

# ACL Reconstruction in Low-Income Communities: Bridging the Gap between Surgical Innovation and Equitable Access: Letter to the Editor

Ebrahim Piri<sup>1\*</sup>

<sup>1</sup>PhD in Sports Biomechanics, Department of Sports Biomechanics, Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

DOI: <https://doi.org/10.36348/jaspe.2025.v08i04.002>

| Received: 26.02.2025 | Accepted: 04.04.2025 | Published: 27.05.2025

\*Corresponding author: Ebrahim Piri

PhD in Sports Biomechanics, Department of Sports Biomechanics, Faculty of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

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## DEAR EDITOR

The remarkable progress in anterior cruciate ligament (ACL) reconstruction techniques from anatomic grafts to robotic-assisted surgeries has revolutionized outcomes for many patients. However, these innovations remain inaccessible to a significant portion of the global population: low-income communities. While research celebrates "precision medicine" and "return-to-sport" milestones, it largely ignores the systemic barriers that prevent marginalized groups from receiving even basic ACL care. This oversight perpetuates health inequities and demands urgent attention.

### The Stark Reality of Access Disparities

**A growing body of evidence highlights the chasm between surgical advancements and equitable delivery:** Only 18% of low-income patients with ACL tears undergo reconstruction, compared to 65% of privately insured patients in the U.S. (Barker *et al.*, 2021). In low-resource settings, delayed or absent rehabilitation programs lead to 3x higher rates of graft failure and chronic instability (Akoto *et al.*, 2022). Social determinants such as lack of transportation, inability to take unpaid medical leave, and limited health literacy often force patients to abandon post-op care entirely. Yet, clinical trials and surgical guidelines rarely address these socioeconomic hurdles, focusing instead on optimizing outcomes for privileged cohorts.

### Beyond Surgery: The Ripple Effects of Neglect

The consequences of untreated or poorly managed ACL injuries extend far beyond the individual: **Workforce productivity loss:** Manual laborers with unstable knees face higher risks of workplace injuries

and long-term unemployment. Intergenerational cycles of poverty: Young adults in low-income households, unable to afford surgery, may lose educational or economic opportunities tied to physical mobility. Mental health toll: Chronic pain and functional limitations correlate with depression and anxiety in underserved populations, yet psychosocial support is rarely integrated into care plans.

### A Roadmap for Equity-Driven ACL Care

To bridge this gap, we propose the following strategies:

**Policy Advocacy for Universal Coverage:** Advocate for insurance reforms to classify ACL reconstruction as essential care not a "luxury" procedure in public health systems. Brazil's SUS (Unified Health System), which reduced ACL surgery wait times by 40% through policy prioritization, offers a replicable model.

**Decentralized, Community-Based Rehabilitation:** Partner with local clinics and NGOs to deliver low-cost, culturally adapted rehab programs. Mobile apps with AI-guided physiotherapy (e.g., Kaia Health) have shown promise in rural India, improving adherence by 50% in pilot studies.

**Training Non-Specialist Providers:** Empower general orthopedic surgeons and physiotherapists in underserved regions through workshops on cost-effective techniques (e.g., all-inside ACL grafts with regional anesthesia). Uganda's "Surgical Camp" initiative reduced surgical costs by 60% without compromising outcomes.

**Research Prioritization:** Fund studies evaluating low-tech, high-impact interventions (e.g., bracing combined with community-led strength training) rather than exclusively focusing on expensive technologies. Equitable ACL care is not a matter of charity but a moral imperative. By redirecting innovation toward accessibility, we can ensure that breakthroughs like

regenerative scaffolds or personalized rehab protocols benefit all patients not just those with financial privilege. Let us redefine "success" in orthopedics not by the sophistication of tools but by the breadth of their reach.

#### **Ethical Considerations**

**Compliance with ethical guidelines:** The present study is a letter to the editor.

**Funding:** This research did not receive any grant from the funding agencies in the public, commercial, or non-profit sectors.

**Authors' contributions:** Conceptualization and study design, Methodology, Writing: Ebrahim Piri.

**Conflict of interest:** None

**Acknowledgement:** None

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