



# UNIVERSITY OF CAMBRIDGE

## **Developing an acute knee injury assessment tool: Cambridge Knee Injury Assessment Tool**

### **The problem**

Acute knee injuries are a common presentation to emergency departments, accounting for up to 8% of complaints. (1) Across all primary care providers, knee pain accounts for one-third of musculoskeletal complaints. (2) To achieve accurate assessment and appropriate treatment, a health professional must undertake a thorough history and physical examination, alongside the use of appropriate special tests and diagnostic imaging. However, the presence of pain, effusion and guarding in acute clinical settings increases the difficulty of diagnosing various knee injuries. There is also a reported lack of confidence by non-orthopaedic healthcare providers in performing clinical musculoskeletal examinations. This is reflected in the finding that as many as 82% of recent medical school graduates are unable to exhibit fundamental proficiency in musculoskeletal examinations. (2) Furthermore, evidence suggests that only 10-15% of patients with initial diagnoses of an ACL injury are correct, with many healthcare systems relying on unnecessary imaging tests. (3) This often leads to patients consulting multiple healthcare providers before receiving a valid diagnosis, delaying rehabilitation or surgical management. These difficulties experienced in the clinical cycle of care are reflected in reports that a median of three health professionals need to be consulted before diagnosing an ACL injury, resulting in a delay of 13 weeks between the time of injury and the time of diagnosis. (1) As soft tissue knee injuries are associated with a significant personal and economic burden, the need to improve the validation of clinical diagnoses and the guidance of management pathways is clear.

### **Current research**

Soft tissue knee injuries (STKIs) in acute settings have become a focal point for researchers and clinicians. Current literature has explored the incidence of acute STKIs to establish the factors predisposing individuals to STKIs. The literature suggests a multifactorial contribution to an increased risk of injury. (4) Previous research has been undertaken with a focus on prevention and intervention for at-risk populations. (4, 5, 6) This project aims to identify risk factors that will enable the risk stratification of individuals to guide the clinical management decisions immediately following an acute STKI. In this space, emerging literature supports combining details from patient history and clinical findings from the physical examination to support the clinical diagnosis of soft tissue knee injuries and guide clinical management pathways. (3, 7)

### **Our research**

The Department of Trauma and Orthopaedics at the University of Cambridge is undertaking a study to identify the priorities in diagnosing, treating, and risk-stratifying knee injuries, as perceived by healthcare professionals in acute settings. This study is seeking the expert opinion of key stakeholders in this area, including physiotherapists, emergency nurse practitioners, general practitioners, sports medicine physicians, radiologists, and orthopedic specialists. This research will be used to guide the development of a risk stratification tool that aims to ensure a more focused and informed approach to the diagnosis of acute knee injuries. Subsequently, this will help guide management pathways to promote time and cost efficiency for both patients and healthcare providers.

### **How will this research be conducted?**

#### **1. Development phase**

This phase involves a Delphi Technique study that will identify relevant predictors and gather consensus on the expert opinion from stakeholders in the provision of orthopaedic healthcare. These opinions will be analysed and combined with the existing literature to develop an evidence-based risk stratification tool.

#### **2. Validation phase**

For this phase, the risk stratification tool will be trialled in an acute setting to assess its predictive value. This will be done through a prospective cohort pilot study.

#### **3. Impact analysis phase**

This phase will measure the usefulness of the rule in a clinical setting through a public health lens including cost-benefit, patient satisfaction, and time/resource allocation.

### **Invitation to participate**

We are currently inviting key stakeholders in orthopaedics to partake in phase 1 of this project. The study will involve a modified e-Delphi technique study that will have 3 rounds and be conducted over the course of a month. Electronic distribution means there will be no face-to-face requirements or focus group attendance for participants. Participation in the survey over the three rounds is crucial to ensuring that the risk stratification tool is developed based on the opinions and expertise of healthcare professionals.

Please follow the QR to express your interest in participating in the study.



## Contact information

A/Professor Stephen McDonnell (Principal Investigator) – Consultant Orthopaedic Knee Surgeon (Addenbrooke’s Hospital, Cambridge) & Associate Professor at the University of Cambridge.

Tom Molloy – MPhil in Medical Science (Surgery) student at the University of Cambridge. MPH, BSc

For any further information, please email [tm766@cam.ac.uk](mailto:tm766@cam.ac.uk).

## References

1. Strudwick K, McPhee M, Bell A, Martin-Khan M, Russell T. Review article: Best practice management of common knee injuries in the emergency department (part 3 of the musculoskeletal injuries rapid review series). *Emergency Medicine Australasia*. 2018;30(3):327-52.
2. Lerew S, Stoker S, Nallamotheu S. The Rules of Four: A Systematic Approach to Diagnosing Common Musculoskeletal Conditions of the Knee. *Spartan Medical Research Journal*. 2020;4(2).
3. Décary S, Fallaha M, Belzile S, Martel-Pelletier J, Pelletier J-P, Feldman D, et al. Clinical diagnosis of partial or complete anterior cruciate ligament tears using patients’ history elements and physical examination tests. *PLOS ONE*. 2018;13(6):e0198797.
4. LaBella CR, Hennrikus W, Hewett TE. Anterior cruciate ligament injuries: diagnosis, treatment, and prevention. *Pediatrics*. 2014;133(5):e1437-50.
5. Alentorn-Geli E, Myer GD, Silvers HJ, Samitier G, Romero D, Lázaro-Haro C, et al. Prevention of non-contact anterior cruciate ligament injuries in soccer players. Part 1: Mechanisms of injury and underlying risk factors. *Knee Surgery, Sports Traumatology, Arthroscopy*. 2009;17(7):705-29.
6. Pfeifer CE, Beattie PF, Sacko RS, Hand A. Risk factors associated with non-contact anterior cruciate ligament injury: A systematic review. *Int J Sports Phys Ther*. 2018;13(4):575-87.
7. Décary S, Fallaha M, Frémont P, Martel-Pelletier J, Pelletier J-P, Feldman DE, et al. Diagnostic Validity of Combining History Elements and Physical Examination Tests for Traumatic and Degenerative Symptomatic Meniscal Tears. *PM&R*. 2018;10(5):472-82.