



## SPIN DOCTOR

Dodger reliever Yimi Garcia shows what a lot of extra rotation can do

BY MIKE PETRIELLO

In the autumn of 2013, Yimi Garcia, then an unheralded prospect coming off a quietly successful year in Double-A, headed off to the Arizona Fall League. He pitched only 12  $\frac{2}{3}$  innings for the Glendale Desert Dogs, yet he still managed to put up a number so impressive that it vaulted his name into must-know status, at least among certain baseball circles.

Garcia's notable number that fall wasn't wins (he had zero in the AFL), saves (one) or even ERA (2.84). It was 2,504, as in revolutions per minute (RPM), measuring the rate at which his fastball spun as it made its way to the plate.

That number, as reported in a December 2013 *Baseball Prospectus* article that was among the first to publicly display spin rate, was well above the (2015) Major League average of 2,226 RPM and was one of the highest tracked from any pitcher in the AFL that year.

Garcia's high spin rate made it clear that something about him was unique, but the connection it had to on-field performance at the time was uncertain. Two years later, Garcia's first full season in the big leagues coincided with the first full season of Major League Baseball Advanced Media's Statcast tracking system, a combination of cameras and radars that collect data on everything from foot speed to exit velocity and spin rate. Among the many things learned from the unimaginable amounts of data that came flooding in: High amounts of spin on fastballs correlate well with swinging strikes.

There's perhaps no pitcher for whom that's more relevant than Garcia, because among the 188 pitchers to throw at least 500 four-seam fastballs in 2015, Garcia's spin rate of 2,531 RPM was second-highest. But since top-ranked Rafael Betancourt retired over the winter, it's fair to say that Garcia entered 2016 with the highest-spin

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fastball of any regular pitcher in the Majors.

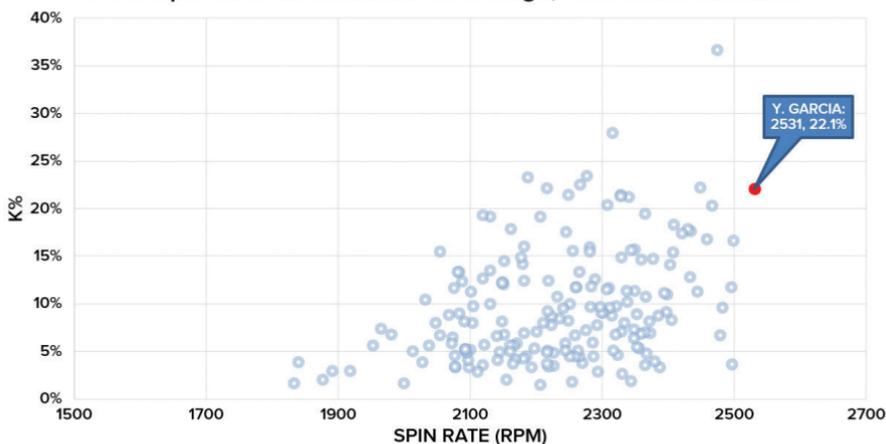
So why does spin matter so much? It goes a long way towards explaining how a pitcher whose fastball velocity was good (93.9 mph) but hardly elite (MLB pitchers average 92.9 mph) finished his first full season in the big leagues with 68 strikeouts in 56.2 innings for the Dodgers. Garcia's strikeout rate of 30.2 percent was better than that of ace starters Stephen Strasburg and Jose Fernandez or top closers Trevor Rosenthal and Ken Giles, all pitchers who easily outshine him in velocity.

A big part of that goes right back to spin rate. A fastball comes out of a pitcher's hand with backspin, which means that the top of the ball is spinning back towards the pitcher, from his perspective. Due to the effects of gravity, all fastballs will drop somewhat on their way to the plate, but the added backspin on higher-spin fastballs can negate that effect for slightly longer, often meaning that the ball arrives several inches higher than a batter expects it would. If the batter then swings under the ball, that leads to swinging strikes (or pop-ups, which are essentially strikeouts).

That all held true for Garcia. In addi-



**2015 Spin Rate vs. Strikeout Percentage, Four-Seam Fastballs**



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Yimi Garcia's high spin rate on fastballs was a big reason for his high strikeout, flyball and pop-up rates in 2015. Conversely, Brett Anderson's low spin rate led to a high groundball percentage.

tion to the very good strikeout rate, his flyball percentage of 54.2 was well above the Major League average of 33.8 percent; his infield fly percentage (i.e., pop-ups) of 14.1 percent was clearly above the MLB average of 9.5 percent. You would expect a pitcher with elite spin to generate strikeouts, flies and pops, and that's precisely what Garcia did.

Now, it's not quite as simple as "higher equals better," like you would expect with pitch velocity or baserunner foot speed. Having a very low-spin fastball can be a benefit too, because it will have the opposite effect, in that it will sink sooner than a hitter is accustomed to, and that leads to a lot of poor contact on the top of the ball, which generally turns into grounders. That's how

Dodger starter Brett Anderson had the highest ground ball percentage (66.3) of the 89 pitchers who threw 150 innings — he had the second-lowest four-seam spin rate, at 1,836 RPM. Really, the worst thing you can have is average spin, because that means your fastball doesn't move much at all, making it hittable even at high speeds.

Ultimately, spin rate is another piece of the pitching puzzle, just like velocity, control, deception and sequencing. But it didn't take us very long to learn just how important a piece it is — and teams are already using it to find the next generation of great pitchers. "You can't teach velocity," goes the saying, yet you know it matters. Considering how Garcia was identified, that might hold true for spin as well.

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