



Effectiveness of Gluteal Muscle Strengthening with Talonavicular Mobilization Versus Short Foot Exercise with Talonavicular Mobilization as a Precautionary Strategy for Medial Longitudinal Arch Integrity in Young Adults

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Abstract

Background: Flexible flat foot is a common musculoskeletal condition characterized by collapse of the medial longitudinal arch during weight-bearing activities. Weakness of intrinsic foot muscles and proximal hip stabilizers, particularly the gluteal musculature, has been identified as an important contributing factor in the development and persistence of flexible flat foot. Talonavicular mobilization has gained attention as a therapeutic intervention for restoring midfoot mobility and improving foot biomechanics. However, limited evidence exists comparing the effectiveness of proximal strengthening and intrinsic foot muscle strengthening when combined with talonavicular mobilization. Therefore, this study aimed to compare the effectiveness of gluteal muscle strengthening with talonavicular mobilization versus short foot exercise with talonavicular mobilization as a precautionary strategy for maintaining medial longitudinal arch integrity in young adults with flexible flat foot. **Results:** Twenty participants diagnosed with flexible flat foot and aged between 18 and 25 years were randomly allocated into two intervention groups. Group A received gluteal muscle strengthening exercises combined with talonavicular mobilization, whereas Group B received short foot exercises combined with talonavicular mobilization. Both groups underwent treatment five sessions per week for four consecutive weeks. Navicular Drop Test measurements were recorded before and after intervention. Statistical analysis revealed significant improvements within both groups ($p < 0.001$). Group A demonstrated a greater reduction in navicular drop values compared to Group B. Between-group analysis of post-test scores revealed a statistically significant difference favouring Group A ($t = 6.9416$, $p < 0.001$). **Conclusions:** Both intervention programs were effective in improving medial longitudinal arch integrity among young adults with flexible flat foot. However, gluteal muscle strengthening combined with talonavicular mobilization was significantly more effective than short foot exercise combined with talonavicular mobilization. The findings support the incorporation of proximal hip strengthening as a preventive physiotherapy strategy for improving foot posture and reducing the risk of future biomechanical complications associated with flexible flat foot.

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Key words: Flexible flat foot; Medial longitudinal arch; Navicular drop test; Gluteal strengthening; Short foot exercise; Talonavicular mobilization; Preventive physiotherapy

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