

Best of BP 2015: Setting Up the Spike

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With the year winding to a close, Baseball Prospectus is revisiting some of our favorite articles of the year. This was originally published on August 24, 2015.

Four years into his professional career, Oakland's [Jose Torres](#) was still a project. He'd shown some feel for pitching, but his mechanics were messy and his numbers had gone backward in his second spin through short-season ball. The A's weren't sure what to do with him in 2015.

But Torres arrived a new man at spring training. His back leg, long an anchor dragging through the dirt behind him, flowed smoothly as he completed his delivery. Even better, his ho-hum fastball had a new gear.

"He showed up throwing 94, 95," said [Garvin Alston](#), Oakland's minor-league pitching coordinator. "We were pleasantly surprised."

All teams want their pitchers to throw hard. Today's low run-scoring environment correlates strongly with a [league-wide uptick in fastball velocity](#) and seemingly every club has a flamethrower or three on its roster. Some of them threw 96 from the day they signed a professional contract. Others are developmental successes, the product of mechanical instruction and hard work from both the player and the development staff. Not all teams develop hard throwers in equal measure, however. Some are better at developing velocity than others, and the clubs that proactively build arm strength and emphasize throwing hard as part of the developmental journey get the most gas from their farm system as a whole.

Trite as it sounds, nobody develops a better fastball without working hard away from the field. Take Torres: Last summer, coaches identified his leg drag as a mechanical flaw that slowed his momentum, affected his release point, and limited his velocity. To fix it, Torres spent months reworking his motion, meticulously practicing it in shadow drills without a ball and while he played catch before games. After working on it all winter and spring, he's still improving—his pitching coach in Beloit, Steve Connelly, thinks he has more velocity in him—and the timespan underscores the discipline required to improve. Not everybody can or will put in the work.

The [Cleveland Indians](#) try to help their prospects do that work, proactively training their pitchers to throw harder. Increasing velocity is one of the club's biggest developmental objectives, and to make it happen, the Indians have implemented one of the sport's most innovative training philosophies. "We try to enhance our pitchers' flexibility, explosion, and athleticism," says [Ruben Niebla](#), the team's minor-league pitching coordinator. Listening to

Niebla, it's apparent that the days of the pitcher as a non-athlete are long gone. In today's game, a pitcher's coordination, work ethic, and athleticism are practically as important as his breaking ball, and all three attributes are integral to adding arm strength: "If we are able to get the most out of their bodies then we feel that we will be able to get max velocity out of their arms," Niebla says.

The work to develop velocity begins in the offseason, when pitchers are encouraged to add strength and are allowed to follow their own throwing programs. Through it all, Cleveland's coaching staff stays up to date with what each of their pitchers are doing: "It's important that our coaches have open lines of communication with the players," Niebla says. "The younger the player, the more instruction and guidance they will need." The obvious model is [Trevor Bauer](#), who, to the consternation of his previous employer in Arizona, has long followed his own conditioning program. But where the Diamondbacks squirmed at Bauer's unconventional regimen, the Indians embraced him: Pitching coach [Mickey Callaway](#) even [flew out to Driveline Baseball](#), Bauer's training facility in Seattle, to learn more about the program.

All of Cleveland's minor-leaguers participate in drills to help them throw harder. The Indians don't have any inhibitions about long toss and they let their pitchers play catch without distance restrictions. (The club does monitor the total number of throws its pitchers make.) Pitchers use crossover symmetry bands to strengthen their elbows and shoulders and follow an in-season throwing program with weighted balls to help them maintain and enhance their arm strength. The drills also condition players for the rigors of big-league work. "We're building their bodies to be able to handle the workload and we push pitchers to give their maximum effort," Niebla says.

Niebla makes it clear that the Indians don't seek velocity at the expense of everything else. Much of the mechanical work the organization's coaches implement in their pitchers is designed with command and consistency in mind, and Niebla certainly doesn't want anybody sacrificing their control for an extra tick on the gun. "Adding a single mile- or five miles-per-hour is important but not the difference-maker for being a successful big-league pitcher," he says. For all of the emphasis on command, though, the simple truth inherent in throwing hard pushes the Indians to get the most velocity they can out of their pitchers. "Subjective and objective data prove that velocity gives you more room for mistakes in command and it helps with missing bats. All pitchers across the board benefit from velocity."

The [St. Louis Cardinals](#) share similar values with Cleveland when it comes to developing pitchers. Chief among them is a willingness to embrace pitchers with their own workout programs, an emphasis on athleticism, and a focus on keeping pitchers healthy. The three traits work hand in hand.

St. Louis' minor-league pitching coordinator, Tim Leveque, says that the Cardinals have few hard-and-fast rules for development. "We really try to individualize. Timing, space, tempo, and rhythm are universal pitching principles, but you have to know a guy's mental approach to pitching, his age, his routines." That philosophy not only applies to a pitcher's

mechanics, but also his workout program. Asked about how he'd handle a pitcher like Bauer in his organization, Leveque said, "You have to want to pick his brain. You don't go in there with an iron hammer and say, 'You can't do this!'" He paused to chuckle. "You have to get to know why he does what he does. You have to have an open mind." That mentality allows the Cardinals to foster pitchers in a supportive environment, and it also potentially gives the team insight into how players with unconventional regimens succeed.

Leveque frames the velocity discussion differently than Niebla—"I look at it through the prism of maintaining velocity"—but he and the Cardinals know the importance of throwing hard and have honed in on athleticism as a particularly desirable trait. For St. Louis, it's not just that athletic pitchers can get more out of workouts or make mechanical adjustments quickly: They might also be better bets to stay healthy.

As average fastball velocity has risen over the past decade, the frequency of major arm injuries and [Tommy John](#) surgeries has exploded alongside. Teams training their pitchers to add velocity do so with the knowledge that they are [stretching the physical limits of elbows and shoulders](#) to the breaking point. Nobody knows how to halt the epidemic, but the Cardinals are hoping that signing good athletes can help. "We feel strongly about drafting and signing athleticism," says [Gary LaRocque](#), St. Louis' farm director. For the Cardinals, it's important that their pitchers don't feel pressured to overexert themselves, and having the athleticism to perfect their deliveries is crucial. "We want them to stay within the realm of their own athleticism, within their own body movements" LaRocque adds. As more and more hurlers work near the top of the theoretical velocity band, it has become increasingly important for them to have clean throwing motions and to develop good throwing habits quickly.

Leveque's open-minded approach suggests that there isn't a roadmap or a "right way" to developing velocity. From a macro perspective, that seems right: Each individual pitcher is too different for a velocity blueprint to function at an organizational level. Rather, the teams that develop velocity best are the ones that intentionally build arm strength and provide flexible training plans for their pitchers. It stands to reason that these clubs will see more pitchers enhance their fastball than clubs taking a more conservative approach to development. In fact, muddled as it is, there is evidence to support this theory: Of the [30 hardest-throwing starters](#) in baseball, the Indians helped develop four of them.

The A's, by contrast, only have one in the top 50. Jose Torres' development demonstrates the inherent unpredictability in getting a prospect to throw harder. Not many pitchers add heat to their fastball once they turn professional, and plenty of organizations make a calculated decision to emphasize command, control, and smooth mechanics over a potentially futile effort to coax more arm strength out of their pitchers. The A's are one such club.

Oakland's minor-league pitchers have a strict throwing program geared toward helping them develop and maintain clean mechanics. Pitchers are not allowed to throw long toss any farther than 150 feet—"We start to see a pitcher's mechanics break down around 130 feet," Connelly says—and all of them perform the same shadow drills and warm-up

routines designed to make their throwing motion second nature. Even pregame bullpen sessions are regimented. The goal is to help pitchers learn to align their upper and lower halves in a repeatable motion while improving their command and feel for sequencing. “Everyone wants velocity,” Alston says, “but we won’t put it over movement or command, things that make you a complete pitcher.”

That’s not to say the A’s ignore potential velocity climbers. “We look for guys with good hand speed, guys who can put a lot of backspin on the ball,” Alston says, referring to the types of pitchers who could benefit most from cleaner mechanics. Potential velocity climbers aren’t singled out for special drills that soft-tossing prospects don’t have access to, though. “Our training philosophy doesn’t vary depending on the player or level,” Alston says. “It’s our job as coaches and instructors to give everybody the same information.” As with Torres, an uptick in velocity is often the byproduct of improved mechanics rather than a developmental goal itself.

None of this means that the A’s and other conservative teams are destined to develop worse pitchers: There’s more to pitching than velocity, and an emphasis on command and sequencing certainly could help middling prospects elevate their performance just as much as an extra tick on their fastball would. But as the league strikeout rate surges and the average heater clocks a little faster every year, there’s real value in knowing how to develop velocity effectively. Not every pitcher who joins a major-league organization has the potential to throw harder. Plenty of them do, though, and the team that can best extract velocity from its personnel will hold a tangible advantage over the rest of the league.