanically and physiologically enough to alleviate hypoxia and its accompanying

symptoms and spread oedema. Furthermore, NFT causes the lumbar nerve roots to slide proximally with neck and knee flexion and distally with neck and knee extension. It also enhances the sciatic nerve's actual excursion [12]. Making use of a dynamic pressure shift (by tensing at one end and relaxing at the other). Furthermore, by oxygenating the nerve, this technique might reduce ischemia pain. By lowering the pressure brought on by intraneural and extra neural fibrosis, NFT enhances axonal transmission and blood flow. By lessening the strain brought on by increased neurons. Additionally, mobility may help regulate pain in the central nervous system [19]. The gate control theory states that stimulation of mechanoreceptors in the joint capsule and surrounding tissues inhibits pain transmission to the spinal cord. It might possibly have a direct correlation with the decline in neurogenic inflammation following immobility. Furthermore, it is postulated that nerve movement in pain-free variations may lessen nerve friction, tension, and compression, hence lowering nerve mechanosensitive [20].

The pumping effect of the Nerve Flossing Technique, when applied dynamically, helps to reduce pressure inside the perineurium, enhance venous return, and disperse oedema. It decreases sensitivity and restores function, which lowers the threat value of injury. This would prevent changes to the dorsal and brain regions, as well as the

possibility of ion channel upgrades in the dorsal root ganglia and central nervous system [21].

Nonetheless, the method of comparing primary and secondary pain points—which pinpoint the location of pain onset and the point of maximum pain tolerance—is a valid way to determine whether pain is present, regardless of the patient or asymptomatic subject (Boyd *et al.*, 2009; Coppieters *et al.*, 2002;). Because of this, the study's conclusions about variances in pain would be taken as more reliable.¹³

The combination of these techniques shows a holistic strategy that addresses all elements of sciatica symptoms, which explains why Neural Flossing Technique is more effective than Conventional Therapy. Notably, a more comprehensive treatment plan can be provided by utilising a multimodal approach that includes specialist treatments such as neural flossing. According to the study, people with acute sciatica may see better results in terms of pain relief and paraesthesia relief if these approaches are combined.

CONCLUSION: -

Both the Treatment are effective but the Group A result showing greater improvement than that of Group B which sum up that Neural Flossing Technique combined with the conventional Therapy is more effective than the conventional therapy.

Neural Flossing techniques are more effective than conventional exercise in terms of reducing pain intensity and decreasing paraesthesia. the slider technique has a greater effect The Findings of the current study concluded that the neural flossing techniques combined with conventional therapy should be included in treatment of patients with acute sciatica among drivers.

ACKNOWLEDGEMENT:

We would like to thank God, who always gave us opportunities and strength to do everything. We would like to give gratitude to our guide Dr. Gaurav Patel, who always supported us throughout the study. He guided us where we did not know and made this project-work easy to us by her knowledge.

REFERENCES: -

- [1] Haugen AJ. Sciatica and disc herniation: Outcome measures and prognostic factors.
- [2] Davis D, Maini K, Vasudevan A. Sciatica. 2022 May 6. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. PMID: 29939685.
- [3] Giuffre BA, Jean Monod R. Anatomy, Sciatic Nerve. 2021 Jul 29. In: Stat Pearls [Internet]. Treasure Island (FL): Stat Pearls Publishing; 2022 Jan-. PMID: 29494038.
- [4] Sciatic nerve. (2023, May 31). In *Wikipedia*.
https://en.wikipedia.org/wiki/Sciatic_nerve.
- [5] Vartan HS, Rajapaksa R, Palekar T, Saini S, Kristy A. A comparative study between neural mobilisation techniques versus nerve flossing technique in patients with acute sciatica. *International Journal of Basic and Applied Research*. 2019;9(3):909-22.
- [6] Darshana D. Chaudhary, Neha Ingale, Kalyani Nagulkar. Article in *Journal of Basic and Applied Research International* · March 2018.
- [7] Allegri M, Montella S, Salici F, Valente A, Marchesini M, Compagnone C, Baciarello M, Manferdini ME, Fanelli G. Mechanisms of low back pain: a guide for diagnosis and therapy. *F1000Res*. 2016 Jun 28;5: F1000 Faculty Rev-1530. doi: 10.12688/f1000research.8105.2. PMID: 27408698; PMCID: PMC4926733.
- [8] Tella, Bosede & Aiyegbusi, Ayoola & Anekwe, Earnest. (2022). Efficacy of Nerve Flossing Technique in the Management of Acute Sciatica. 23. 14-23.

- [9] Afzal M, Sabrina, Sehrish. Treatment of Sciatica by Neural Flossing Technique (NFT) in Adults. Pak. J. Rehabil. 2022; 11(1):08-16] DOI: 10.36283/pjr.zu.11.1/003
- [10] Kumar M, Garg G, Singh LR, Singh T, Tyagi LK. Epidemiology, pathophysiology, and symptomatic treatment of sciatica: a review. Int. J. Pharm. Biol. Sci. Arch. 2011 Aug;2(4):1050-61.- pathophysiology
- [11] @Book {shacklock2005clinical, title= {Clinical Neurodynamic: A New System of Neuromusculoskeletal Treatment author.
- [12] Chaudhary K, Manjunath H, Singh AK, Rajbanshi SK. Effect of Neurodynamic Slider Technique Combined with Conventional Therapy and Conventional Therapy Alone in Sciatica: A Comparative Study. Indian Journal of Physiotherapy & Occupational Therapy. 2022 Jan 1;16(1).
- [13] Institute of Medicine (US) Committee on Pain, Disability, and Chronic Illness Behavior; Osterweis M, Kleinman A, Mechanic D, editors. Pain and Disability: Clinical, Behavioral, and Public Policy Perspectives. Washington (DC): National Academies Press (US); 1987. 7, The Anatomy and Physiology of Pain. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK219252/>
- [14] Camino Willhuber GO, Piuizzi NS. Straight Leg Raise Test. [Updated 2023 Jun 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK539717/>
- [15] BOOK - Orthopaedic physical assessment AU - Magee, David JPY - [2002] PB - Fourth edition. Philadelphia: Saunders, [2002].
- [16] Grøvle, Lars & Haugen, Anne & Keller, Anne & Natvig, Bård & Brox, Jens & Grotle, Margreth. (2010). The bothersome Ness of sciatica: Patients' self-report of paraesthesia, weakness, and leg pain. European Spine Journal. 19. 263-269. 10.1007/s00586-009-1042-5.
- [17] Adnan M, Arsh A, Ali B, Ahmad S. Effectiveness of bent leg raise technique and neurodynamics in patients with radiating low back pain. Pakistan Journal of Medical Sciences. 2022 Jan;38(1):47

- [18] Haytham Ibrahim Morsi, Bassem Galal Eldein El Nahass, Mona Mohamed Ibrahim *et al.* Effects of Slider, Tensioner Neurodynamic Mobilization Techniques and Stretching Exercises in Treatment of Chronic Discogenic Sciatica: A Comparative Study, 19 May 2022, PREPRINT (Version 1) available at Research Square [<https://doi.org/10.21203/rs.3.rs-1572951/v1>]. 2020 Mar 30;8(1):33-6.2022 Dec 5:2250038.
- [19] Morsi HI, El Nahass BG, Ibrahim MM. Effectiveness of Slider And Tensioner Neurodynamic Mobilization Techniques Compared to Stretching Exercises on Pain, Function, And Range of Motion In Patient With Chronic Discogenic Sciatica.
- [20] Paranjape S, Naik N. Comparison of Effectiveness of Passive Hamstring Stretching Technique and Neurodynamic Sciatic Nerve Sliding Technique in Low Back Pain.
- [21] Riaz MU, Shah F, Shah SM. Comparison of Spinal Mobilization with Leg Movement and Neurodynamic Sliding Technique for Improving Function in Radicular Leg Pain: JRCRS. 2020; 8 (1): 33-36. Journal Riphah College of Rehabilitation Sciences.