

Prominent MLB team physician sounds alarm on pitching injuries



By Ken Rosenthal and Eno Sarris Mar 8, 2024

369

One of the game’s leading orthopedic surgeons is sounding an alarm on pitching injuries — and citing the advent of the sweeper and power changeup as significant reasons for the spike.

Dr. Keith Meister, the [Texas Rangers’](#) head team physician, said teams are exacerbating the problem by emphasizing pitchers’ performance over their availability.

“These front offices, unfortunately, are living more in the moment than taking a longer, broader-term view,” Meister said. “There is a way to manage this. What if a guy doesn’t have a WHIP (walks and hits per inning pitched) of 0.8. What if he has a WHIP of 1.1 but he’s able to play 162?”

Meister, who pioneered the hybrid elbow procedure that combines a traditional ligament reconstruction with the addition of an internal brace, said surgical techniques changed markedly over the past decade in response to how pitching evolved.

As teams increased their emphasis on velocity and stuff, injury-list placements for pitchers rose from 241 in 2010 to 552 in 2021 before decreasing slightly each of the past two seasons, according to a [Major League Baseball](#) spokesperson. The days pitchers spent on the IL more than doubled over a slightly longer span.

A hyperfocus on performance often begins at the youth level. Many pitchers experience problems before ever reaching the majors. The number of pitchers drafted in the top 10 rounds with a history of elbow reconstruction rose from six between 2011 and 2013 to 24 between 2021 and 2023, the league spokesperson said.

Meister, 62, said he repaired approximately 230 elbow ligaments last year and is “way ahead of that pace” this year. [Shohei Ohtani](#) [threw more sweepers than anyone in baseball](#) from 2021 to 2023 before undergoing his second major elbow procedure. Of course, pitchers who do not throw sweepers or power changeups also are getting hurt, as evidenced by the mounting injuries this spring.

The [Boston Red Sox’s Lucas Giolito](#) might require a second elbow reconstruction. The [Houston Astros’ Justin Verlander](#), [New York Mets’ Kodai Senga](#) and [Toronto Blue Jays’ Kevin Gausman](#) and [Alek Manoah](#) are among those dealing with shoulder issues. The [San Francisco Giants’ Sean Hjelle](#) is out with an elbow problem, and [Tristan Beck](#) had surgery to remove an aneurysm in his arm.

And that is only a partial list.

“We used to say, you get your one TJ, you’re good. Then it was, you get 10 years out of one. Then it was seven to eight,” Meister said. “Now guys break down in three to five, depending upon who they are, the stuff they have, what they throw.”

The game, then, appears to be teetering on a perilous edge. Pitchers are throwing more breaking balls than ever before. They also are throwing harder than at any point in the sport’s history. Velocity commonly is cited as one of the biggest drivers of pitching injuries. And the sport rewards those who chase it.

“Analytics says velo is super important,” said one pitching coach who was granted anonymity for his candor. “Pitchers and analysts pursue velo. The pitchers that don’t do this retire. The ones that stay take on some injury risk to avoid working at Costco.”

Meister, director of the Texas Metroplex Institute for Sports Medicine, acknowledges the dangers velocity poses. But, he said, “spin is worse.”

The sweeper puts tremendous stress on the inner elbow, Meister said. The power “movement” changeup, as Meister calls it, also puts inordinate strain on the arm. “And to throw these pitches,” he said, “you have to squeeze the crap out of the baseball.”

Years ago, Meister recalls hearing the late Johnny Sain, a former major-league pitcher and independent-minded pitching coach, say when a pitcher is holding a ball correctly, he should grip it in a way that he could throw a raw egg without breaking it.

Today it's the opposite, Meister said. Pitchers apply a "death grip" to the ball, essentially pre-loading every muscle in their arms. At release, those muscles acutely lengthen in what is known as an "eccentric contraction." The result can be almost like a hamstring tearing, affecting different pitchers in different parts of the arm.

"We're seeing all these tears in the lat and teres, all these tears of the previously reconstructed ligament, a lot more flexor-tendon tears," Meister said. "I can tell you it is a consequence of predominantly those two pitches — the sweeping slider and these hard movement changeups."

Over the past three seasons, the percentage of sweepers thrown has increased from 1.3 to 3 to 4.3 percent league-wide, according to Statcast. The Rangers, the team that employs Meister, barely throw the pitch, [as reported by the Dallas Morning News](#). Meister said the current nomenclature to classify pitches actually is insufficient. He photographs his patients' grips and has seen four or five different grips for both sweepers and changeups.

Shortly before spring training, Meister shared his concerns on a Zoom call with two Major League Baseball executives involved in injury prevention, Kevin Ma and John D'Angelo. The session was part of a study the league is conducting on pitching injuries. The league has conducted approximately 100 interviews, its spokesperson said, from doctors and athletic trainers to independent researchers and college coaches to club executives and former pitchers. Once the study is complete, the league expects to form a task force.

Not everyone in pitching research and coaching agrees with Meister's belief that spin is more problematic than velocity.

"A sweeper is just a curveball with a different grip," one pitching coach pointed out, adding that [research is divided on the link between grip strength and spin rates](#). "And guys aren't screwballing their changeups to get this movement. For both pitches, they are leveraging the seams to get it to move differently."

Glenn Fleisig, Biomechanics Research Director for the American Sports Medicine Institute, also expressed doubt sweepers are cause for greater concern.

"We have not studied sweepers, per se, in the biomechanics lab, but we have shown in a number of studies that curveballs and sliders are no more stressful than fastballs," Fleisig said in an email.

“Therefore, I have no reason to believe sweepers are more of an injury risk factor than other breaking pitches or fastballs. The science points to three main injury risk factors — effort (velocity is an indication of this within pitchers), amount of pitching and mechanics.”

The caveat to research from Fleisig and others focusing on the risks of velocity is that at least [one study from Driveline Baseball](#) showed that stress on the elbow per mile per hour on the pitch is higher for secondary pitches like changeups and sliders. Thus, a pitcher who throws his slider as hard as his fastball actually will put more stress on his elbow.

It’s perhaps no accident that [Jacob deGrom](#), who throws his slider as hard as some pitchers throw their fastballs, has struggled to stay healthy. The higher the velocity, the greater the risk, no matter which pitch is thrown — and slider velocity around the league [has gone up almost two miles per hour](#) since baseball started publicly tracking it in 2007.

Many pitchers, viewing injuries as almost an occupational hazard, barely seem to care. Advances in “stuff” research, which attempts to value movement and velocity separate from results, show that harder breaking balls are better breaking balls, almost across the board. In addition, oft-injured pitchers often sign big contracts based on the quality of the stuff, not their durability. So, who is going to tell a pitcher not to be like deGrom? Who is going to advise one to avoid throwing a slider like Justin Verlander’s low-90s breaking ball?

[Tampa Bay Rays](#) president of baseball operations Erik Neander, whose team lost three starting pitchers to season-elbow injuries in 2023, said finding the optimal intersection between performance and availability is a challenge that extends all the way down to youth baseball.

“For the investment in the player and person and the care you pour in, it’s really difficult to see anyone get hurt and lose their opportunity to play,” Neander said. “How to balance that with giving them the best opportunity to compete and succeed at the major-league level, it’s a very difficult balancing act, one we obsess over. We’d love nothing more than to find a better way to do it that also allows them to have success.”

Right now, it isn’t happening.

Meister said an analyst with one club told him the average major-league career is now under three years for all players and just under 2.7 for pitchers.

“It’s like [NFL](#) running-back numbers,” Meister said. “Cynically from the ownership side of things, they’re never going to have to pay big bucks to any of these players. Forget about them becoming free agents. They’re never even going to become arb-eligible.”

Meister said for a time, he believed the league was comfortable with a “next man up” mentality. That disturbed him; only so many arms, he said, are capable of throwing at the major-league level. But lately, he is encouraged by the league’s effort to find solutions.

“What I’ve talked to MLB about is, look, we have all this data on performance. We also have all this data on health. We have to marry these two metrics,” Meister said. “I’m not going to sit here and tell you to never throw a sweeper or never throw a hard changeup. But at some point, you have to say, ‘OK, when we see a pitcher throwing that pitch more than 15 percent of the time, the likelihood of him having an injury to his shoulder or elbow goes (up), whatever, tenfold.”

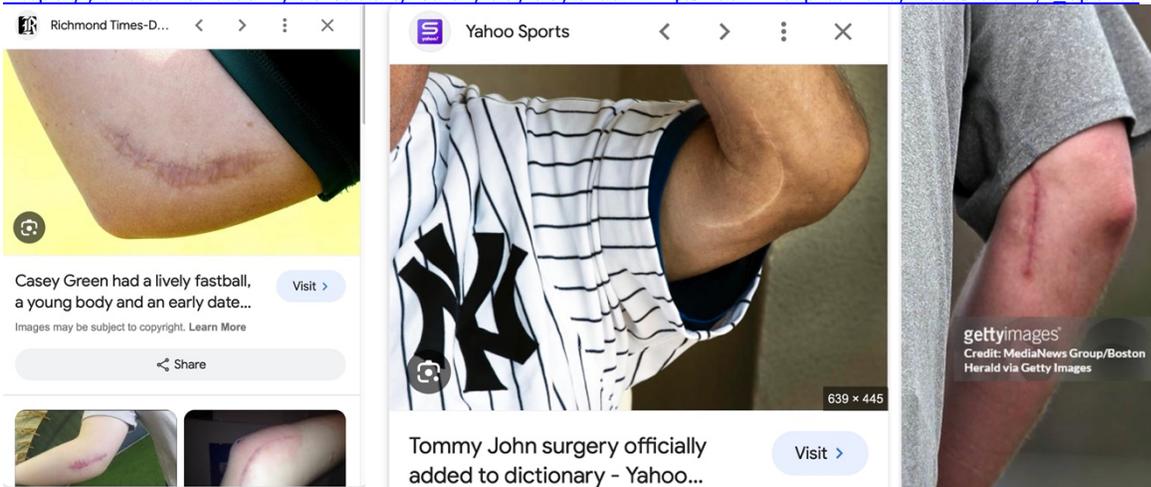
A return to the art of pitching might be one way to attack the problem. Neander said while teams know stuff is critical to getting major-league hitters out, “the ability to locate can make up an awful lot of ground for any deficiencies in stuff.” But for now, pitchers generally rely upon throwing every pitch as hard as possible, knowing it will produce the greatest benefits.

When talking last year about the effect of children throwing curveballs hard before a certain age, the San Francisco Giants’ [Alex Cobb](#) was succinct.

“I used to rip tons of curveballs in my little league game, then I went home and threw the football after the game because I was the quarterback too,” he said last year. “I threw as hard as I could all the time. Maybe you shouldn’t listen to me because I’ve had every surgery known to man ... but I also made the big leagues.”

(Top photo of Shohei Ohtani in August 2023: Brian Rothmuller/Icon Sportswire via Getty Images)

https://theathletic.com/5325032/2024/03/08/elbow-injuries-mlb-pitchers/?source=nyt_sports



Some pitchers end up with three of these scars. Each operation requires at least a year of rehab recovery to regain full strength. I wonder if PED Human Growth Hormone (HGH) shouldn't be allowed during recovery. TJB