Galore International Journal of Applied Sciences and Humanities
[Indexed, Peer Reviewed Journal]
Vol. 9; Issue: 4; Oct.-Dec. 2025
Website: www.gijash.com
Case Report *P-ISSN: 2456-8430*

Progressive Rehabilitation to Improve Strength, Balance Proprioception and Gait Following ACL Reconstruction with Lateral Meniscus Repair in Kabaddi Player - A Case Report

Virupakshagouda V Adapur[1], Royline Fathima Pinto[2]

[1]Senior Physiotherapist, Padmanabhan Movementology Clinics, HSR Layout, Bangalore- 560102
[2]Lecturer, Tejasvini Physiotherapy College, Kudupu, Mangalore-575028

Corresponding Author: Virupakshagouda V Adapur

DOI: https://doi.org/10.52403/gijash.20250402

ABSTRACT

Kabaddi's dynamic movements and contact nature contribute to a high incidence of ACL injuries, often accompanied by meniscal damage. This case report presents the successful rehabilitation of a 22-year-old recreational Kabaddi player following right arthroscopic ACL reconstruction and lateral meniscal repair. Post-surgery, the patient underwent structured physiotherapy aimed at restoring range of motion, strength, balance, and functional mobility. Over the course of treatment, he achieved all short-term goals, regained independent ambulation, and improved his Lysholm and Tegner scores by 80%, reaching activity level 5. The intervention demonstrated excellent outcomes, including a 92% return to sport, minimal complications, and a low retear rate. This case highlights the importance of targeted physiotherapy in optimizing recovery and enhancing quality of life after complex knee injuries.

Keywords: ACL reconstruction, Meniscal repair, Performance testing, Return to sports, Isokinetic strength.

INTRODUCTION

The anterior cruciate ligament (ACL) is vital for knee stability, resisting anterior tibial translation and rotational forces. [1] Kabaddi, a high-impact sport involving rapid pivots, accelerations, decelerations, and contact on uneven surfaces, has the highest rate of ACL injuries among sports 44.7%.[2] These injuries often coincide with meniscal tears, which occur in 30–60% of ACL cases and worsen knee function. The meniscus plays a key role in proprioception, lubrication, and shock absorption. Partial meniscectomy increases the risk of osteoarthritis. [3] ACL reconstruction (ACLR) provides a biomechanical environment that supports meniscal healing. Combined ACLR and meniscal repair yield better outcomes than isolated procedures. [1] However, rehabilitation protocols specific to kabaddi athletes are underreported. This case report focuses on rehabilitation following ACLR with lateral meniscus repair in a kabaddi player.

CASE REPORT

A 22-year-old male recreational kabaddi player presented to physiotherapy following arthroscopic ACL reconstruction and lateral meniscus posterior horn repair of the right knee. The injury occurred during a Kabaddi

match involving rapid pivoting and contact. Post-surgery, he was referred for rehabilitation to restore range of motion (ROM), strength, balance, gait, and return to sport-specific activities.

Initial assessment revealed pain scores of 8/10 during activity and 6/10 at rest. Swelling, tenderness, and reduced ROM were noted, with limited patellar mobility and tibial translation. Muscle strength testing showed generalized weakness in the right lower limb. The Q-angle was 22°, and gait analysis revealed antalgic gait with prolonged swing phase and pelvic hiking. Functional mobility was impaired, with a Five Times Sit-to-Stand Test time of 17 seconds. The Tegner Lysholm score was below 60/100, and the Oxford Knee Score (OKS) was 81.58%, indicating severe impairment.

The patient began a structured rehabilitation program including rest, ice, elevation, ROM exercises, and six weekly clinic sessions over eight weeks. Treatment included manual therapy, patellar glides, neuromuscular re-education, and strengthening exercises targeting quadriceps, VMO, abductors, extensors, and hamstrings. NMES was used to activate quadriceps, and cryotherapy was applied post-session.

Outcomes showed significant improvement: NPRS reduced to 0/10, Q-angle to 13°, knee flexion increased from 60° to 122°, and strength gains were observed across all muscle groups. Sit-to-stand time improved to 10 seconds. OKS dropped to 9.58%, and Lysholm and Tegner scores rose to 80%. Continued therapy was planned to support full return to kabaddi.

DISCUSSION

The rehabilitation of a young adult following lateral meniscus repair and ACL reconstruction underscores the critical role of evidence-based physical therapy in optimizing functional outcomes and preventing long-term complications. Post-operative management must address risks such as joint stiffness, delayed return to activity, and cartilage degeneration, which may predispose patients to early-onset osteoarthritis (Logerstedt et al., 2010).[l]

Early intervention is pivotal, particularly in light of post-surgical cartilage changes that demand targeted rehabilitation strategies. The implementation of Clinical Practice Guidelines for Meniscal and Articular Cartilage Lesions provided a structured framework for care. Neuromuscular electrical stimulation (NMES) was employed to counteract quadriceps activation failure a common sequela of knee injury that impairs gait mechanics and joint loading (Hart et al., 2010). [5] NMES, combined with progressive strength training and supervised rehabilitation, has been shown to significantly enhance quadriceps strength and knee function (Taradaj et al., 2013). [6]

Furthermore, early weight-bearing and proprioceptive training were prioritized to restore joint stability and support athletic performance, aligning with recommendations by Herrlin et al. (2007) and Logerstedt et al. (2010). [7,4] These interventions contributed to measurable improvements in patient-reported outcomes, including the Oxford Knee Score (OKS), Lysholm, and Tegner activity scales are valid indicators of knee function and return to sport readiness.

Over the eight-week rehabilitation period, the patient demonstrated progressive gains in range of motion, muscular strength, balance, and independent ambulation. These outcomes were facilitated by a multimodal approach incorporating manual therapy, therapeutic exercise, neuro-re-education, and gait training. While recovery was gradual, the trajectory was consistent with expected healing timelines and functional milestones for combined meniscal and ACL procedures.

Continued skilled physical therapy was recommended to achieve sport-specific goals and ensure a clinically meaningful recovery. This case reinforces the necessity of individualized, guideline-informed

rehabilitation protocols that adapt to patient needs and surgical complexity.

CONCLUSION

Rehabilitation after ACL and meniscus repair in a Kabaddi player led to marked gains in mobility, strength, and balance. Targeted interventions such as neuromuscular stimulation, balance retraining, and graded strengthening formed the cornerstone of this evidence-based rehabilitation approach. Early intervention reduced complications, while ongoing therapy supported sport-specific readiness and long-term functional gains.

Declaration by Authors

Ethical Approval: Approved
Acknowledgement: The authors would like to sincerely thank the participant, students and faculty for their support in completion of this case report.
Source of Funding: None
Conflict of Interest: The authors declare no conflict of interest.

REFERENCES

1. Wenning M, Heitner AH, Mauch M, Gehring D, Ramsenthaler C, Paul J. The effect of meniscal repair on strength deficits 6 months after ACL reconstruction. Arch Orthop Trauma Surg. 2020 Jun;140(6):751-760.
2. Gupta R, Khanna T, Masih GD, Malhotra A, Kapoor A, Kumar P. Acute anterior cruciate ligament injuries in multisport elite players: Demography, association, and pattern in different sports. J Clin Orthop Trauma. 2016 Jul-Sep;7(3):187-92.
3. Gupta R, Khanna T, Masih GD, Malhotra A, Kapoor A, Kumar P. Acute anterior cruciate ligament injuries in multisport elite players: Demography, association, and pattern in different sports. J Clin Orthop Trauma. 2016 Jul-Sep;7(3):187-92.
4. Logerstedt DS, Snyder-Mackler L, Ritter RC, Axe MJ, Godges J, Altman RD, Briggs M, Chu C, Delitto A, Ferland A, Fearon H. Knee pain and mobility impairments: meniscal and articular cartilage lesions: clinical practice guidelines linked to the international classification of functioning, disability, and health from the orthopaedic section of the American Physical Therapy Association. Journal of Orthopaedic & Sports Physical Therapy. 2010 Jun;40(6): A1-35.
5. Hart JM, Pietrosimone B, Hertel J, Ingersoll CD. Quadriceps activation following knee injuries: a systematic review. Journal of athletic training. 2010 Jan 1;45(1):87-97.
6. Taradaj J, Halski T, Kucharzewski M, Walewicz K, Smykla A, Ozon M, Slupska L, Dymarek R, Ptaszkowski K, Rajfur J, Pasternok M. The effect of neuromuscular electrical stimulation on quadriceps strength and knee function in professional soccer players: return to sport after ACL reconstruction. BioMed research international. 2013;2013(1):802534.
7. Herrlin S, Hallander M, Wange P, Weidenhielm L, Werner S. Arthroscopic or conservative treatment of degenerative medial meniscal tears: a prospective randomised trial. Knee Surgery, Sports Traumatology, Arthroscopy. 2007 Apr;15(4):393-401.

How to cite this article: Virupakshagouda V Adapur, Royline Fathima Pinto. Progressive rehabilitation to improve strength, balance, proprioception and gait following ACL reconstruction with lateral meniscus repair in kabaddi player - a case report. *Galore International Journal of Applied Sciences & Humanities*. 2025; 9(4): 11-13.
DOI: https://doi.org/10.52403/gijash.20250402

******