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ORIGINAL ARTICLE

THE EFFECTIVENESS OF GOODMORNINGS EXERCISE VS CONVENTIONAL STRENGTHENING EXERCISE IN SUBJECTS WITH MECHANICAL LOW BACK PAIN

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ABSTRACT

Background of the Study: Low back pain (LBP) is a very common and more than 10 million cases reported per year (India). The overall prevalence of low back pain was < 10% in the community. The prevalence of low back pain was more in women compared to men and it occurs more in the age group 20-35 compared to other age groups. **Methodology:** The study setting is Physiotherapy OPD ACS medical college and hospital campus with experimental study design. 30 subjects of both male and female between the age of 20-35 years who are brisk and who doesn't have any previous illness with slump test negative were included. Group 1 (n=15) were given Goodmornings with barbell exercise for 30 minutes and Group 2 (n=15) were given with conventional strengthening exercise for 30 minutes. The subjects were assessed pre and post to the treatment by Oswestry low back disability questionnaires and Visual Analogue Scale. **Results:** On comparing the Mean values of Group A & Group B on VAS Score, it shows significant decrease in the post test Mean values but (Group B - Strengthening) shows (2.53) which has the Lower Mean value is effective than (Group A - Barbell) (3.00) at $P \leq 0.05$. Hence Null Hypothesis is rejected. On comparing the Mean values of Group A & Group B on Oswestry Disability Index(OSDI), it shows significant decrease in the post test Mean values but (Group B - Strengthening) shows (16.86) which has the Lower Mean value is effective than (Group A - Barbell) (19.60) at $P \leq 0.05$. **Conclusion:** Therefore, this study proved conventional strengthening exercise plays a vital role in treating MLBP.

Keywords: Barbell; Strengthening exercise; Oswestry low back disability questionnaires; Visual analogue scale.

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INTRODUCTION

Low back pain is a loss of spinal core stability and it is most significant prompt causes of periodic low back pain. It is most common complaints seen as global burden among adolescents. It has a frequency of 60-85% throughout a specific lifetime and the superiority of cases (90%) are mechanical and take place in all age groups but it is most common in people between the ages of 20-40 years both the gender populations are affected¹⁻⁴.

The ancient history of back pain reported dates back to 1500 BC., which is recorded in the continuing on surgical text of Edwin Smith papyrus. LBP is the most common disorder in the India; about 80% of decade has at least one episode of LBP during their time. The frequency of LBP disability appears to have recorded enlarged in western society since about 1970, The exact, objective study of LBP, its probable history and its effectual treatment is complication because of the multiple factors involved⁵⁻⁸.

According To WHO Definition Low back pain is a leading cause of disability. It occurs in uniform magnitude in all cultures, interference with quality of life and work attainment and is the most familiar reason for medical consultations. Physical therapy includes both progressive and inactive treatments⁹⁻¹¹.

Physical Suffering and Job: Factors that may enrich at work consist of poor posture while sitting or standing, sitting or standing for long periods of time, driving long distance improper lifting techniques, frequent lifting or lifting excessively heavy loads. Conclude these psychological factors recover a person's chances from LBP.

Component of LBP

- ☐ Mechanical Stress: Structural instability, Postural stress, Constriction of muscle
- ☐ Postural Stress: Misfitting furniture, Poor posture, Abuse of muscles immobility
- ☐ Nutritional Deficiency
- ☐ Metabolic And Endocrine Imbalances
- ☐ Psychological factors
- ☐ Chronic Infection

Mechanical Low Back Pain (MLBP): Mechanical low back pain (MLBP) is illustrated as a musculoskeletal pain which differs with physical activities and not proves root compression or serious spinal disease. Spine is the important structures which import load, grant movements and guard from harm the spinal cord.

Spinal stability is formed by active and passive and neural subsystems. In persons younger than 45 years, MLBP is term the most familiar causes of impairment and it is the third most common cause of impairment in persons aged older than 45 years¹².

According To WHO Definition Mechanical Low Back Pain (MLBP) is marked to be as high as 84%. The prevalence of low back pain was more in women compared to men and it occurs more in the age group 25 to 35 compared to other age groups.

Conventionally treatment of this problem has revolved around NSAIDs. Physical therapy and conventional spine exercise and 64% were advised exercise for the back. The exercise targets that erector spinae, a group of muscles that extend from the base of the skull to the sacrum. One must practice this exercise a few

times a week to build lower back strength, prevent back pain and improve posture.

Goodmornings Exercise: Goodmornings exercises are usually used in prevention programs for rehabilitating low back pain patients. The good morning exercise is a backing movement utilized primarily by weight lifter to strengthen the extensors of the erector spinae. Good morning exercise are good exercise for exactly conditioning lumbar, thoracic and extension of the back, good lifting techniques is mandatory when supportive near maximal effort to avoid acute injury or long-term damage. Goodmornings exercises are very good at exercising the stabilizing muscles.

Conventional Strengthening Exercise: The conventional strengthening exercise that has receives developing attention in the literature and media is the lower back stability exercise. This type of conventional strengthening exercise can be alternately defined as unspecified exercises that strengthen spinal musculature or those that indicate to the deep lumbo pelvic musculature.

There is some demonstration that exercises thought to target these deep muscles are effectual in LBP in general populations.

The conventional strengthening exercise targets the erector spinae, a group of muscles that extend from the base of the skull to the sacrum.

The conventional strengthening exercise is efficient for promote muscular strength and endurance in the erector spinae, it keep from injury and postural problems in the spine. The conventional strengthening exercise is moderately easy to perform, but it can establish a high level of tension on the lower back, this exercise slowly and skilfully to keep from injury. The conventional Strengthening exercise is one

of the most simple but effective exercise to train and strengthen the lower back. The belly and back area are the most problematic zones of the body for most people.

The conventional strengthening exercise is the most powerful and useful exercise for lower back muscles, in addition most effective and useful exercise for flat belly and slender waist. The conventional strengthening exercise is technically much safer than other exercise to train the lower back, while performing superman, much less load is condensed on the IVD, and so the risk of injury is virtually zero.

The conventional Strengthening exercise has a great benefit don't need any special equipment to perform it, the exercise can be done at home. Regular doing this exercise will bring only benefits their health. Strengthening the lower back with the conventional strengthening exercise builds support and stability for the spine, and it can also keep from happening and reduce back pain, the conventional strengthening exercise is one of the best for training the erector spinae muscles.

The conventional strengthening exercise strengthens their back and also engages abs. The conventional Strengthening exercise to restore the strength of back and gradually return to everyday activities is important for full recovery after low back pain. It is conclude that specific stabilization exercise lead to changes of deep core muscles and this exercise can develop the multifidus muscle¹³⁻¹⁵.

METHODOLOGY

This study is the quasi experimental design comparative pre & post type. 30 Subjects were recruited from DR.MGR Educational & Research Institute, A.C.S Medical College and hospital, Physiotherapy – OPD, Chennai. Subjects were

selected by simple random sampling method. Both male and female subjects were selected. Study duration was 1 month. Inclusion criteria were Healthy individuals between 20-35 years of age, Slump test negative, both male and female. Exclusion criteria were Systemic illness, recent surgeries, congenital abnormal spine, Anemia were excluded. Pencil, paper and barbell were the materials used. Visual analogue scale (VAS), Oswestry low back pain disability (OSDI) was used as outcome measures.

Procedure: An informed consent form was signed by the patients, to participate in this study. Patients were screened by both inclusion and exclusion criteria.

Data will be collected on Oswestry disability index enclosing questions targeting to assess to compare the effectiveness of Goodmornings exercise and conventional strengthening exercise, duration and pattern of pain. These are the questions on relieving factor occur exercise on pain in mechanical low back pain. The VAS used to measure the severity of pain before and after treatment, that is a easy examination tool consisting of a 10cm line accompanying 0 on one end, denotes the no pain and 10cm the another denotes the worst pain.

The pre test score will be taken by using VAS and OSDI. Patients were informed about the exercise the repetition and duration of the treatment session. The treatment protocol for each exercise were done up to 20 minutes in between exercise, rest time was given. The total duration of the treatment session was about 20 min per day and for 7 days per week for 1 month.

Group-A

Good mornings Exercise:

Technique: Grasp a barbell across the shoulder blades, scapula, rotate the shoulder joint internally, the forearm is pronated and the fingers of the hand grasping the supported barbell. Bend their knee 0 to 10 degree tilt the pelvis anteriorly; bend forward as if the upper trunk should be parallel to the floor and the cervical spine in extension. Keep foot shoulder width apart and step one inch wide. Lift up maintaining the lumbar arch. Do not come up fully. Ten repetitions in a set will be increased once in ten days.

Group -B

Conventional Strengthening Exercise

Technique: The patients were asked to lying on abdomen. Then they were asked to lift the hand and opposite side leg and then they were asked to repeat it opposite side. At last they asked to lift both the upper limb and lower limb. Ten repetitions in a set will be increased once in ten days.

The patients were encouraged to do the exercise in order to decrease the pain.

Data Analysis

The collected data were tabulated and analyzed using both descriptive and inferential statistics. All the parameters were assessed using statistical package for social science (SPSS) version 24. Paired t-test was adopted to find the statistical difference within the groups & Independent t-test (Student t-Test) was adopted to find the statistical difference between the groups.

#VAS	PRE TEST		POST TEST		t - TEST	Significance
	MEAN	S.D	MEAN	S.D		
GROUP- A	4.80	.774	3.00	.534	9.00	.000***
GROUP- B	4.86	.743	2.53	.516	14.64	.000***

Table 1: Comparison of Vas Score between Group – a and group - B in Pre and Post Test

#OSDI	#GROUP - A		#GROUP – B		t - TEST	df	Significance
	MEAN	S.D	MEAN	S.D			
PRE TEST	31.00	3.83	32.66	5.27	-.990	28	.331*
POST TEST	19.60	3.20	16.86	3.09	2.37	28	.024**

Table 2: Comparison of Oswestry Disability Index (OSDI) Between Group – A and Group - B In Pre and Post Test

#OSDI	PRE TEST		POST TEST		t – TEST	Significance
	MEAN	S.D	MEAN	S.D		
GROUP- A	31.00	3.83	19.60	3.20	10.41	.000***
GROUP- B	32.66	5.27	16.86	3.09	11.83	.000***

Table 3: Comparison of Vas within Group–A & Group–B between Pre & Post Test Values

#VAS	#GROUP - A		#GROUP - B		t - TEST	df	Significance
	MEAN	S.D	MEAN	S.D			
PRE TEST	4.80	.774	4.86	.743	-.241	28	.812*
POST TEST	3.00	.534	2.53	.516	2.43	28	.022**

Table.4 comparison of Oswestry disability index (OSDI) within Group–A & Group–B between pre & post test values

RESULTS

On comparing the pre and post test values within the experimental group, Group A & Group B on VAS & OSDI shows highly significant difference in Mean values where p value is $P \leq 0.001$. Group B strengthening Exercise shows statistically significant improvement then Group A – barbell Exercise.

DISCUSSION

In the present study patients between the age group of 20 to 35 years and having symptoms of LBP for 1 month were included. The study was conducted to determine the effect of Goodmornings exercise and conventional strengthening exercise approaching MLBP patient. In our study 45 participants were selected randomly and then 10 subjects were removed from the study, 5 members did not co-operated in the study due to personal reasons like job, timings of OPD and etc., this study was to strengthen the lower back and to improve the quality of life in both the male and female.

A comparison has been done on the effectiveness of two active interventions; the Goodmornings exercise and conventional strengthening exercise in patients with MLBP for 1 month duration. At the deadline of the treatment program both groups showed improvement in pain score measured using VAS and OSDI. The result of the study was statistically indicated that the described data's such as mean and standard deviation which indicated that improvement in the term of pain and disability at the end of the treatment in both the groups. Correlate the result obtained from the two groups, the result of the study showed that conventional strengthening

exercise showed significant $P \leq 0.001$ improvements than Goodmornings exercise.

A study concluded that result, barbell exercise and conventional strengthening exercise are helpful for treating patient with LBP, including disability the pre test mean value of VAS between Group A (4.80) and Group B (4.86) did not show a significant difference. At the end of the session the post test mean value showed a significant difference between Group A (3.00) and Group B (2.53). The pre test mean value of OSDI between Groups A (31.00) and Group B (32.66) did not show a significant difference. At the end of the treatment session the post test mean value of OSDI between Group A (19.60) and Group B (16.86) showed a significant difference. Group B patient treated with conventional strengthening exercise showed better than Group A. The clinical advancement in the present study was evaluated by VAS and OSDI¹⁶.

The conventional strengthening exercise is more effective than the Goodmornings exercise. The Group A showed a significant improvement from pre - test to post-test, with slight difference from Group B. It may be due to the pre requisite of the exercise to be done under the supervision of the physical therapist as the starting and ending positions are so, because of improper position it leads to muscle strain eliciting the unwanted complications and new conditions over the present complaints. This study is limited to such as OSDI. As mention in the limitation if the back muscle strength are assessed if should a very good improvement. As the muscle is strong enough it can take up the load based on it and also improve the quality of life¹⁷.

The conventional strengthening can be done for longer duration. These exercises taught by

the patient soon after the electrotherapy treatment usually are learned by the patient very easily, like the other exercise it does not need to be monitored. The method it is done is very simple, easy and promising good result so the subject of our study have done the exercise. At home, whenever they have a time they perform exercise¹⁸⁻¹⁹.

Both type of exercise improve the strength of the muscle, the strong muscle improve the quality of life. The stronger muscle it does not strain itself, and hence if cooperated with all endeavor. The present study demonstrates that barbell exercise and conventional strengthening exercise has exposed a positive effect in relieving pain and disability. The physical therapist handle a wide range of fascination in the management of lower back pain, anyhow the effectiveness for these interference is limited²⁰.

Ethical clearance: Ethical clearance was obtained from the Institutional ethical committee, Dr. MGR. Educational and Research Institute, Chennai with reference No. A-024/PHYSIO/IRB/2017-2018 approval letter dated 10/01/2017.

Conflicts of Interest: There is no conflict of interest to conduct this study.

Fund for the study: This is self-funded study.

CONCLUSION

By the obtained result from this experimental study, it is concluded that there was significant improvement in MLBP in both groups. However, strengthening exercise (Group-B) showed more significant improvement than Goodmornings exercise (Group-A) and corrects Low back pain , prevent back pain and improve posture.

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