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A Comparative Study To Find Out The Effectiveness Between Core Stabilization Vs Mckenzie Exercises In The Treatment Of Patients With Mechanical Low Back Pain

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ABSTRACT

AIM: the aim of the study is to find out the effectiveness between core stabilization vs Mc kenzie exercises in the treatment of patients with mechanical low back pain

METHOD: 30 subjects with mechanical low back pain were selected between the age group of 20 to 40 years were randomly assigned into two groups. Group A was treated with Core muscle strengthening exercise and Group B was treated with Mc kenzie exercise for mechanical low back pain patients.VAS, The revised oswetry questionnaire were used as measuring tool, before and after treatment were recorded for further analysis.

RESULTS: Data analyzed and result indicates that Core muscle strengthening exercise has improved back pain and disability than in Mc kenzie exercises.

CONCLUSION: The results present here are important as they demonstrate that lumbar stabilization exercise program are aimed at improving pain, range of motion and functional disability From the result, Study can be concluded that Core stabilization exercise has significantly improve pain and disability than Mc kenzie exercise in subjects with Mechanical low back pain.

Keywords: Core stabilization, Low back pain, Mckenzie Exercise, Musculoskeletal, Revised Oswestry Disability Questionnaire, VAS scale.

INTRODUCTION

Low back pain is a common musculoskeletal disorder affecting majority of the population at some point in their life. It accounts for more sick leaves and disability than other medical condition. According to World Health Organization, low back pain is a leading cause of disability. Most cases are non specific Mechanical low back pain consists of unspecific injury of lumbar column, could be related to other causes of lumbar pain, although in most of the cases the etiology is unknown. It affects 60-90% of the population at any time in their lives.

Exercise therapy is found to be more effective in treating low back pain, and McKenzie technique is one of the most popular of many conservative spine care programs. It is a method of diagnosis and treatment based on movement patterns of the spine. Studies have shown that general exercises are also effective in treating low back pain, so the aim of this study is to compare the effectiveness of McKenzie exercises with that of core stabilization exercises on mechanical low back pain.

The McKenzie approach utilizes an assessment process which aims to identify subgroups of patients within the non-specific spinal pain population whose symptoms behave in a similar way when subjected to mechanical forces.

Another approach is the Core Stabilization Exercises which are gaining popularity for the management of mechanical low back pain. Re-education of the trunk muscles may be achieved by using stabilization exercises. The aim is to correct imbalance of activity between more deeply placed stability muscles and more superficially placed mobilizing counterparts.

The Revised Oswestry Disability Questionnaire is one of the principal condition specific outcome measures used in the evaluation of disability resulting from back pain. This questionnaire has been designed to give the therapist information as to how an individual's back pain affects one's ability to manage in everyday life; around the lumbar spine to maintain its functional stability and Core strengthening has been promoted as a preventive regimen.

METHODOLOGY:

Present study intends to assess the effectiveness of Core Stability exercises compared to that of McKenzie exercises in patients with mechanical low back pain. The patients will be diagnosed for the intended study by using the criteria for Mechanical low back pain as given by Gordon Waddell (1998). The criteria are, Pain is usually episodic. Morning stiffness or pain is common. There is pain on forward flexion and often also on returning to erect posture Pain is often produced or aggravated by extension, lateral flexion, rotation, standing, walking, sitting and exercises. Pain usually becomes worse over the course of the day. Pain is relieved by change of position especially when lying down or in flexed posture. Low back pain lasting more than one day

This study includes 30 patients aged between 20 to 50 years. The 30 subjects will be divided into two groups of 15 each. The first group will be treated with Core stabilization exercises while the other group will be treated with McKenzie exercises. The subjects of both groups will be educated about their respective exercise protocols and what will be expected of them during the exercises.

Pre test assessment will be done using the revised Oswestry Disability Questionnaire/index and prior to the treatment and at the end of treatment course. The subjects will be educated to fill the questionnaire and comparison will be done.

TREATMENT TECHNIQUES

Group A: Core Stabilization Exercises

The patients will be first taught drawing in of the abdomen and to maintain their neutral position.

(Frequency- 2 times a day, Rest interval- 5 minutes)

Bi-lateral leg extension in prone position- The patients will be asked to lie prone and lift the legs without bending the knees and hold the position for 05 seconds.

Unilateral leg extension while upper body prone: The patients will asked to lie prone and lift their legs alternately to the horizontal level and hold for 05 seconds

Lifting hips up in bridged position- Patients will be asked to hold this position for 5 seconds. This will be progressed to unilateral knee extension while keeping hips in bridged position.

Superman exercise- The patient will be in a four point kneeling position and will be asked to straighten out one leg behind, keeping the trunk still and not twisting. The process will be repeated with other leg. The progression of this is done by lifting opposite arm and leg. **Dead bug exercise**- In supine position, the patient will be advised to flex ipsilateral upper limb and lower limb and hold the position for ten seconds. Process will be repeated for the opposite side. The movements must be done slowly

Group B: McKenzie Exercises:(Frequency- 2 times a day, Repetition- 10 times, Rest interval-5 minutes)

Extension in prone lying:

Patient will be asked to lie in prone with arms beside the body and head turned to one side and maintain the position for 4-5 minutes.

In the same position, the patient will be asked to place the elbows under the shoulders so that the patient lean on their forearms and maintain the position for 5 minutes.

The patient will then be advised to extend their elbows in the above position and push the top half of their body as far as the pain permits. The patient holds the position for a second or two and then comes back to the starting position. This will be done ten times per session.

Extension in standing:

The patient will be asked to stand upright with feet slightly apart, hands placed at the back so that the fingers are pointed backward and the thumbs forward. The patient bends backward at the waist as far as they can keeping the knees straight, maintaining this position for a second or two and return to the starting position.

Knee to chest:

The patient will be asked to lie supine with knees bent and foot placed on the couch. From this position the patient brings both the knees towards the chest and gently but firmly pulls the knees with hands towards the chest till pain permits. The patient maintains this position for 1-2 seconds and returns to starting position

Flexion in sitting:

Patient will sit on the edge of a chair with knees and feet well apart and hands resting in between legs touching the ground. From this position the patient bends forward and returns back.

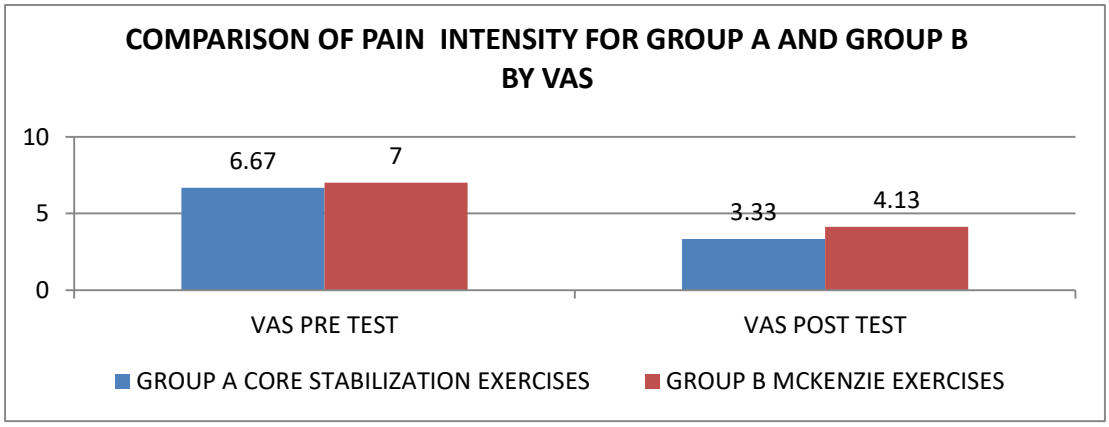
DATA ANALYSIS:

COMPARISON OF GROUP A AND GROUP B PATIENTS PAIN BY USING VAS

Group Statistics					
	GROUP	N	Mean	Std. Deviation	Std. Error Mean
VAS PRE TEST	GROUP A CORE STABILIZATION EXERCISES	15	6.6667	1.23443	.31873
	GROUP B MCKENZIE EXERCISES	15	7.0000	1.19523	.30861
VAS POST TEST	GROUP A CORE STABILIZATION EXERCISES	15	3.3333	.97590	.25198
	GROUP B MCKENZIE EXERCISES	15	4.1333	.99043	.25573

INDEPENDENT SAMPLES TEST

	t-test for Equality of Means						
	t	df	p Value	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
VAS PRE TEST	0.751	28	.459	.33333	.44365	.57544	1.24211
VAS POST TEST	2.228*	28	.034	.80000	.35901	.06460	1.53540

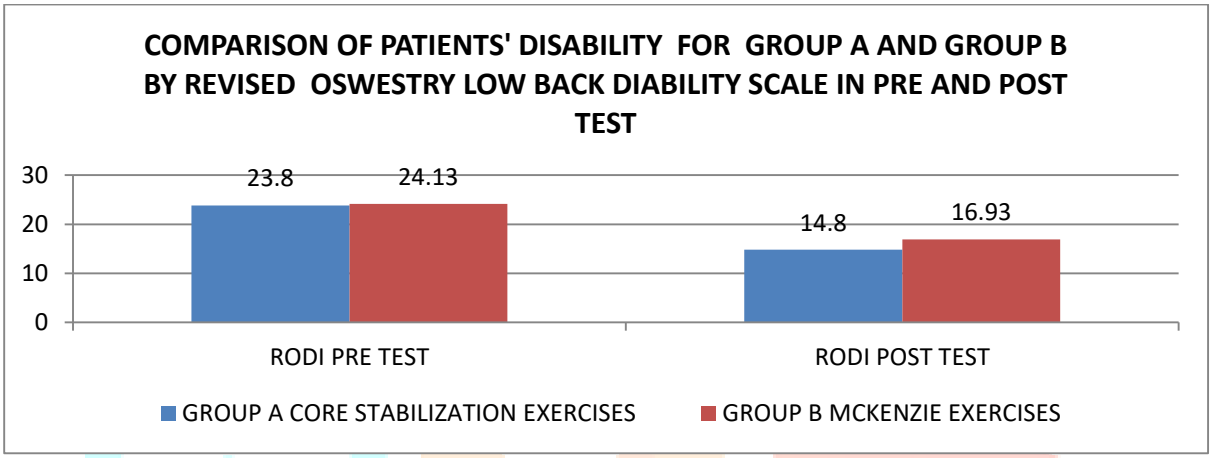


*p<0.05

Group Statistics

	t-test for Equality of Means						
	t	df	p Value	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
RODI PRETEST	0.246	28	.807	.33333	1.35248	2.43710	3.10377
RODI POSTTEST	2.168*	28	.039	2.13333	.98400	.11770	4.14896

RODI POSTTEST	GROUP A CORE STABILIZATION EXERCISES	15	14.8000	2.11119	.54511
	GROUP B MCKENZIE EXERCISES	15	16.9333	3.17280	.81921



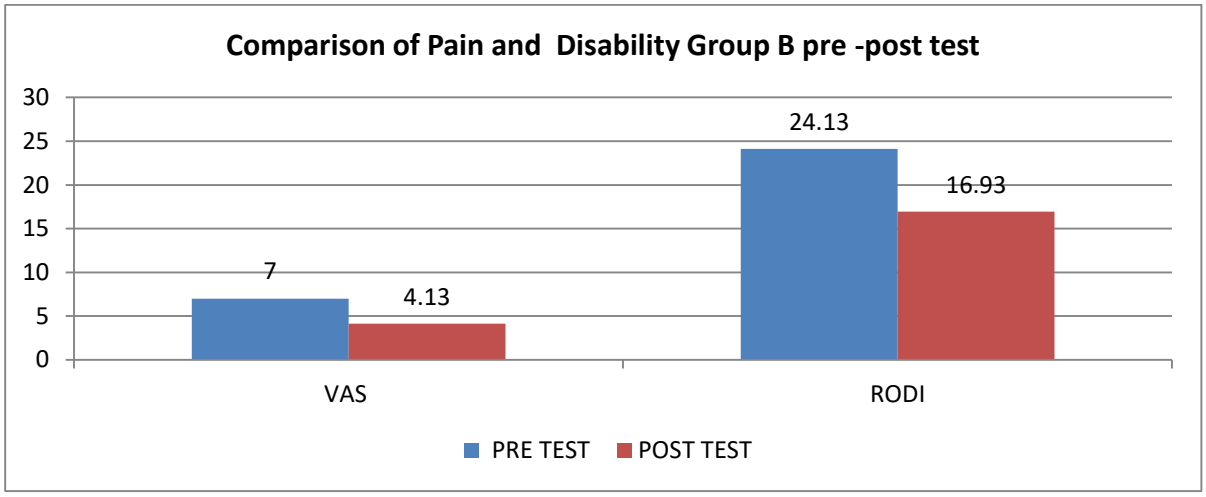
COMPARISON OF PRE –POST OF GROUP B MCKENZIE EXERCISES

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAS PRE TEST	7.0000	15	1.19523	.30861
	VAS POST TEST	4.1333	15	.99043	.25573
Pair 2	RODI PRETEST	24.1333	15	3.48193	.89903
	RODI POSTTEST	16.9333	15	3.17280	.81921

PAIRED SAMPLES TEST

		Paired Differences					t
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	VAS PRE TEST - VAS POST TEST	2.86667	.83381	.21529	2.40492	3.32841	13.315**
Pair 2	RODI PRETEST - RODI POSTTEST	7.20000	2.85857	.73808	5.61698	8.78302	9.755**

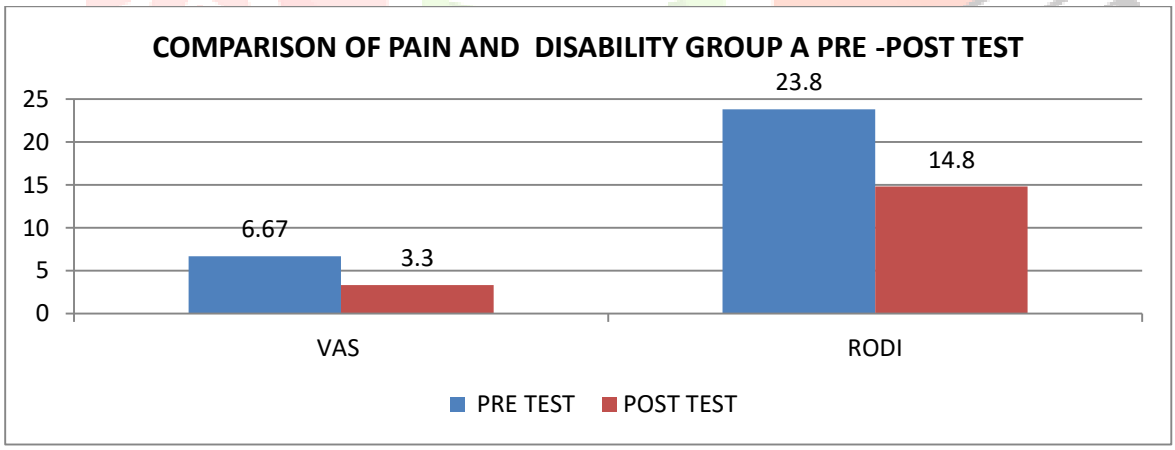


COMPARISON OF PRE –POST OF GROUP A CORE STABILIZATION EXERCISES

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAS PRE TEST	6.6667	15	1.23443	.31873
	VAS POST TEST	3.3333	15	.97590	.25198
Pair 2	RODI PRETEST	23.8000	15	3.91335	1.01042
	RODI POSTTEST	14.8000	15	2.11119	.54511

PAIRED SAMPLES TEST

		Paired Differences					T
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	VAS PRE TEST - VAS POST TEST	3.33333	1.11270	.28730	2.71714	3.94952	11.602**
Pair 2	RODI PRETEST - RODI POSTTEST	9.00000	3.52542	.91026	7.04769	10.95231	9.887**



ANALYTICAL TOOL: The analytical tool used in this study was independent t-test

RESULT:

The study sample comprised of 30 patients. Among 30 patients, 15 were treated with core stabilization exercise and 15 were treated with Mc kenzie exercise.
The pre and post test values were assessed by VAS and ODI in Group A and Group B.
Thirty patients with Mechanical low back pain participated in this study.

Independent t-test was used to compare variables, before and after interventions. After intervention, the score of pain decreased in both groups ($p < 0.05$). The mean score of disability is significantly decreased in core stabilization group ($p < 0.05$).

Data analysed and result indicates that Core muscle strengthening exercise has improved back pain and disability in than Mc kenzie exercises.

DISCUSSION:

The research work was experimental comparative approach, which studied the effectiveness of Core strengthening exercise and Mc kenzie exercise to improve pain and disabilty for Mechanical low back pain patients. For this study 30 patients were recruited. From this sample of 30, the subjects were divided into 2 groups consisting of 15 subjects each. The outcome measurement was done by Visual analogue Scale (VAS) and Revised osewstry diability index.

On statistical analysis using "t" test, it was found that there is significant difference in the post test scores of group A over Group B, thus rejecting the null hypothesis.

Hence it can be stated that Core stabilization is effective in improving pain and disability than Mc kenzie exercise in Mechanical low back pain subjects

CONCLUSION:

Low back pain is a very common musculoskeletal condition in the developing country. Everyday a lot of patients of low back pain come to the physician. Of them, most suffered from mechanical deformation of the spinal musculoskeletal structures, caused by lack of physical strength, prolong abnormal postural habit, lifting of heavy loads, stressful occupations, inadequate resting periods, recurrent number of back pain.This study shows that lumbar stabilization exercises are beneficial for individuals with low back pain because they stabilize the lumbar spine.

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APPENDIX I:

TOOL DESCRIPTION

VISUAL ANALOGUE SCALE (VAS): A testing technique for measuring subjective or behavioral phenomena (as pain) in which a subject selects from a gradient of alternatives (as from "no pain" to "worst imaginable pain" or from "every day" to "never") arranged in linear fashion.

REVISED OSWESTRY DISABILITY QUITIONAIRRE: The Oswestry Disability Index (also known as the Oswestry Low Back Pain Disability Questionnaire) is an extremely important tool that researchers and disability evaluators use to measure a patient's permanent functional disability. The test is considered the 'gold standard' of low back functional outcome tools.

DATA : GROUP A

GROUP	VAS_PRE_TEST	VAS_POST_TEST	RODI_PRETEST	RODI_POSTTEST
GROUP A CORE STABILIZATION EXERCISES	8.00	5.00	29.00	12.00
GROUP A CORE STABILIZATION EXERCISES	7.00	4.00	28.00	16.00
GROUP A CORE STABILIZATION EXERCISES	6.00	4.00	26.00	18.00
GROUP A CORE STABILIZATION EXERCISES	8.00	4.00	27.00	15.00
GROUP A CORE STABILIZATION EXERCISES	5.00	3.00	23.00	15.00
GROUP A CORE STABILIZATION EXERCISES	8.00	2.00	20.00	12.00
GROUP A CORE STABILIZATION EXERCISES	7.00	4.00	21.00	12.00
GROUP A CORE STABILIZATION EXERCISES	9.00	4.00	17.00	14.00
GROUP A CORE STABILIZATION EXERCISES	6.00	2.00	19.00	12.00
GROUP A CORE STABILIZATION EXERCISES	5.00	3.00	22.00	16.00
GROUP A CORE STABILIZATION EXERCISES	7.00	4.00	26.00	15.00
GROUP A CORE STABILIZATION EXERCISES	6.00	3.00	24.00	14.00
GROUP A CORE STABILIZATION EXERCISES	7.00	4.00	30.00	18.00
GROUP A CORE STABILIZATION EXERCISES	5.00	2.00	25.00	17.00
GROUP A CORE STABILIZATION EXERCISES	6.00	2.00	20.00	16.00

GROUP B

GROUP B MCKENZIE EXERCISES	7.00	4.00	29.00	17.00
GROUP B MCKENZIE EXERCISES	8.00	5.00	27.00	15.00
GROUP B MCKENZIE EXERCISES	8.00	4.00	26.00	20.00
GROUP B MCKENZIE EXERCISES	6.00	3.00	22.00	14.00
GROUP B MCKENZIE EXERCISES	9.00	5.00	30.00	24.00
GROUP B MCKENZIE EXERCISES	6.00	3.00	21.00	18.00
GROUP B MCKENZIE EXERCISES	8.00	4.00	24.00	14.00
GROUP B MCKENZIE EXERCISES	7.00	5.00	20.00	16.00
GROUP B MCKENZIE EXERCISES	5.00	3.00	28.00	19.00
GROUP B MCKENZIE EXERCISES	7.00	5.00	23.00	13.00
GROUP B MCKENZIE EXERCISES	8.00	6.00	26.00	20.00
GROUP B MCKENZIE EXERCISES	6.00	4.00	20.00	13.00
GROUP B MCKENZIE EXERCISES	5.00	3.00	25.00	20.00
GROUP B MCKENZIE EXERCISES	8.00	5.00	19.00	15.00
GROUP B MCKENZIE EXERCISES	7.00	3.00	22.00	16.00