

The Hidden Deficit: Lean Body Mass and Fat Mass Changes Post-Acl Surgery

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Abstract

Introduction: Anterior cruciate ligament (ACL).This study aims to explore the discrepancies in lean body mass (LBM) and fat mass between the post-operative ACL thigh and the contralateral thigh, despite their equal mid-thigh circumferences.

Methods: Fifteen patients who underwent Arthroscopic ACL reconstruction with either STG or BPTB grafts and followed a personalized rehabilitation plan for 12 weeks were included in this study. Dual-energy X-ray absorptiometry (DEXA) scans were performed 12 weeks post-surgery to assess body composition. Measurements of mid-thigh circumference, LBM, and fat mass were obtained for both the operated and contralateral thighs. Statistical analysis was conducted to compare the differences between the two thighs.

Results: The results demonstrated that while the mid-thigh circumferences of the post-operative ACL thigh (54.6 ± 4.24) and the contralateral thigh (54.27 ± 4.2) were comparable, significant differences were observed in their composition. The LBM of the post-operative ACL thigh (7652.93 ± 967.21) was significantly lower ($p < 0.05$) compared to the contralateral thigh (8015.07 ± 954.27), indicating muscle atrophy despite equal circumference. Conversely, the fat mass in the post-operative ACL thigh was significantly higher ($p < 0.05$), suggesting an increase in adipose tissue.

Conclusion: These findings underscore the importance of considering muscle composition changes, addressing quadriceps inhibition, and employing appropriate assessment tools in post-operative assessments and rehabilitation strategies for ACL reconstruction patients.