

Effect of Core Stabilization Program and Conventional Therapy in the Management of Patients with Recurrent Low Back Pain

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Abstract

The purpose of this study is to compare the effect of core stabilization program and conventional therapy in treating recurrent low back pain. Forty individuals were randomly assigned into two treatment groups of conventional therapy and core stabilization exercises. Treatment effects were established by pre-post treatment assessment of ROM, VAS and RMDQ. Both the group's variables are assessed for homogeneity by using one-way ANOVA prior to assessing for significance. The significance of the study is analyzed by using student t-test. This study demonstrated significantly higher improvements in VAS, RMDQ following core stabilization exercises and higher improvements in ROM following conventional exercise therapy at $p=0.05$. Thus this study concludes that the core stabilization exercises is more effective in improving VAS and RMDQ scores than the conventional exercise therapy recurrent low back pain patients.

Keywords: Core Stabilization Exercises; Low Back Pain.

Introduction

Recurrent low back pain is a cumulative process resulting from chronic poor posture coupled with sedentary habits that put back under severe stress.

Low back pain is associated with deconditioning of spine and trunk due to lack of core strength and stability in which 60-80% of general population suffer with high recurrence rates of 60-85% within following three year. Low backache is a discomfort in the area of the lower part of the back and spine.

Akuthota V et al [1,2,3], have explained that core strengthening has become a major trend in low back rehabilitation of the lumbar spine to maintain functional stability, promoted as a preventive regimen and performance-enhancing program as well.

Rainsville J et al [4,5,6], in a study reviewed regarding the efficacy of exercise in chronic low back pain, concluded that exercise is an integral tool to

improve impairments in back flexibility and strength. It is effective in improving function, and decrease behavioral, cognitive, as well as disability aspects of low back pain syndrome.

Purpose

1. To study the Effect of conventional exercise
2. To study the Effect of core stabilization in patients with low back pain.
3. Compare of the effects of the two and analyze for any significant variation

There is significant difference in the effect of treatment between core stabilization program and conventional exercises in the management of recurrent low back pain with core stabilization program proving better than the conventional exercises.

Materials and Methods

Examination Table, Towels, Short wave Diathermy, Physio ball Goniometer The subjects were selected from the Outpatient Department of Physiotherapy of various hospitals in Dehradun.

Method of Data Collection

Total of 40 patients in two groups of 20 each

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selected randomly. Both male and female of age group 30-50 years with the diagnosis of recurrent low back ache

Group A: Control group 20 patients, Group B: Experimental group 20 patients.

Type of Study

Randomized Clinical Trial

Inclusion Criteria

- Both male and female patients.
- Age group between 30-50 years
- Postural predisposition

Exclusion Criteria

- Patients with tumor, infection or fracture.
- Patients with rheumatic and inflammatory conditions.
- Patients with disc disease. Lumbar strain or sprain.
- Lumbar canal stenosis.
- Bowel and bladder dysfunction
- Patients with any known pathological lesion in spine

Procedure

Selection of patient through detailed assessment of physical findings, inclusion and exclusion criteria. Short wave diathermy was given for 15 minutes prior to starting the exercises to relieve pain. The patients in the control group were treated with conventional back exercise program for 3 days a week for 6 weeks.

Group A

Group B

Short wave Diathermy was given for 15 minutes before the exercise session to relieve pain. Patients in experimental group were treated with core stabilization exercises for 30 minutes of 10 repetitions each with 10 seconds hold and adequate rest (10 seconds) was given between each repetition. The training session was scheduled for 3 days a week for 6 weeks.

The Exercises Given were as Follows

Exercise 1

Patient in supine lying on physio ball was instructed to place the hands behind the head and

lift the trunk to reach the knees to hold the position for five seconds then bring it back to neutral position.

Exercise 2

Patient lying on his back with calves resting on the ball was asked to rock very slowly side-to-side with normal breathing.



Fig. 1: Treatment with short wave diathermy



Fig. 2: Rehabilitation with core rehabilitation exercises

Group B

Exercise 3

The patient in supine lying on the floor with feet on the ball and ankles together, arms behind the buttocks, using the thigh and abdominals asked to straighten the legs and hold it for 10 seconds then bring them back to neutral position After 6 weeks of training program, the patients were reassessed on the basis of pain rating on VAS and disability rating on the Rolland Morris Disability Questionnaire and ROM by using goniometer

Results

A group of 40 patients were randomly assigned

into two groups of 20 in each (n=20) into Control group (n=20), Experimental group (n=20), which were analyzed for their normality and homogeneity by using one-way anova.

This analysis has shown that all the groups were homogeneous and hence were analyzed for their significance by using student t- test. This analysis has shown significance in relation to decrease in pain, improving the functional outcome and disability at p=0.05 in core stabilization group when compared to control group

Table 1: t-value for improvement in VAS

n ₁	n ₂	Difference of Mean	Total SD	t-value	P value
20	20	1.25	0.305	4.098	0.05

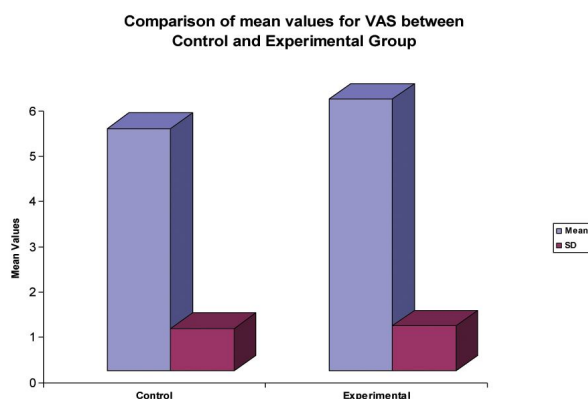


Table 2: t- value for improvements in Rolland Morris Disability Questionnaire

n ₁	n ₂	Difference of Mean	Total SD	t-value	P value
20	20	3.55	1.53	2.308	0.05

Discussion

The patients in group A showed improvements in VAS score with a mean of 5.35 and in Rolland Morris Disability Questionnaire with a mean of 10.55. These patients also shown improvements in flexion, extension, side flexion and rotation at p=0.05. The patients in Group B also showed improvements in VAS scores with a mean of 6.6 and morris disability questionnaire of 14.1. Though conventional back care exercises and core stabilization exercises are proved to be effective in chronic recurrent low back pain patients, the group that received core stabilization exercises shown more strengthening the isolated muscles, where as in group B the concentration is on strengthening the group muscles. In case of Group A improvements in ROM is slightly higher than that of Group B. This is an accordance with mcgill [6,7,8] that performing exercises on labile surface increase abdominal muscle activity, which changes both the

level of muscle activity and the way the muscles co-activate to stabilize the spine and whole body. This suggests a much higher demand on motor control system, which may be desirable for rehabilitation programme.

Limitation

- The sample size in this study is small. The finding should be substantiated in a larger group of subjects.
- The follow-up to see the long-term effects of training is not done.
- The study has not taken into consideration of the patients other than the recurrent low back pain patients who constitute a fewer percentage of total back pain patients.
- The results of the study cannot be generalized to all unstable surfaces and all strength-training exercises.
- Improvements in strength of lumbar stabilizing muscles have not been documented.

Future Studies

- The study must be incorporated on a large population for more generalizations to be made.
- The study should be done on variety of low back pain patients.
- Further areas of research may include examining the intensity and duration of training.
- Core stabilization exercises using different labile surfaces is recommended. Future studies implementing strength outcome are advised.

Conclusion

Supporting evidence from the literature though seems to be controversial in certain areas, the outcome of this study with highly significant statistical changes will lead us to the conclusion of accepting the research hypothesis which could be stated as "Core stabilization exercises is more effective in the management of recurrent low back pain than conventional therapy".

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