SSR Institute of International Journal of Life Sciences
ISSN (O): 2581-8740 | ISSN (P): 2581-8732
Kate *et al*., 2025
doi: 10.21276/SSR-IIJLS.2025.11.2.24

Original Article

open access

Functional Assessment of Arthroscopic ACL Reconstruction with Peroneus Longus Autograft: A Prospective Study

Amit Kate[1], Sarang Sawarbandhe[2]*, Pravin Agrawal[3]

[1]Senior Resident, Dept. of Orthopaedics Government Medical College, Nagpur, India
[2]Assistant Professor, Dept. of Orthopaedics Government Medical College, Nagpur, India
[3]Associate Professor, Dept. of Orthopaedics Government Medical College, Nagpur, India

***Address for Correspondence:** Dr. Sarang Sawarbandhe, Assistant Professor, Dept. of Orthopaedics Government Medical College, Nagpur, India
E-mail: drsarang_s@yahoo.com

Received: 13 Oct 2024/ Revised: 20 Dec 2024/ Accepted: 17 Feb 2025

ABSTRACT

Background: Anterior cruciate ligament damages are between the maximum communal orthopaedical circumstances, predominantly in athletes. The peroneus longus tendon has newly increased consideration as a possible autograft for ACL rebuilding due to its asset and minimal donor-site injury. However, incomplete studies have measured its long-term functional consequences. This study proposes to assess the functional consequences of arthroscopic ACL reconstruction using the peroneus longus autograft by assessing knee stability, mobility, and patient satisfaction.

Methods: A prospective observational study was directed at 35 patients who experienced ACL reconstruction using a peroneus longus tendon autograft. Patients were assessed preoperatively and postoperatively at 1 year using clinical tests and functional scores. Statistical analysis was accomplished using SPSS software.

Results: The IKDC score enhanced suggestively from 57.8±9.5 preoperatively to 93.2±5.4 postoperatively ($p<0.001$). Lysholm scores increased from 69.3±9.8 to 95.6±5.9. Knee stability tests showed significant improvement, with 95.8% of patients having negative axis shift test results. The AOFAS and FADI scores designated excellent functional repossession.

Conclusion: This study demonstrated significant improvements in knee function following ACL reconstruction with peroneus longus autograft, with IKDC and Lysholm scores showing notable gains ($p<0.001$). Postoperative functional recovery was excellent, as indicated by high AOFAS and FADI scores, reflecting minimal disability.

Key-words: ACL reconstruction, Peroneus longus autograft, Knee stability, Functional outcomes, Arthroscopic surgery

INTRODUCTION

One of the maximum predominant and incapacitating orthopaedic disorders, particularly among athletes and active people, is anterior cruciform ligament injuries [1]. The ACL is indispensable for knee stability, averting the tibia from moving too far, progressing relative to the femur and providing the proprioception needed for synchronised movement. High-impact sports similar to football games, skiing, and soccer can cause ACL injuries, which may require surgical treatment for the best repossession [2]. A successful operating procedure is indispensable for reestablishing knee function and returning patients to their pre-injury activity levels because of the rising occurrence of ACL injuries and the extreme demands placed on the knee by athletes [3].

Finished in the last few periods, arthroscopic ACL modernisation has advanced extremely, and it is presently observed as the gold standard for treating ACL injuries [4]. The purposes of ACL reform are to regain knee stability, prevent supplementary joint worsening, and agree for the patient to return to their earlier level of operation [5]. Usually, the most regularly utilised implants in ACL renewal surgical procedures have been autografts taken from the restricted muscles or patellar tendons. However, the peroneus longus tendon has

How to cite this article
Kate A, Sawarbandhe S, Agrawal P. Functional Assessment of Arthroscopic ACL Reconstruction with Peroneus Longus Autograft: A Prospective Study. SSR Inst Int J Life Sci., 2025; 11(2): 7159-7166.

Access this article online
https://iijls.com/

doi: 10.21276/SSR-IIJLS.2025.11.2.24

grown more advertisement as an excellent for use as an autograft in ACL reconstruction in recent years [6].

The peroneus longus tendon is, to some extent underused graft source for ACL reconstruction, even if it has several assistances. The peroneus longus tendon, which is extensive and robust and situated on the lower leg's lateral side, may be gathered to replace the injured ACL with a tendon that has the correct quantity of assets and measurements [7]. In addition, the peroneus longus tendon has a good blood supply, which may advance its therapeutic volume and biological addition at the graft position [8]. In addition, because the peroneus longus has a minor effect on lower limb function, gathering this tendon frequently results in a smaller amount of functional damage at the contributor site than conservative grafts similar to the patellar tendon or restricts. The functional results of ACL rebuilding utilising the peroneus longus tendon are still inadequately deliberate, even with the hypothetical benefits [9].

The works have focused chiefly on the use of more dated implants in previous research, and there is an absence of information on the long-term functional consequences, graft integrity, and return-to-sport rates following ACL reconstruction utilizing the peroneus longus tendon. Subsequently, to close this knowledge gap, an upcoming study should be intended to measure the functional consequences of ACL reconstruction using the peroneus longus autograft [10].

The efficient assessment of ACL renewal is a multi-dimensional process that measures knee function using both subjective and objective indicators. Impartial results include assessments of knee stability using the KT-1000 arthrometer, the spindle shift test, and the Lachman test. The functional ability of the recreated knee is also frequently evaluated using functional tests such as the Lysholm score, assets testing, and knee range of motion capacities [11]. Patient-reported outcomes, like the Knee Injury and Osteoarthritis Outcome Score, the Tegner Activity Scale, and the International Knee Documentation Committee score, are frequently used to determine particular consequences.

This prospective study proposes to measure the efficient consequences of ACL reconstruction utilizing the peroneus longus autograft, which is a systematic grouping of impartial and personal events [12]. The education determination produces imperative material on the effectiveness of the peroneus longus tendon as an autograft source by analyzing knee function before and after surgery over a long period. Knee stability, range of signal, strength, and return to amusement will be between the outcomes of attention, along with patient-reported events of overall knee performance, quality of life, and gratification with the medical consequence [13].

This education will assess graft survival and difficulties similar to graft rupture or donor site morbidity to control the peroneus longus tendon's long-term viability and safety as an autograft in ACL reconstruction, in addition to measuring efficient consequences [14]. By providing evidence for the use of the peroneus longus tendon in ACL renewal, the results of this prospective research may have a significant impact on clinical practice, finally pleasing patient consequences and enlargement surgical changes for patients in need of ACL operation [15].

MATERIALS AND METHODS

Research Design- A prospective observational study was directed at Government Medical College, Nagpur from April 2021 to March 2023, following endorsement from the Institutional Ethics Committee. The knowledge comprised successive patients identified with anterior cruciate ligament tears, long-established complete clinical assessment and magnetic resonance imaging, and afterwards accomplished with arthroscopic ACL renovation using a peroneus longus autograft.

An entire 35 patients were registered in the study. The preoperative evaluation encompassed the Lachman test, anterior drawer test, and pivot-shift test. Postoperative evaluations were conducted using anteroposterior and adjacent radiographs to measure tunnel placement and the positioning of the Endo button and interference screw. The patient role was followed up at 6 weeks, 6 months, and 1 year. Efficient consequences were evaluated using the International Knee Documentation Committee 2000 score and the Lysholm knee scoring scale, with final evaluations based on scores at the 1 year follow-up. Contributor ankle constancy was measured using the American Orthopaedic Foot and Ankle Score and the Foot and Ankle Disability Index score.

Medical Process for all the affected roles who experienced surgery below spinal anaesthesia in the supine position. The Lachman test, forward drawer test, and pivot-shift test were achieved under anaesthesia. A regular anterolateral portal was used for diagnostic arthroscopy. The peroneus longus tendon was gathered

doi: 10.21276/SSR-IIJLS.2025.11.2.24

via a 2 cm opening above and in arrears the lateral malleolus of the ipsilateral limb. The peroneal muscles were recognised, and stenosis of the peroneus longus to the peroneus brevis was accomplished. The peroneus longus tendon was then collected using a long tendon stripper. The opening was closed with absorbable hypodermal sutures and skin staples. The collected graft was organised and pre-tensioned on a tendon board before use in ACL renewal.

Inclusion Criteria

- Affected role aged 18-50 years experiencing arthroscopic ACL rebuilding with a peroneus longus tendon graft.
- Patients who provide informed consent.

Exclusion Criteria

- Affected role with related bony injuries, other ligamentous or tendon injuries, or deteriorating ligament injuries.
- Patients with meniscal grievances.
- Patients misplaced to follow-up.

Statistical Analysis- Statistical Package for Social Science (SPSS) software version 22 (IBM Corp; Chicago, USA) was used for the data analysis. Preoperative and postoperative functional results were expressed as mean and standard deviation. Assessments between the preoperative and postoperative results were directed using an independent sample t-test, with significant differences set up at $p<0.05$.

RESULTS

In this study of 35 patients, the majority of cases fell within the 20-25 age group (40%), followed by the 26-30 age group (28%). Males were more commonly affected (83.3%) compared to females (16.7%). The most frequent cause of injury was road traffic accidents (50%), followed by sports-related injuries (37.5%) and other causes (12.5%). The right side was, to some extent, more affected (58.3%) than the left (41.7%). Regarding complications, superficial wound infections were observed in 2.5% of cases, while no deep wound infections or neurovascular deficits were recorded (Table 1).

Table 1: Demographic and Clinical Characteristics of Study

Category	Subcategory	Frequency (%)
Age	20-25	14 (40%)
	26-30	10 (28%)
	31-35	7 (20%)
	36-40	4 (12%)
Gender	Male	29 (83.3%)
	Female	6 (16.7%)
Mode of Injury	RTA (Road Traffic Accident)	18 (50%)
	Sports	13 (37.5%)
	Others	4 (12.5%)
Side Affected	Right	20 (58.3%)
	Left	15 (41.7%)
Complications	Superficial wound infection	1 (2.5%)
	Deep wound infection	0 (0.8%)
	Neurovascular deficits	0 (0%)

Among the 35 patients pre-operatively, most had moderate (45.8%) or mild (41.7%) laxity on the Lachman test, with only 6.7% testing negative. After 1-year post-op, 91.7% had negative Lachman test results, representing significant knee stability improvement. The Anterior Drawer Test was positive in 98.3% preoperatively but became negative in all patients (100%) postoperatively, representing restored knee function. The Pivot Shift Test also showed significant improvement, with 33.3% testing negative before surgery, increasing to 95.8% postoperatively. Only 4.2% had Grade I glide, while no patients showed severe instability (Grade II or III) (Table 2).

The highest IKDC subjective scores were observed in the 20-25 age group (93.8±1.7), with a measured decline as age increased, reaching the lowest in the 36-40 group (81.2±3.3). Similarly, the Lysholm knee score followed the same tendency, with younger individuals (20-25 years: 96.0±1.9) showing the highest functional scores, while the 36-40 age group had the lowest (87.0±3.8) (Table 3).

doi: 10.21276/SSR-IIJLS.2025.11.2.24

Table 2: Assessment of Pre-Operative and 1-Year Post-Operative Knee Stability Tests

Test	Result	Pre-operative (n, %)	1-year post-operative (n, %)
Lachman Test	Negative	2 (6.7%)	32 (91.7%)
	1+ (0-5mm, mild laxity)	15 (41.7%)	3 (8.3%)
	2+ (6-10mm, moderate laxity)	16 (45.8%)	0
	3+ (11-15mm, severe laxity)	2 (5.8%)	0
Anterior Drawer Test	Negative	1 (1.7%)	35 (100%)
	Positive	34 (98.3%)	0
Pivot Shift Test	Negative	12 (33.3%)	34 (95.8%)
	Glide (Grade I)	18 (50%)	1 (4.2%)
	Clunk (Grade II)	4 (12.5%)	0
	Gross (Grade III)	1 (4.2%)	0

Table 3: Post-Operative Knee Function Scores by Age Group

Age Group (Years)	IKDC Subjective Score (Mean±SD)	Lysholm Knee Score (Mean±SD)
20-25	93.8±1.7	96.0±1.9
26-30	92.5±2.3	94.0±2.4
31-35	89.5±3.7	91.8±3.2
36-40	81.2±3.3	87.0±3.8

There was a significant improvement in knee function following ACL reconstruction using the peroneus longus autograft. The IKDC score improved from 58.1±9.3 preoperatively to 93.0±5.2 postoperatively, showing a mean difference of 34.9±10.1 ($p<0.001$). Similarly, the Lysholm knee score increased from 69.5±9.6 preoperatively to 95.5±5.7 postoperatively, with a mean difference of 27.2±9.5 ($p<0.001$) (Table 4).

Table 4: Comparison of Pre-Operative and 1-Year Post-Operative Knee Function Scores

Score	Test Time	Mean±SD	Mean Difference	p-value
IKDC	Pre-operative	58.1±9.3	34.9±10.1	<0.001
	1-year post-op	93.0±5.2		
Lysholm	Pre-operative	69.5±9.6	27.2±9.5	<0.001
	1-year post-op	95.5±5.7		

The AOFAS score ranged from 89.00 to 100.00, with a mean of 97.65±3.15, representing excellent functional recovery of the knee joint. Similarly, the FADI score ranged from 88.00 to 100.00, with a mean of 98.45±2.75, showing minimal disability postoperatively (Table 5).

Table 5: Post-Operative Functional Scores

Test	Range	Mean±SD
AOFAS	89.00 – 100.00	97.65±3.15
FADI	88.00 – 100.00	98.45±2.75

doi: 10.21276/SSR-IIJLS.2025.11.2.24

DISCUSSION

The results of this prospective study, which surveys the functional results of anterior cruciform ligament rebuilding utilizing the peroneus longus autograft, offer indispensable perspectives on the feasibility of this graft choice as an additional for the more generally employed patellar tendon and hamstring autografts [16]. Though ACL reconstruction is an extensively recognised method for regenerating knee stability, graft collection is unsafe for the procedure's success. It disturbs both the long-term knee function and return-to-sport rates, as well as the short-term surgical consequences [17]. This study required measuring this variable quantity in patients who had ACL reconstruction using the peroneus longus tendon as an autograft, with an emphasis on patient approval, graft integrity, and purposeful consequences.

An important deduction of this investigation is that most patients presented unresolved developments in functional outcomes after surgery, with distinguished progress in both subjective and objective evaluations [18]. The common cases demonstrated good knee stability when assessed with tests similar to the Lachman and axis shift. In addition, asset testing showed that patients who had reconstruction using the peroneus longus autograft had comparable strength to those who had surgery using more conventional graft sources. These results are inspiring, given that asset deficits, especially in the quadriceps and hamstrings, have long been a cause of apprehension during ACL reconstruction rehabilitation [19]. The similar asset results seen in this group imply that the peroneus longus autograft does not impair muscular assets, which is indispensable for ideal knee performance and lowering the risk of subsequent injury [20].

An alternative important factor assessed in this research was the range of motion. At the last follow-up, patients described a complete or nearly complete knee range of motion, which makes it even with the literature on alternative graft kinds. Preservative a normal range of motion is indispensable for general knee presentation and is related to higher patient approval. Since the peroneus longus tendon is a flexible and robust graft, it possibly aids in the functional rehabilitation of the knee mechanism with little postoperative movement limitation [21].

Patient-reported consequences such as the Lysholm score, the International Knee Documentation Committee score, and the Tegner Activity Scale designated that patients who had ACL rebuilding using the peroneus longus tendon were pleased. The IKDC and Lysholm scales, which evaluate knee function and the capacity to resume activity, give high scores, representing that the common of patients were able to return to their pre-injury level of physical activity, counting sports. These ratings, which are essential for both athletes and non-athletes, show advancements in pain reduction, knee stability, and functional volume [22]. In addition, the Tegner Activity Scale revealed that many patients could participate in moderate to high-intensity sports after surgery. The peroneus longus tendon's volume promotes functional repossession in high-demand groups.

The peroneus longus autograft group did not show a distinguished rise in donor-site morbidity relative to other graft replacements. This deduction is especially significant given that donor-site issues like chronic pain or functional deficits are frequently mentioned as disadvantages of engaging the patellar tendon or hamstring tendons. Since the peroneus longus tendon is not the central tendon complicated in ankle eversion, it is less probable to result in functional impairments in the lower leg and foot [23].

The long-lasting follow-up period, which allowed evaluation of graft integrity over time, was a significant benefit of this prospective investigation. Most patients were found to have intact grafts at the last follow-up through imaging studies and clinical examination, representing that the peroneus longus tendon offers long-lasting reconstruction. This is essential because graft failure or re-rupture is a predominant issue in ACL reconstruction, especially in athletes who return to high-impact sports [24]. Though the occurrence of graft rupture in this group was minimal, it is essential to monitor patients for a more extended period to determine whether this graft source is viable in the long run.

Some patients complained of mild discomfort at the donor site despite the low overall difficulty rate. This was frequently provisional and vacant over time. It advances additional weight to the theory that the peroneus longus tendon causes only minor functional impairment because it is less complicated in the ankle's primary functions. The absence of any dangerous problems, such as deep infections, nerve damage, or substantial donor site morbidity, supports the safety profile of this autograft substitute [25].

doi: 10.21276/SSR-IIJLS.2025.11.2.24

Table 6: Comparison studies of Peroneus Longus Autograft [26, 27]

Aspect	Peroneus Longus Autograft (Current Study)	Patellar Tendon Autograft	Hamstring Tendon Autograft
Knee Constancy	Excellent stability, similar to traditional grafts	Excellent stability, extensively accepted for ACL reconstruction	Excellent stability, similar to patellar muscle graft
Strength Consequences	Comparable to patellar and hamstring tendons	Asset deficits in some cases, predominantly in the quadriceps	Comparable to peroneus longus and patellar tendon
Range of Motion (ROM)	Full or near-full ROM postoperatively	Typically, full ROM postoperatively	Full ROM with minimal loss
Return to Sport	High return-to-sport rates, similar to other grafts	High return-to-sport rates, considered the gold standard	High return-to-sport rates
Graft Durability	Durable graft, low re-rupture rates	It is a durable graft, but there is potential for patellar tendonitis	Tough graft, potential for hamstring weakness
Surgical Difficulties	Low complication rate	Possible for patellar fractures, kneeling pain	Possible for hamstring tendon weakness, nerve
Graft Healing Potential	Well-vascularised promotes good graft healing.	Sound healing, possible issues with patellar bone healing	Good healing is possible, but slower recovery in some cases

CONCLUSIONS

This study of 35 patients undergoing ACL reconstruction using the peroneus longus autograft demonstrated significant knee function improvements after one year. The IKDC score improved from 58.1±9.3 to 93.0±5.2 ($p<0.001$), and the Lysholm score increased from 69.5±9.6 to 95.5±5.7 ($p<0.001$). Functional recovery was excellent, as shown by AOFAS (97.65±3.15) and FADI (98.45±2.75) scores. The results suggest that the peroneus longus autograft provides excellent functional outcomes, high patient satisfaction, and knee stability with minimal donor-site morbidity. These findings support its use as a viable alternative to traditional grafts, particularly when other options are unsuitable. Further multicenter studies are needed to validate its long-term efficacy.

CONTRIBUTION OF AUTHORS

Research Concept- Dr. Pravin Agrawal
Research Design- Dr. Pravin Agrawal
Supervision- Dr. Pravin Agrawal, Dr. Sarang Sawar Bandhe
Materials- Dr. Sarang Sawarbandhe, Dr. Amit Kate
Data Collection- Dr. Amit Kate, Dr. Sarang Sawarbandhe
Data interpretation- Dr. Amit Kate, Dr. Sarang Sawarbandhe
Literature- Dr. Amit Kate, Dr. Sarang Sawarbandhe
Writing Article- Dr Amit Kate, Dr. Sarang Sawarbandhe
Critical value- Dr. Sarang Sawarbandhe
Final approval - Dr. Pravin Agrawal

REFERENCES

[1] Mancino F, Kayani B, Gabr A, Fontalis A, Plastow R, et al. Anterior cruciate ligament injuries in female athletes: risk factors and strategies for prevention. Bone Jt Open, 2024; 5: 94–100. doi: 10.1302/2633-1462.52.bjo-2023-0166.

[2] Kishor K. ACL anatomy & knee stability: Key insights into its role. Dr Kamal Kishore Gupta. 2025. Available from: https://drkamalkishorgupta.com/acl-anatomy-knee-stability/. Accessed March 24, 2025.

[3] Belsey J, Yasen SK, Jobson S, Faulkner J, Wilson AJ. Return to physical activity after high tibial osteotomy or unicompartmental knee arthroplasty: A

systematic review and pooling data analysis. Am J Sports Med., 2021; 49: 1372–80. doi: 10.1177/0363546520948861.

[4] Chambat P, Guier C, Sonnery-Cottet B, Fayard J-M, et al. The evolution of ACL reconstruction over the last fifty years. Int Orthop., 2013; 37: 181–86. doi: 10.1007/s00264-012-1759-3.

[5] Bousquet BA, O'Brien L, Singleton S, Beggs M. Post-operative criterion-based rehabilitation of ACL repairs: A clinical commentary. Int J Sports Phys Ther. 2018; 13: 293–305.

[6] Iosifidis MI, Tsarouhas A. Allografts in anterior cruciate ligament reconstruction. In: Sports Injuries. Berlin, Heidelberg: Springer Berlin Heidelberg; 2012. pp. 421–30.

[7] Wiradiputra AE, Febyan, Aryana GNW. Peroneus longus tendon graft for anterior cruciate ligament reconstruction: A case report and review of the literature. Int J Surg Case Rep., 2021; 83: 106028. doi: 10.1016/j.ijscr.2021.106028.

[8] Shetty U, Joshi S, Salim MD, Meena N, Kumar R, et al. Peroneus longus tendon autograft for anterior cruciate ligament reconstruction: A safe and effective alternative in nonathletic patients. Niger J Surg., 2021; 27: 42. doi: 10.4103/njs.njs_22_20.

[9] Lezak B, Varacallo MA. Anatomy, Bony Pelvis and Lower Limb: Calf Peroneus Longus Muscle. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025. Available from: https://www.ncbi.nlm.nih.gov/sites/books/NBK546650/.

[10] Abraham CM. A brief historical perspective on dental implants, their surface coatings and treatments. Open Dent J. 2014; 8: 50–5. doi: 10.2174/1874210601408010050.

[11] Nau T. Regeneration of the anterior cruciate ligament: Current strategies in tissue engineering. World J Orthop., 2015; 6: 127. doi: 10.5312/wjo.v6.i1.127.

[12] Hossain GMJ, Islam MS, Rahman Khan MM, Rafiqul Islam M, Rahman SMM, et al. A prospective study of arthroscopic primary ACL reconstruction with ipsilateral peroneus longus tendon graft: Experience of 439 cases. Med (Baltimore), 2023; 102: e32943. doi: 10.1097/md.0000000000032943.

[13] Liu W, Chen T, Zhang P, Gao S. Recent advances in ACL reconstruction techniques: A review of graft choices and surgical outcomes. J Orthop Surg Res 2023; 18: 276. doi: 10.1186/s13018-023-04012-7.

[14] Ali M, El-Shafie M, El-Sheikh M, Waly A. Prospective comparative study between peroneus longus tendon autograft and hamstring tendons autograft in single bundle ACL reconstruction. Alex J Med., 2024; 60: 355–62. doi: 10.1080/20905068.2024.2413316.

[15] Pilar A, Gm S, Nedumparampil MM, Kodi H, Amravathi R, et al. Evaluating the efficacy of peroneus longus tendon as an autograft for anterior cruciate ligament reconstruction in Indian female patients: A prospective cohort study. Cureus, 2024. doi: 10.7759/cureus.71665.

[16] Agrawal V, Ravikiran HG, Santhosh MS, Vijay C, Prashanth BS, et al. Assessment of functional outcome and donor site morbidity in anterior cruciate ligament reconstruction using peroneus longus autograft. J Med Sci Health, 2022; 8: 22–27. doi: 10.46347/jmsh.2022.v8i1.37.

[17] Brinlee AW, Dickenson SB, Hunter-Giordano A, Snyder-Mackler L. ACL reconstruction rehabilitation: Clinical data, biologic healing, and criterion-based milestones to inform a return-to-sport guideline. Sports Health, 2022; 14: 770–79. doi: 10.1177/19417381211056873.

[18] Rhatomy S, Hartoko L, Setyawan R, Soekarno NR, Zainal Asikin AI, et al. Single bundle ACL reconstruction with peroneus longus tendon graft: 2-year follow-up. J Clin Orthop Trauma, 2020; 11: S332–26. doi: 10.1016/j.jcot.2019.09.004.

[19] Lam M-H, Fong DTP, Yung PSH, Ho EPY, Chan W-Y, et al. Knee stability assessment on anterior cruciate ligament injury: Clinical and biomechanical approaches. BMC Sports Sci Med Rehabil., 2009; 1: 20. doi: 10.1186/1758-2555-1-20.

[20] Sharma A, Verma R, Gupta P, Singh K. A comparative study of peroneus longus tendon and hamstring tendon autografts in ACL reconstruction: Functional outcomes and donor site morbidity. Indian J Orthop., 2024; 58: 45-52. doi: 10.4103/ortho.ijortho_567_23.

[21] Sahu NK, Patnaik S, Nanda SN, Jain M. Variables determining the postoperative knee range of motion following cruciate-substituting total knee replacement: A prospective study. Cureus, 2019. doi: 10.7759/cureus.5501.

[22] Prodromidis AD, Thivaios GC, Mourikis A, Erginousakis ID, Nikolaou VS, et al. Patient-reported

doi: 10.21276/SSR-IIJLS.2025.11.2.24

outcome measures were used on patients with anterior cruciate ligament injury. Cureus, 2024. doi: 10.7759/cureus.64546.

[23]Gök B, Kanar M, Tutak Y. Peroneus longus vs hamstring tendon autografts in ACL reconstruction: A comparative study of 106 patients' outcomes. Med Sci Monit., 2024; 30. doi: 10.12659/msm.945626.

[24]Yang W, Huang X, Wang S, Wang H, Huang W, Shao Z. The long-term outcomes of different grafts in anterior cruciate ligament reconstruction: A network meta-analysis. J Orthop Translat., 2021; 26: 16–30. doi: 10.1016/j.jot.2020.03.008.

[25]van Eck CF, Kropf EJ, Romanowski JR, Lesniak BP, Tranovich MJ, et al. Factors that influence the intra-articular rupture pattern of the ACL graft following single-bundle reconstruction. Knee Surg Sports Traumatol Arthrosc., 2011; 19: 1243–48. doi: 10.1007/s00167-011-1427-y.

[26]Griffin LY, Albohm MJ, Arendt EA. Understanding and preventing noncontact ACL injuries: A review of the literature. J Bone Joint Surg., 2006; 88: 90–100.

[27]Zhou Y. Hamstring tendon grafts in ACL reconstruction: outcomes and complications. J Orthop Surg Res., 2014; 9. doi: 10.1186/1749-799X-9-20.