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EFFECTS OF CORE STABILITY EXERCISES VERSUS MYOFASCIAL RELEASE TECHNIQUE COMBINED WITH CORE STABILITY EXERCISES IN THE MANAGEMENT OF LOW BACK PAIN

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ABSTRACT

Low back pain (LBP) is a symptom that is an important health problem throughout the world. Non-specific low back pain (NSLBP) is the most widespread form of LBP. NSLBP is called LBP without recognizable specific underlying pathology. The prevalence and burden of LBP increases with aging. Myofascial release (MFR) is a variety of manual therapy technique in which pressure is applied to muscle and fascia to soften and stretch the myofascial complex, intended to restore optimal length, decrease pain, and improve function. This situation is more common and complex in elderly people. Because of the changes in fascia structures, dysfunction of deep muscles of back and trunk is common in chronic LBP. Injuries of low back are mostly caused from the superficial back line (SBL). The SBL contains the plantar fascia, gastrocnemius muscles, hamstring muscles, sacrolumbar fascia, erector spinae muscles and epicranial fascia.

Keywords: CORE STABILITY, MYOFASCIAL, STABILITY EXERCISES

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INTRODUCTION

Low back pain (LBP) is a leading cause of disability that bears the greatest burden, affecting 540 million people worldwide. LBP is a well-documented and an extremely common health problem that hinders the activities of daily living, compromises the quality of life (1). According to World Health Organization Global Burden of Disease Study by World Health Organization (WHO-GBD) in 2010, "The most common reason of years lived with disability (YLDS) in the world was lower back-pain, followed by neck pain and other musculoskeletal disorders" (2). In primary health care setting 60 to 80 percent of the population is predisposed to LBP sooner or later in their lifetime (3). Gross Domestic Product (GDP) in most of the countries has been assessed to rise as high as 1.7 percent, due to the subsequent financial consequence of days lost from work, disability advantages related to occupation and health asset use which are caused by low back pain (4) . As reported by WHO's latest global burden of diseases study conducted in 2013, prevalence of low back pain has increased to 12.2%, compared to the 2010 study conducted in 54 developing and developed countries, which was 11.9 %. LBP influences 40-60 percent of working adults in western settings (5). The term "low back pain" refers to discomfort in the back, arises from the lowest rib down to the gluteal region and extends into the legs (6). The factors affecting the normal functioning of back are much diversified i.e. many of the disturbances are not related to any pathology, but may be rather caused by functional disturbances that are recognized by physical examination and can't be identified by imaging studies (7). One of the major reasons for back pain is altered spinal patterns of movement caused by changes in spinal structure, i.e. change in the curvatures of spine, caused by mostly muscular imbalances (8). Core stability exercises regimes fortify spinal musculature, by emphasizing on lumbo-pelvic region especially on the core muscles e.g., transverses abdominis, multifidus(9).

METHODOLOGY

Clinical setting the study was conducted in the Department of Rehabilitation Sciences, Kailash Hospital Greater Noida, UP.

Target Population: Both male and female patients with Low back pain. Study Design Randomized Control Trial (RCT).

Duration of Study: The study was completed during a period of six month.

Sampling Technique: Simple random sampling technique.

Sample Size: Sample size is calculated by using WHO software for samples size calculation. Taking previous study "Efficacy of progressive core strengthening exercise on functional endurance tests and hypertrophy of multifidus, transverses abdominis in healthy female subjects with low core endurance", using confidence interval of 95% and bound of error of 0.05%, a total

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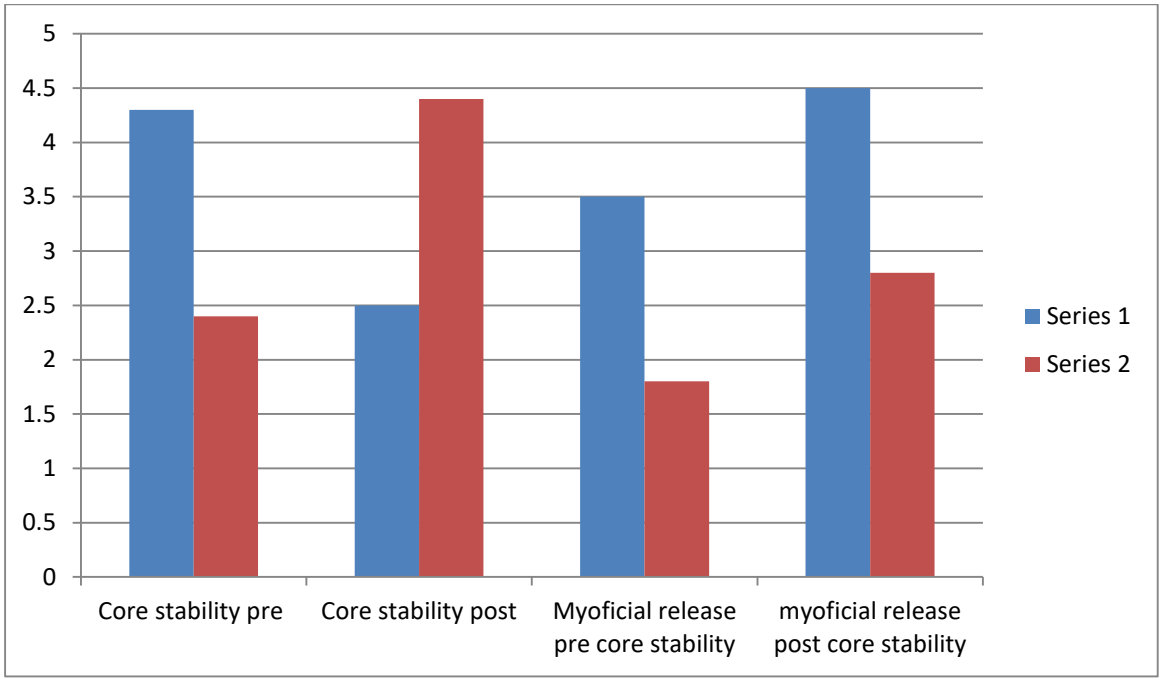
sample size of 40 is calculated(10).

Sample Selection L: The sample population was obtained using the following inclusion and exclusion criteria.

Inclusion Criteria: Both male and females between age, group of 18-50 years with low back pain referred to the department of rehabilitation sciences (9).



Exclusion Criteria

- Post Spinal surgery/instrumentation.
- Medical "red flags" (e.g. Rheumatoid arthritis, osteoporosis, Fracture, Tumor) Prolonged steroid use and bone tissue infection or malignancy, Radiculopathy.
- Acute Traumatic injury of spine/lower extremity.
- Patient under anti-coagulant therapy.
- Any neurological or psychological deficit.
- Any Medico-legal Issues.
- Ethical Consideration All the data collected was kept confidential. The participants were informed about the risk and benefits of the study, and their right to quit at any time.

RESULTS

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A total number of 40 participants with mean age of 45.34±5.2 recruited comprised of 34% males and 66% females divided into Group A (n=20) and B (n=20) respectively. The simple main effects analysis showed that the Core Stability Exercises applied with Myofascial release technique group proved to be more effective than the Core Stability Exercises group. The patients in the group B reported a mean difference (2.73 from 7.18) in their pain reduction and (19.09 from 37.91) mean reduction in functional disability and mean increase in muscle mass of Right Lumber Multifidus (2.5cm from 1.59cm) and Left Lumber Multifidus mean (1.96cm from 1.55cm).

DISCUSSION

The study provided a mean to determine the efficacy of Core Stability Exercises and Myofascial Release Technique for the management of Low back pain. The understanding of the Data analysis has revealed the ways and provided insights about the prescription of exercise interventions by physiotherapists for patients with low back pain. The thesis documented here has potential implications and significance to physical therapy education and clinical practice, as a basis of future research and discussion can be formed. Outcomes of this study revealed that statistically exercise intervention applied to both groups, evidenced to be effective in management of low back pain, but clinically, the evaluation revealed that there was greater pain reduction in Core Stability Exercises applied with Myofascial release technique group as compared to core stabilization exercise group.

The study results revealed that core stability exercises reduced pain and augmented the daily functional activities in low back pain patients. Decrease in level of disability and pain in both groups was shown in the results of their study. The ability of the core muscles is enhanced by core stability exercises, therefore resulting in post-intervention decreased perception of pain and improved functional outcomes in subjects with low back pain. A moderate level decrease in pain perception was demonstrated by the subjects that were allocated to core stabilization group. The motor control exercises proved to be superior over electrotherapeutic modalities in the management of chronic non-specified low back pain, as established by Yang, H. et al., in their study. The activation of the transversus abdominus and multifidus was targeted using Specific exercises performed on the Subjects in treatment group (11). In our study, Cross sectional area of lumbar multifidus increased after 6 weeks of a specific core stabilization exercise program in both groups with low back pain. As mentioned in previous studies, patients with Low Back Pain had significantly smaller multifidus cross sectional area at the lowest two vertebral levels than asymptomatic subjects (12). According to our study, specific retraining improved multifidus muscle Cross sectional area, accompanied with a decrease in pain. Classic trunk-strengthening exercises involve activation of the muscles. Such strengthening exercises have proved to be different from the stability exercises, which are intended to stabilize muscles, primarily by low-level isometric activation, followed by progressive integration into everyday activities. In our study, the myofascial release along with core stabilization group showed significantly greater improvement, when compared to the other group, as the ability to recruit the lumbar multifidus, though the difference was largely accounted for by a worsening in the other groups. Efficient increase in strength of multifidus muscle and reduced level of pain in patients with low back

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pain was associated with the performance of core stabilization exercise program, as confirmed by this study. The limitation of the study included a small sample size. Moreover, the results could have been obtained after one month duration from application of intervention, in order to understand the long-term effects of intervention. Biasness based on gender was faced because of random sampling, which effect on the results has based on the differences between Muscle cross sectional area in males and females. The factor of patient biasness could also not be controlled.

CONCLUSION

The study focused on multiple modes of exercise programs focused on core stability. The present study has proven to provide significant improvement in low back pain, spinal muscle thickness and functional disability in patients with low back pain when treated with core stability exercise with Myofascial Release technique as compared to core stability exercise alone.

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