

## Introduction

- Anterior cruciate (ACL) rupture has an incidence of 30-78 per 100,000 annually
- Despite advances in ACL reconstruction (ACLR) and post-operative rehabilitation, only 45-60% of patients return to preinjury level of athletic performance
- Kinesiophobia or fear of re-injury: important factor contributing to decreased return-to-sport rates following primary ACLR
- Can be assessed with Tampa Scale of Kinesiophobia (TSK) or Anterior Cruciate Ligament Return to Sport After Injury (ACL-RSI)
- Specific definitions and thresholds for kinesiophobia are lacking
- There are no systematic reviews identifying the factors behind high levels of kinesiophobia

## Objectives

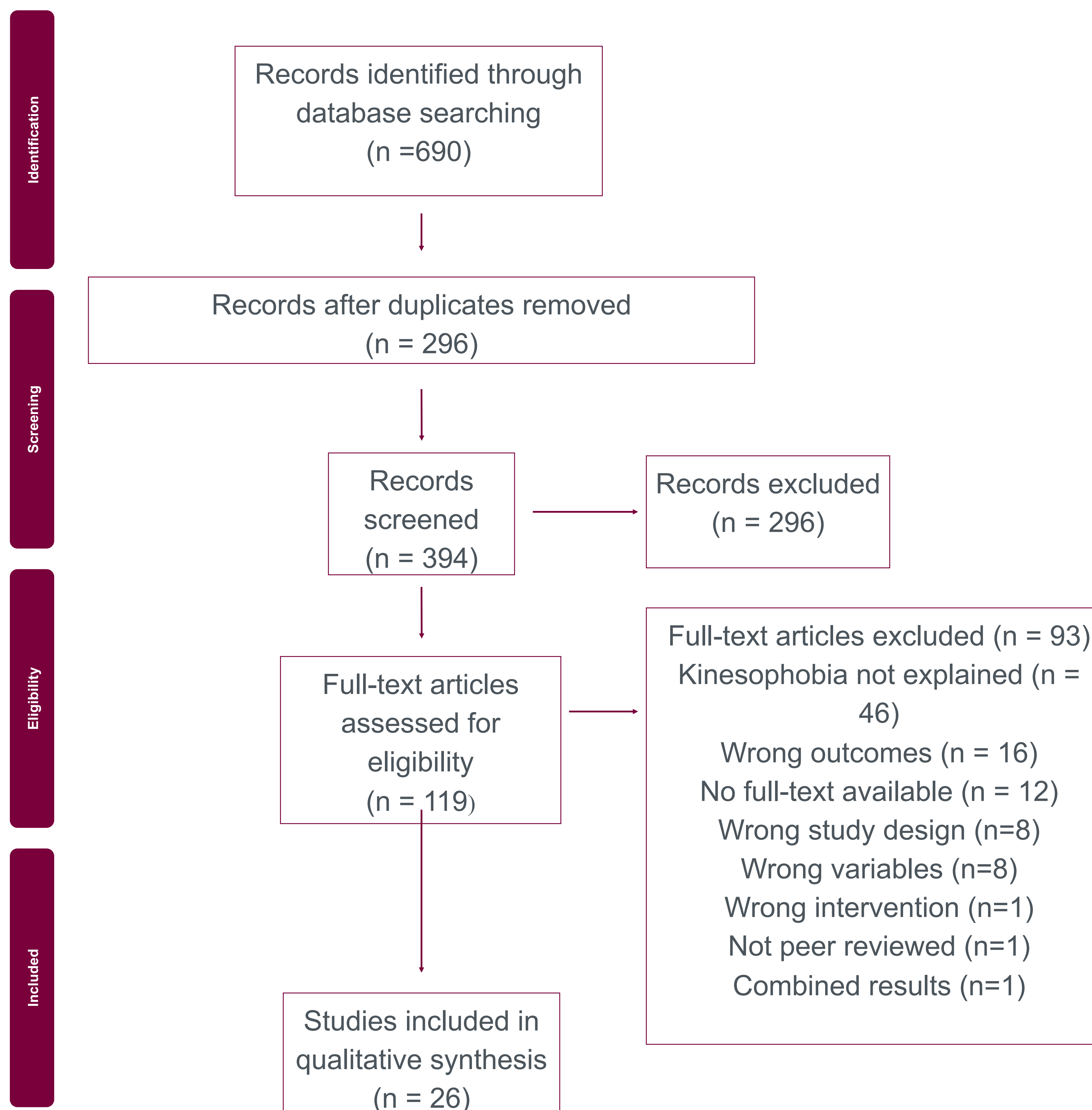
- To elucidate the most commonly reported method used to quantify kinesiophobia and to identify key variables that influence the degree of kinesiophobia following primary ACLR

## Methods

- Three online databases (Pubmed, Ovid(MEDLINE), EMBASE) were searched from database inception to August 7<sup>th</sup>, 2022 independently by two reviewers
- Inclusion criteria: studies in English, human, subjects of all ages, level I to IV evidence, reported primary ACLR, reported kinesiophobia, using TSK
- Quality assessment carried out using Methodological Index for Non-Randomized Studies (MINORS) appraisal tool

## Results

- After systematic abstract/title and full-text screening, 26 articles were identified to meet the inclusion and exclusion criteria
- Reviewers reached almost perfect agreement during title ( $k=0.87$ , 95% CI (0.79-0.93) and full-text review ( $k=1.00$ ).
- Literature search yielded a total of one (4%) level I, four (17%) level II, five (22%) level III and twelve (52%) level IV studies



## Results Continued

- A total of 2213 patients with a mean age of 27.6 years and mean follow-up time of 36.7 months post-surgery
- 88% of included studies used variations of TSK (TSK-11 or TSK-17), 27.0% used the ACL-RSI
- There was a common association between higher kinesiophobia and poor patient-reported functional status measured via International Knee Documentation Committee (IKDC) Scores, Activity of Daily Living (ADL), Quality of Life (QoL), and Sports/Recreation (S/R) subscales
- Increased pain via the KOOS pain and symptom subscales as well as the Pain catastrophizing Score (PCS) also influenced the degree of kinesiophobia post-ACLR
- Increased injury to surgery time and being closer to date of surgery post-operatively demonstrated higher levels of kinesiophobia
- Other variables influencing kinesiophobia included increased injury to surgery time, being closer to the date of surgery postoperatively, and lower patient-reported functional status

## Discussion & Conclusion

- The most important finding of the present study was that poor patient-reported functional status, increased postoperative symptoms, and pain catastrophizing, as well as longer injury to surgery times, and being closer to date of surgery postoperatively are predictive factors of kinesiophobia
- TSK-11, TSK-17, or ACL-RSI can be used to assess degree of kinesiophobia in patients following ACLR
- Addressing maladaptive psychological responses by incorporating various cognitive-behavioural therapies (imagery, mindfulness, guided relaxation, and breathing techniques) may be indicated for this patient population
- Functional rehabilitation in addition to psychological rehabilitation can aid in improving outcomes, setting realistic expectations through goal-reprioritization and readjustment is a viable option

## References/Acknowledgements

- Gans I, Retzky JS, Jones LC, Tanaka MJ (2018) Epidemiology of Recurrent Anterior Cruciate Ligament Injuries in National Collegiate Athletic Association Sports: The Injury Surveillance Program, 2004-2014. Orthop J Sports Med DOI: 10.1177/2325967118777823
- Hart HF, Culvenor AG, Guermazi A, Crossley KM (2020) Worse knee confidence, fear of movement, psychological readiness to return-to-sport and pain are associated with worse function after ACL reconstruction. Phys Ther Sport DOI: 10.1016/j.ptsp.2019.10.006
- Eiger B, Errebo M, Straszek CL, Vaegter HB (2022) Less is more: reliability and measurement error for three versions of the Tampa Scale of Kinesiophobia (TSK-11, TSK-13, and TSK-17) in patients with high-impact chronic pain. Scand J Pain DOI: 10.1515/sjpain-2021-0200
- Webster KE, Feller JA (2021) Evaluation of the Responsiveness of the Anterior Cruciate Ligament Return to Sport After Injury (ACL-RSI) Scale. Orthop J Sports Med DOI:10.1177/23259671211031240