

ROLE OF CORE STABILITY EXERCISES IN OBESE INDIVIDUALS WITH LOW BACK PAIN: A PROSPECTIVE STUDY

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ABSTRACT

Background and Purpose: Pain in the lower back is a common concern, affecting up to 90% of population at some point in their lifetime, up to 50% have more than one episode. It has been found that annual expenditure on the low back pain range from \$30-70 billion. The main causative factor that can cause back pain is poor posture while sitting, standing and lifting heavy weights. Other factors that can cause low back pain include spinal disorders and systemic diseases. Core stability exercises have become one of the fitness trend broadly used exercises for low back pain.

Materials and Methods: 47 patients, having BMI more than 30, both males and females and age between 18-45 years, of low back pain were taken. All the patients were assessed for pain and level of disability with Visual analogue scale and Oswestry disability questionnaire. After the baseline assessment, all the patients were conveniently divided into two equal groups, Group A and Group B. Group A received conventional physiotherapy whereas Group B received core stability exercises along with conventional physiotherapy. The subjects were reassessed after completion of 8 weeks of intervention. The purpose of the study was to determine the Role of core stability exercises in Obese Individuals with Low Back Pain: A Prospective Study.

Result & Conclusion: It can be concluded that both conventional physiotherapy as well as addition of core stability exercises are effective in obese individuals with low back pain but addition of core stability exercise has much more remarkable effect than conventional physiotherapy alone on low back pain in obese patients. Hence core stability exercises is an integral part of physiotherapy regime for accurate and efficient management of low back pain

KEY WORDS: Low Back Pain, Core Stability Exercises, Level of Disability, Pain.

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Access this Article online

Quick Response code



DOI: 10.16965/ijpr.2016.193

International Journal of Physiotherapy and Research

ISSN 2321- 1822

www.ijmhr.org/ijpr.html

Received: 10-11-2016

Accepted: 28-11-2016

Peer Review: 12-11-2016

Published (O): 11-12-2016

Revised: None

Published (P): 11-12-2016

INTRODUCTION

Low back pain (LBP) is one of the most common musculoskeletal conditions. In India nearly 60% of people have LBP in some point of their life [1]. It is an extremely common health problem & has been considered as the 5th most common cause to visit a clinician. Studies have shown that the incidence of LBP is highest in the 3rd decade of life & its prevalence increases with age until 60–65 age groups and then gradually declines [2].

Low back pain is a common problem. The exact cause cannot be identified in 85-95% of cases. A precise cause of mechanical back pain can be identified 5-15 % percent of the time. It arise from any one of a number of anatomical structures including bones, intervertebral discs, joints, ligaments, muscles, neural structures and blood vessels [3]. Back pain is of 2 types' mechanical & chemical (non mechanical). Mechanical pain is the general term that refers to any type of back pain caused by placing

abnormal stress and strain on muscles of the vertebral column. Typically, mechanical pain results from bad habits, such as poor posture, poorly-designed seating and incorrect bending and lifting motion [4]. Pain in the lower back is a common concern, affecting up to 90% of population at some point in their lifetime, up to 50% have more than one episode [5]. It has been found that annual expenditure on the low back pain range from \$30-70 billion [6].

The main causative factor that can cause back pain is poor posture while sitting, standing and lifting heavy weights. Other factors that can cause low back pain include spinal disorders and systemic diseases [7]. Obesity is often defined simply as a condition of abnormal or excessive fat accumulation in adipose tissue, to the extent that health may be impaired. However, obese individuals differ not only according to the degree of excess fat, which they store, but also in the regional distribution of the fat within the body. Indeed, excess abdominal fat is as great a risk factor for disease as is excess body fat [8]. Obesity is one of several lifestyle factors that has been suspected of not merely relating to, but in fact causing Low Back Pain. There are several hypotheses relating to a link between obesity and LBP. It has been postulated that excessive body weight could have mechanical ill effects on the back caused by excessive weight bearing [9].

The "core" has been used to refer to the lumbopelvic-hip complex, which involves deeper muscles, such as the internal oblique, transversus abdominis, transversus spinalis (multifidus, rotators, semispinalis), quadratus lumborum, and psoas major and minor, and superficial muscles, such as the rectus abdominis, external oblique, erector spinae (iliocostalis, spinalis, longissimus), latissimus dorsi, gluteus maximus and medius, hamstrings, and rectus femoris [10-14].

SUBJECTS AND METHODS:

47 Patients, who were diagnosed with Low Back Pain, The patients were included in the 2 groups namely; Group A and Group B using convenient sampling method. All the subjects was assessed for pain and level of disability. The pain was measured by visual analogue scale, level of

disability was measured by Oswestry Disability .All the patients was reassessed after the completion of the treatment that is 8 weeks.

Intervention

- Group A - The subject in this group received conventional therapy alone, which was consisted hot packs, stretching and strengthening of back (Kumar, 2011).

- Group B - The subjects in this group were administered conventional therapy along with 24 session of core stabilization exercises 8 sessions per phase 3 times per week on alternate days . Exercise program were done in 3 phases (McGill, 2001).

- o Phase 1 included abdominal bracing, single knee to chest and bridging exercises.

- o Phase 2 included abdominal strengthening, basic stabilization and wall squats with swiss ball.

- o Phase 3 included lumbar extensor strengthening, lumbar extension on ball and corner stretch.

Data Analysis: Statistical study of the evaluation was done using SPSS 16 and Chi square test was used for assessing statistical significance.

Fig 1.1: Shows Comparison of VAS score in low back patients:0 weeks and 8 weeks post training with in Group A and Group B.

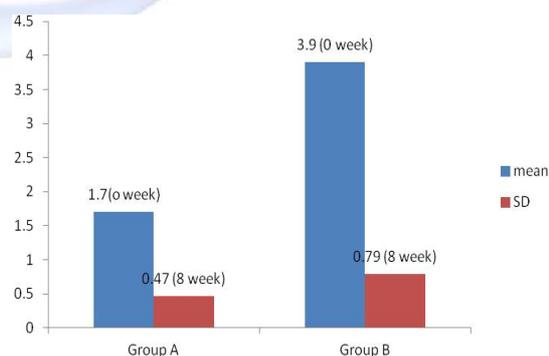
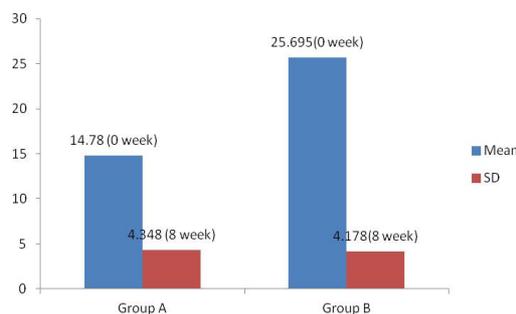


Fig 1.2: Shows Comparison of ODI score in low back patients:0 weeks and 8 weeks post training with in Group A and Group B.



RESULT

In VAS score group A shows post therapy 0.47% and group B post therapy 0.79% improvement of pain and ODO score in group A 4.3% and group B 4.17% improvement in decrease disability in group B patients, So in both outcome the group B shows more improvement because in group B patients received core strengthening exercises and conventional physiotherapy.

DISCUSSION

The purpose of the study was to investigate efficacy of core stability exercise in obese individuals with low back pain. The results revealed significant improvement in pain, level of disability i.e. group A and group B.

The present study revealed significant improvement in level of pain in obese individuals with low back pain in Group A. This similar study was done by Choisy, 2000 who concluded that strengthening & stretching exercise are effective in decreasing low back pain in woman. According to the biomechanical model theory, weakened muscles cause mechanical irritation in the lumbar spine, thereby causing pain by stimulating pain-sensitive structures. Such continued stimulation serves as an initial cause of central sensitization and chronic pain. The vicious cycle of pain causing spasm and spasm worsening pain is a generally accepted concept at the moment [10].

The results of this study also show significant improvement in level of disability in obese individuals with low back pain in Group A. These similar results done by Bala K. Gakhar, 2012 both stretching & strengthening exercises are equally effective in reducing pain & disability. These exercise to maintain lumbar stability to strengthen muscles, increase endurance, and correct posture. Such exercises showed similar effects in decreasing pain intensity and level of disability [11].

Group B received conventional physiotherapy along with core stability exercise in obese individuals with low back pain. The result of present study shows significant improvement in level of pain in obese individuals with low back pain in Group B. A similar result was seen in a study done by Franca et al in 2010 who analysed the

efficacy of two exercises programme, segmental stabilization and strengthening of abdominal and trunk muscles with chronic low back pain and concluded that there is more improvement in all variables in the segmental stabilization group opposed to the strengthening [12].

Level of disability in obese individuals with low back pain in Group B improved significantly which is in accordance to the work done by Aggarwal in 2010 who did a study on the effects of lumbar stabilization exercises as home programme in treatment of young women with non specific low back pain and concluded that In experimental group, where lumbar stabilization exercises along with back care and ergonomic advice is given, is more effective to decrease pain and disability than in control group in which only back care and ergonomic advice is given as a home programme. Similarly, by Kim [13] demonstrated improved level of disability in low back pain patients.

The results show that there is significant difference of unpaired t - test between group A and group B for VAS and ODO. Macedo LG et al., 2009 did a study on the effects of core stability exercise on nonspecific LBP and concluded that core stability exercises are more effective. Another study done by Barr, Wikmar and Arvidsson [14] to compare the stabilizing training compared with manual treatment in sub-acute and chronic low back pain further supports the findings of present study. The results showed that stabilizing training seemed to be more effective than manual treatment in terms of improvement of individuals and the reduced need for recurrent treatment periods.

Core stability exercise is based on the well established premise that stability of the spine is dependent on the contribution of muscle. Approach aimed to train the skilled activation of the deep muscles, to train the integration of the deep and superficial systems, and to progress through a program of tailored functional exercises in varying environments and contexts to ensure transfer to normal activity.

CONCLUSION

It can be concluded that both conventional physiotherapy as well as addition of core stability exercises are effective in obese individuals with

low back pain but addition of core stability exercise has much more remarkable effect than conventional physiotherapy alone on low back pain in obese patients. Hence core stability exercises is an integral part of physiotherapy regime for accurate and efficient management of low back pain

Conflicts of interest: None

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How to cite this article:

Parwinder Kaur, Deepika Sharma, Sandeep Kumar, Smati Sambyal. ROLE OF CORE STABILITY EXERCISES IN OBESE INDIVIDUALS WITH LOW BACK PAIN: A PROSPECTIVE STUDY. *Int J Physiother Res* 2016;4(6):1793-1796.

DOI: 10.16965/ijpr.2016.193