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## ORIGINAL ARTICLE

**A COMPARATIVE STUDY BETWEEN NEURAL FLOSSING  
TECHNIQUE AND WILLIAM'S EXERCISE TECHNIQUE ALONG  
WITH CONVENTIONAL THERAPY IN SCIATICA**

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### ABSTRACT

**Background of the study:** Sciatica is one of the most common painful conditions among the global population and without any age limit. Objective of the study was to compare the effectiveness of Neural Flossing Technique and William's Exercise Technique along with Conventional therapy in Sciatica. **Method:** The treatment procedure was explained to the patient. A written consent was obtained from the voluntary participation in this study. There were 30 patients with Sciatica were selected based on the inclusion and exclusion criteria and they were divided into 2 Groups, Group A and Group B. Group A was treated with Neural Flossing Technique with Conventional therapy and Group B was treated with William's Exercise Technique with Conventional therapy on Sciatica. Numerical Pain Intensity Scale and Fear–Avoidance Beliefs Questionnaire (FABQ) were used as outcome measures. Each patient was given a Physiotherapy program for 4 weeks duration. The pre and post treatment values were measured before and after 4 weeks for comparison. **Result:** The results of this study showed that there was significant improvement in both Groups. The subject who participated in experimental Group A had shown good improvement on pain reducing and hip range of motion than the Group B. **Conclusion:** The study which was conducted for 4 weeks period of intervention showed that group A of those who received Neural Flossing Technique with Conventional therapy resulted in improvement on pain reducing and hip range of motion than the Group B who received William's Exercise Technique with Conventional therapy.

**Keywords:** Neural Flossing Technique, William's Exercise Technique, Numerical Pain Intensity Scale, Fear –Avoidance Beliefs Questionnaire (FABQ)

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## INTRODUCTION

Sciatic Nerve is the thickest nerve in our body and it's is the largest branch of the sacral plexus, having the root value L4, L5, S1, S2, S3<sup>1</sup>. It starts in the pelvis and ends at the superior angle of the popliteal fossa by dividing into the tibial and common peroneal nerves. Any condition that may structurally impact or compress the sciatic nerve may cause sciatica.

Sciatica is one of the most common painful conditions among the global population and without any age limit. It caused due to discomfort in the region of the back of the body that stretches the nerve from the lower border of the 12th rib to the lower gluteal folds. It's one of the musculoskeletal disorders. Many risk factors causes Sciatica such as the worker who spent all their time by lifted bulky goods, smoker, obesity, prolonged sitting, prolonged standing, improper lifting, bending, poor standing and poor sitting posture.

Sciatica may cause radiating pain, numbness, tingling sensation and irritation in one or both legs which spreads along the pathway of the sciatic nerve because of an issue with any of the five sciatic spinal nerve roots. Sciatica is another way of saying lumbar radiculopathy along with other similar terms like nerve root entrapment and nerve root pain<sup>2</sup>.

Neural Flossing Technique as introduced by Michael Shack lock. It's an active procedure done by the patients which is mechanically and physiologically benefit as a conservative treatment among Sciatica<sup>3</sup>. It's an idea that the entire nervous system is continuous structure and it moves and slides in body as we move and the movement is related to physiological process. NFT slides and moves the nerve

through the tissues proximally and distally to the maximum possible extent, moving every joint and part of body that the nerve crosses.

NFT might be effective in acute sciatica and also effective in the management of neuropathic conditions like carpal tunnel syndrome<sup>4</sup>, low back pain and other radiculopathies. Neural Flossing is also known as Neural Gliding or Neuro Dynamic Mobilization. It is a method that can both reduce pain and improve range of motion<sup>5</sup>. Williams Exercise helps to improve lumbar flexion and strengthen the gluteal and abdominal muscles to avoid from the pain getting worse<sup>6</sup>. Comparison of both method will be the beneficial aspect to the society and knowledge can be shared among physiotherapy professional.

## METHODOLOGY

The study was conducted at JKKMMRF College of Physiotherapy-Outpatient Department. The patient was informed about the whole procedure and treatment method. A written consent was obtained from their voluntary participation in this study. There were 30 patients with Sciatica were selected based on the inclusion and exclusion criteria and they were divided into 2 Groups, Group A and Group B. Group A was treated with Neural Flossing Technique with Conventional therapy and Group B was treated with William's Exercise Technique with Conventional therapy on Sciatica. Numerical Pain Intensity Scale (NPIS) and Fear-Avoidance Beliefs Questionnaire (FABQ) were used as outcome measures. Each patient was given a Physiotherapy program for 4 weeks duration. The pre and post treatment values were measured before and after 4 weeks for comparison.

**Inclusion criteria:** Acute sciatica, Aged between 30 to 40 years, Only Men were included, BMI between 18.5-24.9, LBA with Sciatica, Unilateral (Either left or right) and Passive Straight Leg Raise (PSLR) Test ( $30^{\circ}$ - $70^{\circ}$ )

#### Procedure and Protocols Group A

Group A was treated with Neural Flossing Technique with Conventional therapy on Sciatica.

#### Procedure

- Sit on a chair or table with back straight and knees bent.
- Slowly straighten the affected leg.
- Extend the neck to look up and ankle with dorsiflexion.
- Hold the position for 5 seconds with Rest time of 2 seconds.
- Follow the exercise for 10 times per session.

#### GROUP B

Group B was treated with William's Exercises Technique with Conventional therapy on Sciatica.

It is a Group of flexion exercises recommends the following

1. Pelvic tilt
2. Single knee to chest
3. Double knee to chest
4. Half sit-up
5. Hamstring stretch
6. Hip Flexor Stretch
7. Squat.

Duration—10 times each exercises per session

#### Conventional Therapy for Group A and Group B

Interferential Therapy for Group A and Group B for 15 Minutes

## RESULT AND TABLES

GROUP	NPIS	Mean	Standard Deviation	Paired 't' value
Group A	Pretest	6.33	1.11	13.2558
	Post test	3.20	1.21	
Group B	Pretest	6.33	0.29	10.2470
	Post test	4.33	0.29	

**Table 1:** Descriptive statistics for Numerical Pain Intensity Scale-Group A and Group B

Descriptive statistic for Numerical Pain Intensity Scale in Group A shows that paired 't' test values of pre vs. post-test values of Group A was 13.2558 at 0.05% level which was greater than tabulated 't' values 2.14. Group B shows that paired 't' test values of Pre vs. Post-test values of Group B was 10.2470 at 0.05%

level which was greater than tabulated 't' values 2.14. This showed like there insignificant difference between pre vs. post-test results of Group A and Group B for NPIS. This exposed that there was significant reduction in post-test mean values in response to NPIS in Group A and Group B.

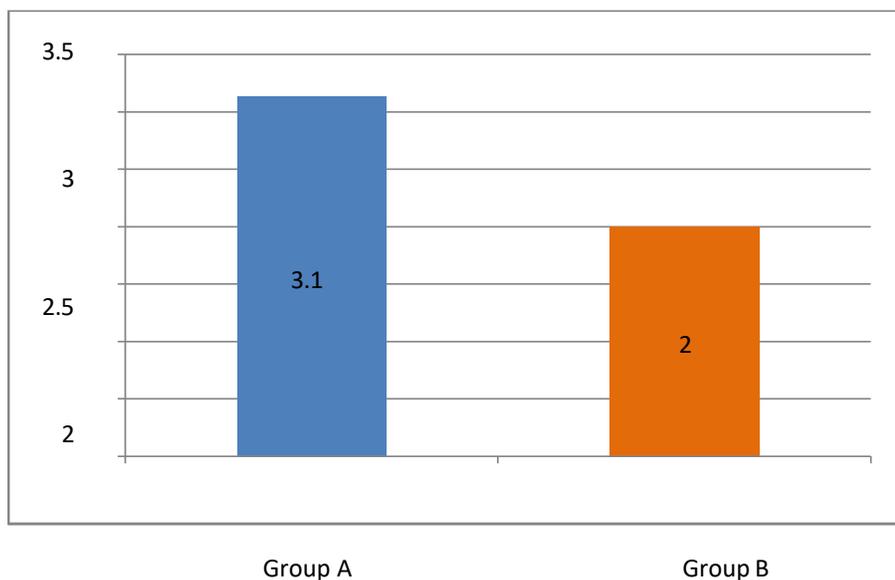
**Result-NPIS (Post test analysis)**

NPIS	Mean	Mean Difference	Standard Deviation	Un Paired 't' value
Group A	3.13	1.13	0.92	3.6972
Group B	2.00		0.76	

**Table 1:** NPIS Posttest analysis between Group A and B

The Unpaired 't'-value of 3.6972 was greater than the tabulated Unpaired 't'-value of 2.4 which showed that there was statistically significant difference at 0.0001 level between Group A and Group B. The pre vs. post-test mean of Group A was 3.13 and the pre vs. post test mean of Group B was 2.00 and mean difference

of Group A and Group B was 1.13 which showed that there was significant reduction in NPIS score for Group A than Group B.



**Graph 1:** NPIS scale graph between Group A and Group B

**Descriptive statistics for FABQ-Group A and Group B**

GROUPS	FABQ	Mean	Standard Deviation	Paired 't' value
Group A	Pre test	76.60	7.87	9.9166
	Post test	46.80	6.62	
Group B	Pre test	81.53	8.07	11.3584
	Post test	52.00	10.22	

**Table 2:** Descriptive statistics for FABQ-Group A and Group B

Descriptive statistic for Fear-Avoidance Beliefs Questionnaire in Group A shows that paired't' test values of pre vs. post-test values of Group A was 9.9166 at 0.05% level which was greater than tabulated 't' values 2.14. Group B shows that paired't' test values of pre vs. post-test values of Group B was 11.3584 at 0.05% level which was greater than Tabulated 't'

Values 2.14. This showed like there in significant difference between pre vs. post test results of Group A and Group B for FABQ. This exposed that there was significant reduction in post - test mean values in response to FABQ in Group A and Group B.

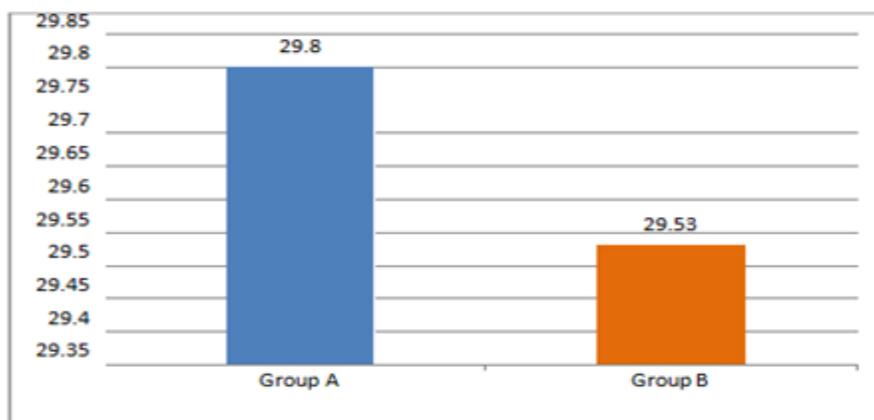
**Result- Fear-Avoidance Beliefs Questionnaire (Post test analysis)**

FABQ	Mean	Mean Difference	Standard Deviation	Unpaired 't' value
Group A	29.80	0.27	11.64	0.0671
Group B	29.53		10.07	

**Table 3:** Fear-Avoidance Beliefs Questionnaire (Posttest analysis)

The Unpaired 't'-value of 0.0671 was greater than the tabulated paired 't'-value of 2.14 which showed that there was statistically significant difference at 0.0001 level between Group A and Group B. The pre vs. post test

mean of Group A was 29.80 and the pre vs. post-test mean of Group B was 29.53 and the mean difference of Group A and Group B was 0.27 which showed that there was significant reduction in FABQ for Group A than Group B.



**Graph 2:** Fear–Avoidance Beliefs Questionnaire between Group A and B

## DISCUSSION

The aim of the study was to compare the effectiveness of Neural Flossing Technique and William’s Exercise Technique along with conventional therapy in sciatica.

A total number of 30 Subjects with sciatica were selected by Experimental study design method after considering the inclusion and exclusion criteria. The informed consents were obtained from subjects individually. Numerical Pain Intensity Scale (NPIS)<sup>7,8</sup> and Fear – Avoidance Beliefs Questionnaire (FABQ)<sup>[9]</sup> were used as outcome measures. Pre test data were collected for Group A and Group B patients and computed.

Group A patients were subjected to Neural Flossing Technique with Conventional therapy and Group B patients were subjected to William’s Exercise Technique with Conventional therapy for a period of 4 weeks<sup>10</sup>.

The results of the same parameters were recorded for comparison after 4 weeks of treatment. The result showed that there was statistical significant difference between Group A and Group B.

The Group A who were treated with Neural Flossing Technique with Conventional therapy had shown good improvement in pain reducing and hip range of motion than Group B who were treated with William’s Exercise Technique with Conventional therapy.

In the analysis and interpretation of Numerical Pain Intensity Scale (NPIS) in Group A and Group B has been done for 15 patients in each group.

The unpaired ‘t’ test value of NPIS in Group A and B post- test analysis was 3.6972 which was greater than the tabulated ‘t’ value 2.14.

In the analysis and interpretation of Fear–Avoidance Beliefs Questionnaire (FABQ) in Group A and Group B for 15 patients in each group

The unpaired ‘t’ test value of FABQ in Group A and B post- test analysis was 0.0671 which was greater than the tabulated t value 2.14.

Based on the statistical analysis and interpretation the result of the study was improving in pain reducing and hip range of motion. Therefore the present study was

accepting the alternate hypothesis and rejecting the null hypothesis.

## CONCLUSION

The study which was conducted for 4 weeks period of intervention, Based on statistical analysis the results of this study showed that there was significant improvement in both Groups. The result also showed that the subject who participated in experimental Group A had shown good improvement in reducing pain and increasing in hip range of motion than in Group B.

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