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Effect of Mulligan Bent Leg Raises Technique in Reducing Pain and Increase ROM in LBA Patients

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ABSTRACT*:* This study has been undertaken to investigate the effect of mulligan bent leg raise technique in Low back ache patients. Current study is experimental study where subjects is male & female both of any age with low back ache, in which total 100 participants took place and all participants complete the study in given time period. Inclusion criteria is low back ache and reduce range of motion, exclusion criteria is sciatica, rupture of sciatic muscles, verified or previously suspected posterior thigh muscle injury and uncertain clinical diagnosis. The objective of the study is to evaluate the efficacy of mulligan bent leg raise technique in Low back ache patient for reducing pain and increasing joint range of motion. To test hypothesis Student t-test was used to analyze. After analyzing the data, we conclude that mulligan bent leg raise technique is very helpful in treating low back ache patients by helping in reducing the pain and increasing range of motion.

KEYWORDS: Low back ache patient, Range of motion, Pain, Vas Scale, Mulligan bent leg raise technique.

I. INTRODUCTION

Low back pain (LBP) or lumbago is a common disorder involving the muscles, nerves, and bones of the back in between the lower edge of the ribs and the lower fold of the buttocks. Pain can vary from a dull constant ache to a sudden sharp feeling[1].Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks)[2]. The condition may be further classified by the underlying cause as either mechanical, non-mechanical, or referred pain[3].

The symptoms of low back pain usually improve within a few weeks from the time they start, with 40–90% of people recovered by six weeks[4].The Mulligan bent leg raise (BLR) technique is used for improving range of straight leg raise (SLR) in subjects with LBP and/or referred thigh pain[5]. and also in order to improve flexibility of hamstring and improve ROM in clients with tight hamstrings. The intention of this technique is to restore normal mobility and reduce LBP and physical impairment. It stretches the lower extremity muscles in combination of hamstring, adductors and rotators. It has been suggested that improving SLR mobility reduces the degree of impairment in LBP[6,7,8].

The SLR test has bio-mechanical effects on pelvis movement, on lumbo-sacral neural structures and hamstring muscles[9,10,11].Hence, it is important when investigating SLR to evaluate the component movements that include hip flexion and posterior pelvic rotation[12].The BLR technique consists of three repetitions of pain-free, isometric contraction of the hamstrings, performed in five progressively greater positions of hip flexion. Suggest that improvement in range of SLR must be greater than 6 degree to state that a real change in SLR range has occurred. Consequently, the change in range produced by the BLR is of clinical relevance only 24 h after the intervention[13,14].

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 walking and 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
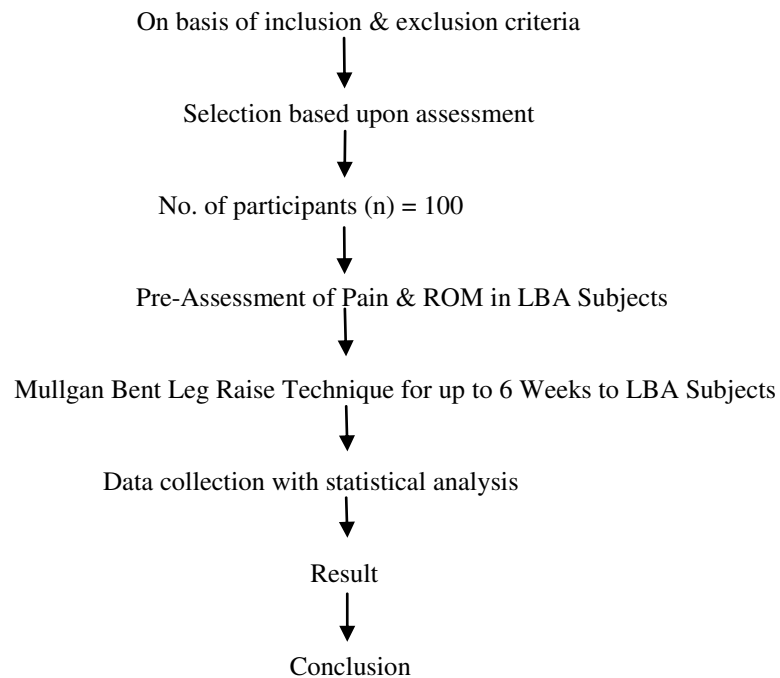
shoulder of the therapist. Ask him to push the therapist away with his leg and then relax. At this point the therapist pushes his bent knee up as far as the therapist can in the direction of his shoulder on the same side provided there is no pain. 3 repetitions of pain free 5s, isometric contraction of the hamstring performed in five progressively greater positions of hip flexion. With the bent knee over the therapist's shoulder , the therapist includes a traction component with this technique[15,16].

II. METHODOLOGY

This chapter is deal with the methods used for the study. This include the information on subjects, inclusion criteria, exclusion criteria, protocol and procedures used in this study. Source of data is Physiotherapy OPD of Saaii college, chaubepur, kanpur. Method of data collection is random, sample size is 100 subjects, study duration is 6 weeks, and study design is Experimental study.

In inclusion criteria subject is willing to participate in the study, both gender male and female can participate over weight, stable vitals, asymptomatic subjects with no any disease. In exclusion criteria Verified or previously suspected posterior thigh muscle injury, Pain on palpation at the origin or insertion of the posterior thigh muscles, Total rupture of hamstring muscles, Sciatica.

On basis of inclusion & exclusion criteria

↓

Selection based upon assessment

↓

No. of participants (n) = 100

↓

Pre-Assessment of Pain & ROM in LBA Subjects

↓

Mullgan Bent Leg Raise Technique for up to 6 Weeks to LBA Subjects

↓

Data collection with statistical analysis

↓

Result

↓

Conclusion

Flowchart 1: represent the whole protocol of present study.

Subjects were selected based upon the inclusion & exclusion criteria. they were explained in detail about the type & nature of study before participation. consent was taken by each subject before participating in the study by signing a consent form that contained all the information necessary for them about the study. procedure was explained in detail and all the necessary precautions were taken to avoid any inconvenience. subject preparation was carefully done. they were asked to not to indulge in any kind of vigorous activity prior to the test or to take any heavy meal up to 1 hour by the test. all the subjects were made sure to be properly hydrated, wore comfortable clothing & comfortable footwear. before starting the test, necessary assessment was done such as age, sex, height, weight and BMI were also documented. according to the **guidelines published in American thoracic societies,**the subjects were recruited by simple random method, and asked to

perform mulligan Bent leg raise technique for about 6 weeks. After completion of time period data is collected and analyse by student test.

III. ANALYSIS

Data analysis was done using IBM SPSS statistics (software package used for statistical analysis 2019 version - 26). Descriptive statistical analysis was done to determine the demographic characteristics of the subjects recruited in the study; paired sample t-test used in the analysis of this study. P – value used in the study to test hypothesis, which help in deciding whether to reject or accept the Null hypothesis. The p – value is probability of obtaining a test value that is at least extreme as the actual calculated value, if the null hypothesis is true. A commonly used value for the p – value is 0.05.

Table 1: Showing descriptive data

	N	Minimum	Maximum	Mean	Std. Deviation
Age	100	18	75	40.51	17.144
Height in cm	100	139	173	157.69	8.307
Weight in Kg	100	45	89	63.60	9.301
Body mass index	100	22	75	38.15	15.837
Valid N (listwise)	100				

The descriptive data of **table 1** shows average age of participants was 40.51 years and the average weight was 63.60 Kg. The participants had an average height of 157.69 cm and correspondingly the average of BMI was calculated to be 38.15. This reflects that average participant were in the over-weight category.

The table 2 shows the statistical data of participants, while analyzing the data it has been found that mulligan bent leg raise technique was significant in improving range of motion and decrease pain in low back ache patients. There is

Table 2: Showing statistical data

|		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	f	Sig. (2-tailed)
					Lower	Upper			
air 1	Pre test FROM - Post test FROM	25.910	41.774	4.177	17.621	34.199	6.202	99	.000
air 2	Pre test EROM - Post test EROM	2.250	10.034	1.003	.259	4.241	2.242	99	.027
air 3	Pre test VAS score - Post test VAS score	3.970	2.037	.204	3.566	4.374	19.487	99	.000

improvement in flexion range of motion with Mean ($\pm$SD) of 25.910 ($\pm$41.774) and t - value was 6.202 with p - value of 0.000, Extension range of motion with Mean ($\pm$SD) of 2.250 ($\pm$10.034) and t - value was 2.242 with p - value of 0.027 and VAS score with Mean ($\pm$SD) of 3.970 ($\pm$2.037) and t - value was 19.487 with p - value of 0.000. So the Table 2 shows that Mulligan bent leg raise technique was significant at the 95% confidence level.

IV. RESULT

The 95% confidence level of paired samples t - test shows significant improvement i.e., null hypothesis is rejected and alternate hypothesis is accepted and we statistically observed improvement along with effectiveness of Mulligan bent leg raise technique in increasing joint range of motion and decreasing pain in over weight individuals with low back ache.
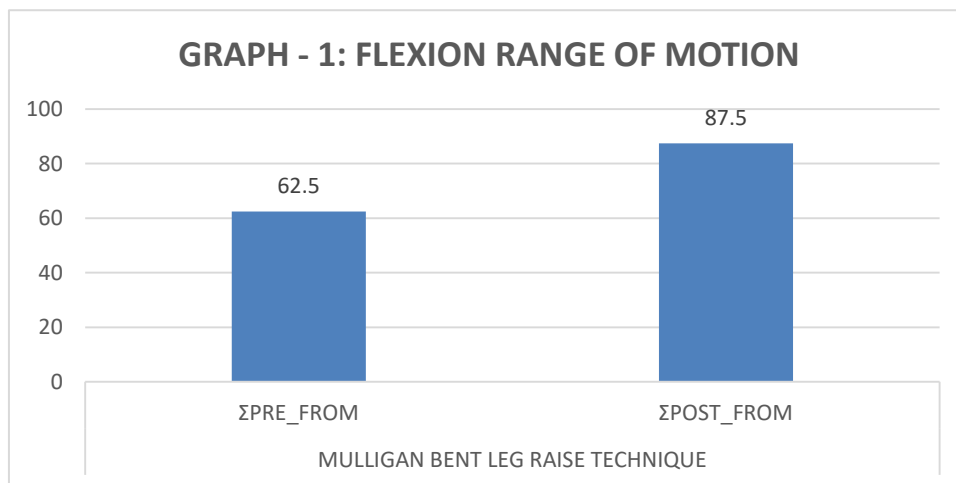
GRAPH - 1: Shows the Flexion range of motion of all the participants treated with Mulligan bent leg raise technique. A finding shows that Flexion range of motion with Means ($\pm$SD) of 25.910 ($\pm$ 41.774) for Mulligan bent leg raise technique, which shows statistically significant.
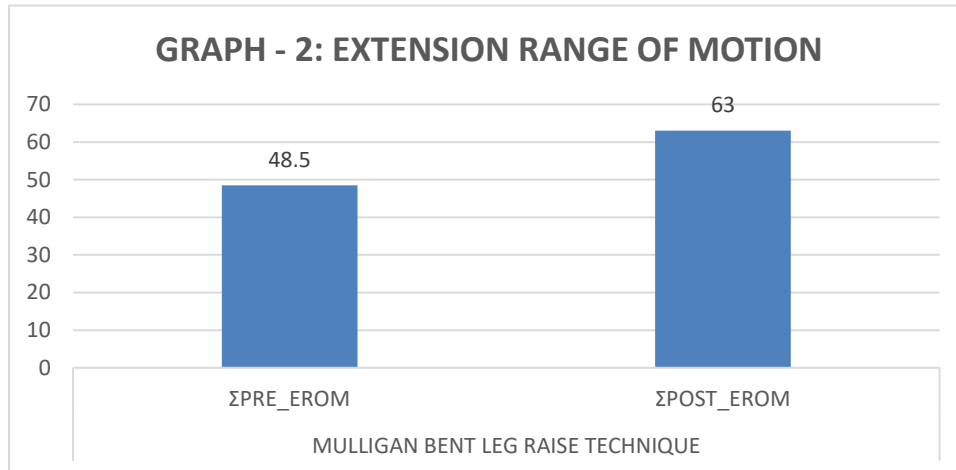
GRAPH - 2: Shows the Extension range of motion of all the participants treated with Mulligan bent leg raise technique. A finding shows that Extension range of motion with Means ($\pm$SD) of 2.250 ($\pm$ 10.034) for Mulligan bent leg raise technique, which shows statistically significant.
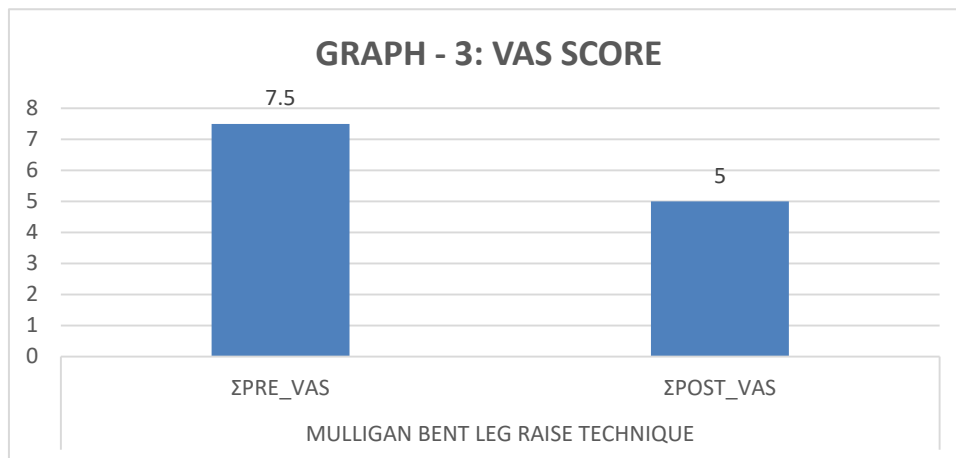
GRAPH - 3: Shows the VAS Score of all the participants treated with Mulligan bent leg raise technique. A finding shows that VAS Score with Means ($\pm$SD) of 3.970 ($\pm$ 2.037) for Mulligan bent leg raise technique, which shows statistically significant.

V. CONCLUSION

Hence, we concluded that, based on the results of this study and previous research, null hypothesis is rejected and alternate hypothesis is accepted. As per the result, it has been concluded that Mulligan bent leg raise technique can be used in over weight patients, and the protocol were effective and shows significant improvement, in managing pain and increasing range of motions.

VI. DISCUSSION

The present study was done to determine the efficacy of Mulligan bent leg raise technique to decrease pain and increase joint range of motion. The study was done on over - weighted individuals. The pre and post effect of Mulligan bent leg raise technique were taken with the help of Goniometer and VAS Scale. There was total 100 subjects recruited

according to inclusion and exclusion criteria. Those who satisfied the criteria were allowed to perform the study. All the 100 subjects were successfully completed the study. All the subjects were taken from OPD of Saaii college, Kanpur.

After analysis of the data collected from the study represents that null hypothesis is rejected and alternate hypothesis is accepted, which means Mulligan bent leg raise technique were effective in decreasing pain and increasing range of motion in over weight subjects. The study represents that the average means of subjects shows Mulligan bent leg raise technique were statistically significant.

We also found same conclusion in 2022, Muhammad Adnan et al , in their study **"Effectiveness of bent leg raise technique and neuro-dynamics in patients with radiating low back pain"** Concluded that Both neuro-dynamics and bent leg raise technique significantly improved pain, functional disability and SLR range in patients with LBP that radiates up to the knee. However, there were no significant differences between the groups who received either neurodynamics or bent leg raise[17].

2014, Gajendrakumar Patel et al., in their study "**To Compare the effectiveness of Mulligan Bent LegRaising and Slump Stretching in Patient with Low Back Pain"**Concluded that Results of the study shows that both the techniquesMBLR and SLUMP are effective in reducing pain and alter the ROM of PSLR. However MBLR group shows greater improvement in pain and ROM of PSLR, then the SLUMP group inpatient with Low Back Pain[18].

2014, P. Ratan Khuman et al., in their study **" Immediate Effects of Single Session Post Isometric Relaxation Muscle Energy Technique Versus Mulligan's Bent Leg Raise Technique on Pain and Hamstring Flexibility in Knee Osteoarthritis Participants: A Randomised Controlled Study"** Concluded that The results of this study show that a single session of Post Isometric Relaxation Muscle Energy Technique as well as Mulligan's Bent Leg Raise Technique along with moist heat are effective in reducing pain and improving hamstring flexibility in knee osteoarthritis participants. It was evident that Mulligan's Bent Leg Raise technique along with moist heat was the most effective compared to Post Isometric Relaxation Muscle Energy Technique with moist heat or moist heat alone in reducing pain and improving hamstring flexibility in knee osteoarthritis participants[19].

2013 Oves Patni1, Saravanan M2, Aliya Shaikh3, Ankita Juneja3, Nazrana Shaikh3, Ruchi Patel3 et al., in their study **"Effect of single bout of passive stretching and Mulligan's Bent Leg Raise (BLR) on Hamstring flexibility in young adults with asymptomatic bilateral Hamstring tightness "** Concluded that In young adults with asymptomatic bilateral hamstring tightness, hamstring flexibility gains obtained from a single bout of both passive stretching and BLR were almost similar. The present study concludes that both passive stretching and BLR interventions can significantly improve hamstrings flexibility and the the difference between the changes produced by both the interventions are negligible[20].

2010, D. Hoy a,*, P. Brooks b , F. Blyth c , R. Buchbinder d et al , in their study **" The Epidemiology of low back pain"** Concluded that It is clear that low back pain is an extremely common problem, which most people experience atat some point in their life. Most cases run a chronic–episodic course. It has a huge impact on individuals,families, communities, governments and businesses throughout the world. The GBD 2005 is currentlymaking estimates of the global burden of low back pain in relation to impairment and activity limitation. Results will be available in 2011. Using a standardized case definition for low back pain in futureepidemiological studies, as proposed by Dionne et al. will improve between-study comparisonsand use of data. Further research is needed to help us understand more about the long-term course andbroader outcomes and impacts from low back pain[21].

The current study is very unique, so we can do a lot in future. This study was conducted for a short period of time and with small sample size; future research involving long time period and larger sample size and comparing of two different intervention is also possible. The result of this study will help the physiotherapist to choose whether which intervention is best for increasing range of motion and decreasing pain in overweight subjects.

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