

To Find the Effectiveness of Conventional Exercise and Core Stabilization Exercises in Conditions with Specific Low Back Pain

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ABSTRACT

Background: - There are mainly two types of low back ache i.e. Non-specific and Specific. The main concept of conventional exercises is working on the weak group musculature to maintain the proper biomechanics and maintaining the normal axial loading forces to the lower limbs. Core stabilization can be described as the ability to control the position and motion to the terminal segment in integrated kinetic chain activities.

Objective: - To compare the effectiveness of conventional exercises and core stabilization exercises in conditions with specific low back ache.

Results: - Pre and Post values of Groups A and B were compared by applying Mann Whitney test. Pre treatment showed that no significant difference in the total score, whereas post treatment showed very significant difference ($U=6.000$, $P=<0.0001$). Thus, from the above conducted study it concludes that patients receiving Core Stabilization exercises had significant improvement clinically and statistically and improved in Oswestry Low Back Pain score than the patients receiving Conventional exercises, thus facilitating functional outcomes.

Keywords: conventional exercises, core stabilization exercises, Non specific LBP,

INTRODUCTION

LBA is a major public health problem all over the world. In India,

occurrence of LBA is alarming; nearly 60 per cent of the people in India have LBA at some time in their lifespan. Epidemiological studies provide important information regarding various risk factors such as sex, life style, occupation, habit, socio-economic status and smoking associated with the history of low back ache.¹

There are mainly two types low back ache i.e. Non-specific and Specific.² Non-specific LBA is defined as back pain with no known underlying pathology. The cause of non-specific low back ache cannot be identified. Spinal abnormalities on X-rays and MRI are not strongly associated with nonspecific low back ache³. The term Specific LBA is used in the presence of a localized source of pain when a specific structure of the spine is painful and if a specific diagnosis is available to characterize the cause of the pain. Specific causes of LBA are inflammatory conditions, infective, neoplastic, metabolic bone diseases, referred pain, psychogenic pain, trauma and congenital disorders. Significant changes in the X- rays and MRI can be seen in specific low back ache.^{2,3}

Discs form the main connection between vertebrae. They bear loading during axial compression and allow movement between the vertebrae. Each disc consists of the nucleus pulposus; a central annulus fibrosus. The annular fibers are

firmly attached to the vertebral bodies and are arranged in lamellae. This annular arrangement permits limiting vertebral movements, reinforced by investing ligaments.^{4,5} In Prolapsed Intervertebral Disc- A prolapsed disc is the inner softer part of the disc (the nucleus pulposus). It bulges out (herniates) through a weakness in the outer part of the disc. A prolapsed disc is sometimes called a herniated disc. The bulging disc may press on nearby structures such as a nerve coming from the spinal cord. Some inflammation also develops around the muscles of prolapsed part of the disc.^{2,3} and causes specific low back ache. The muscles of trunk consist of global muscles which helps in mobility while local muscles which help in stability of the spine. The conventional exercises work on the mobility system more rather than the stability system⁶. The aim of core stabilization exercises is to restore normal function of the muscles and enhance spinal stability to decrease pain and dysfunction.^{7,8} The Oswestry Low Back Pain Scale is the most commonly used functional back scale. It is a very reliable outcome measure for low back pain with a test retest reliability of 0.94 and internal consistency validity of 0.86.⁹

So in this study the researcher tried to find out which group of exercises i.e. the conventional exercises which concentrates more on the mobility system of the lumbar spine and the core stabilization exercises which concentrates more on the stability system of the lumbar spine was effective in conditions with specific low back ache and which exercises is bringing a better outcome in the patients.

NEED FOR STUDY

Low back ache is the most common problem suffered by a majority of the population globally. In low back ache core muscles are primarily affected, and this impaired core stability with delayed onset of action of the transverses abdominis muscle has been shown to be associated with low back ache.^{7,8} So there is a need to design a

protocol of core stabilization exercises which can be prescribed to patients in conditions with specific causes of low back ache.

AIM AND OBJECTIVES

AIM-

- To find the effectiveness of conventional exercises and core stabilization exercises in conditions with specific low back ache.

OBJECTIVES-

- To find the effect of conventional exercises in conditions with specific low back ache.
- To find the effect of core stabilization exercises in conditions with specific low back ache.
- To compare the effectiveness of conventional exercises and core stabilization exercises in conditions with specific low back ache.

MATERIALS AND METHODOLOGY

STUDY TYPE : Experimental study.

STUDY DESIGN : Randomized controlled trial.

SAMPLE SIZE : 36 patients.

PLACE OF STUDY : OPD of MIP, COPT, Latur.

DURATION OF STUDY : 1 Year.

SAMPLING METHOD : Simple random sampling method (lottery method).

INCLUSION CRITERIA-

- Both males and females.
- Age between 35-60 years.
- Visual analogue score 3 or less than 3 on day 1, if more than 3 then patient will be given pain management for 1 week then when visual analogue score is less than 3 they will be included in the study.
- Lumbar spondylosis with or without radiating pain but without neurological symptoms.
- Prolapsed intervertebral disc with or without radiating pain but without neurological symptoms.
- Lumbar spondylolisthesis. (Grade I and II).

EXCLUSION CRITERIA-

- Patients with cardio-pulmonary diseases.
- Patients with tumour, infection and fracture in spine.
- Pregnancy.
- Visual analogue score more than 3 after 1 week pain management treatment.

PROCEDURE FOR STUDY-

After the ethical clearance subjects fulfilling the inclusion criteria were given the consent form before intervention and were explained regarding the study.

The patients were assessed by Visual Analogue Scale at the first day for randomization and inclusion in the study. The patients referred or non-referred after been diagnosed with specific low back ache, were treated for pain management with physical agents- shortwave diathermy, lumbar traction and Interferential therapy this treatment lasted for 45 minutes once a day for 1 week. Group A received Conventional exercises and Group B received the Core Stabilization exercises. These exercises were given for 30 minutes a day 3 times a week for 4 weeks. The patient’s outcome was seen on Oswestry Low Back Pain Scale at the beginning and at the end of 4 weeks.

Two treatment groups were made-

- Group A- Conventional exercises.
- Group B- Core Stabilization exercises.

CONVENTIONAL EXERCISES-

EXERCISES GIVEN FOR THE 1ST AND 2ND WEEK-

- 1) Static back exercises-⁶
- 2) Pelvic bridging exercises-⁶
- 3) Bottom to heel stretch exercises-⁶

EXERCISES GIVEN FOR 3RD AND 4TH WEEK-

1. Lumbar spine rotation exercises-⁶
2. Knee to Chest exercises-⁶
3. Cat and Camel exercises-⁶

CORE STABILIZATION EXERCISES-

EXERCISES GIVEN FOR THE 1ST AND 2ND WEEK-

1. Planks –^{10,11}
2. Abdominal bracing-^{10,11}
3. Multifidus Activation-^{10,11}

EXERCISES GIVEN FOR 3RD AND 4TH WEEK-

- 1) Abdominal Bracing Exercises Progression-^{10,11}
- 2) Paraspinal muscle activation exercises-^{10,11}
- 3) Quadratus lumborum and obliques activation exercises-^{10,11}
- 4) Side planks with knees extended-^{10,11}

DATA PRESENTATION

AGE DISTRIBUTION -

The comparison of age showed that there was no significant difference between the age of males and females in both the groups. (t value=0.9810, P value=0.3335)

GENDER DISTRIBUTION -

The comparison of gender in both the Groups A and B showed that there was no significant difference between males and females in both the groups. (P value=0.4998)

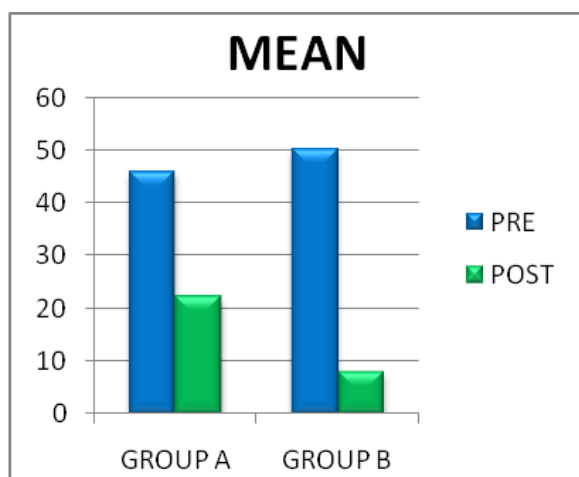
OSWESTRY LOW BACK PAIN SCALE

Pre and Post values of Groups A and B were compared by applying Mann Whitney test. Pre treatment and post treatment showed significant difference. Values of Group A showed that there was very significant difference between pre and post values. Values of Group B showed that there was extremely significant difference between pre and post values.

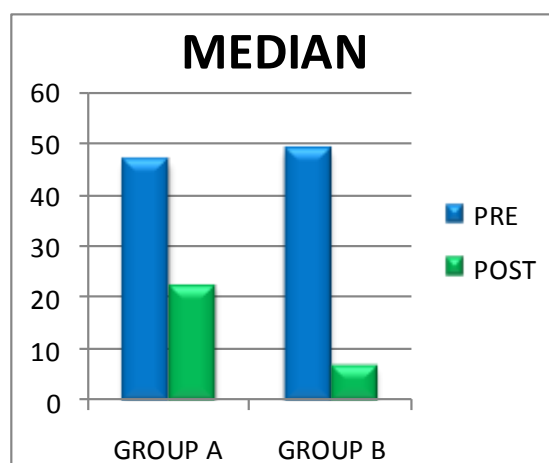
TOTAL SCORE OF OSWESTRY LOW BACK PAIN SCALE

Table no. 1 Comparison of Pre and Post values of total score of Oswestry Low Back Pain Scale

GROUPS	PRE		POST		‘W’ VALUE	‘P’ VALUE
	MEAN±SD	MEDIAN	MEAN±SD	MEDIAN		
GROUP A	46.043±7.729	46.660	22.217±5.60	22.220	171.000	<0.0001
GROUP B	50.316±7.786	48.880	8.02±4.253	6.660	171.00	<0.0001
MANN WHITNEY TEST	U=107.50, P=0.0870		U=6.000, P=<0.0001			



Graph no.1 i- Total score of OLBPS



Graph no.1 ii- Total score of OLBPS

The table shows comparison of mean values, standard deviation and median of pre and post values of total score of Oswestry Low Back Pain Scale of Groups A and B. The pre and post values of each Group A and B were compared by applying Wilcoxon Matched Pairs test. Values of Group A showed that there was extreme significant difference between pre and post values. (W value=171.00, P value=<0.0001, T+ = 171.000, T- = 0.000). Values of Group B showed that there was extremely significant difference between pre and post values. (W value=171.00, P value=<0.0001 T+ = 171.00, T- = 0.000). Pre and Post values of Groups A and B were compared by applying Mann Whitney test. Pre treatment showed that no significant difference in the total score, whereas post treatment showed very significant difference (U=6.000, P=<0.0001).

DISCUSSION

Low back ache is a major public health problem all over the world. Most people suffer incapacitating low back pain at some stages in their lives. In India, occurrence of low back ache is also alarming; nearly 60 per cent of the people in India have significant low back ache at some time or the other in their lifespan. Epidemiological studies provide important information regarding various risk factors such as sex, life style, occupation, habit, socio-economic status and smoking

associated with the history of low back pain.³ Literature has supported the fact that there is core muscle instability in different causes of specific low back ache, but as such core stabilization exercises are not been given for generalized cases of specific causes of low back ache.¹²⁻¹⁵ Proper ergonomics advice and a well planned exercise program if given to patients would decrease the incidence of low back pain.¹⁶

This study was undertaken with the aim to determine the effectiveness of conventional and core stabilization exercises in conditions with specific low back ache. The basic objective of this study was to find out the effect of conventional exercises and core stabilization exercises in conditions with specific low back ache patients. This study was done in MIP College of Physiotherapy, OPD, Latur. 36 patients who were diagnosed for Specific low back ache with age group between 35-60years were divided into two Groups A and B. 21 were males and 15 females in both the Groups. A thorough musculoskeletal assessment was performed and outcome was seen with Oswestry Low Back Pain Scale.

First Group A was treated with Conventional exercises and Group B was treated with Core Stabilization exercises for 4 weeks. The pre and post intervention score was measured with Oswestry Low Back Pain Scale.

Statistical analysis was done by using Instat software in which Wilcoxon

Matched Pairs Test and Mann Whitney Test were used to analyze scores of Oswestry Low Back Pain Scale. Statistical analysis revealed that there was extremely significant difference between pre and post values of each Group A and B (P value= <0.0001) and extremely significant difference between post values of both the Groups A and B (P value= <0.0001).

Thus, this study concludes that Core Stabilization exercises were more effective than Conventional exercises in conditions with specific low back ache.

CONCLUSION

Thus, from the above conducted study it concludes that patients receiving Core Stabilization exercises had significant improvement clinically and statistically and improved in Oswestry Low Back Pain score than the patients receiving Conventional exercises, thus facilitating functional outcomes.

So this study accepts the alternate hypothesis.

LIMITATIONS AND SUGGESTIONS

LIMITATIONS:

The sample size was small.

The study could not be compared based on gender, age and type of specific low back ache.

SUGGESTIONS:

Study can be conducted with large sample size.

The study can continue by comparing based on age, gender and type of specific low back ache.

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