

Throwing fastballs may be linked to Tommy John surgery in MLB pitchers

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Contrary to conventional wisdom, Major League Baseball pitchers who throw a high percentage of fastballs may be at increased risk for Tommy John surgery, according to research at Henry Ford Hospital in Detroit.

Researchers suggest that throwing fastballs nearly half of the time puts pitchers at risk of injury to their elbow. MLB pitchers who have undergone Tommy John surgery threw on average 7 percent more fastballs than pitchers who had no surgery.

Researchers found no statistical differences in other pitch types like curveballs, sliders and change-ups. They also found no correlation between pitch velocity and risk of injury.

The findings are published in the *Journal of Shoulder and Elbow Surgery*.

"Our findings suggest that throwing a high percentage of fastballs rather than off-speed pitches puts more stress on the elbow," says Robert Keller, M.D., chief resident in Henry Ford's Department of Orthopedic Surgery and the study's lead author. "This leads to elbow fatigue, overuse and, subsequently, injury."

Tommy John surgery, named after the former Los Angeles Dodgers pitcher who underwent the pioneering surgery more than 40 years ago, has since been performed on legions of pitchers at the professional and collegiate levels. In medicine it is known as ulnar collateral ligament

(UCL) reconstruction. During the two-hour outpatient procedures, the UCL in the medial elbow is replaced with a tendon from the same arm or from the hamstring area.

While the cause of UCL injury is not fully known, orthopedic specialists have long theorized it's due to overuse and stress on the elbow, pitching velocity and joint motion. A growing body of bio-medical research is starting to support that premise.

It's estimated that nearly 25 percent of current MLB pitchers have undergone Tommy John surgery.

In a retrospective, case-controlled study, Dr. Keller and his research colleagues collected data of 83 MLB pitchers from two years before and after they had surgery and matched it against pitchers in a control group with no prior surgery over the same time period. Data included pitching statistics like pitch velocity, pitch types and innings pitched as well as pitching demographics like age, experience and whether they are left-handed or right-handed.

Vasilios (Bill) Moutzouros, M.D., a Henry Ford orthopedic surgeon and the study's senior author, says the study's findings should be viewed with perspective and caution, noting that only MLB pitchers were the subject of the research.

"Our research should not be interpreted by [pitchers](#) who may now think they can go out and throw 80 percent of curveballs and not be at risk of injury," Dr. Moutzouros says. "With overuse and continued stress on the [elbow](#), the potential for injury over time is very real and at any playing level."

More information: Robert A. Keller et al. Major League Baseball pitch velocity and pitch type associated with risk of ulnar collateral

ligament injury, *Journal of Shoulder and Elbow Surgery* (2016). DOI: [10.1016/j.jse.2015.12.027](https://doi.org/10.1016/j.jse.2015.12.027)

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