

## **Bilateral Comparison of Elbow Ulnar Collateral Ligament Thickness in Division I Baseball Athletes**

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### **ABSTRACT**

It has been established the mechanics of throwing a baseball contributes to ulnar collateral ligament (UCL) injury because of the repetitive valgus stress on the anterior band of the UCL, as it is the primary stabilizer of valgus stress in the elbow. This repetitive stress has been shown to cause adaptations in tensile properties leading to damage or failure of the UCL. Previous research has shown that ultrasound imaging may have the ability to detect changes in the UCL before the onset of symptoms in pitchers. **PURPOSE:** This study was performed to compare bilateral UCL thickness in Division I baseball players. **METHODS:** 22 Division I baseball players from the same university participated in this study. The players were separated into two groups based on position: pitchers (n=11; 190.9 ± 7.8 cm; 92.3 ± 11.2 kg) and position players (n=11; 184.6 ± 7.0 cm; 85.9 ± 10.8 kg). Ultrasound imaging was captured bilaterally on the players' elbows using B-mode ultrasonography (LOGIQ, GE Healthcare). Players were tested seated in a reclined position with the arm resting on a plinth, shoulder abducted 90°, elbow extended 150°, and with forearm in a supinated position. The midpoint thickness of the UCL was measured in millimeters using ImageJ (National Institute of Health). The difference between throwing arm and non-throwing arm UCL thickness was calculated as 'UCL Dif'. A two-way mixed factor ANOVA (position [pitcher vs position player] x arm [throwing arm and non-throwing arm]) was used to analyse UCL thickness. **RESULTS:** There was no position x arm interaction (**p=0.735**); however, there were significant main effects for position (p = 0.003) and arm (p ≤ 0.001). When collapsed by position, UCL thickness was significantly greater in the throwing arm compared to the non-throwing arm (0.621 ± 0.008 mm vs. 0.581 ± 0.008 mm). When collapsed across arms, pitchers had significantly greater throwing arm UCL thickness compared to position players (0.618 ± 0.008 vs. 0.518 ± 0.008). **CONCLUSION:** The UCL thickness in pitchers' throwing elbow was greater compared to position players. The greater UCL thickness in the throwing arm appears to be an adaptive change to the repetitive stress during a pitch. We believe the known relationships between UCL thickness, player position, and arm dominance can be best explained by positional demands and throwing style.