

# Lumbar Stabilization Exercises Combined with Therapeutic Yoga in the Management of Chronic Low Back Pain

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**Abstract:** *This study aims to evaluate the combined effectiveness of specific stabilization exercises with yoga training for chronic low back pain patients in minimizing pain and improving their lumbar stability and functional ability. Totally 36 patients participated in this study which was performed as a Pre-test and post-test experimental study design. The outcome measure used was VAS, Roland Morris's back pain questionnaire (RMQ). Specialized Lumbar stabilization exercises combined with therapeutic Yoga were provided to the patients. There was a significant difference in the gain score for the exercise with yoga for the VAS and RMQ. In the patient, the VAS score has decreased from the mean (standard deviation), pre-test (8/10) to post-test (3/10) which shows the difference. There was a significant difference in the Pain score (11) for the exercise with yoga for the Roland – Morris low back pain questionnaire. In the patient, RMQ scores have increased from the mean (standard deviation), pre-test (16/24) to post-test (5/24). This study reveals that specific stabilization exercises with yoga therapy training programs resulted in improvement. Progressive training appears to be an effective intervention to reduce low back pain and has a positive effect on improving strength. The study supports the lumbar spine stabilizing exercises combined with yoga therapy as an effective approach in minimizing pain and improving functional capacity.*

**Keywords:** Lumbar stabilization

## I. INTRODUCTION

The management of low back pain is globally a major health and economic concern. As one of the leading causes of physical limitation, low back pain is a chief source of incapacitation, suffering, and expense. (1,2) It is also recognized that the cause of this health problem is very difficult to establish because of the irregular nature of its occurrence in individuals and the unclear etiology of low back pain. Although the effectiveness of exercise combined with yoga as a prevention strategy and intervention for low back aches has recently been challenged, this awareness actually suggests the need for more controlled studies that may eventually lead to the development of new and improved exercise and yoga designs prove to be viable intervention (3). Low back pain affects 60% to 80% of the population, of those experiencing low back pain, 30% to 70% will have recurrent episodes recovery is anywhere between 3 days and 6 weeks for 80% 90 % of acute assaults of back pain and becomes a chronic problem for 5% to 10% of the sufferers (4). Male and female individuals are affected equally. There is evidence that 12% to 26% of children and adolescents experience low back pain although most cases of low back pain occur in persons between the ages of 25 and 60yrs, peaking at about 40yrs (5-7) Low back pain and disability do not progressively increase with age and do not correspond to age-related changes in disc degeneration. It is not clear why low back pain peaks at about the fourth decade of life. Most clinicians agree that the treatment of low back pain should focus on known deficiencies. Typically, these sufferers lack normal of flexibility, muscular strength, and muscular endurance in various muscles of the trunk, including the lumbar and abdominal muscles. Often times these patients are overweight and deconditioned. Therefore, the role of exercise and yoga in the treatment and prevention of low back pain should be to correct or improve these deficiencies. In other parts of the body, the use of exercise to improve strength, mobility, coordination, and endurance have been well recognized (8). There are various approaches that may be taken in the management of back pain. Traditional approaches include passive modalities to generic exercises, while current research evidence leans towards a specific

exercise and yoga training exercises. The abdominal and lumbar musculature to provide adequate support to the lumbar spine during movement and while under load is considered a contributing factor to the persistence of low back pain and dysfunction in the absence of trauma (9-11). It has been shown that multifidus is dysfunctional for a length of time, at the ipsilateral side of injury it will begin to shrink and undergo composition changes becoming infiltrated with fatty tissue. Followed by it losses its endurance capacity and leads to dysfunction. After an injury, there is excessive recruitment of the multifidus lost. An ideal time to implement low- weight, high repetition exercises to increase multifidus recruitment is needed. Dysfunction of the recruitment and motor control of the deep segmental stability system resulting in poor control of the neutral joint position. This literature demonstrates a motor control deficit associated with delayed timing/ recruitment in the local stability system (12,13). These changes may decrease muscle action around a motion segment and potentially result in poor segmental control and instability. These are also strong evidence to support the non specific fitness training is comparably effective in rehabilitation of chronic low back pain. This study attempts to compare the effectiveness of two important exercise protocols which minimizes pain and improves the functional ability of low back pain population. The objective of the study is to evaluate the combined effectiveness of specific stabilization exercises with yoga training for chronic low back pain patients in minimizing pain and improve their lumbar stability and functional ability.

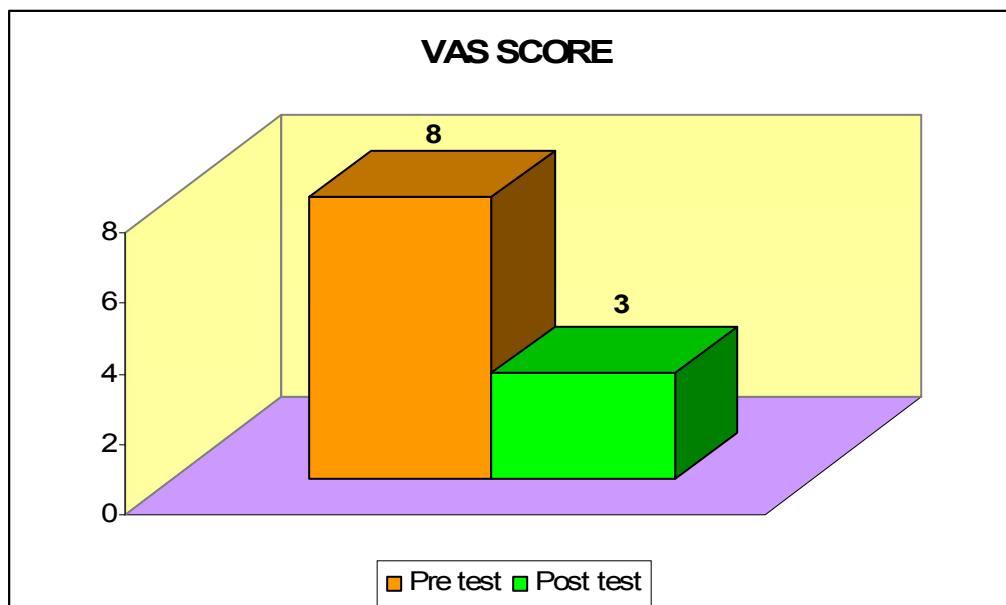
## II. METHODOLOGY

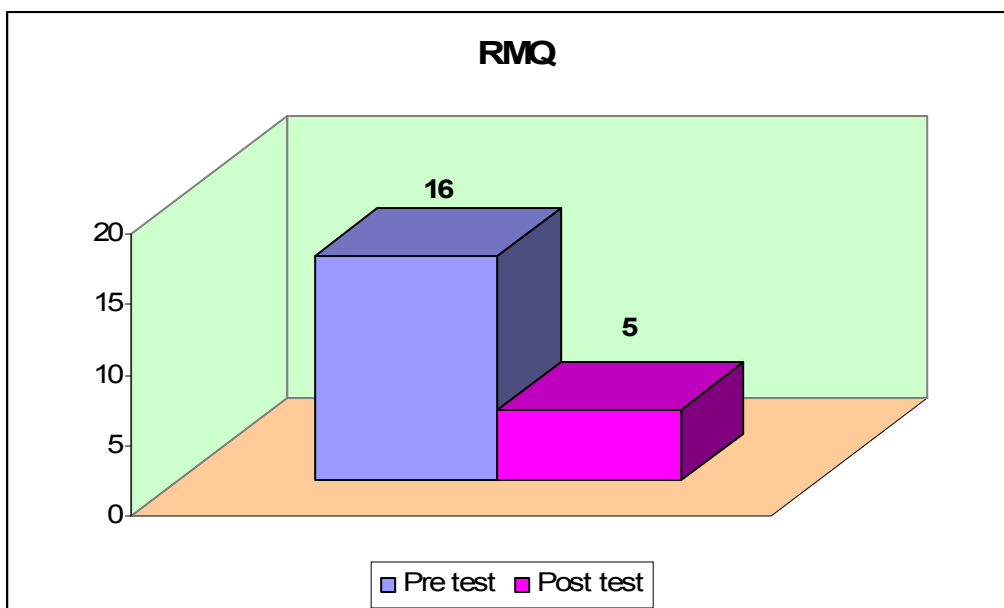
Here a Pre-test and post-test experimental study design were used to compare the effectiveness of specific stabilization exercises combined with yoga therapy in the management of chronic low back pain. Subjects were selected for the study if they were in 20 to 50 years of age, both genders, and presented with Pain for more than a week due to degenerative disc disease and Non-specific chronic low back pain. Patients were excluded if they had acute low back pain, a history of spinal infection, fracture or malignancy and cardiac disorders, evidence of sacroiliac joint and hip joint dysfunction, or neurological deficit. The outcome measure used were VAS, Roland Morris's back pain questionnaire (RMQ). Dependent variables for the study was pain, functional capacity and lumbar stability, Independent variable: specific stabilization exercise with yoga asanas. A single subject selected from the chronic low back pain population according to inclusion and exclusion criteria randomly from our out patient department. Then the subject assessed completely and written informed consent was obtained from the subject to confirm his full – hearted participation in the research programme. the basic anatomy of the lumbar spine was explained to the subject with computer aid pictures. The abnormal stress forced on the bones and joints due to faulty postures were clearly demonstrated. Pre-test assessment: the subject is assessed for pain and disability using VAS scale and Roland – Morris back pain questionnaire and scores are recorded. The subject the subjected to lumbar stabilization exercise with yoga asana as mentioned below for 15 days duration. Prior to participation in the tests, the subjects were taught specific stabilization exercises. The subject was taught the cat stretch to perform. It is performed by slowly cycling through full spinal; flexion to full extension, and in prone lying for better understanding. This exercise provides motion for the spine with very low loading of the intervertebral joints. This is the first stage of exercise. The next stage of exercise to perform is the curl-up, where the head and shoulders are raised off the support surface, with the hands under the lumbar region, to help stabilize the pelvis and support the neutral spine. A variation is to bend only one knee while the straight leg assists in pelvic stabilization and preservation of a neutral lumbar curve. This is done in the supine position. The third stage of exercise performed is the isometric horizontal side support, supporting the lower body with knees on the support surface reduces the demand further for those individuals who are more concerned with safety, whereas supporting the body with the foot increases the muscle challenge, but also the load on the spine position is side lying. Along with specific stabilization exercises yoga therapy was also planned for chronic low back pain patients. After doing stabilization exercises, yoga asana is also thought for the subject whose blood pressure and pulse rate have been already recorded. The Asana program started with konasana, it is practiced in a sitting position with abducted hip with knee flexion and with legs together, arms by adducted position elbow extension with hands by the side of the feet. It is done for 5 minutes. Its practice makes the spine flexible; this is an advantage in back pain. Bhujangasana – Sanskrit bhujanga means cobra. The final position of this asana resembles the hooded snake, hence it is called bhujangasana, it is practiced in a prone lying position with legs together, toes together, pointing outward, hands by the side of the body, fingers together and palm facing upwards and forehead resting on the ground. Fold hands at the elbows, place palms on

the ground near each side of the shoulder, and thumb should be under the armpit. Bring your chin forwards and place it on the ground. Raise your chin and turn your head backward as much as possible. Maintain the posture for some time. Then slowly bring your body to the ground. Suta – Vajrasana: lying on the back with folded legs. Hence it is called suta vajrasana. In this asana shoulders should rest on the ground; this strengthens abdominal muscles. It is a good remedy for constipation. Salabhasana – lie prone pressing the ground with your hands on either side of the chest and raise your legs together nine inches high in the air. Maintain this position for sometimes then bring the legs down slowly. The legs should not bend at the knees, this strengthens the muscles of the lower abdomen. Cakrasana – it minimizes the stiffness of the spine and connected nerves are made strong. It is practicing in a standing position. Stand erect with legs together, toes together, hands by the side of the thighs, and gaze in front. Now raise both hands from in front towards the sky. Palms facing in front. Keeping the weight of the body on ankles and thighs, bending backward till where you can reach. Maintain the position for some time, and slowly returns to the original position. After the treatment program, post-test measures are recorded using the VAS and RMQ tools.

### III. RESULTS

There was a significant difference in the gain score for the exercise with yoga for the Visual Analog Scale. In the patient, the VAS score has decreased from the mean (standard deviation), pre-test (8/10) to post-test (3/10) which shows the difference. There was a significant difference in the pain score for the exercise with yoga for the Roland – Morris low back pain questionnaire. In the patient, RMQ scores have increased from the mean (standard deviation), pre-test (16/24) to post-test (5/24). This study reveals that specific stabilization exercises with yoga therapy training programs resulted in improvement. Progressive training appears to be an effective intervention to reduce low back pain and has a positive effect on improving strength.





#### IV. DISCUSSION

The main objective of this study was to find the effects of specific stabilization exercises with the yoga asana program in improving stability and strength for chronic low back pain. The study brought to light the following results there is a significant difference in the improvement. The population for the study constituted a single subject taken as the sample. There is a significant difference in mean values of VAS scores from the mean (standard deviation), pretest (8/10) to post-test (3/10) similar to previously reported studies (12-16). here is a significant difference in mean values of RMQ scores from the mean (standard deviation), pretest (16/24), to post-test (5/24). Comparison of the performance before and after intervention demonstrated significant improvement in Visual Analog Scale and Roland – Morris Questionnaire scores in the patient. The VAS and RMQ both assess pain and working ability. The VAS assesses pain during functionally based activities in sitting and standing, whereas RMQ's ability to work. (17-21) Numerous studies now document in reducing chronic low back pain. Exercise and yoga have been reported to improve functional status, increase activity levels, counteract weakness and decrease physical frailty in patients. A limitation of this study is that neither the study participant nor myself conducting the performance-based pain assessment were blinded to the purposes of the study (22). Pre-training, and post-training measurements were conducted by the principal investigator. The objective nature of the assessments should have served to reduce researcher bias, but the possibility cannot be excluded. In addition, a participant might have worked harder during their post-training assessment to please the researcher. Finally, the present study, which took only 15 days, did not address the issue of maximum pain gains: how much can function be improved in patients and how long does it take to reach the maximum? Similarly, time limitations prohibited the study from addressing the issue of retention of pain improvements. Additional research is needed to document the effects of specific stabilization exercises combined with yoga therapy, on chronic low back pain. Finally, the major contribution of the investigation stems from its ability to assess the clinical feasibility of a simple stabilization exercise yoga therapy in consistent to previously documented studies (23-27).

#### V. CONCLUSION

The study supports the lumbar spine stabilizing exercises combined with yoga therapy as an effective approach in minimizing pain and improving functional capacity. The exercises and asanas help the patients to learn the kinesthetic awareness necessary to maintain a safe neutral spine and thus avoid potentially harmful end range. The postural-motor control that is trained is vital for spinal stabilization during activities of daily living and demands of employment. Stabilization exercise with yoga and an approach towards total body health and fitness in management, prevention, or restoration of healthy back exercise combined with yoga therapy can be prescribed hand in hand with physical therapy

practice for the effective rehabilitation of chronic low back pain patients. Current research has provided information in the study of specific stabilization exercises combined with yoga therapy. However, some areas of this topic still lack evidence further research consideration could look at identifying an optimal number of repetitions and holding time that would be effective for exercises. More studies should be done to combine the efficacy of yoga with specific stabilization exercises. More studies need to focus on older adults and use a large number of samples.

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