

# Elbow Ulnar Collateral Ligament Injuries in Overhead Athletes: An Infographic Summary

Jason L. Zaremski, MD\*<sup>†</sup>

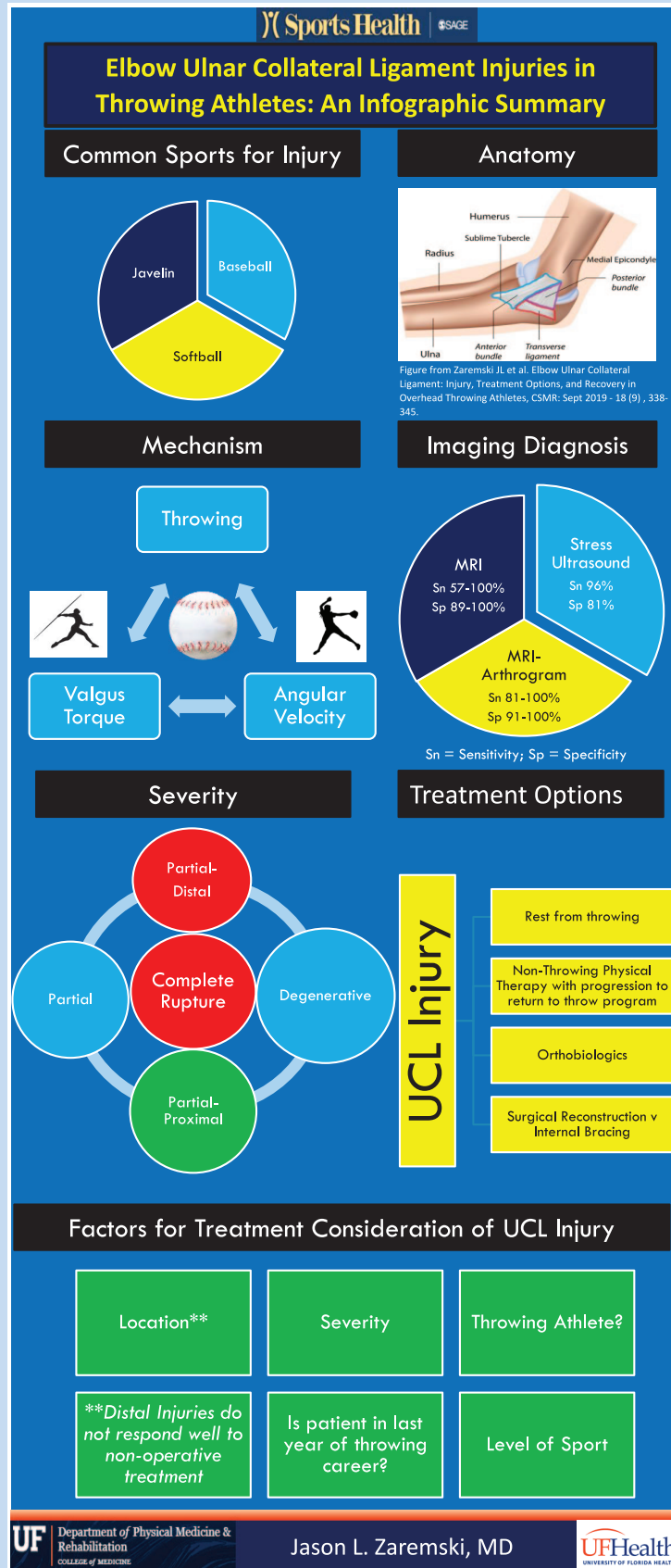
Ulnar collateral ligament (UCL) injuries of the elbow are common in throwing athletes. Given that the UCL's primary function is to provide valgus stability during the deceleration phase of throwing, injury to the UCL will render throwing difficult to nearly impossible.<sup>15</sup> Injuries will occur more so in the sports of baseball, softball, and javlineers participating in track and field.<sup>5,10,14</sup> Data has indicated that valgus torque reaches 64 N-m and proximal forces as high as 1000 N to prevent elbow distraction. Further, angular velocity across elbow may reach 1900-2480 degrees/second.<sup>6,8</sup> Imaging modalities that have the greatest accuracy for diagnosis include magnetic resonance imaging (MRI), MRI-arthrogram, and stress ultrasonography.<sup>2,3,11,12</sup> Treatment of UCL injury depends on multiple factors. These include if the injury is a partial tear or complete tear and the location (distal versus proximal) of the partial tear.<sup>7</sup> Further, complete tears, as well as partial distal tears, are more likely to undergo surgical intervention.<sup>1,13</sup> Treatment decision-making is primarily dependent on following factors: location, severity, if the patient is a throwing athlete, and if the patient is in his or her last year of his/her throwing career due to the length of the rehabilitation process if surgery is pursued.<sup>15</sup> Return-to-play success rates when treated conservatively vary from anywhere from 42% to 100%. Conservative treatment includes rest, rehabilitation, platelet-rich plasma injections, and a throwing program.<sup>4</sup> Surgical treatment has evolved significantly with various reconstructive techniques and (when indicated) surgical repair with internal bracing. Return-to-play rates are high, ranging from 80% to 95% with low complication rates, but rehabilitation for reconstruction can range from 12-18 months or longer. Therefore, patients must be made aware of the commitment to the rehabilitation process if electing to undergo surgical reconstruction.<sup>9</sup>

**Keywords:** injury; sports; throwing; ulnar collateral ligament

From <sup>†</sup>Department of Physical Medicine and Rehabilitation, College of Medicine, University of Florida, Gainesville, FL

\*Address correspondence to Jason L. Zaremski, MD, CAQSM, FACSM, FAAPMR, Clinical Associate Professor, PM&R and Sports Medicine, Director, UF Health Throwing Clinic, University of Florida Health, UF Orthopaedic and Sports Medicine Institute, 3450 Hull Road, Gainesville, FL 32607 (email: zaremjl@ufl.edu) (Twitter: @DrZSportsDoc). DOI: 10.1177/19417381221098622

© 2022 The Author(s)



## REFERENCES

1. Buckley PS, Morris ER, Robbins CM, et al. Variations in blood supply from proximal to distal in the ulnar collateral ligament of the elbow: A qualitative descriptive cadaveric study. *Am J Sports Med.* 2019;47:1117-1123.
2. Campbell RE, McGhee AN, Freedman KB, Tjoumakaris FP. Diagnostic imaging of ulnar collateral ligament injury: A systematic review. *Am J Sports Med.* 2020;48:2819-2827.
3. Ciccotti MG, Atanda A, Nazarian LN, Dodson CC, Holmes L, Cohen SB. Stress sonography of the ulnar collateral ligament of the elbow in professional baseball pitchers: a 10-year study. *Am J Sports Med.* 2014;42:544-551.
4. Cascia N, Picha K, Hettrich CM, Tim, L. Considerations of conservative treatment after a partial ulnar collateral ligament injury in overhead athletes: A systematic review. *Sports Health.* 2019;11:367-374.
5. DeFroda SF, Goodman AD, Gil JA, Owens BD. Epidemiology of elbow ulnar collateral ligament injuries among baseball players: National Collegiate Athletic Association Injury Surveillance Program, 2009-2010 Through 2013-2014. *Am J Sports Med.* 2018;46:2142-2147.
6. Dines JS, Jones KJ, Kahlenberg C, Rosenbaum A, Osbahr DC, Altchek DW. Elbow ulnar collateral ligament reconstruction in javelin throwers at a minimum 2-year follow-up. *Am J Sports Med.* 2012;40:148-151.
7. Erickson BJ, Harris JD, Chalmers PN, et al. Ulnar collateral ligament reconstruction: Anatomy, Indications, techniques, and outcomes. *Sports Health.* 2015;7:511-517.
8. Fleisig GS, Bolt B, Fortenbaugh D, Wilk KE, Andrews JR. Biomechanical comparison of baseball pitching and long-toss: implications for training and rehabilitation. *J Orthop Sports Phys Ther.* 2011;41:296-303.
9. Jensen AR, LaPrade MD, Turner TW, Dines JS, Camp CL. The history and evolution of elbow medial ulnar collateral ligament reconstruction: from Tommy John to 2020. *Curr Rev Musculoskelet Med.* 2020;13:349-360.
10. Leland DP, Conte S, Flynn N, et al. Prevalence of medial ulnar collateral ligament surgery in 6135 current professional baseball players: A 2018 update. *Orthop J Sports Med.* 2019;7:2325967119871442.
11. Magee T. Accuracy of 3-T MR arthrography versus conventional 3-T MRI of elbow tendons and ligaments compared with surgery. *AJR Am J Roentgenol.* 2015;204:W70-75.
12. Park JY, Kim H, Lee JH, et al. Valgus stress ultrasound for medial ulnar collateral ligament injuries in athletes: is ultrasound alone enough for diagnosis? *J Shoulder Elbow Surg.* 2020;29:578-586.
13. Ramkumar PN, Haeberle HS, Navarro SM, Frangiamore SJ, Farrow LD, Schickendantz MS. Clinical utility of an mri-based classification system for operative versus nonoperative management of ulnar collateral ligament tears: A 2-year follow-up study. *Orthop J Sports Med.* 2019;7:2325967119839785.
14. Zaremski JL, McClelland J, Vincent HK, Horodyski M. Trends in sports-related elbow ulnar collateral ligament injuries. *Orthop J Sports Med.* 2017;5:2325967117731296.
15. Zaremski JL, Vincent KR, Vincent HK. Elbow ulnar collateral ligament: injury, treatment options, and recovery in overhead throwing athletes. *Curr Sports Med Rep.* 2019;18:338-345.

For article reuse guidelines, please visit SAGE's website at <http://www.sagepub.com/journals-permissions>.