Several Factors Predict The Achievement Of The Patient Acceptable Symptom State And Minimal Clinically Important Difference For Patient-Reported Outcome Measures Following Anterior Cruciate Ligament Reconstruction: A Systematic Review

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Introduction

- Patient-reported outcomes measures (PROMs) are increasingly being used in orthopaedic literature to outline subjective effects of anterior cruciate ligament reconstruction (ACLR)[1]
- However, studies traditionally prioritize measures of statistical significance, rather than measures of clinical significance
- The patient-acceptable symptom state (PASS), minimal clinically important difference (MCID), and minimal important change (MIC) are three of the most common markers of clinical significance[2]
- To date, no reviews have summarized the predictors of achieving clinically-significant outcomes (PASS/MCID/MIC) following ACLR

Objectives

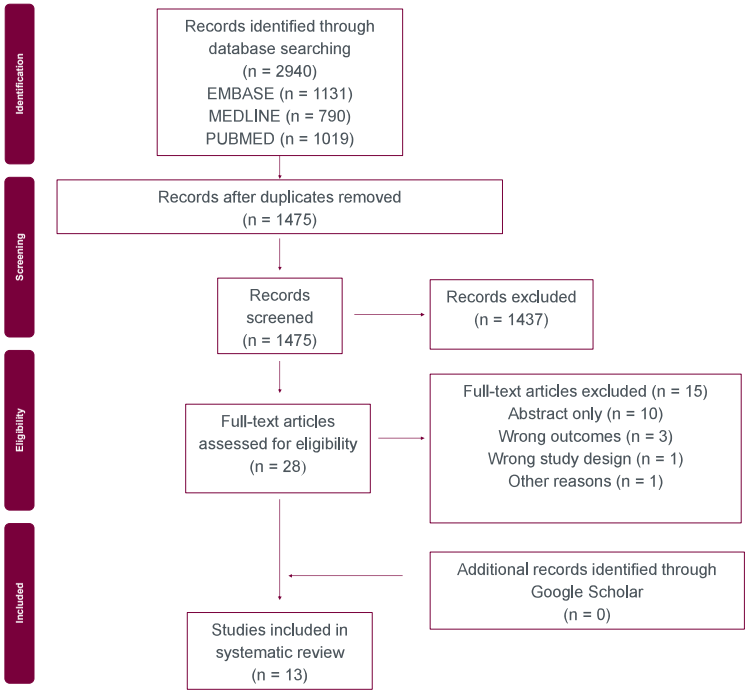
- To summarize the predictors of achieving the PASS, MCID, and MIC for PROMs (International Knee Documentation Committee (IKDC), Lysholm, and KOOS) following primary ACLR

Methods

- Three online databases (MEDLINE, PubMed, and Embase) were searched from inception to January 5th, 2024
- Inclusion criteria: English studies, human studies, level of evidence I to IV, studies reporting predictors of MCID/MIC/PASS achievement for patients undergoing primary ACLR
- Data on demographics, objective clinical outcomes, predictors of clinically-significant PROMs, and relevant statistical associations were extracted

Results

- Following abstract/title and full-text screening, 13 studies were identified to meet the inclusion criteria
- Included studies constituted three case series (level IV evidence), three retrospective cohort studies (level III evidence), six case-control studies (level III evidence), and one prospective cohort study (level II evidence)
- Agreement was strong during both the title/abstract screening ($k = 0.802$) and full-text screening ($k = 0.833$)
- The included studies represented a total of 21,235 patients



Results Continued

- **Main Factors Influencing PASS Achievement:**
  - Lateral extra-articular tenodesis (LET) (**KOOS**, OR=11.08, p=0.01)
  - Hamstring tendon autografts (**KOOS**, OR range: 2.02-2.63, p≤0.01)
  - Age>30 (**KOOS**, OR range: 1.37-2.28, p≤0.02)
  - Male sex (**KOOS**,OR range: 1.03-1.32, p≤0.01)
  - Higher preoperative PROMs (**IKDC/KOOS**, OR range: 1.04-1.21, p≤0.05)

- **Main Factors Influencing MCID/MIC Achievement:**
  - Female sex (**KOOS**, OR=0.93, p=0.03)
  - Non-hamstring tendon autografts (**KOOS**, OR=0.70, p=0.01)
  - Higher preoperative PROMs (**IKDC/Lysholm**, OR range: 0.76-0.84, p≤0.01)
  - Meniscectomy (**KOOS**, OR=0.67, p=0.01)
  - Collision sports (**IKDC/KOOS**, OR range: 0.02-0.60, p≤0.05)

Discussion & Conclusion

- The main finding of this systematic review was that various factors predicted the achievement of the PASS, MCID, and MIC for post-ACLR IKDC, Lysholm, and KOOS PROMs
- These findings suggest the following ideal ACLR candidate: 1) suffers an isolated ACL injury (no concomitant cartilage damage), 2) does not suffer a collision-type injury, and 3) receives a hamstring tendon autograft (versus bone-patellar tendon-bone autograft) with-or-without concomitant LET
- Limitations of this review were a limited number of included studies (13), limited study quality (one level II study, no level 1 studies,) concern of floor and ceiling effects regarding included PROMs (i.e. KOOS)[3] , and lack of age-related data stratification
- This review advocates for the consideration of long-term, prospective cohort studies or RCTs to validate the predictors of clinically-significant outcomes identified by this review

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Relevant Disclosures

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- International Quadriceps Tendon Interest Group Member
- Magellan Society Member
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