

Patellofemoral Pain and Subsequent ACL injury: A 10-year Population-based Study

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Introduction

- Patellofemoral pain (PFP) is a common cause of anterior knee pain affecting a significant portion of the population.
- Notably, there is strong similarity between reported anterior cruciate ligament (ACL) injury and PFP risk factors.
- Both conditions have higher incidence in young female athletes and are associated with neuromuscular impairments.
- **Key Aim:** To investigate the incidence of ACL and other knee injuries in individuals with a history of PFP and identify factors associated with these injuries in this population.

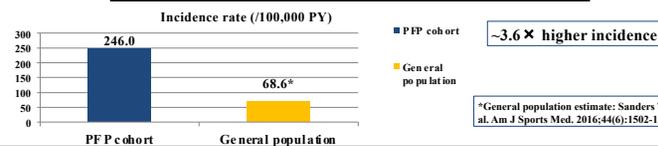
Methods

- **Design:** Retrospective EMR cohort (index PFP 2014–2016; follow-up through 2024).
- **Outcomes:** ACL, meniscus, traumatic intra-articular knee injury/procedure via ICD/CPT + chart review (first event after index PFP).
- **Laterality:** Laterality-specific codes; ipsilateral = same side as index PFP.
- **Stats:** Cumulative incidence (95% CI) + incidence rate/100,000 person-years; Wilcoxon & χ^2 ; logistic regression adjusted age/sex/BMI.

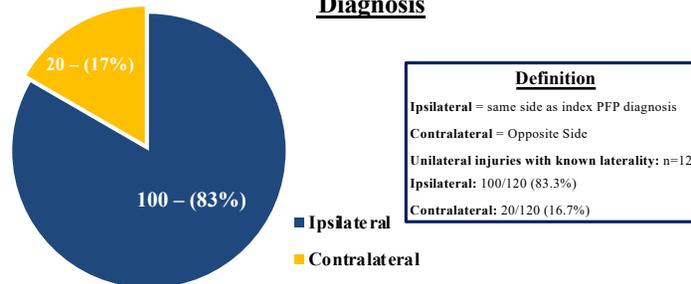
Results

- **Cohort:** n=1,232 PFP (2014–2016), follow-up through 2024
- **Injury burden:** Any intra-articular knee injury/procedure 10.9% (134/1,232)
- **Timing:** Median time to any injury 10 mo (IQR 1–41); ACL 10.5 mo (IQR 0–28)
- **Predictors:** BMI associated univariately (p=0.025); no independent predictors in adjusted model

ACL Injury Incidence Rate: PFP Cohort vs General Population

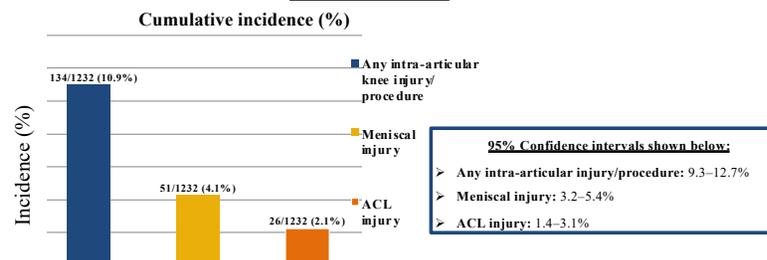


Laterality of Unilateral Subsequent Knee Injuries After PFP Diagnosis



Laterality derived from laterality-specific ICD-10 codes and confirmed via chart review

Cumulative Incidence of Subsequent Knee Injuries/Procedures After PFP Diagnosis



Outcomes identified via ICD-10/CPT codes with manual chart review confirmation; First post-index event counted.

Discussion

- Patients diagnosed with patellofemoral pain demonstrated a clinically meaningful subsequent risk of ACL and intra-articular knee injury.
- ACL incidence was 246 per 100,000 person-years, with most events occurring within the first year and predominantly ipsilateral.
- PFP may represent an early clinical marker for heightened knee injury susceptibility and an opportunity for targeted, movement-quality and load-management-focused rehabilitation.

Conclusion

Patellofemoral pain may be an early clinical risk flag—subsequent knee injuries cluster within 12 months and are predominantly ipsilateral to the index PFP side.

Clinical Relevance

- **PFP may function as an early clinical risk flag:** Subsequent ACL injury incidence was 246/100,000 per year, approximately **3.6 × the general population estimate** (68.6/100,000 per year).
- Injuries clustered early and were predominantly ipsilateral—supporting a practical window for targeted neuromuscular and load-management rehab.
- PFP may signal elevated ACL risk, with 2.1% sustaining ACL injury
- Most injuries occurred within the first year of PFP diagnosis and were predominantly ipsilateral, indicating a potential early intervention window targeting neuromuscular deficits.
- Higher BMI and body weight were associated with injury, reinforcing the importance of load management and movement-quality-focused rehabilitation.

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