

# An improved elbow MRI view for Major League Baseball pitchers

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According to a pilot study published in ARRS' *American Journal of Roentgenology* (AJR), the flexed elbow valgus external rotation (FEVER) view can improve MRI evaluation of the ulnar collateral ligament (UCL)

in Major League Baseball (MLB) pitchers.

"The increased joint space width confirms elbow valgus stress with FEVER view," wrote corresponding author Thomas Knoblauch at the University of Nevada Las Vegas. "Diagnostic confidence increased, and additional UCLs were identified as abnormal."

Due to repetitive extreme valgus stress during overhead throwing maneuvers, UCL injuries remain common in throwing athletes. Because standard positioning for elbow MRI is often suboptimal for UCL rendering, Knoblauch, Arizona Diamondbacks head team physician Gary Waslewski, and colleagues piloted their study to assess FEVER view impact on ulnotrochlear (UT) joint space measurement and UCL reader evaluation, as incorporated with conventional elbow MRI.

A total of 44 MLB pitchers underwent elbow MRI, including both standard sequences and a coronal fat-saturated proton density-weighted sequence in the FEVER view using specific positioning maneuvers and sandbags to immobilize the elbow in valgus stress, while visualizing the UCL parallel to its long axis. To measure UT joint space and assess confidence in UCL-related findings with overall UCL normality, two radiologists independently evaluated standard and FEVER views.



Note elevated flexed elbow and sandbags to induce valgus stress. Elbow coil is not included in image. Credit: American Roentgen Ray Society (ARRS), *American Journal of Roentgenology* (AJR)




20-year-old male pitcher shows normal anterior bundle of UCL (blue arrow) and 2.9 mm UT articular width. Credit: American Roentgen Ray Society (ARRS), *American Journal of Roentgenology* (AJR)

"Among 44 MLB pitchers undergoing elbow MRI," Knoblauch et al. continued, "the FEVER view, compared with standard view, yielded increased UT joint space width (mean increase, 1.80mm) and increased confidence for three of five UCL-related findings (mean increase, -0.14 to 0.98)." Readers 1 and 2 classified 3 and 2 additional UCLs as abnormal on FEVER compared with standard view; neither reader classified any UCL as abnormal in standard view but normal in FEVER view.




**Impact of Valgus Stress During Elbow MRI in Throwing Athletes**

**44 pitchers from 3 Major League Baseball teams underwent elbow MRI of the throwing arm.**




**MRI performed using both standard and flexed elbow valgus external rotation (FEVER) views.**



**FEVER view resulted in:**

- 1.8 mm ulnotrochlear joint space widening
- greater reader confidence in UCL assessment
- more abnormal UCLs detected



FEVER view may improve MRI evaluation of the UCL in throwing athletes.

Knoblauch et al. DOI.10.2214/AJR.21.25608 AJR

"The findings support the FEVER view as a practical addition to standard elbow MRI protocols for achieving elbow valgus stress in throwing athletes," the authors of this AJR article concluded, "thereby providing functional information to complement the high-resolution anatomic assessment provided by MRI." Credit: American Roentgen Ray Society (ARRS), *American Journal of Roentgenology* (AJR)

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**More information:** Pamela J. Lund et al, FEVER: The Flexed Elbow Valgus External Rotation View for MRI Evaluation of the Ulnar Collateral Ligament in Throwing Athletes—A Pilot Study in Major League Baseball Pitchers, *American Journal of Roentgenology* (2021). [DOI: 10.2214/AJR.21.25608](https://doi.org/10.2214/AJR.21.25608)

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