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# An Investigation of Physiotherapy Interventions in the Management of Lower Cross Syndrome: A Literature Review

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## ABSTRACT

Lower Cross Syndrome (LCS), characterised by muscular imbalances with weak gluteals/abdominals, tight hip flexors/lumbar extensors, contributes to a range of musculoskeletal complications. Physiotherapy interventions have been its primary treatment modality. Given the increasing prevalence of sedentary lifestyles and the availability of diverse physiotherapy interventions,there is a critical need to understand the most effective physiotherapy interventions for managing LCS. This literature review, therefore aims to investigate the effectiveness of various physiotherapy interventions in managing LCS. To achieve this, an extensive search for full-text articles addressing the role of physiotherapy intervention for the treatment of LCS, published in the English language between 2019 and 2024, was thus carried out through the databases PubMed, EMBASE, Cochrane Library, PEDro and EBSCOhost using a combination of keywords, including 'Lower Cross Syndrome,' 'Postural Disorder,' 'Exercise Therapy,' and 'Physiotherapy,' and Boolean operators to refine the search strategy.No geographical limitations or study design restrictions were applied for study inclusion. Following the comprehensive search, a total of 5 randomised clinical/control trials and 2 experimental studies met the eligibility criteria. The study population comprised males and females aged between 11 and 50 years. The physiotherapeutic interventions included 6 to 24 sessions of conventional physiotherapy involving stretching and strengthening exercises and the use of specific manual therapy techniques like Janda's approach, Sahrmann's approach, muscle energy technique, proprioceptive neuromuscular facilitation technique, dynamic neuromuscular stabilisation training, and lacrosse ball massage technique. The effectiveness of these interventions was assessed using outcome measures, including the Oswestry Low Back Pain Disability Questionnaire for functional disability, Modified Thomas test and goniometry for hip flexibility, sit-and-reach test for overall flexibility, visual analogue scale and numeric pain rating scale for pain, manual muscle testing for abdominal and gluteal strength, Y-balance test and functional movement screening for postural control, McGill Pain Index and plank test for muscle function, and clinical measurements such as costovertebral angle, lumbosacral angle, and anterior pelvic tilt for postural assessment. Findings suggest that physiotherapy plays a crucial role in LCS management. A comprehensive approach encompassing strengthening, stretching, manual therapy, and patient education is recommended. Future research should focus on standardised protocols and long-term outcomes to enhance treatment efficacy.

**Keywords:** Low back pain, Muscles, Physical therapy modalities, Postural balance.