



# A COMPRATIVE STUDY OF MULLIGANS BENT LEG RAISE TECHNIQUE VERSUS TRACTION STRAIGHT LEG RAISE TECHNIQUE REDUCES HAMSTRING TIGHTNESS IN LOW BACK PAIN IN POSTPARTUM FEMALES

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## Abstract :-

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**INTRODUCTION:-** In the population of pregnant women, low back pain (LBP) and pelvic girdle pain (PGP) are rather common (20–90%), albeit a small percentage of women may experience both types of pain. The patient is put through this exam while lying supine, both legs straight, and feet spaced 20 cm apart. Without bending her knee, the woman is instructed to raise each leg in turn to a height of 20 cm above the examination table.<sup>6</sup> More recently, a fresh method for treating hamstring tightness was developed: the Mulligans bent leg raise (BLR). Recently, this painless stretching method has been used to treat hamstring stiffness with limitation in straight leg raises (SLR).<sup>7</sup> Mulligan has discussed two treatments that are said to help individuals with low back pain increase their range of motion in the hip flexion: the traction straight leg raise (TSLR) and the bent leg raise (BLR). Limitations in hip flexion range of motion along with low back discomfort, either with or without referred leg pain, are indications for using Mulligan's Traction Straight Leg Raise (TSLR) and Bent Leg Raise (BLR) procedures.<sup>8</sup> **AIM:-**The purpose of the research is to evaluate the impact of Mulligan's Bent Leg Raise (BLR) techniques and Traction Straight Leg Raise (TSLR) reduces hamstring tightness in low back pain in postpartum.

**Method and Methodology:** Hamstring tightness of Group A treated by Mulligan's bent leg raise (BLR) while hamstring tightness of Group B treated by Traction straight leg raise (TSLR) to reduce the low back pain in postpartum.

**Result:-**Under strict prescribed technical norms on hamstring tightness in low back ache in postpartum, we observed significant improvement along with the effectiveness of MB Leg raise in comparison to TS Leg raise training program. The 2t Confidence level of all tests shows significant change observed, i.e., null hypothesis is rejected, and alternate hypothesis is accepted. The P= Value is ( $P \leq 0.001$ ) detected.

**Conclusion:** Therefore, we came to the conclusion that, overall, the null hypothesis is rejected and the alternate hypothesis is accepted based on the findings of this study and earlier research, which indicates that the study to determine the effect of Mulligan's bent leg raise technique (MBLR) shows significant improvement in compare with traction straight leg raise technique (TSLR) on hamstring tightness in low back ache in postpartum is observed.

**KEYWORDS:** - HAMSTRING TIGHTNESS, POSTPARTUM, MULLIGAN BENT LEG RAISE TECHNIQUE, TRACTION LEG RAISE TECHNIQUE



**INTRODUCTION:** - In the population of pregnant women, low back pain (LBP) and pelvic girdle pain (PGP) are rather common (20–90%), albeit a small percentage of women may experience both types of pain. However, during pregnancy, pelvic girdle pain is usually more prevalent and severe. Postpartum low back pain is more common and more severe. As a matter of fact, discomfort may persist in up to 75% of pregnant women with back pain after giving birth. Forty percent of instances may persist in pain after six months, even though the majority of cases resolve within that time. In women who have experienced low back discomfort in the past during pregnancy, the pain appears to subside throughout the postpartum phase. On the other hand, it was discovered that women who report low back discomfort or pelvic girdle pain within three months after giving birth are more likely to develop chronic or persistent low back pain. Just 6% of these women recover from childbirth within six to eighteen months. Researchers have not been able to determine the etiologic factors associated with pelvic girdle pain or postpartum low back pain.<sup>1</sup>

Hips and pelvis may roll back due to a tight hamstring, flattening your lower back and resulting in back issues. The semitendinosus, semimembranosus, and biceps femoris are the three main muscles that make up the hamstring muscle. They span the hip and knee joints and are housed in the thigh's posterior compartment. They are therefore the knee's flexors and the hip's extensors.<sup>2</sup> A reduction in the muscle's capacity to flex causes muscle tightness by limiting the range of motion at the joint where the muscle operates.<sup>3</sup> It is common to propose that muscular tightness is an inherent risk factor for the emergence of a muscle injury. It has been proposed that hamstring strains are predisposed to by a lack of flexibility. Stretching your hamstrings will improve muscle flexibility and reduce stiffness. By using Mulligan's bent leg raise (BLR) technique, scar tissue adhesion is released, allowing for complete muscle

lengthening and the restoration of flexibility needed for functional use.

Bent leg raise (BLR) is a painless procedure that can be used on patients experiencing painful or limited straight leg raising (SLR). Patients exhibiting a gross bilateral limitation of straight leg raise (SLR) may consider trying it.<sup>4</sup> The Lasegue test is another name for the straight leg lift.<sup>5</sup> It has been demonstrated that this test is helpful in evaluating and diagnosing pelvic girdle discomfort in women who have just given birth. The patient is put through this exam while lying supine, both legs straight, and feet spaced 20 cm apart. Without bending her knee, the woman is instructed to raise each leg in turn to a height of 20 cm above the examination table.<sup>6</sup> More recently, a fresh method for treating hamstring tightness was developed: the Mulligan's bent leg raise (BLR). Recently, this painless stretching method has been used to treat hamstring stiffness with limitation in straight leg raises (SLR).<sup>7</sup> Mulligan has discussed two treatments that are said to help individuals with low back pain increase their range of motion in the hip flexion: the traction straight leg raise (TSLR) and the bent leg raise (BLR). Limitations in hip flexion range of motion along with low back discomfort, either with or without referred leg pain, are indications for using Mulligan's Traction Straight Leg Raise (TSLR) and Bent Leg Raise (BLR) procedures.<sup>8</sup>

#### Literature Review :

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 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.

Willhuber GO, Piuze 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.

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 bent raise in treating the hamstring tightness in college students.

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.

#### **Aim of the study:**

The purpose of the research is to evaluate the impact of Mulligan's Bent Leg Raise (BLR) techniques and Traction Straight Leg Raise

(TSLR) reduces hamstring tightness in low back pain in postpartum.

#### **Objectives:**

- To Evaluate the Mulligans Bent Leg Raise (BLR) technique reduces the hamstring tightness in low back pain in postpartum
- To Evaluate the Traction Straight Leg Raise (TSLR) technique reduces hamstring tightness in low back pain in postpartum
- To Compare the evaluation in between Mulligans Bent Leg Raise (BLR) and Traction Straight Leg Raise (TSLR) Technique reduces hamstring tightness in low back pain in postpartum

#### **Hypothesis:**

- $H_0$  = There will be no difference of effect of Mulligans Bent Leg Raise (BLR) and Traction Straight Leg Raise (TSLR) reduces the hamstring tightness in low back pain in postpartum
- $H_1$  = There will be the effect of Mulligans bent leg raise (BLR) reduces the hamstring tightness in low back pain in postpartum
- $H_2$  = There will be the effect of Traction straight leg raise (TSLR) reduces the hamstring tightness in low back pain in postpartum
- $H_3$  = There will be evaluate the effect of Mulligans bent leg raise (BLR) and Traction straight leg raise (TSLR) reduces the hamstring tightness in low back pain in postpartum

#### **Method and Methodology:**

- **Source of data** : Rama Hospital & Research Centre (Department Of Gynaecology) Physiotherapy OPD
- **Sample size** : 30 Subjects
- **Research design** : Experimental study
- **Materials required** :

Hydrocollator packs

Towel

Plinth

Macintosh

Bedsheet

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Goniometer

- **Test** : SLR Test
- **Criteria for selection :**

**Inclusion Criteria—Low back Pain**

Postpartum  
**Normal delivery**  
**Hamstring tightness**

**Exclusion Criteria- C-section**

**Before pregnancy**

**Procedure:** Randomly subjects were divided into two groups:

Group A (15 objects)

Group B (15 objects)

Hamstring tightness of Group A treated by Mulligan's bent leg raise (BLR) while hamstring tightness of Group B treated by Traction straight leg raise (TSLR) to reduce the low back pain in postpartum.

**Group-A:-** The patient is positioned in a supine position on the plinth using Mulligan's bent leg raise method (BLR). Hips and knees 90 degrees bent, with the afflicted limb resting on the researcher's shoulder. The researcher is standing up on a walk. The lower end of the femur should be grasped with the thumbs at the popliteal fossa and the fingers in front. The patient places his bent knee over the therapist's shoulder. Request that he use his leg to push the therapist away before he unwinds. Assuming there is no pain, the therapist now pushes the patient's bent knee as far as possible up toward the patient's shoulder on the same side. Three sets of hamstring isometric contractions without pain, carried out in five positions with

Table-I Master chart of Mulligan Bent Leg Raise Technique(GROUP-A)

Table-II Master chart of Traction Straight Leg Raise Technique(GROUP-B)

increasing hip flexion. The therapist applies a traction component to this treatment, with the leg bent over the therapist's shoulder.

**Group B:** The patient is positioned supine and is facing his right side when performing a traction straight leg raise (TSLR). Request that the patient actively raise their legs straight (SLR) on their own, noting the range as you go. Take hold of his lower leg immediately in front of the ankle joint, then lift it off the bed to a position that is just beyond the painful range. Hold the leg that is gripped to your chest while bending your knees. The limb will experience a longitudinal traction as the therapist extends the knee. As long as there is no pain, maintain the traction and do a straight leg raise (SLR). Perform three straight leg raises (SLRs) while using traction. (In the absence of pain).

#### **DATA ANALYSIS:**

Data analysis was done using IBM SPSS Statistics (software package used for statistical analysis 2019 version-Rev.) The study employed descriptive statistics, namely the t-test, to ascertain the demographic features of the respondents that were recruited. When doing hypothesis testing, the p-value can be used to determine whether to reject or not to reject a null hypothesis. The p-value is the likelihood that, in the event that the null hypothesis is correct, a test statistic will be obtained that is at least as extreme as the calculated value. 0.05 is a frequently used cut-off value for the p-value.

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MULLIGAN BENT LEG RAISE					
Sno.	Age	Right Leg		Left Leg	
		Pre Intervention Day-1	Post Intervention Day-5	Pre Intervention Day-1	Post Intervention Day-5
1	22	25	32	28	34
2	28	37	44	35	42
3	33	30	33	26	27
4	25	30	45	36	52
5	24	30	46	36	52
6	30	30	45	32	48
7	24	30	41	38	42
8	22	30	45	40	55
9	28	25	39	28	40
10	28	30	42	30	43
11	27	35	48	40	51
12	23	30	45	35	48
13	30	42	41	30	42
14	22	40	53	35	45
15	22	30	35	35	38

TABLE-I (GROUP-A=15 Subjects)

Master chart of Mulligan Bent Leg Raise Technique

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TRACTION STRAIGHT LEG RAISE					
Sno.	Age	Right Leg		Left Leg	
		Pre Intervention Day-1	Post Intervention Day-5	Pre Intervention Day-1	Post Intervention Day-5
1	27	40	48	40	48
2	22	30	38	30	38
3	22	26	31	30	36
4	28	30	38	30	38
5	31	30	37	35	41
6	22	25	32	28	34
7	28	37	44	35	42
8	33	30	33	26	27
9	30	30	32	25	28
10	35	30	32	35	38
11	25	32	40	36	38
12	23	30	37	25	32
13	22	40	48	40	48
14	33	29	36	32	42
15	23	31	37	38	47

TABLE-II (GROUP-B=15 subjects)

Master chart of Traction Straight Leg Raise Technique

MULLIGAN BENT LEG RAISE											
Sno.	Age	Right Leg					Left Leg				
		Pre-Day-1	Post-Day-5	x-y	D2	Pre-Day-1	Post-Day-5	x-y	D2		
1	22	25	32	7	2	49	28	34	6	2	36
2	28	37	44	7	2	49	35	42	7	2	49



3	33	30	33	3	2	9	26	27	1	2	1
4	25	30	45	15	2	225	36	52	16	2	256
5	24	30	46	16	2	256	36	52	16	2	256
6	30	30	45	15	2	225	32	48	16	2	256
7	24	30	41	11	2	121	38	42	4	2	16
8	22	30	45	15	2	225	40	55	15	2	225
9	28	25	39	14	2	196	28	40	12	2	144
10	28	30	42	12	2	144	30	43	13	2	169
11	27	35	48	13	2	169	40	51	11	2	121
12	23	30	45	15	2	225	35	48	13	2	169
13	30	42	41	-1	2	1	30	42	12	2	144
14	22	40	53	13	2	169	35	45	10	2	100
15	22	30	35	5	2	25	35	38	3	2	9
	<b>24.3</b>	<b>31.6</b>	<b>42.27</b>	<b>10.7</b>		<b>139</b>	<b>33.6</b>	<b>43.93</b>	<b>10</b>		<b>130</b>
					V	<b>9.9</b>			V		<b>9.29</b>
					SD	<b>3.2</b>			SD		<b>3.05</b>

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TABLE-III: Calculation chart of Group A

i.e. Mulligan Bent Leg Raise  
 (where V=Variance, SD=Standard Deviation)

TRACTION STRAIGHT LEG RAISE											
Sno.	Age	Right Leg				Left Leg					
		Pre-Day-1	Post-Day-5	x-y	D2	Pre-Day-1	Post-Day-5	x-y	D2		
1	27	40	48	8	2	64	40	48	8	2	64
2	22	30	38	8	2	64	30	38	8	2	64
3	22	26	31	5	2	25	30	36	6	2	36
4	28	30	38	8	2	64	30	38	8	2	64
5	31	30	37	7	2	49	35	41	6	2	36
6	22	25	32	7	2	49	28	34	6	2	36
7	28	37	44	7	2	49	35	42	7	2	49
8	33	30	33	3	2	9	26	27	1	2	1
9	30	30	32	2	2	4	25	28	3	2	9
10	35	30	32	2	2	4	35	38	3	2	9
11	25	32	40	8	2	64	36	38	2	2	4
12	23	30	37	7	2	49	25	32	7	2	49



13	22	40	48	8	2	64	40	48	8	2	64
14	33	29	36	7	2	49	32	42	10	2	100
15	23	31	37	6	2	36	38	47	9	2	81
	<b>26.9</b>	<b>31.33</b>	<b>37.53</b>	<b>6.2</b>		<b>43</b>	<b>32.33</b>	<b>38.47</b>	<b>6</b>		<b>44.4</b>
					V	<b>3.1</b>				V	<b>3.17</b>
					SD	<b>1.7</b>				SD	<b>1.78</b>

**TABLE-IV: Calculation chart of Group B**

**i.e. Traction Straight Leg Raise  
 (where V=Variance, SD=Standard Deviation)**

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

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

**TABLE-V: Calculation chart for final result**

**Result:-**

Under strict prescribed technical norms on hamstring tightness in low back ache in postpartum, we observed significant improvement along with the effectiveness of MB Leg raise in comparison to TS Leg raise training program. The 2t Confidence level of all tests shows significant change observed, i.e., null hypothesis is rejected, and alternate hypothesis is accepted. The P= Value is (P≤0.001) detected.

**Discussion :**

A total of thirty subjects (15 in each of the two groups) were selected based on the inclusion and exclusion criteria; only those who met the requirements were permitted to participate in the study, and thirty subjects in total successfully finished it.

The individuals were recruited from the Department of Gynaecology at Rama Hospital & Research Centre and Physiotherapy OPD, Kanpur, based on inclusion criteria that included solely female gender, postpartum age, low back pain, and tightness in the hamstrings. Subjects who had recently



undergone a C-section, were pregnant at the start of the study or during it, were not permitted to take any dietary supplements, anabolic-androgenic steroids, or any other medications that might have affected their hormone levels or physical performance were also excluded.

We also came to the same conclusion as Drs. Sejal Sathe and Gauri M. Afle: that in terms of increasing hamstring flexibility, Mulligan's bent leg raise approach seemed to be more successful than Traction's straight leg raise.

Postpartum low back pain is more common and more severe. In fact, a significant portion of women who have back discomfort during pregnancy may experience it again after giving birth. Few patients may still be in pain after six months, even though most instances end within that time. In women who have experienced low back discomfort in the past during pregnancy, the pain appears to subside throughout the postpartum phase.

The same result reached by Drs. Amrutkuvar H. Pawar and Santosh Metgud was also reached by us: the randomized clinical trial offered proof in favor of Mulligan's TSLR and BLR approach being used to reduce pain, enhance hip flexion (SLR) range of motion, and enhance functional well-being. Mulligan's Bent Leg Raise is another very helpful exercise for enhancing physical function in LBP patients with radiculopathy.

#### **Clinical Consequences:**

These results imply that the purpose of the study is to compare the efficacy of Mulligan's bent leg raise (BLR) and traction straight leg raise (TSLR) technique on hamstring tightness in low back pain following childbirth. Since MBLR significantly improves the results of TSLR, it will enhance the course of treatment.

#### **Conclusion:**

Therefore, we came to the conclusion that, overall, the null hypothesis is rejected and the alternate hypothesis is accepted based on the findings of this study and earlier research, which indicates that the study to determine the effect of Mulligan's bent leg raise technique (MBLR) shows significant improvement in compare with traction straight leg raise technique (TSLR) on

hamstring tightness in low back ache in postpartum is observed.

#### **Study Limitation:**

One of the main shortcomings of the research was its small sample size. Numerous study participants left because of the multiple follow-up meetings.

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