

The Effect of Mulligan's Bent Leg Raise Technique Versus Traction Straight Leg Raise Technique on Hamstring Tightness In Low Back Pain In Postpartum

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Abstract- *The main aim of the study is to compare the effectiveness of Mulligan's bent leg raise (BLR) and Traction straight leg raise (TSLR) technique on Hamstring tightness in low back ache in postpartum. 30 subjects have selected for the study with pre and post intervention reading taken using SLRT and ROM with goniometer. Group A received Mulligan's bent leg raise technique and group B received Traction SLR technique.*

There was a significant improvement noted in Mulligan's BLR in compare to TSLR training program on Hamstring tightness in low back ache in postpartum. Hence it can be concluded that MBLR is better than TSLR for Hamstring stretching.

Keywords- Hamstrings, Low back Ache, Mulligan's bent leg raise, Postpartum, Traction SLR

I. INTRODUCTION

Low back pain (LBP) or pelvic girdle pain (PGP) has a prevalence of 20-90 % in the pregnant population, while a small number of women may suffer from a combination of both pains. While pelvic girdle pain is typically more common and intense during pregnancy. Low back pain is more intense and common in the postpartum period. In fact, up to 75% of women who suffer from pregnancy related back pain may continue to have pain after giving birth. While the majority of cases resolve within a 6 month postpartum, 40% may continue to experience pain beyond 6 months. For those with a history of low back pain during pregnancy, low back pain seems to decrease over the postpartum period. However women who experience low back pain or pelvic girdle pain at 3 months postpartum were found to be at higher risk for persistent or chronic low back pain. Of these women, only 6% recover within 6-18 months after giving birth. Researchers have been unable to identify etiologic factors relating to postpartum low back pain or pelvic girdle pain.¹ Tight Hamstring can cause

your hips and pelvis to rotate back flattening the lower back leading to back problems.

The Hamstring muscle comprises three large muscles namely; semitendinosus, semimembranosus and biceps femoris muscle. They are located in the posterior compartment of the thigh and span the hip and the knee joint. Hence, they are extensors of the hip and flexors of the knee.²

Muscle tightness is caused by decrease in the ability of the muscle to deform, resulting in a decrease in the range of motion at the joint on which it acts.³ Muscular tightness is frequently postulated as an intrinsic risk factor for the development of the muscle injury. Lack of flexibility has been suggested as a predisposing factor of Hamstring strains. Hamstring stretching will increase flexibility and decrease muscle stiffness.

The motion of the lumbar spine and pelvis could also impact stretching effects in the application of hamstring stretching. The stretching to improve hamstring flexibility, increase task performance ability, prevent injuries, align posture, and affect lumbar spine and pelvic motion as well.⁴

Mulligan's bent leg raise (BLR) technique releases the scar tissue adhesion to allow full lengthening of muscle and to regain flexibility for functional use. Bent leg raise (BLR) is a painless technique and can be applied on any patient who has limited or painful straight leg raising (SLR). It can be tried with patients who have a gross bilateral limitation of straight leg raise (SLR).⁵

The straight leg raise is also called the Lasègue test.⁶ This test has been shown to be useful for the assessment/diagnosis of pelvic girdle pain in postpartum women. This test is performed with the patient with the supine position with both legs straight and with feet 20-cm apart. The woman is asked to raise one leg after the other to a height of 20 cm above the examination table without bending the knee.⁷

Mulligan's bent leg raise (BLR) is a newer technique which has recently been developed to manage Hamstring tightness. It is a painless stretching technique which is recently utilized in management of Hamstring tightness with limitation straight leg raise (SLR).⁸

Mulligan's has described the traction straight leg raise (TSLR) and bent leg raise (BLR) techniques, which are said to improve range of motion of hip flexion in patients with low back pain. Indications for use of Mulligan's Traction Straight Leg Raise (TSLR) and Bent Leg Raise (BLR) techniques are limited range of motion of hip flexion together with low back pain with or without referred leg pain.⁹

II. REVIEW OF LITERATURE

Melissa Corso, Diane Grondin et al, Postpartum Low Back Pain: It is not always What You Think, they concluded that Postpartum back pain may not actually be related to pregnancy itself or the act of delivering a child. There are other differential diagnoses that health care practitioners should consider when examining and diagnosing the new mom.

Dr. Sejal Sathe, Dr. Gauri M Afle, to compare the effectiveness of Mulligan's bent leg raise and Traction straight leg raise on Hamstring flexibility in young individuals, they concluded that Mulligan's bent leg raise technique appeared to be more effective than Traction straight leg raise to increasing Hamstring flexibility.

Dr. Sneha Chauhan, a study to find out an immediate effect of bent leg raise technique in school going children with Hamstring tightness, concluded that there is significant study of bent leg raise technique in school going children therefore It can be used with conventional treatments to improve Hamstring flexibility in school going children.

Mohammed Zaid Tai, Megha Bandawde et al, to compare effectiveness of Mulligan's bent leg raise versus myofascial release in physiotherapy students with Hamstring tightness, they concluded that this study concludes that Group 1 in which bent leg raise technique was given showed more improvement in Hamstring flexibility than Group 2 in which Myofascial release technique was given.

Shrinivas Vinayakrao Shinde, Smita Bhimrao Kanase, Effect of Mulligan's bent leg raise versus Neural mobilization on Hamstring tightness in college students, they concluded that Neural mobilization was found to be more effective than Mulligan's bent raise in treating the Hamstring tightness in college students.

Dr. Amrutkuvar H. Pawar, Dr. Santosh Metgud, comparative effectiveness of Mulligan's Straight Leg Raise and Bent Leg Raise in Low Back Ache with Radiculopathy, they concluded that the randomized clinical trial provided evidence to support the use of Mulligan's BLR and TSLR techniques in relieving pain, improving hip flexion (SLR) range of motion and improving functional well being. In addition, Mulligan's Bent Leg Raise can be of great value in improving physical function in LBP with radiculopathy.

Willhuber GO, PiuZZi NS. Straight Leg Raise Test.

Vermani E, Mittal R, Weeks A. Pelvic girdle pain and low back pain in pregnancy: a review. Pain Practice. 2010 Jan;10(1):60-71.

III. AIM

The aim of the study is to find out an effect of Mulligan's bent leg raise technique (BLR) or traction straight leg raise (TSLR) technique on Hamstring tightness in low back pain in postpartum.

IV. HYPOTHESIS

H_0 = There will be no difference an immediate effect of Mulligan's bent leg raise (BLR) and Traction straight leg raise (TSLR) on Hamstring tightness in low back pain in postpartum.

H_1 = There will be the effect of Mulligan's bent leg raise (BLR) and Traction straight leg raise (TSLR) in reducing Hamstring tightness in low back pain in postpartum.

H_2 = There will be the effect of Traction straight leg raise (TSLR) and Mulligan's bent leg raise (BLR) in reducing Hamstring tightness in low back pain in postpartum.

V. MATERIAL AND METHODOLOGY

- **Source of data:** Lala Lajpat Rai Hospital (Department of Gynecology), Kanpur (Hallet OPD)
- **Method of data collection:** Sample size = 30 subject
- **Material:** Goniometer; Hydrocollateral Pack
- **Test:** Straight leg raise (SLR)
- **Study design:** Comparative study
- **Study duration:** 5 days
- **Criteria for selection**
 1. **Inclusion-criteria:**
 - Postpartum

- Low-back-pain
- Hamstring tightness

2. **Exclusion-criteria:**

- C-Section
- Before pregnancy.

VI. PROCEDURE

Subjects were randomly divided into two groups; Group A received Mulligan’s bent leg raise (BLR) and Group B received Traction straight leg raise (TSLR).

Group A:

Hydrocollator pack for 10 minutes prior to the stretching Mulligan’s bent leg raise (BLR) technique.

Mulligan’s bent leg raise technique (BLR): Position of the patient in supine lying on the plinth. Hips 90 degree flexed, knee 90 degree flexed and the affected limb on researcher’s shoulder. Position of the researcher is walk standing. Hand placement is to grasp the lower end of femur, thumbs at popliteal fossa and fingers in front. Subject places his flexed knee over the shoulder of the therapist. Ask him to push the therapist away with his leg and then relax. At this point the therapist pushes his bent knee up as far as the therapist can in the direction of his shoulder on the same side provided there is no pain. 3 repetitions of pain free 5s, isometric contraction of the Hamstring performed in five progressively greater positions of hip flexion. With the bent knee over the therapist shoulder therapist includes a traction component with this technique.

Group B:

Hydrocollator pack prior for 10 minutes to the stretching Traction straight leg raise (TSLR) technique.

Traction straight leg raise (TSLR): Position the patient in supine and stand facing his right side. Ask the patient to actively straight leg raise (SLR) without assistance and note the range. Now grasp his lower leg proximal to the ankle joint and raise it off the bed to a position just short of the painful range. Flex your knees and hold the clasped leg to your chest. When the therapist extends the knee this will effectively apply a longitudinal traction to the leg. Sustain the traction and undertake a straight leg raise (SLR) as far as possible provided there is no pain. Straight leg raise (SLR) with traction three times. (When pain free).

VII. RESULT

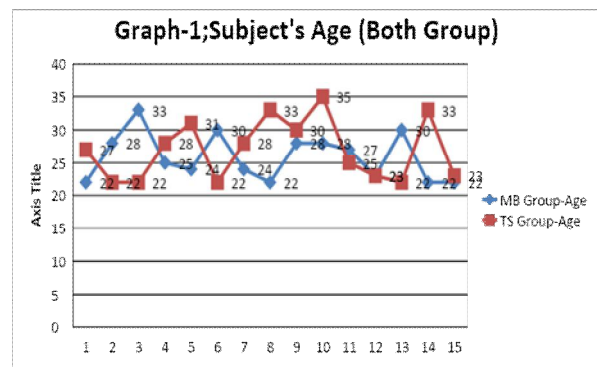
Table 1. represents the data analysis of each group with left and right leg

	MB Leg Raise		TS Leg Raise	
	Mean (D)	SD	Mean (D)	SD
Right Leg	10.67	3.15323	6.2	3.048067
Left Leg	10.33	1.749898	6.13	1.780851

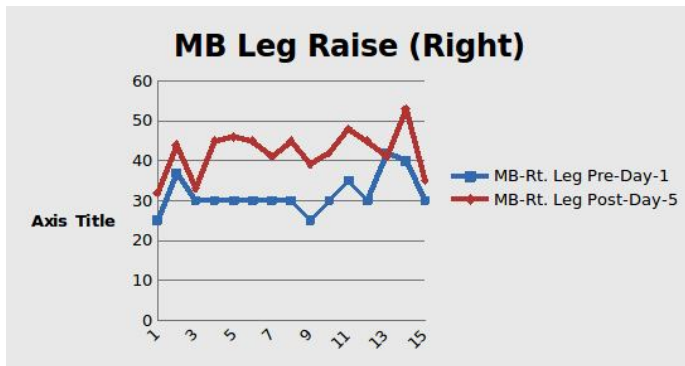
Table 2: Calculation chart for final result

	MB Leg Raise	TS Leg Raise
Mean difference (RL-LL)	0.34	0.07
A=(SD ²)/No. of n for RL	7.589926667	0.619380829
B=(SD ²)/No. of n for LL	7.113926667	0.211428686
C=A+B	14.70385333	0.830809515
D =SQRT C	3.834560383	0.911487529
DF	28	28
t-value	0.02312319	0.084255174
p-value	0.481716012	0.433453082

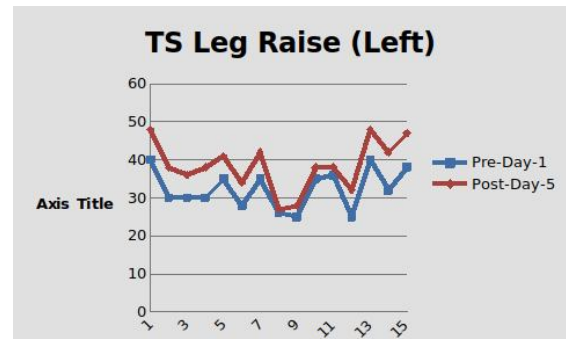
The 2t Confidence level of all tests shows significant change observed i.e. null hypothesis is rejected and alternate hypothesis is accepted, so that we observed significant improvement along with effectiveness of MB Leg raise in compare to TS Leg raise training program under strict prescribed technical norms on Hamstring tightness in low back ache in postpartum.



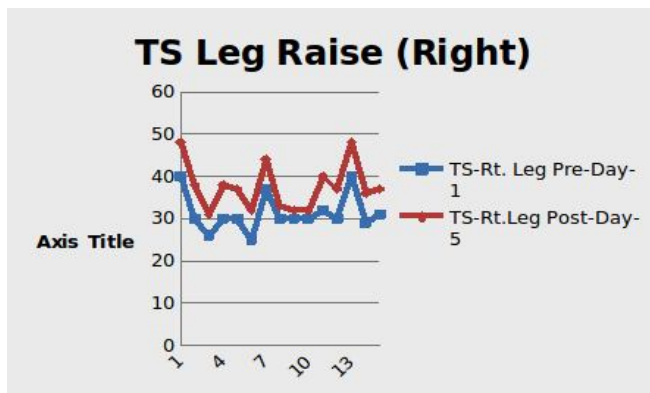
Graph-1: Represents the Age wise distribution of all study subjects of both groups i.e. MBLR & TSLR, A finding shows mean age (±SD) is 24.3 (±4.64) years for MBLR & , mean age (±SD) is 26.9 (±4.11) years for TSLR, which represents young aged participants.



Graph-2: Represents the distribution of MBLR Right leg, A finding shows mean (\pm SD)10.67(\pm 2.11) to compare findings of Pre-Day-1 data to ost-Day-5 data of this group.



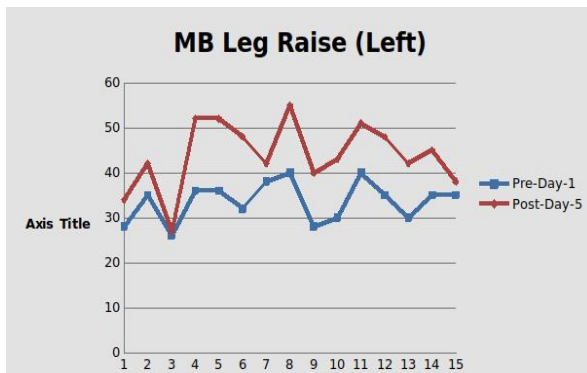
Graph-5: Represents the distribution of TSLR left leg, A finding shows mean (\pm SD) 6.0(\pm 2.16) to compare findings of Pre-Day-1 data to ost-Day-5 data of this group.



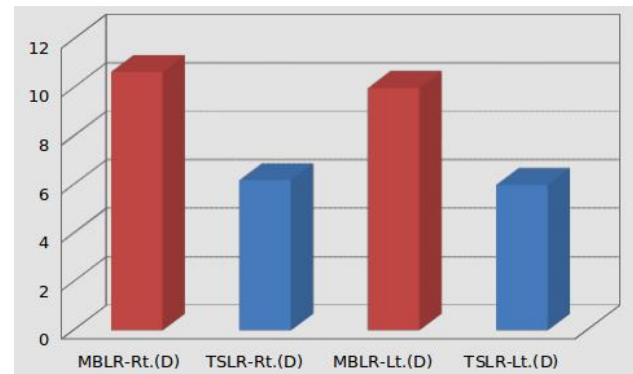
Graph-3: Represents the distribution of TSLR Right leg, A finding shows mean (\pm SD) 6.2(\pm 2.43) to compare findings of Pre-Day-1 data to ost-Day-5 data of this group.

VIII. DISCUSSION

Total 30 subjects (15 subjects in each two groups) were taken according to the inclusion & exclusion criteria, those who satisfied the criteria were allowed to perform the study, and a total 30 subjects successfully completed the study.



Graph-4: Represents the distribution of MBLR left leg, A finding shows mean (\pm SD) 10.33(\pm 1.91) to compare findings of Pre-Day-1 data to ost-Day-5 data of this group.



Graph-6: Represents the distribution MBLR Right & Left to TSLR Right & Left, A finding shows MBLR right (\pm SD) is 10.67(\pm 2.11) & MBLR left 10.33 (\pm 1.31) to TSLR Right mean (\pm SD) 6.2(\pm 2.43) & TSLR Left 6.0(\pm 2.16) which represents significant improvement in MBLR to TSLR.

All the subjects were taken from Lala Lajpat Rai Hospital - Department of Gynecology (Hallet OPD), Kanpur on inclusion criteria such as gender female only, young aged with postpartum with low back pain along with Hamstring tightness. We excluded the subjects with recent C-section, before pregnancy at beginning or during study, we can't allow any nutritional supplements in diet & participants also not allowed to take anabolic-androgenic steroids or any other drugs that might affect their physical performance or hormonal imbalance prior/during the study.

We also found the same conclusion of Dr. Sejal Sathe, Dr. Gauri M Afle that Mulligan's bent leg raise

technique appeared to be more effective than Traction straight leg raise to increase Hamstring flexibility.

Low back pain is more intense and common in the postpartum period. In fact, up to a high percentage of women who suffer from pregnancy related back pain may continue to have pain after giving birth. While the majority of cases resolve within a 6-month postpartum, few may continue to experience pain beyond 6 months. For those with a history of low back pain during pregnancy, low back pain seems to decrease over the postpartum period.

We also found the same conclusion of Dr. Amrutkuvar H. Pawar, Dr. Santosh Metgud, that the randomized clinical trial provided evidence to support the use of Mulligan's TSLR and BLR technique in relieving pain, improving hip flexion (SLR) range of motion and improving functional well being. In addition, Mulligan's Bent Leg Raise can be of great value in improving physical function in LBP with radiculopathy.

IX. CLINICAL IMPLICATIONS

These data suggest that the study is to compare the effectiveness of Mulligan's bent leg raise (BLR) and traction straight leg raise (TSLR) technique on Hamstring tightness in low back ache in postpartum shows significant betterment through MBLR in compare to TSLR, so it will improve the treatment outcome.

X. FUTURE RESEARCH

This study was conducted for a short period only, future research involving a longer time period & comparing the effects of the two intervention programs is possible.

XI. LIMITATION OF THE STUDY

A small sample size was one of the major limitations of the study. Many participants quit during study due to multiple sessions follow-up.

XII. CONCLUSION

Hence we concluded that Overall, based on results of this study and previous research, it can be said that the study to find out an effect of Mulligan's bent leg raise technique (MBLR) shows significant improvement in compare with traction straight leg raise (TSLR) technique on Hamstring tightness in low back ache in postpartum is observed so the null hypothesis is rejected and alternate hypothesis is accepted.

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