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Original Article

Comparing the effectiveness of lumbar stabilization exercises with general spinal exercises in patients with postero-lateral disc herniation

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ABSTRACT

Objective

To compare effectiveness of lumbar stabilization exercises (LSE) with general spinal exercises in patients with postero-lateral disc herniation.

Methods

In this study which was conducted at Physical Therapy Clinic National Hospital and Medical Center DHA, Lahore for a period of two months, 50 patients with postero-lateral disc herniation were divided in two groups; a Control group which underwent general spinal exercises (GSE) and an experimental group which underwent LSE. Both groups had regular physical therapy sessions consisting of heat, ultrasound and manual therapy. For 4 weeks, participants were taught and practiced either GSE or LSE.

The progress of the patients was measured on modified Oswestry scale, based on the subjective evaluation of the patients in their activities of daily life.

Results

Total disability post-test scores were lower in experimental group than control group.

Conclusion

Lumbar stabilization exercises are of better choice when compared with general spinal exercises in patients with postero lateral disc herniations. (Rawal Med J 2011;36:259-261).

Key words

Lumber herniation, low back pain, lumber stabilization.

INTRODUCTION

"Lumbar stabilization exercises" (LSE) is a modern concept in the management of patients with postero-lateral disc herniation. Certain muscles of the back support and stabilize the spine to help prevent low back pain (LBP). These muscles include the lumbar multifidi and the transversus abdominus. The lumbar "stabilization exercises" is a program of back muscles exercises designed to improve strength and enhance flexibility in a pain-free range. It provides the patient with movement awareness, knowledge of safe postures, functional strength and coordination that promotes management of LBP.[1] Patients with herniation undergo regular physical therapy sessions includng heat, ultrasound, manual therapy, postural care advice and therapeutic exercises. The conventional therapeutic exercises are either William's flexion or Mackenzi's extension. Majority of the back pain patients, especially due to hernation, have to suffer a lot due to their weak muscles of extensor compartment and peak intensity of pain in the following

years.[2,3] The aim of this study was to compare the effectiveness of lumbar stabilization exercises with general spinal exercises in patients with postero-lateral disc herniations

SUBJECTS AND METHODS

The study was conducted at Physical Therapy Clinic, National Hospital and Medical Center, Lahore for a period of two months. Fifty subjects with postero-lateral disc herniation participated in the study and were divided randomly in two groups; a control group which underwent general spinal exercises (GSE) and an experimental group which underwent LSE. Both groups had regular physical therapy sessions consisting of heat, ultrasound and manual therapy. For continuous 4 weeks, participants were taught and practiced either GSE or LSE.

The progress was measured with modified Oswestry scale (Appendix). To check the difference between means of the total disability score of the two groups, student t test was used. A $P<0.05$ was considered to be statistically significant. SPSS was used for data analysis.

RESULTS

Total disability score at the start of the study and post test total disability score in experimental and control group are shown in figures 1,2 and 3. Total disability post-test scores were lower in experimental group than control group ($p=0.000007$).

Figure 1: Total disability score in all participants at start of the trial.

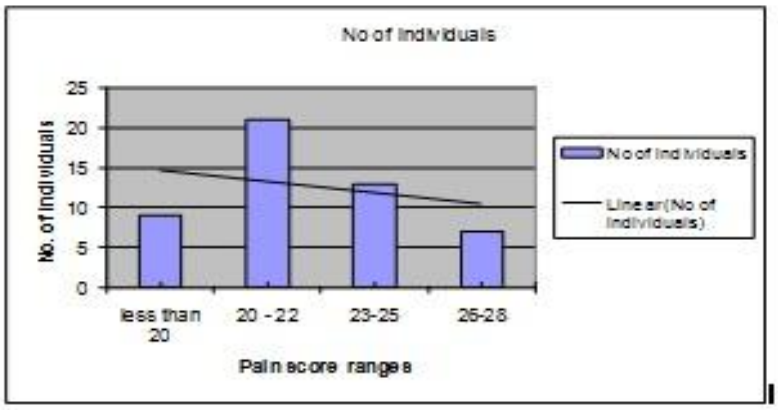
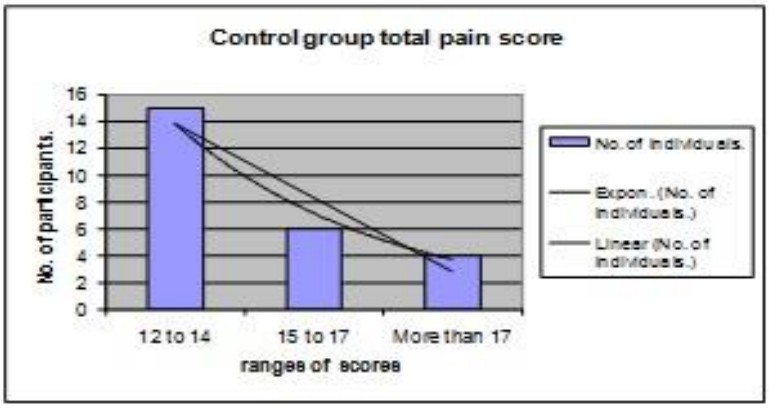


Figure 2: Total disability score experimental group after trial.

Figure 3: Control group total disability score after trial.



DISCUSSION

LSE protocols specifically focus on lumbar spinal muscles that are actively engaged in exercise.[4,5] These exercises relieve pain, improve functional parameters and strengthen trunk and back extensors.[6,7] GSE are mainly flexibility exercises and study showed that benefits of these are not better. These old fashioned exercise do not have potential to actively engage lumbar spinal muscles so these are able to control spine in different postures. Except when patient is in acute condition, these exercises are perfectly safe, comfortable and easy to learn for all patients. This finding was consistent with all participants in experimental group.

Safety and efficacy of LSE has demonstrated in patient with low back pain including those with nerve root compression.[5] These exercises do not have any contraindications and can readily be included in any therapeutic exercise program. However, at the end of the study, many patients fell bored when told to exercise. Although they took these exercises very lightly, nonetheless, their progress was satisfactory. This proves therapeutic efficacy and potential of stabilization exercises to activate the core stability effects.

Hydrotherapy is largely being advocated in Pakistan but not every patient has the affordability of a swimming pool.[8] Besides therapeutic efficacy of LSE, it is also very mandatory for all working therapist to be fluent and accurate with their techniques in such patients, as these were found to provide excellent results.[9] Regarding management of such patients, role of modalities and manipulative management needs to be clinically established.[10,11] Clinical trials can be conducted in discogenic patients to compare their post exercise pain disability score in pool and at home utilizing LSE protocols.

CONCLUSION

The LSE were provided significantly better results compared with general spinal exercises in patients with postero lateral disc herniations. They were safe and easy to perform.

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REFERENCES

1. Kisner C, Colby LA. Therapeutic exercises. 5th ed. New Delhi: Jaypee;2007.p.13.

2. Adams MA, May S, Freeman BJ, Morrison Hp, Dolan P. Effects of backward bending on lumbar intervertebral discs. Relevance to physical therapy treatments for low back pain. Spine1999;24:431-7.

3. Adams MA, Monnion AF, Dolan P. Personal risk factors for first-time low back pain. Spine 1999;3:2497-505.

4. Hopper C, Kolt GS, McConville JC. The effects of Feldenkrais awareness through movement on hamstring length, flexibility, and perceived exertion. J Bodywork Movement Therapies 1999;3:238-47.

5. Liebenson C. Spinal stabilization training. J Bodywork Movement Ther 1998;2:218-23.

6. Hides J, Jull GA, Richardson CA. Long term effects of specific stabilizing exercises for first-episode low back pain. Spine 2001;26:E243-8.

7. McGill SM. Low back stability: from formal description to issues for performance and rehabilitation. Exer Sport Sci Rev 2001;29:26-31.

8. Hyoung HK. Effects of a strengthening program for lower back in older women with chronic low back pain. J Korean Acad Nurs 2008;38:902-13.

9. Grenier SG, McGill SM. Quantification of lumbar stability by using 2 different abdominal activation strategies: Arch Physical Med Rehabil 2007;88:54-62.

10. Akuthota V, Nadler SF. Core strengthening: Arch Physical Med Rehabil 2004;85:3Suppl 1:S86-92.

11. Kiesel KB, Underwood FB, Mattacola CG, Nitz AJ, Malone TR. A comparison of select trunk muscle thickness change between subjects with low back pain classified in the treatment-based classification system and asymptomatic controls. J Orthp Sports Phys Ther 2007;37:596-607.

Appendix: Modified Oswestry Scale:

Pain Intensity:

1. I have no pain at the moment
2. The pain is very mild at the moment
3. The pain is moderate at the moment
4. The pain is fairly severe at the moment
5. The pain is very severe at the moment
6. The pain is the worst imaginable at the moment

Walking:

1. Pain does not prevent me walking any distance
2. Pain prevents me from walking more than 2 kilometres
3. Pain prevents me from walking more than 1 kilometre
4. Pain prevents me from walking more than 500 metres
5. I can only walk using a stick or crutches
6. I am in bed most of the time

Standing:

1. I can stand as long as I want without extra pain
2. I can stand as long as I want but it gives me extra pain
3. Pain prevents me from standing for more than 1 hour
4. Pain prevents me from standing for more than 30 minutes
5. Pain prevents me from standing for more than 10 minutes
6. Pain prevents me from standing at all

Sleeping:

1. My sleep is never disturbed by pain
2. My sleep is occasionally disturbed by pain
3. Because of pain I have less than 6 hours sleep
4. Because of pain I have less than 4 hours sleep
5. Because of pain I have less than 2 hours sleep
6. Pain prevents me from sleeping at all

Social Activity:

1. My social life is normal and gives me no extra pain
2. My social life is normal but increases the degree of pain
3. Pain has no significant effect on my social life apart from limiting my more energetic interests e.g. sport
4. Pain has restricted my social life and I do not go out as often
5. Pain has restricted my social life to my home
6. I have no social life because of pain

The progress of the patient was measured subjectively on this modified scale pre test and post test. All the participants were asked to fill this form before and after end of the exercise trial.

The lower the total disability score which is the aggregate of all 5 variable the greater is the improvement of the patient in his activities of daily living.