

Abstract

Background of the study:- Non-specific low back pain (NSLBP) is a prevalent issue seen especially in young adults, often attributed to sedentary behaviors, poor posture, and inadequate core stability. Lumbopelvic stability is essential for preventing and managing low back pain by ensuring proper coordination of the pelvis and lower back muscles. The study explores the effectiveness of using Pressure Biofeedback (PBF) as a tool to assess and train lumbopelvic stability and Transverse Abdominis muscle activation in alleviating non-specific low back pain (NSLBP). The study examines the relationship between changes in lumbopelvic stability and transverse abdominis activity and the reduction in low back pain.

Aim:- The primary aim of the study is to activate the transverse abdominis by using of the Pressure Biofeedback Unit (PBU) in nonspecific low back pain. To determine the relationship between pressure biofeedback unit training for transverse abdominis activation and lumbopelvic stability among non-specific low back pain in adults. To compare the both groups effectiveness on lumbopelvic stability and non-specific low back pain.

Methods:- The study had been commenced after taking approval from Institutional Scientific Committee. The Ethical clearance was taken from the Brainware University Ethical Committee. The informed consent was taken from all the participants. After going through the screening and inclusion criteria all the participants was divided into two groups (group1 & group 2) was randomly assigned. Group 1 was an experimental group, was undergone transverse abdominalis strengthening exercise using Pressure Biofeedback training for 4 weeks, with three sessions per week. The pressure biofeedback device was used to monitor and train transverse abdominis activation during specific exercises that enhance lumbopelvic stability. Group 2 was the control group and ask to do pelvic floor strengthening exercises for 4 weeks, with three sessions per week. The Pre & Post training outcomes measurement data was taken.

Results:- Both interventions significantly reduced pain scores (VAS), with Active SLR showing $t=-16.68$ and Pelvic Floor $t=-10.32$ (both $p<0.00001$). Pain relief resulted from enhanced neuromuscular control and improved spinal stabilization through transverse abdominis activation, which functions as the body's natural corset.

Conclusion:- Both approaches proved equally effective for pain management, though functional outcomes varied between groups. The study supports transverse abdominis-focused interventions as evidence-based treatments, emphasizing motor control restoration over

symptom management alone. Pressure biofeedback units emerged as valuable tools for facilitating precise deep muscle activation and neuromuscular re-education in clinical practice.

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