



EFFECTIVENESS OF PILATES ALONG WITH CONVENTIONAL EXERCISE AND CONVENTIONAL EXERCISE ALONE IN PARTICIPANTS WITH SUBACUTE LOW BACK PAIN

Physiotherapy

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ABSTRACT

Low back pain is considered a benign and self-limiting condition in most patients. Pilates is a system of exercises widely used in low back pain. There are no studies, show the effectiveness of Pilates exercises in participants with subacute low back pain. The study aimed to find the effectiveness of Pilates versus Conventional Exercise in participants with Subacute Low Back Pain and to determine the better of these for benefit of populations. So a Quasi-Experimental study was conducted in which 30 participants' featured of subacute low back pain were studied for 6-weeks intervention. They were divided into 2 groups by convenience sampling: - Group A: conventional exercise and Group B: Pilates along with conventional exercise. Pre and post-treatment data were collected and analyzed by SPSS 22.0. Paired and unpaired t-test was used to find out the significance of the treatment. A significant improvement in pain, disability, muscle strength, and endurance ($p < 0.05$) was found after the treatment in both the groups. Greater statistical significant improvement was seen in Group B compared to Group A. Thus the study concluded that Pilates along with conventional exercise was more effective in treating participants with subacute low back pain.

KEYWORDS

Subacute low back pain, Oswestry disability index, Pilates.

INTRODUCTION

Musculoskeletal disorders are evident as the most prevalent pathologies in developed countries. Among these, low back pain (LBP), is defined as pain along with discomfort, localized below the costal margin and above the inferior gluteal folds, with or without leg pain can be highlighted. The most common form of LBP is nonspecific and is seen when the cause of anatomopathological pain cannot be determined.¹

The etiology of LBP is multifactorial and may be associated with factors such as age, gender, smoking, alcoholism, body weight, social class, level of schooling, physical activity, and work activities. The literature has highlighted the influence of the imbalance between the function of the extensor and flexor muscles of the trunk in increasing the probability of developing disorders that affect and disrupt the stability of the lumbar spine.^{2,3}

Therapeutic exercises are still considered the most effective resources for treating LBP, although there are varieties of applied exercises in clinical practice.⁴ The clinical guideline published by the American College of Physicians (2017) suggested that the first choice for patients with low back pain should be nonpharmacologic treatment including exercises and motor control exercise in addition to other therapies.⁵

Pilates exercise is commonly prescribed to people with low back pain^{6,7}, Pilates exercise is named after its founder Joseph Pilates, who developed a series of exercises in the 1920s to encourage physical and mental conditioning.^{8,9} Core stability, strength, and flexibility are emphasized in Pilates exercise, as is control of movement, posture, and breathing.⁹ Since Pilates acts in the contraction of this muscle, it is believed that the method can be used in individuals with lumbar spine instability.¹⁰

There are originally 6 principles for Pilates of low back pain:^{8,9} that are Centering, Concentration, Control, Precision, Breath and Flow.

Previously the research on the effectiveness of Pilates exercises in chronic low back pain compared with either no Pilates or home exercise program and/or along with standard back care education has been proven, but the effectiveness of Pilates exercise along with conventional exercise in subacute low back pain have not been proven till date.

Methodology

The Participants of subacute low back pain were identified from Orthopedic Physiotherapy OPD of Nootan College of Physiotherapy. Participants of both gender with the age between 30 to 50 years had symptoms of subacute low back pain from 6 to 12 weeks, with NPRS rating 5 or more than 5 and those who were willing to be a part of the study were included in the study.¹¹ An informed and written consent

was obtained from the participants who agreed to be a part of the study that was to be conducted. Participants with Subacute back pain attributed to any specific pathology like disc herniation, tumor, infection or fracture, osteoporosis, structural deformity, inflammatory disorders, radicular syndrome, cauda equina, and severe back pain were excluded from the study.¹²

The participants were selected by convenience method. A total of thirty participants with a mean age of 35.9 ± 4.86 (mean \pm SD) became part of the study. The participants underwent a detailed pre-evaluation. The pain was assessed by Numerical Pain Rating Scale (NPRS), functional disability was scored by Oswestry Disability Index (ODI) and Lumbar Muscle Endurance and Strength by Pressure Biofeedback Unit.

The participants of Group A were treated with the Conventional exercise and Group B was treated with Pilates exercise along with the Conventional exercise. The treatment protocol consisted of 5 sessions of conventional treatment/ week, and 5 sessions of Pilates treatment for 6 weeks. After 6 weeks of treatment, the participants of both groups underwent post-evaluation, and the pre and post-treatment data were noted and then evaluated further.

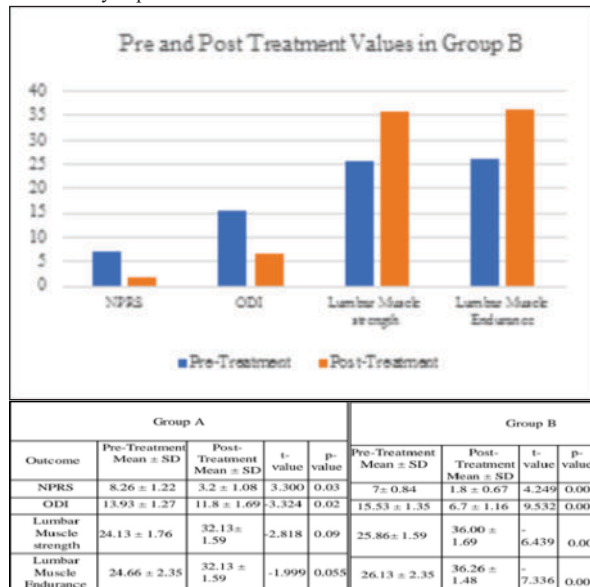
Treatment Protocol

Pilates exercise protocol for Group B.¹³

WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
1. Hip twist level 1 [5 reps]	1. Hip twist level 1 [5 reps]	1. Hip twist level 1 [3 reps]	1. Hip twist level 1 [3 reps]	1. Hip twist level 1 [3 reps]	1. Hip twist level 1 [3 reps]
2. One leg stretch level 1 [5 reps]	2. One leg stretch level 1 [5 reps]	2. One leg stretch level 1 [3 reps]	2. One leg stretch level 1 [3 reps]	2. One leg stretch level 1 [3 reps]	2. One leg stretch level 1 [3 reps]
3. Double leg stretch level 1 [5 reps]	3. Double leg stretch level 1 [5 reps]	3. Double leg stretch level 1 [5 reps]	3. Double leg stretch level 1 [3 reps]	3. Double leg stretch level 1 [3 reps]	3. Double leg stretch level 1 [3 reps]
	4. Double leg stretch level 2 [5 reps]	4. Double leg stretch level 2 [5 reps]	4. Double leg stretch level 2 [5 reps]	4. Double leg stretch level 2 [5 reps]	4. Double leg stretch level 2 [5 reps]
	5. Clam level 1 [5 reps]	5. Clam level 1 [3 reps]	5. Clam level 1 [3 reps]	5. Clam level 1 [3 reps]	5. Clam level 1 [3 reps]
		6. Shoulder bridge level 1 [5 reps]	6. Shoulder bridge level 1 [5 steps]	6. Shoulder bridge level 1 [5 steps]	6. Shoulder bridge level 1 [5 steps]
		7. Arm openings level 1 [3 reps]	7. Arm openings level 1 [3 reps]	7. Arm openings level 1 [3 reps]	7. Arm openings level 1 [3 reps]
			8. Scissors level 1 [5 reps]	8. Scissors level 1 [5 reps]	8. Scissors level 1 [5 reps]
					9. Breaststroke prep level 1 [5 steps]
					10. Breaststroke prep level 2 [5 steps]

RESULT

All statistical analysis was done using SPSS 22.0 software for windows. Descriptive analysis was obtained by using mean & standard deviation. The intergroup comparison between Group A and B of pre-treatment and post-treatment of NPRS, ODI, and lumbar muscle strength and endurance was done by paired t-test. The intragroup comparison of pre-treatment and post-treatment of NPRS, ODI, and lumbar muscle strength and endurance within Group A and Group B was done by unpaired t-test.



The results disclosed that after a six-week treatment program, both groups, Group A received conventional exercises only and Group B who received Pilates along with conventional exercises attained a significant improvement in the strength and endurance of back flexor muscle and reduced pain and disability. But statistically greater significant improvement was seen in Group B as compared to Group A (p value < 0.05).

DISCUSSION

LBP occurrence at an early age can cause disease progression, resulting in subacute LBP that has the potential to decrease an individual's quality of life.¹⁴

Pilates is described by practitioners as "A unique method of physical fitness that uses a combination of muscle strengthening, lengthening and breathing to develop trunk muscles and restore muscle balance".¹⁵ Pilates pays special attention to the muscles which stabilize the joints, thus encouraging correct body mechanics (Bass, 2005). It, therefore, strengthens the deep spinal stabilizing muscles, lengthens the spine, trains mind-body awareness, and improves posture.¹⁶

Recently, the method started to be used by health professionals to integrate body and mind because it improves fitness, flexibility, core strength, posture, balance, and body awareness. Pilates training is designed to improve general body flexibility and health by emphasizing core strength, posture, and coordination of breathing with movement making the body more flexible & stronger.¹⁷

The statistically significant difference found in this study was in accordance with Miyamoto et al¹⁸ found a significant short-term reduction in pain and disability in the group that received a minimal intervention using mat Pilates; however, no difference was found in the medium term.

The results of these studies^{18,19} are similar to those of the present study about disability. The difference in the results for pain may have occurred because the above-mentioned studies compared the Pilates method with minimal intervention or a control intervention and not with another form of exercise.

Though a significant improvement was found after treatment in both the groups, Group B showed greater improvement in the NPRS Score, ODI Score, Lumbar Muscle Strength, and Endurance. (p-value < 0.05).

Thus, the null hypothesis [H₁], [H₂], [H₃] is failed to accept.

The above statement suggests that Pilates can be employed along with conventional exercises in the effective management of participants with Subacute low back pain in improving trunk muscle strength and endurance, reducing pain and disability.

The limitations of the study were that it involves smaller sample size. So further the same study can be performed with larger sample size and with different outcome measures to find the long term follow up.

CONCLUSION

In the experimental conditions used in the study, both the groups showed significant improvement in Lumbar muscle strength and endurance. The use of Pilates along with the Conventional Exercise evidenced a significantly greater improvement in reducing pain, increasing lumbar muscle strength and endurance when compared to the Conventional Exercise alone (Group A).

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