

# **Morningside Graduate School of Biomedical Sciences**

## **Masters in Clinical Investigation Program**

Announces the MSCI Thesis Defense of

**ADAM CELLURALE**

**Prevention of Ulnar Collateral Ligament Injuries in Baseball: A Systematic Review**

Thursday, May 19, 2022 at 1 p.m. Via Zoom Meeting

**Background:** Medial ulnar collateral ligament reconstruction surgery (UCLR) is a common surgical procedure performed on elite level baseball players. Physical signs and symptoms of ulnar collateral ligament (UCL) injuries requiring UCLR along with treatment have been clearly defined, however, an exact etiology of UCL injuries and methods of preventing UCLR surgery remain unclear.

**Objective:** Systematically review and qualitatively provide an in-depth summary of recent literature about the relationships between changes in advanced pitching metrics for potential warning signs of UCL injury prior to requiring UCLR.

**Methods:** We searched two electronic databases (PubMed, Scopus) from inception to October 2021 using a keyword search. Data extracted included author and year of publication, study design, sample size, study location, and primary outcome variables. Articles that met inclusion criteria were then evaluated using a modified Downs and Black criteria.

**Results:** The key word search returned 51 articles of which a total of seven articles were included in the review. For the papers that met the inclusion criteria, four noted changes to velocity as potential an indicator for UCLR surgery, two identified lateralization of arm angles as an indicator of UCLR surgery, and one reported change to spin rates of specific pitches as an indicator for UCLR surgery.

**Conclusions:** The results of this review show that changes in certain advanced pitching metrics such as spin rate, velocity, and lateralization of arm angles could be potential indicators of UCL damage. Further evaluation is needed to continue to improve our understanding of how these trends could be used as predictors of UCLR.

**Keywords:** UCLR, Tommy John Surgery, advanced pitching metrics, spin rate, velocity, lateral rotation, Major League Baseball (MLB), pitching, baseball

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