Photography by Elizabeth Lavin

Dr. Keith Meister Wants to Fix

Baseball

The Rangers' doctor invented the state-of-the art surgical technique used to fix pitchers' elbows. He'd rather not do it.

By Mike Piellucci

JOINT EFFORT: By his count, Meister has operated on more than 2,000 elbows, saving more than 2,000 careers.

PITCH PERFECT: More than a decade removed from his career highlight in the World Series, former Texas Ranger Derek Holland sought out Meister after he ruptured his elbow while pitching for the York Revolution.

Derek Holland, once a major league stalwart, was on the mound for the York Revolution when his life seemed to fall apart. It was June 2023, and Holland had been pitching for the independent league team for all of two weeks. He threw an old standby, a slider, and felt like his arm disconnected from the rest of his body. Holland had ruptured his ulnar collateral ligament, a half-inch piece of connective tissue that looks like a snippet of flat pappardelle but functions as the elbow's linchpin. To repair it, he'd need Tommy John surgery, once a feared operation that has become commonplace.

Still, Holland was 37 and more than a decade removed from his career highlight: as a Texas Ranger, nearly shutting out the St. Louis Cardinals in a 2011 World Series game. What was the point in fixing his arm to get back to baseball's hinterlands? He knew the man he had to call.

At 62, Keith Meister could pass for the assistant manager of a Planet Fitness gym, fit and energetic in a way Holland describes as "like he drank 36 Red Bulls." Meister has served as the Rangers' head physician since 2004. He's also the founder of the Texas Metroplex Institute for Sports Medicine and Orthopedic Center, or TMI. But he's best known as the country's most sought-after medial elbow surgeon.

By Meister's count, he has operated on more than 2,000 elbows, which means he has saved more than 2,000 careers. He expects to operate on 350 elbows this year, a nearly 25–30 percent increase over the 240 he worked on a year ago. Rangers senior director of medical operations Jamie Reed, who recruited Meister from the University of Florida, estimates that Meister has operated on a player in at least 28 of the 30 MLB organizations by the season's three-quarter mark, a number Meister will neither confirm nor deny. Most of those operations are Tommy John surgeries. Six years ago, Meister revolutionized the procedure. In the world of baseball, it's like he invented cold fusion.

"He's the heir apparent to all of the baseball doctor gurus," says the recently retired Dr. James Andrews, Meister's mentor and the most renowned sports orthopedic surgeon in the United States. "There's never just one person in that category, but he's certainly at the top of the heap."

Meister's reputation wasn't the only reason Holland sought him out. The two had been friendly since Holland had broken into Texas' rotation as a 22-year-old. Meister, an avid cyclist, sometimes rode with Holland between his starts. Fish were a regular talking point. Holland has saltwater tanks, while Meister regularly scuba dives and shoots underwater photography. Meister had operated on Holland before, performing microfracture surgery on Holland's knee back when Meister still had the bandwidth to operate on lower extremities. Then his practice narrowed, and baseball lapsed into crisis. Now 80 percent of his procedures concern the elbow, with most of those being Tommy John surgery—which everyone in the sport considers a plague on baseball.

"If this were outside of the sport, and juvenile diabetes rates were where the Tommy John rates are, there'd be screams across the nation," Reed says. "'What's going on?' 'We've got to fix this epidemic.' But in baseball, we just seem to accept it."

Keith Meister doesn't agree.

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In 1974, another left-handed pitcher felt his elbow pop. Unlike Derek Holland, Tommy John, an ace for the Los Angeles Dodgers, had nowhere to turn. Orthopedic surgery was in its stone age, CT scans were in their infancy, and the first MRI of a human being was still three years away. There was no way even to visualize the scope of the damage to the ulnar collateral ligament after John, as he'd later tell *Sports Illustrated*, felt like he "had left my arm someplace else."

John refused to accept his plight. He begged Dr. Frank Jobe, the Dodgers' physician as well as his friend, to help him. But Jobe didn't really know how to—except for the bold idea of drilling four holes in John's elbow, plucking a tendon from his wrist, and threading it through in a figure-eight pattern to hold it all together. Jobe put the odds of success at 1 in 100—a medical Hail Mary. John, with nothing to lose and no prospects to chase, fixated on the 1.

What happened next lives on in baseball and medical lore. John returned to the mound in 1976, the first of 13 more seasons he'd pitch in the big leagues. He won more games after the experimental operation than before it, finishing his career just a dozen victories shy of baseball's hallowed 300-win club. Three months after the procedure, though, John required a second operation to reposition the ulnar nerve in his elbow, which left him with nerve damage that wouldn't fade for another year. His forearm withered. He couldn't wiggle his thumb. His pitching hand curled into a claw. Even though John eventually healed, the complications left Jobe unsure of the procedure he'd created. It would be another two years before he'd agree to perform it again.

That left plenty of room for improvement. Andrews, a protégé of Jobe, popularized a modification to transfer the nerve subcutaneously—below the skin—to avoid getting it trapped under the muscle, mitigating the nerve damage that could have retired John. Dr. David Altchek, a New York-based surgeon, created an alternative to Jobe's figure-eight called the docking technique, which split the muscles instead of detaching them, thereby requiring less drilling into the elbow. The surgery became more reliable and less brutal. Tommy John patients began dependably returning to the mound in 18 months, sometimes less based on how diligently they engaged in rehab.

In 2013, Dr. Jeff Dugas, an Andrews mentee like Meister, devised a solution for the growing population of athletes whose ligaments were damaged but not torn. They needed a treatment somewhere between rest and reconstruction. Both Jobe and Andrews had attempted ulnar collateral ligament repairs to poor results, but a surgeon in Scotland had achieved promising outcomes on the ankle through a new technology called the internal brace, which deploys sutures and a pair of anchoring devices. Dugas suspected the Scottish technique could translate to the elbow and "had this in the quiver waiting to go until I had the right person who needed it for the right reason." That person turned out to be a rising senior at Carroll High School in Ozark, Alabama, who wanted more than anything to pitch his final high school season. Eight months later, the kid did just that.

Less than four decades after being powerless to save its best arms from the worst injuries, baseball now had a reliable way to reconstruct a pitcher's elbow and a reliable way to repair it. The medical community had fixed the operation that fixed the athletes. They may have done their job too well. "People have started to think it's this magic elixir that makes you better," says Matt Snyder, who covers baseball for CBS Sports.

Last year, a report from the American Medical Association found that more than 35 percent of Major League Baseball pitchers had undergone Tommy John surgery, a 29 percent increase from 2016. In 2023 alone, more MLB players underwent the procedure than had players in almost the entirety of the 1990s. The number will rise. Baseball's brightest pitching talents cannot stay on the mound, their arms made brittle by throwing harder, with more ball movement, than ever before.

"What's going on now is not sustainable," Meister says. He feels compelled to use his pulpit to call baseball back from the brink. He badgers the Rangers' front office about the pitches thrown by the organization's players. He harps on MLB to implement a radical rule change that could, among other things, curtail the number of pitches thrown. He preaches the merits of his hybrid surgery on the medical convention circuit. And he pounces on media invitations that afford him the chance to educate a wider audience about the costs of stretching the game to its physical limits. Dr. Peter Indelicato, his former partner at the University of Florida, calls him a crusader.

Beyond that, though, he also has a special trove of data. He has photographed and documented about 1,200 of his elbow surgeries, putting him in possession of possibly the largest arm injury database in existence. That vantage point has directed him toward bold positions and big ideas, not all of which the sport is ready to hear.

"He's the reason why guys come back from a traumatic elbow injury," Reed says. "I think he'd like to be part of the reason why we have less elbow injuries."

Maybe he'll save baseball along the way.

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Twenty years ago, baseball saved Meister. There was always a ceiling at the University of Florida, where he'd worked since 1993, and he'd bumped into it. "I knew someday he would leave," Indelicato says, in search of more operating time, less bureaucracy, and, most importantly, someplace Meister could push himself.

The question was where. He'd already turned down an offer from Andrews to work for him, a golden ticket if ever there was one. He verbally accepted a job as head physician at the University of Virginia, where he once completed a fellowship, in 2003, only to change his mind because the vibe wasn't right. Gradually, Meister came to understand that "I needed to try and do it myself, my way. That's kind of always been the way I've been. I've never been afraid to try." Then the Rangers came along, offering him a chance to realize his dream of working in professional baseball while also providing Meister the latitude to be an entrepreneur and build his own practice.

Success demanded absolute commitment. He spent his first spring with the team flying between Arizona, where the Rangers held spring training, and Florida, where he was tying up loose ends. When he arrived in North Texas, he slept on a mattress on the floor of a mostly unfurnished apartment while trying to get his clinic operational. Once the season began, the team got its first taste of Meister's appetite for long, often punishing hours.

"It's unheard of for a head team physician in Major League Baseball to cover 81 home games a year," says Reed, yet there Meister was each night, as he would be for the next 17 years before finally dialing back his workload. He'd examine the players before first pitch, then pass the nine innings by lifting weights with Rangers assistant general manager Jon Daniels (and Daniels' predecessor, John Hart, before Daniels graduated to the team's general manager in 2005). When the game was over, Meister, Reed, and assistant trainer Kevin Harmon would "do our job, drink a beer or two together, and then do it again" the next day. Live that loop enough and you become "more of a comrade than a staff member," says former Rangers pitcher Colby Lewis, which

explains how Meister made the invite list for team icon Adrian Beltre's recent Hall of Fame induction.

The peak stretched from 2005 through 2008, when he took on a third job as the Dallas Stars' head physician. The Stars came within two games of the Stanley Cup Final that final year, which put him on site for about 150 sporting events for the calendar year, on top of full days at TMI, a schedule that Meister estimates had him working hundred-hour weeks.

All the while, Meister reserved his greatest hustle for building his practice. He'd speak at whatever Rotary Club would have him, hobnob with every athletic trainer he could meet. He kept a business card at the ready when he ate out. After he paid the bill, he'd leave the card behind with a note thanking the server for a great meal.

Andrews taught him the power of availability, how great orthopedic surgeons pick up the phone, so he learned to endure an endless barrage of calls and texts, which he tries to cut off sometime in the neighborhood of 10 PM. "I would always say every encounter you have is planting a seed," Meister says, "and you just don't know if that's going to be a weed or a bush or a tree or a forest."

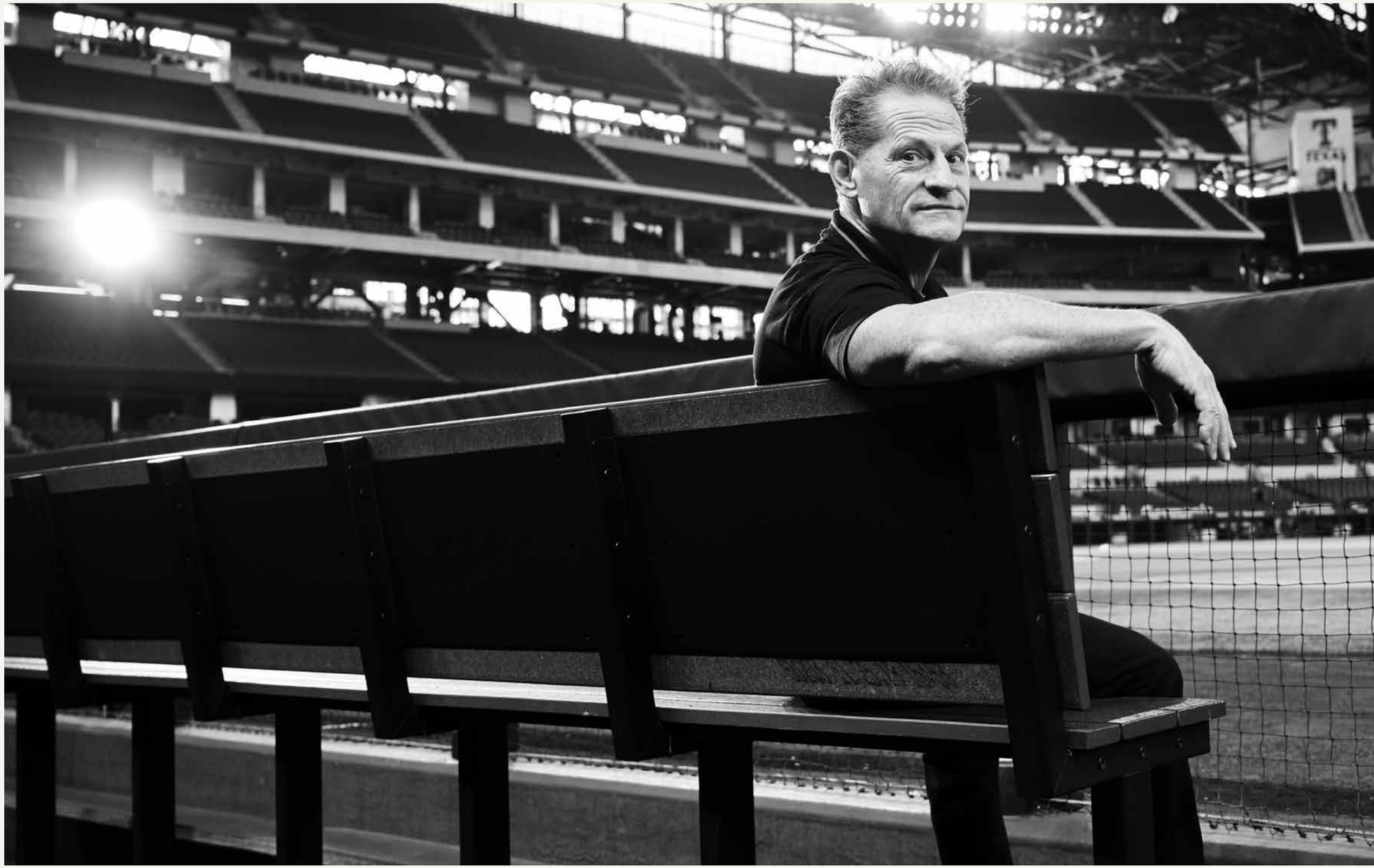
He kept sowing them until he willed TMI into the latter. Plenty of those business card recipients made their way to his clinic. So did a growing legion of professional athletes—many in the Rangers' clubhouse, many more not—who first popped into his training room on game days for a catchup or a checkup.

"Somewhere along the way, it went from 'Keith's going to be seeing our guys' to 'Keith's coming over and the opposing team is sending six guys over to see him,'" says Daniels, who overlapped with Meister for 18 years in the organization.

Many of their jerseys, inscribed with messages of gratitude, line the hallways of TMI's flagship location in Arlington. It's the only obvious indication that you are touring the go-to repair shop for athletes with blown-out arms. Meister does not keep an office on the premises—a waste of space, he insists. The conference room features blank walls and mismatched chairs—function over fashion.

When he bounds into a new patient's room, always in golf clothes and black On Clouds, he immediately begins searching for a touch point, common ground—where the player went to high school, perhaps, or who coached him in college. If the player is from the Dominican Republic, say, or Cuba, Meister will speak Spanish, a language his father insisted he and his three sisters pick up during their adolescence in Rye Brook, New York. Rarely does it take long to suss out a connective thread in a new relationship, because after three decades of traveling the country in athletic medicine, he knows someone everywhere, and, as Indelicato puts it, "you could talk to him about anything between sex and sauerkraut." Once Meister finds it, he'll usually make a note on that person's contact page in his iPhone, so he can lead with a personal touch whenever they reach out, no matter how long it's been. He has saved every thank-you card a patient has ever given him. "I just feel like somebody took the time to write this note to me, cared enough to write it. How can I throw it away?" he says.

Meister could make his job easier. He says he knows 95 times out of 100 what an elbow needs before he walks into a patient's room. He could get to cutting a lot faster. Instead, office visits that might really require only 15 minutes routinely stretch three or four times that long, even for cases like the college freshman in early August who got an appointment only after pulling strings. Questions are encouraged. Second opinions are welcomed. And if the patient finds a viable nonsurgical option? "I always say better the needle than the knife," he says. He's there if they need him, how they need him, including in each step of their rehab, the particulars of which he drew up, too. "They're his patients from day one until they finish their career," Reed says.



One patient stands out among the pack.

Kyle Cody intended to make his mark on the diamond in 2018. He had to settle for doing so in the operating room, as Keith Meister's Tommy John. Cody was 24 years old and fresh off being named the Rangers' Nolan Ryan Pitcher of the Year, awarded to the organization's top minor league arm. He ran 6-foot-7, 245 pounds, with a big fastball and, as Meister would learn upon scanning Cody's right elbow, a bigger

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problem. Cody needed an ulnar collateral ligament reconstruction, but there was a snag. A large chunk of bone wedged itself into the middle of Cody's ligament. Removing it with a traditional Tommy John would lead to significant tissue loss, the sort that the replacement tendon would stand little chance of compensating for on its own. But if Meister threaded the tendon and also reinforced the area with an internal brace? That might do the job.

Meister describes the origin of his surgical breakthrough, which will go down as the enduring moment of his career, like he was doing his taxes. "I had been doing internal brace repairs for about four or five years at that point, and they were doing very, very well. So I said, 'Kyle, I've been thinking about doing this for a while. This is what I'd like to do.' And I showed him—the good thing is I have all these pictures and things. 'This is what it looks like. This is what I anticipate we'd be doing. Are you comfortable with it?' [He said], 'I trust you.'"

The rest of the surgical world, on the other hand, finds it hard to overstate how big of a deal Meister's gambit became. He put his own spin on one of medicine's most famous surgeries—how many can you think of that are named after a person?—and improved it to a level that his data indicate between 92 and 95 percent of his patients not only make it back to the mound but return to their prior level of performance. Dugas calls him a pioneer. Andrews says, "He's changed the whole technology of what we do in the Tommy John theater to help get these players well." Andrews, himself a legend, says that Meister "could very well be better than I ever was." Peers who have watched him perform the operation come away describing his technique almost like a waltz. "Everything is so choreographed," says Dr. Shane Seroyer, one of Meister's partners at TMI. "Everything is perfectly positioned. Every movement is thought out."

To stand in Meister's operating rooms—he runs two simultaneously, his team prepping a patient in one room while he cuts in the other—is to watch a fragile, intricate process seem as routine as swapping out an air filter in your attic. The first pair of hybrid surgeries he performs on a Wednesday morning in August are indistinguishable from one another, apart from the second patient, a reliever pitching for one of baseball's most storied clubs, also needing his flexor tendon repaired. Meister makes the same 6-centimeter incision, places the same array of four stitches beneath the skin and two more around the ligament itself, and snaps a set of 20 photos (plus a video) to form the latest dossiers for his database.

He requires only two accommodations over 100 minutes of operating time. First, he asks someone to please adjust a piece of medical equipment near his left boot. (He wears white shrimping boots to keep his feet dry should any saline solution hit the floor.) Second, he asks them to crank up the tunes, which skew toward rock ranging from The Beatles to Foster the People.

When it's over, he scans a QR code containing a link to the photos, which he sends to the players' respective organizations. Then it's off to return messages before the next pair of procedures. The operating theater he leaves behind is nearly spotless.

Pitching's new world order crystallized for Meister sometime around the start of the pandemic, when the scans he examined each day began to look like blast sites. Elbows weren't just tearing more frequently; they were tearing differently, too.

Meister subscribes to the notion that there is no single reason behind the spike in elbow injuries. Catch him with time on his hands, such as a recent Wednesday afternoon after surgery, still in his scrubs as he reclines in one of the oddball chairs in TMI Arlington's conference room, and he'll tell you about them all. The mechanics of a pitcher's delivery are a factor. So are how hard and how often a pitcher throws, especially when it starts at the youth level, where more and more kids pitch year-round. He rips off a stat he got from a friend: in 2013, three pitchers threw 94 mph or harder at the Perfect Game National Showcase, high school baseball's premier meat market for college and pro scouts. Eleven years later, with better training and less fear of the physical repercussions, the number was 54.

"You can't drop a V12 in a Volkswagen," he says. "It doesn't work well."

He loathes MLB's decision to crack down on the use of sticky substances to help grip the baseball, which led to pitchers overcompensating by clamping tighter on the ball and tensing the forearm muscles on every throw. And he bemoans the decline of the craft of pitching, how teams run down their arms by pushing them to throw every pitch at maximum effort instead of pacing themselves through an outing. Meister refers to the practice as "redlining," the way a muscle car pushes its throttle to the limit.

"There's no investment in teaching guys how to pitch," he says. "They're teaching guys how to throw."

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FINAL EXAMS: Meister routinely checked out Rangers pitchers such as Colby Lewis before they took the mound, then passed the nine innings by lifting weights with the assistant general manager.

But more and more, he believes the greatest culprit in the elbow injury epidemic might be spin rate. The term first reached the public lexicon in 2015, when MLB unveiled Statcast, a data suite derived from a series of high-speed cameras that measure most everything on the field of play down to the millimeter. While MLB teams likely had similar technology on a proprietary level, Statcast democratized the previously unknowable. It created a new set of benchmarks to fetishize, from the exit velocity of the ball off a bat to a base runner's sprint speed to the extension a pitcher gets off the mound. Spin rate, which measures a ball's revolutions per minute, is among the most important.

Try as every pitcher might, not everyone can harness the velocity to transform their fastball into a weapon. Spin pries open another door for success. If you can't outmuscle them, deceive them. A new class of pitches has been engineered accordingly. The sweeper, the most ubiquitous of the lot, jolts out of the pitcher's hand like a flying saucer on nitrous oxide. Power changeups remix your uncle's classic slow ball with as much as 10 mph more velocity and way more movement. "Designer pitches," Meister calls them, a note of derision in his tone.

The starting point to harness one is a "death grip on the baseball." Then, upon release, comes the eccentric contraction, which Meister describes thusly: "The muscle is still contracted, but it's lengthening, so it just rips everything off the medial side of the elbow." If it sounds grueling, that's because it is. But in 2022, MLB pitchers threw more off-speed pitches—non-fastballs—than heaters for the first time in the game's history. The ones who lean hardest on spin over speed? "They're all going to break," Meister says. He knows what he'll find when they do. "I can tell you, looking at an MRI scan, what kind of pitch that guy just threw," he says. "It's that predictable."

Here is where he loses some people. More than one baseball analyst has noted that a smattering of pitchers, such as former Rangers ace Yu Darvish, dabbled with the sweeper well before it became in vogue. Dr. Glenn Fleisig, the director of biomechanics research at the Andrews-founded American Sports Medicine Institute and one of sport's leading biomechanics experts, is open to the idea that Meister could be right. But he also hears echoes of the panic he helped debunk two decades ago about a different pitch, the curveball, heightening injury risk. "We've changed the word from 'curveballs' to 'sweepers'," he says. "I still think it's how hard you throw and whether you have good mechanics in general. I don't think it's a type of pitch."

The Rangers, though, appear to be listening to their doctor. It is probably not a coincidence that Texas threw fewer sweepers than any other team in 2023. But Meister has examined enough pitchers in the team's farm system to understand that more designer pitches are coming to Globe Life Field. He recalls a conversation with an unnamed member of the team's front office in which he challenged the executive to explain why he'd allow so many minor leaguers to throw pitches their bodies are too immature to handle. We give them a choice, the doctor was told. The pitcher can pick the safest health outcome and maybe top out with the Frisco RoughRiders, or they can deploy every tool available and have a serious shot at the big leagues.

"That's not a choice," Meister says now, his eyes flashing anger, a crusader on the march. "That's irresponsible." He points to Dane Dunning and Cody Bradford, relatively soft-tossing twentysomethings in Texas' rotation, as proof of an alternative in the team's own midst. "The bullshit I get oftentimes is 'Oh, they're outliers,'" he says. "They're not outliers. We just need to take the time to develop them."

If he's losing the battle, he's refusing to concede ground. He serves on an MLB task force investigating the injury epidemic, and he has proposed a rule to ban foul balls on two-strike counts, which would amount to the most dramatic change in how the game is played in decades. At first blush, it seems outlandish, then much less so as he bores into its potential to cut down pitch counts, push hitters to put more balls in play, and shorten games in one swoop.

"I've even got Max Scherzer saying, 'You know, that's not such a bad idea,'" he says of the Rangers' future Hall of Fame pitcher. "And Max doesn't agree with anything."

Absent reform on that level, Meister wonders if agents, not teams or players, are the ones who might finally restore order in the system by hiring outside pitching coaches to tutor their clients on marrying results with sustainability, since the longer they stay healthy, the more guaranteed contracts—and commissions—there are to go around.

It's drastic stuff, most of it well beyond the scope of conventional baseball wisdom. But that doesn't mean he's wrong, especially when it comes to the root causes of the epidemic he treats better than anyone. The reality, Daniels says, is Meister "has a different perspective on it than just about anybody else in the world. … He might be out there a little bit ahead of the curve on some of his observations and his thesis or hypothesis on why this is happening."

The question is how much time he has to wait for everyone to catch up. The status quo isn't sustainable for Meister, either, with its swollen surgery schedules and fuzzy separation between professional and personal time. He daydreams about scaling back. He'd like to teach, be it the hybrid technique at the operating table or orthopedic science in university lecture halls as an adjunct. Both, ideally. "I feel like I've got something to give back," he says.

All of that makes Indelicato, his old partner, chuckle. "I'll tell you a secret: Keith has been saying that for 10 years," he says. No one can ease his load unless Meister agrees to slough it off, to pull back from the front line. And as Seroyer, his current partner, says, "I don't see how he can back off right now because he's changing things. He's single-handedly advancing the way we're treating them."

By the time you read this story, dozens more pitchers will have turned to Meister to save their professional futures. There will be dozens behind them, too, with untold dozens more on the horizon. There is no eradicating this problem. There's not even a consensus on what containment looks like. There is only the pursuit of better, undertaken by those unwilling to shrug and accept less. Somewhere in America, a young man hurt his arm today. In Arlington, Keith Meister will grab his scalpel, raise his voice, and get to work. D

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