

# Effectiveness of the Early Strengthening of the Thigh Muscles on the Outcomes of Anterior Cruciate Ligament Reconstruction(ACL-R): A Randomized Clinical Trial

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## ABSTRACT

**Objective:** There is insufficient information on the effectiveness of the early strengthening of the quadriceps muscle in the candidates for Anterior Cruciate Ligament Reconstruction. Therefore, the current study aimed to assess the effectiveness of early interventions for strengthening the abductor, adductor, extensor, flexor, and pronator muscles in pain management, range of motion, quality of life (QOL), and functions of patients following ACL-R operation.

**Materials and Methods:** This single-blind clinical trial was performed in 2018-19 on 48 candidates for ACL-R at Tabriz University of Medical Sciences. The intervention was initiated 2 days after the surgery, and patients were allocated to two intervention and control groups. The test group received the strengthening intervention, while the control group only benefitted from conventional care, and early physiotherapy was commenced in this group. Subsequently, the outcomes of the two groups were compared using the timed up and go test, stair climb test, 6-minute walk test, muscle strength, visual pain scale, and quality-of-life questionnaire.

**Results:** In the intervention group, the knee extension range of motion ( $P=0.007$ ) and knee external rotator strength ( $P=0.047$ ) significantly increased. On the other hand, the knee flexion range of motion ( $P=0.96$ ), QOL ( $P=0.414$ ), performance on the 6MWT test ( $P=0.088$ ), and thigh abductor muscle strength ( $P=0.225$ ) were not significantly different between the two groups.

**Conclusion:** According to the results of the present study, both traditional and early physiotherapy approaches can improve unilateral ACL-R outcomes by strengthening the thigh muscles.

**Keywords:** ACL-R, Physiotherapy, Thigh muscle strengthening

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