



“TO DETERMINE THE COMBINED EFFECT OF NFT WITH MULLIGAN TSLR IN PARTICIPANTS WITH SCIATICA- RCT”

Physiotherapy

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ABSTRACT

Background: Sciatica is the most common problem affecting the adult population annually. Mulligan TSLR is used to Increase the SLR range. The NFT is a gentle exercise that stretches irritated nerves. This study aimed to find out the combined effect of NFT with mulligan traction SLR to reduce pain and improve function in participants with sciatica to get the best results.

Methods: Participants with Sciatica were randomized into 2 groups by simple random sampling into Group A (Experimental Group) and Group B (Control group). Pre and post-treatment data were collected and analyzed using SPSS 22.0.

Results: A greater statistically significant improvement in pain & disability ($p < 0.05$) were found in Group A as compared to Group B.

Conclusion: The study concluded that the combined effect of NFT with Mulligan TSLR is more effective in sciatica.

KEYWORDS

Sciatica, Nerve Flossing Technique, Mulligan Traction Straight Leg Raise, NPRS, RMDQ

BACKGROUND:

The sciatic nerve is the largest in the human body. It is formed by L4 - S3 nerve roots from the lower spine. It passes deep in the buttock and down the back of the thigh the way to the heel and sole.^[1]

Sciatica is considered a symptom rather than a diagnosis.^[2,3] Characteristically, sciatica involves radiating leg pain that follows a dermatomal pattern^[4,5] along with the distribution of the sciatic nerve. The lifetime incidence of this condition is estimated in between 13% to 40%.^[6] In 90% of cases, the sciatica is caused by a lumbar herniated disc with subsequent nerve root compression.^[7] Sciatica is clinically diagnosed with an SLR test.

Mulligan traction straight leg raise is used clinically to increase the range of SLR when it is limited due to low back dysfunction lifting the limb through a pain-free range of SLR.^[8] The nerve flossing technique is a type of gentle exercise that stretches irritated nerves improve their range of motion and reduce pain. It's also known as nerve gliding.^[9] Nerve flossing techniques aim to move the nerve along its distribution by lengthening or shortening that path.^[10] Nerve flossing techniques can help to build up general strength and flexibility.^[11] Some researchers had published comparative studies on Mulligan TSLR with Bend leg raise, slump SLR, and other manual therapy techniques in participants with sciatica and till today only a single pilot study had been published on Mulligan TSLR in sciatica.^[12] This study aimed to determine the combined effect of nerve flossing technique with mulligan traction straight leg raise in participants with sciatica.

Two Hypotheses were formulated: [H₀] There is no significant combined effect of nerve flossing technique with mulligan traction straight leg raise in reducing pain & improvement of function in participants with sciatica. [H₁] There is a significant combined effect of nerve flossing technique with mulligan traction straight leg raise in reducing pain & improvement of function in participants with sciatica.

Method:

This study was a randomized controlled trial. It was conducted in Nootan College of Physiotherapy from September 2021 to February 2022. This study was approved by the Institutional Committee of Nootan College of Physiotherapy. Written informed consent was obtained from all individual participants included in the study.

Participants:

The participant with Sub-acute sciatica, aged between 35-60 years, both male and female, who were diagnosed with sciatica due to PIVD, with unilateral involvement. The Participants were excluded of lumbar spine surgery within 12 months, Suffered from sciatica with vascular disorders and diabetic neuropathy, Sciatica due to tumor, fractures, infection of the spine, and Sciatic nerve compress^[13] The pre-evaluation included history, pain assessment (NPRS), functional scale (RMDQ) of the participants.

Randomization:

Participants were divided by Simple Random Sampling in A & B groups. Randomizations into two groups were achieved through the lottery method without replacement of chit and only participants were blinded in this study.

Treatment:

Treatment was given only in the experimental group [Group-A]. In the Mulligan TSLR technique, participant should be supine on low bed or floor with their arms by their sides, a single pillow under the head. The therapist standing on the affected side, grasps the lower leg proximal to the ankle joint and applies the longitudinal traction force. After that leg raises off the bed to the painful range. Sustain this traction and undertake a straight leg raise as there is no pain.^[14] Mulligan traction straight leg raise is done five days per week for 6 weeks. In the NFT technique, participants should be in a side-lying position affected leg should be uppermost. Therapists stand beside the participant therapist grasps the lower leg at the ankle joint and performs knee extension with hip flexion at pain-free range then passively dorsiflexes the ankle with active neck extension for 5 seconds. Then therapists will passively plantarflex the ankle with the active neck flexion for 5 seconds.^[15] The above procedure, repeated NFT 15 times, for 3 sets with an interval of 5 minutes between each set. [Table-1]

Each participant was evaluated before and after the session.

All statistical analysis was done using SPSS 22.0 software for windows. Descriptive analysis was obtained by mean & standard deviation. Intergroup comparisons between Group A & B of pre & post-treatment of NPRS and RMDQ were done using an unpaired t-test. Intragroup comparison of pre & post-treatment scores of NPRS and RMDQ within Group-A and B were done using paired t-test.

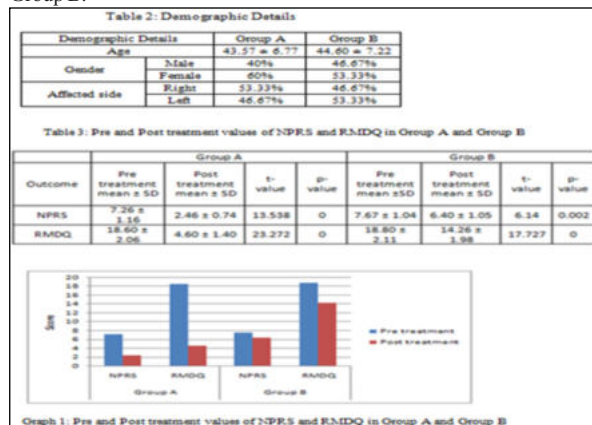
Table 1: TREATMENT PROTOCOL FOR GROUP A:

Weeks	Mulligan traction SLR	Nerve flossing technique
Week 1	2 Rep./Day for 5 Days	10 Rep./Set, 1 Set/Day [5 Days]
Week 2	2 Rep./Day for 5 Days	10 Rep./Set, 1 Set/Day [5 Days]
Week 3	2 Rep./Day for 5 Days	10 Rep./Set 2 Sets/Day [5 Days] (3 Min. Hold Between Each Set)
Week 4	3 Rep./Day for 5 Days	10 Rep./Set 2 Sets/Day [5 Days] (3 Min. Hold Between Each Set)
Week 5	3 Rep./Day for 5 Days	15 Rep./Set 3 Sets/Day [5 Days] (1 Min. Hold Between Each Set)
Week 6	3 Rep./Day for 5 Days	15 Rep./Set 3 Sets/Day [5 Days] (1 Min. Hold Between Each Set)

RESULTS:

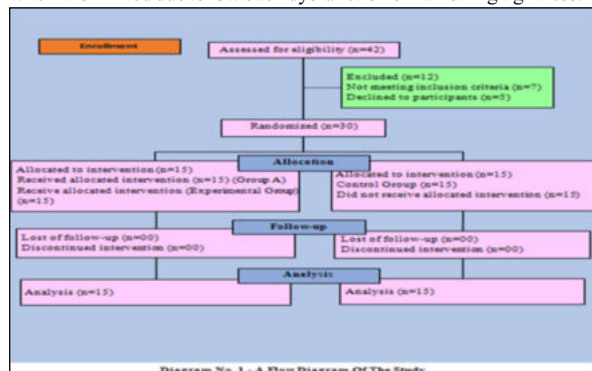
As Shown in Diagram 1, a total of 42 participants were selected. Among them, 07 Participants didn't meet the inclusion criteria and 05 participants decline to participate in the study. So, 30 participants of sciatica were selected. Table 2 shows the Demographic details of the participants in both groups.

The result disclosed after 6 weeks treatment program. As Shown in Table 3 and Graph 1, significant improvement in pain, disability through RMDQ scale ($p < 0.05$) after the treatment. A greater statistically significant difference was seen in Group A as compared to Group B.



DISCUSSION:

Nerve flossing techniques aim to move the nerve along its distribution by lengthening or shortening that path that the nerve must travel from its source at the spinal cord to its endpoint in hand or feet. Mulligan traction straight leg raise is used clinically to increase the range of SLR when it is limited due to low back dysfunction or hamstring tightness.



Traction has been shown to improve painfully restricted straight leg raise in previous studies by Larsson^[16] and Pal^[17]. Also, a recent study by C. Beyerlein^[18], found that the straight leg raise traction technique significantly improved range. Anikwe EE et al found that the nerve flossing technique is effective in the reduction of acute sciatic pain and improvement range of motion.^[19] So, conducted this study to deliberate the combined effect of the nerve flossing technique with mulligan traction straight leg raise to reduce pain through NPRS and improve function through RMDQ in participants with sciatica. In the current study, NPRS and RMDQ scale showed improved results in both groups but more statistically significant improvement was noted in group A as compared to group B, with obvious differences in the value of the means of both groups. This study was conducted on 30 participants who were divided into two groups; Group A [Experimental group] who received NFT with mulligan TSLR and Group B [Control group]. Though, a significant improvement was found after 6 weeks of treatment. Group A showed greater improvement in NPRS and RMDQ scales. [p -value < 0.05]. Thus the null hypothesis [H_0] is failed to accept. This statement suggests that the combined treatment of nerve flossing technique with mulligan traction straight leg raise is the effective management of participants with sciatica in reducing pain and improving function.

The limitations of this study were Small Sample Size, Participants involved were only with sub-acute sciatica, and Participants with only unilateral side were included. So, in the future, further study can be

done with long-term follow-up, with a large sample size, and with other outcome measures.

CONCLUSION:

The study concluded that the combined effect of NFT with Mulligan TSLR is more effective in participants with sciatica.

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Conflicts Of Interest: There are no conflicts of interest.

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