

Effect of Postero-Anterior Lumbar Spine Mobilization versus McKenzie Press-Ups in Non-Specific Low Back Pain

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ABSTRACT

Background: Non-specifically pain in the low back occurs in 85% percent of population. Examples like Posterior to anterior mobilization and press up exercises are rapidly used as most common physical therapy intervention for the reduction of pain in low back.

Aim: Major purpose of this study is to find out the influence of posterior to anterior mobilization of spine and prone press-ups exercises in reduction of pain due to nonspecific reasons in low back.

Materials and Methods: The design of this study conducted was randomized clinical trial.

Thirty subjects who fulfill the inclusion criteria were chosen subjectively from the department of physical therapy of Ayesha Hospital Lahore. Duration of study was six months, from November 2020 to April 2021. Two groups were made with selection of fifteen participants in each group. Posterior to anterior glides to lumbar spine combined with the inclined press up's exercises of lumbar was given to group II. Subjects chosen in group II were observed before the treatment started and after the completion of the treatment for NPRS and utilitarian incapacity. The posterior to anterior glide to lumbar spine was given to the participants of group I. participants of group I were also examined before the start of the treatment and after the completion of entire treatment and NPRS along with functional incapacity were also observed at the end of the treatment.

Results: Pain in low back spine is decreased in both of the selected groups I and II.

Statistical importance occurs in results of both the groups in all its limitations.

Both groups were similar in normality measurement values with p-value>0.05.

Conclusion: Posterior to anterior mobilization and press-up exercises can be used as effective

Keywords: Nonspecific pain in low back, prone press up exercises, posterior to anterior mobilization of spine.

INTRODUCTION

Non-specific pain in low back is the pain that occur at low back without any specific reason. It is a main cause of limitation of activity, absence and high health care costs.(1)Non-specific pain in low back has become a serious difficulty in whole over the world. 84 percent of people suffering from life time low back pain, and the percentage of chronic low back pain is 23 percent, 11 to 12 percent some of are disabled by low back pain. Some of the mechanical factors like lifting and carrying heavy weights do not have a pathogenic cause but do cause back pain. Similarly genetic reflection also holds an important role in nonspecific pain in low back.(2)

Many reasons and factors affect the low back pain that includes from age, sex, body mass index (BMI) to the physical movement of the Participants. The reason of constant pain is multifactorial that can include pain, emotional, societal, job-related, and money related factors.(3)

The definition of Maitland is a use of oscillatory passive and adjunct movements to spinal joints and vertebral joints. This technique is aimed at restoring spinning, rolling and gliding between surfaces of joints and rating them according to their amplitude.(4)To treat pain Posterior to anterior central vertebral pressure should be equal to both of the lumbar spine sides. When pain or muscular spasm occurs in motion in this direction, this procedure is defined, but it is done in a way that does not

stimulate pain or spasm in muscle. In participants with structural anatomical variations related with defective posture of body, this technique is successful..(5)

McKenzie used a technique press-up exercise in prone position that is used for reducing pain and enhancing spinal movements. Robin McKenzie proposed another idea of finding and treatment dependent on examination of Participants with both sudden onset of pain and prolonged back issue(6).In McKenzie's view of mechanical disorders, both diagnosis and therapy depend on the indications previously observed, during and after continuous motion testing. The postural issues lead to muscle dysfunction with loss of extension in lumbar. In slow steady motion, expanding to the end range is performed as a therapy.(7) The basic philosophy is that facing forces will maybe delay the pain and recover the role of McKenzie's theory. Extensor muscle exercises are sometimes used to treat Participants with back problems. More mobility in spine means more reduction in pain in low back. so, movement of spine maneuvers can be suggested to Participants (8) who have low back pain.

Earlier studies were done in relating the efficiency of posterior to-anterior lumbar mobilization and -press ups exercises in prone position after one sitting and show major progression in ranges of extension but not clinically associated progresses. This is perhaps due to only sitting of interferences (9). Thus everlasting additions in reduction of pain and extension of lumbar can never be achieved. In

addition, only a few trials have been performed to see the efficacy of posterior to -anterior lumbar extension mobilization in non- pain in low back.(10)

So there is deficiency of proof for clinical efficiency of postero-anterior spinal mobilization, prone press-ups on pain and functional disability in non-specific low back pain because no study has been performed to see their effect after 4 weeks. Hence this study would be meaning to prove the effect of postero-anterior mobilization and prone press ups on non-specific low back pain after 4 weeks and their clinical use. Therefore, the objectives of this randomized controlled trial was to determine the effectiveness of the PA lumbar spine mobilizations and prone press ups in subjects with nonspecific low back pain for the results of pain and functional disability.

METHODOLOGY

30 Participants in this sample who had met the selection criteria were included. Prior to conducting any physical test, written informed consent was taken from every Participants involved in this study. Participants in two classes were distributed by simple random sampling. The study was carried out in Ayesha Hospital Lahore's Physiotherapy ward. Duration of study was six months, from November 2020 to April 2021. 30 subjects that fulfill the inclusion criteria were divided in two different groups having 15 Participants in each of the group. 15 subjects were divided randomly into the control group and given treatment with lumbar mobilization of Maitland Grade II and fifteen subjects were randomized into the experimental group and given treatment with McKenzie's exercises of prone press up. All thirty subjects completed a complete protocol characterized by four weeks of treatment plan. The data was collected on the first day before the intervention and collected after four weeks, and then the last day after the intervention requested

The groups I Participants were given mobilization with a special care by lying them in a prone position to the treatment table and their hands hanging on both sides of the couch. The total time was approximately ten minutes for the intervention advised for the lumbar spine that is posterior to anterior mobilization. The Prone Press-up Exercises are recommended for Group II. Subjects were

asked to do a movement of prone push-up exercises, using the arms to push upward into the spinal extension of the top half of the body, while the pelvis that moves downward due to gravitational force remains on the couch.. They can perform a total of 10 repetitions. Approximately 10 minutes was the average period for the press-up exercises in prone position type of intervention. Treatment was performed five days in a week for a total time period of one month and three sets of proposed fifteen replications were used between the repetitions with a rest period of thirty seconds. With the Numerical Pain Level Scale, pain was assessed and functional impairment assessed with an ODI questionnaire. Statistical analyses were made preference among all other procedures to find out the influence of treatment advised to Participants of both controlled group and the experimental group. . This is achieved by using the 21.0 version of IBM SPSS Inc. The independent sample t-test statistical tools was used for factors that were found between two groups while on the other hand the paired sample t-test was used for factors that occurs within the same group. Some of the Descriptive statistical measures such as mean values, standard deviation and p-value are reported along with it

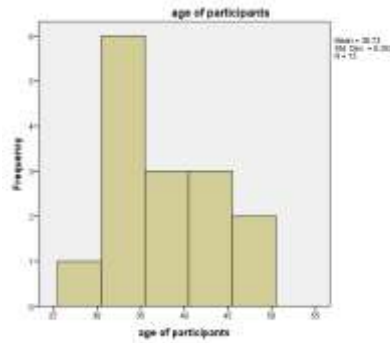
RESULTS

Both groups were similar in normality measurement values with p-value>0.05. The above data reveals that the mean age of Group A participants was 38.73, while the mean age of Group B participants was 38.47. The above table shows that the mean pre-value for NPRS was 7.73 in Group A and the mean post-value for NPRS is 3.53. The mean ODI pre value was 48.80, and the mean ODI post value was 22.90. The above table showing that in Group B the mean pre value of NPRS is 6.67 and means post value is 5.20. The mean pre value of ODI is 49.33 and mean post value of ODI is 41.33. The above table shows that in the Maitland mobilization, the mean post value of NPRS was 3.53 and the mean post value of NPRS in McKenzie resistant press ups was 5.20. In Maitland mobilization, the mean post value of ODI is 22.93 and the mean post value of ODI in McKenzie prone press ups was 41.33.

		Paired Differences					t	Df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	pre value of NPRS - post value of NPRS	4.200	1.207	.312	3.532	4.868	13.475	14	.000
Pair 2	pre value of ODI - post value of ODI	25.867	10.460	2.701	20.074	31.659	9.578	14	.000

Group Statistics

	study group of participants	N	Mean	Std. Deviation	Std. Error Mean
post value of NPRS	Maitland mobilization	15	3.53	1.246	.322
	McKenzie prone press ups	15	5.20	1.568	.405
post value of ODI	Maitland mobilization	15	22.93	7.478	1.931
	McKenzie prone press ups	15	41.33	13.494	3.484



DISCUSSION:

The age range of respondents was between 20 and 50 years of age. Subjects that were over fifty years of age are at more risk to pain in lower back due to unique physiological degenerative changes that occurs because of older age(11). Thus, participants over the age of fifty years were not included in the study under the heading of pain in lower back due to nonspecific reasons. In both groups, substantial pain relief over 4 weeks of sessions was observed in both groups.(12)

The mean results of intra group Numeric Pain Rating Scale (NPRS) were noted and statistically significant differences were observed in the group before the treatment started and at the end of the treatment after the completion of the therapy in four weeks' time period.(13) The results stated that when intergroup comparisons were made, statistically significant changes were found in pain relief between both of the groups.(14)

In regard of reduction of pain, posterior to-anterior spinal mobilization proved more effectiveness. In the present research, the decrease in pain level, as quantified by the NPRS, was quite reliable and in favor of previous studies that tells us that both of the therapies were effective in lessening pain in lower back with the application of both posterior to anterior spinal mobilization and press up exercises in prone position. (15)

Twomey et al, explained that one of the reasons of decreased resistive motions were the continuous repetitions of spine that circulates the synovial fluid all over the surface of articulate cartilage and its disc. (7)

Participants might felt able to move with less resistance to motion and thus may have encountered less pain.

After two sets of one-minute bouts of spinal mobilization in given to subjects selected with complaints of pain in lower back due to nonspecific reasons, Chiradejnant et al mentioned a 36 percent decrease in pain. The special influence of posterior to anterior mobilization of lumbar spine on pain in lower back with nonspecific were also studied by Good sell et al and an average reduction in pain was recorded 33 percent. (16)

A seven point one percent more ranges of lumbar extension is examined, as measured from two inclinometers having fluid-basis on the application of three sets of 1 minute posterior to-anterior mobilization given at L3 vertebrae, L4 vertebrae and L5 spinal vertebrae, was recorded in the current study supporting the work of McCollum and Benson. (17)

Another Cochrane Literature Review found that there is more evidence on the studies of that spinal manipulative technique (SMT) or the spinal mobilization (MOB) technique for the relief of initial acute pains as compared to more general management by practitioners. (18)

The current analysis showed that when both of the - groups were analyzed using the Oswestry Disability Index Questionnaire (ODI), statistically significant changes were observed in both groups and decreased ODI scores were seen, reflecting an increase in pain and functional activities. There was also an analysis among the groups themselves and different ratings were recorded showing difference in readings between both of the two groups I and II stating that group I has more better results of ODI ratings in group1. It can also be inferred that in Participants having lower back pain due to nonspecific reasons, the posterior to -anterior spinal mobilization procedure is greater efficient in enhancing the outcome of physical activity.

CONCLUSION

The study concludes that both the treatments are effective for Low back pain, But Lumbar Spine mobilization was more effective in reducing pain in lower back as compared to McKenzie prone press up exercises.

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