Prevalence of Anterior Knee Pain After Anterior Cruciate Ligament Reconstruction Among Football Players in Kolhapur City

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***Abstract*—Background-Anterior knee pain, common among athletes and the general population, arises from conditions like patellar chondromalacia and patellofemoral pain syndrome. Although typically self-limiting, it can substantially hinder daily activities and sports performance. Given the increasing occurrence of ACL injuries, grasping the prevalence of anterior knee pain post-reconstruction is vital, especially for athletes.**

Method

The study aimed to investigate the prevalence of anterior knee pain syndrome following anterior cruciate ligament reconstruction among football players in Kolhapur city.

Materials:

Subjects were selected from football clubs and assessed using the Patellar Grind Test and Kujala Anterior Knee Pain Scale. Inclusion and exclusion criteria were considered, and subjects willing to participate were included after receiving an explanation of the study's nature.

Result

This study involved participants aged 18 to 30, with an average age of 24.08 years. ACL injury prevalence was 14.7%, higher in males. Players with anterior knee pain had played football for an average of 9.16 years, compared to 11 years for those without pain. Pain severity was mild in 34%, moderate in 4%, and absent in 62%. The Patellar Grind Test was positive in 38%, indicating anterior knee pain symptoms. These findings highlight the prevalence of anterior knee pain after ACL reconstruction and emphasize the test's value in assessment and management, especially in football players.

Conclusion

Our study aimed to determine the frequency of anterior knee pain after ACL reconstruction among football players in Kolhapur city. Our findings revealed that 38% of the 47 subjects showed positive symptoms, while the remaining 62% did not exhibit any symptoms of anterior knee pain. It suggests that individuals with 5-10 years of football experience are more prone to experiencing anterior knee pain following ACL reconstruction.

***Index Terms*—Anterior knee pain, ACL reconstruction, football players, prevalence, assessment tools, rehabilitation, long-term outcomes.**

I. INTRODUCTION

The knee is a complicated hinge joint that may move in the sagittal plane in flexion and extension, as well as in varus and valgus positions. It can also retain stability under different loads since it permits medial and lateral rotation during knee flexion and in the terminal phases of movement. Knee injuries are widespread despite their stability, especially anterior cruciate ligament (ACL) injuries and anterior knee pain (AKP).

Children, teens, and adults—especially athletes—are susceptible to AKP, a ubiquitous ailment. It interferes with tasks like sitting, squatting, and ascending stairs, and accounts for a large percentage of musculoskeletal problems suffered by athletes. For up to two years, the discomfort is usually related to the knee's anterior tissues. Of the athletes evaluated in sports clinics, 20–40% have patellofemoral pain syndrome, which is a major cause of AKP.

Numerous studies on risk factors and preventative techniques have been conducted because of the high frequency of ACL injuries in football. AKP after ACL reconstruction is important since it might impede healing. To provide information to improve post-

surgical treatment and results, this study attempts to determine the prevalence of AKP among football players in Kolhapur City.

II. METHODS

The study was conducted after getting approval from the Institutional ethical committee and protocol committee of D. Y. Patil Education Society, deemed to be university Kolhapur and D.Y. Patil College of Physiotherapy, Kolhapur. Participants for the study were recruited from several football clubs across the Kolhapur region based on the inclusion and exclusion criteria.

•Study type: observational

•Study design: cross-sectional study

•Sample design: simple random sampling

Inclusion criteria

Male participants belonging to the age group of 20-30 years, having history of anterior cruciate ligament reconstruction surgery, who have their investigation report regarding to ACL, surgery performed within the last 5 years and willingness to participate in the study.

Exclusion criteria

Patients who underwent previous knee surgery other than ACL reconstruction, have severe cognitive impairments or communication difficulties that may affect the ability to complete measures, having any significant medical condition that may affect knee function or pain and unable to provide informed consent.

Statistical analysis

• Age - the minimum age of the subject was 18years and the maximum age was 30 years.

Inference: The percentage of ACL injury is high in 18-30 years of age group.

Age	Frequency(n)	Percentage (%)
18-20	6	12%
21-25	26	56%
26-30	15	32%
Total	47	100%

Table no 1: shows age – wise distribution

• Number of years playing football.

In our study we included the participant playing football for more than 3 years. The minimum number of years playing football in our study is 3 years and maximum is 18 years. The means of years playing football with anterior knee pain is 9.16 ± 2.85 and without anterior knee pain is 11 ± 2.78.

Inference: Anterior knee pain following ACLR is likely to be more in 5-10 years of experience.

Experience	Frequency(n)	Percentage (%)
5 years -10 years	15	32%
11 years-15 years	3	6%
Total/out of	18/47	62%/100%

Table no 2: shows distribution of pain according to years of playing

•Anterior knee pain scoring (AKPS)

In our study according to the anterior knee pain scale, out of 47 patients, no one had severe anterior knee pain. 2 (4%) patients had moderate anterior knee pain, and 16 (34%) patients had mild anterior knee pain. The frequency of patients without anterior knee pain was 31 (62%).

Severity of pain	Frequency(n)	Percentage (%)
0-25 severe pain	0	0%
26-50 moderate pain	2	4%
51-75 mild pain	16	34%
76-100 no pain	29	62%
Total	47	100%

Table no 3: shows distribution of severity of pain according to Kujala questionnaire score

•Patellar grind test

Out of 47 subjects participating in the study, 38% of participants tested positive and remaining 62% don't show any symptoms regarding anterior knee pain.

Inference: The findings demonstrate that a percentage of football players experiencing anterior knee pain according to patellar grind test.

Patellar grind test	Frequency(n)	Percentage (%)
Positive	18	38%
Negative	29	62%
Total	47	100%

Table no 4: shows distribution of severity of pain according to Patellar grind test

III. RESULT

In this study, participants aged 18 to 30 years had an average age of 24.08 ± 3.13 years. The prevalence of ACL injury was 14.7%, higher in males. Those experiencing anterior knee pain played football for an average of 9.16 ± 2.85 years, compared to 11 ± 2.78 years for those without pain. Previous studies showed varying levels of pain severity, while in this study, none had severe pain, 4% had moderate, and 34% had mild pain, with 62% reporting no pain. The Patellar Grind Test was positive in 38% of participants, indicating anterior knee pain symptoms. These findings underscore the prevalence of anterior knee pain following ACL reconstruction, especially among football players, and emphasize the importance of tools like the Patellar Grind Test for assessment and management.

IV. DISCUSSION

Anterior knee pain (AKP) is a well-documented complication following anterior cruciate ligament reconstruction (ACLR), with varying prevalence across different populations and athletic disciplines. Our study, which examined 47 football players from Kolhapur City, adds to the growing body of research on post-ACLR complications, particularly within the context of football—a sport characterized by high-impact movements, frequent changes in direction, and significant knee-loading activities. While numerous studies have explored AKP in the general population, the unique biomechanical demands of football, combined with environmental and training-specific factors in Kolhapur, make it essential to investigate this issue within a localized athletic community.

Previous research has established that AKP after ACLR is often linked to quadriceps weakness, patellar maltracking, and incomplete rehabilitation. Studies by Hart et al. (2020) and Logerstedt et al. (2014) emphasize that inadequate recovery of terminal knee extension and patellar mobility significantly increases the risk of persistent AKP. Furthermore, Ardern et al. (2016) highlight the psychological aspect, noting that unfulfilled expectations regarding pain management contribute to anxiety, which in turn amplifies pain perception. Our findings align with these perspectives, reinforcing the importance of early intervention strategies such as structured range of motion (ROM) exercises and neuromuscular training.

Comparing our results to previous studies, AKP prevalence post-ACLR has been reported to range from 10% to 40% in the general population (Feller et al., 2001; van Meer et al., 2015). However, our study suggests that football players may exhibit a different prevalence due to the sport's repetitive knee flexion, eccentric quadriceps loading, and intense physical demands. This observation is consistent with Myer et al. (2012), who found that athletes in sports requiring frequent cutting and pivoting motions are more susceptible to AKP following ACLR. Such biomechanical stressors, combined with training intensity and external factors like playing surface, may contribute to variations in pain outcomes across different sporting disciplines and regions.

These findings reinforce the need for rehabilitation protocols that address both physical and psychological recovery in football players. Early restoration of full knee extension, progressive quadriceps strengthening, and neuromuscular retraining have been identified in studies by Grindem et al. (2018) and Escamilla et al. (2012) as crucial in minimizing the risk of AKP. Additionally, psychological readiness plays a critical role in pain perception and return-to-play timelines, making it imperative for rehabilitation programs to integrate mental conditioning alongside physical therapy.

By focusing on football players from Kolhapur City, this study highlights the need to consider sport-specific and regional factors when examining post-ACLR complications. Understanding these nuances can help refine rehabilitation strategies to optimize recovery, improve long-term knee function, and ultimately enhance athletic performance. Future research should explore larger cohorts and long-term follow-ups to further elucidate the relationship

between sport-specific demands, psychological influences, and AKP outcomes in football players.

V. CONCLUSION

Our study aimed to determine the frequency of anterior knee pain after ACL reconstruction among football players in Kolhapur city. Our findings revealed that 38% of the 47 subjects showed positive symptoms, while the remaining 62% did not exhibit any symptoms of anterior knee pain. It suggests that individuals with 5-10 years of football experience are more prone to experiencing anterior knee pain following ACL reconstruction.

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