Part 4 of The Hitting Spectrum Series

The Development Gap

How Baseball's Player Development System Is Recycling Players Through Undiagnosed Problems

By Dylan Allread | Analytical and writing support by Anthropic's Claude | July 6 2026

MLB & MiLB data: baseballsavant.mlb.com | Stance data: baseballsavant.mlb.com/visuals/batting-stance

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Jimmy Crooks scores 86.1 on The Steeps algorithm. The highest score in baseball. His whiff rate on offspeed pitches is catastrophic. His attack angle is well above league average. The mechanism destroying his production is specific, measurable, and diagnosable from publicly available Statcast data.

He also appeared on the MiLB callup candidate list generated by the same framework.

Those two facts sitting next to each other are the most important finding in this entire series. Not because the algorithm is contradicting itself. Because it is revealing exactly how the player development system fails.

The MiLB callup algorithm flagged Crooks as a candidate because the minor league dataset does not contain attack angle data, bat speed tracking, or contact point measurements. It only saw his production numbers, which looked acceptable at the minor league level where pitching is less sophisticated and defense is weaker. The full This Is The Place Score, the one that catches The Steeps, requires inputs the minor league evaluation system does not systematically collect or apply.

He got called up. MLB pitchers buried changeups and ran sweepers past him at a 54.3% whiff rate. Nobody had the framework to see it coming. And when it happens to the next Crooks, and the one after that, the system's response will be the same: send him back to the minors to work on his hitting.

That is not player development. That is player recycling through an undiagnosed problem.

The Cycle Nobody Has Named

Here is how the current system actually works for a hitter with an undiagnosed Contact Cliff or Steeps problem.

A prospect produces in Triple-A. His K rate is acceptable. His exit velocity is real. His wOBA looks like an MLB hitter. The organization calls him up.

He struggles in MLB. Pitchers have better stuff, better sequencing, and several months of scouting data that identifies his vulnerability. The Contact Cliff hitter gets a steady diet of slow pitches that give his hands time to manipulate. His contact rate stays high and his production stays weak. The Steeps hitter gets fastballs high to establish the plane, then changeups and sweepers low to

exploit the hole. He misses. A lot.

The organization sends him back down to work on his hitting. The development coaches in the minors work on what they can measure: visual swing mechanics, launch angle off the tee, pitch recognition drills, approach adjustments. They do not work on the Contact Cliff deceleration gap because they have never heard it called that and they do not have a tool that measures it at the minor league level. They do not address The Steeps attack angle problem with the precision the framework requires because nobody named the mechanism and built the diagnostic around it.

The player works hard. He is a professional. He does everything the coaches ask. His MiLB numbers improve or hold steady because MiLB defense and pitching do not exploit the flaw as systematically as MLB does. He gets called up again. The same underlying problem is still there. The cycle repeats.

This is not a hypothetical. It is the documented career arc of dozens of players every season. The names change. The mechanism stays the same. The sport calls it the learning curve or the adjustment period or the need for more development time. It is actually a failure to diagnose the correct problem before sending a player back to work on the wrong thing.

What the Data Gap Looks Like in Practice

The minor league dataset used throughout this series contains 955 hitters with meaningful plate appearances. It includes wOBA, xwOBA, K rate, whiff rate, ISO, hard hit rate, exit velocity, and launch angle.

It does not contain bat speed tracking. It does not contain attack angle measurement. It does not contain contact point data by pitch velocity bucket.

Those three missing inputs are precisely the inputs that diagnose the Contact Cliff and The Steeps.

The Contact Cliff is identified by: bat speed declining faster than aging predicts, a widening deceleration gap between bat speed on slow pitches versus fast ones, and a growing contact point spread between slow and fast pitches. None of those are measurable from the available MiLB dataset.

The Steeps is identified by: attack angle above league average, a climbing launch angle trajectory across seasons, and a catastrophic whiff rate on specific pitch types. Attack angle is entirely absent from the MiLB data. Launch angle is present but without the multi-year trajectory in a single dataset the trend is harder to establish. Pitch-type specific whiff rates require more granular data than aggregate season statistics provide.

The result is that the two most specific and most fixable production failure modes are essentially invisible to the minor league evaluation system as currently structured. The organization can see that a hitter is struggling. It cannot see precisely why in the way this framework can. So it responds

with general development interventions that address the visible symptoms rather than the underlying mechanism.

The Specific Cost

The cost of this gap is not abstract. It plays out in two concrete ways.

The first is misdirected development time. A Contact Cliff hitter sent back to the minors to work on being more aggressive is being given advice that will make his problem worse. Aggression is not the issue. The hands are too good at finding the ball. The fix is environmental: move forward in the box, compress the manipulation window, force commitment to the swing path. If the development coach instead works on load timing, hip rotation, or attack angle because those are the visible mechanical variables, the behavioral drift continues to compound across hundreds of additional at-bats in the development environment.

A Steeps hitter sent back to work on pitch recognition against offspeed is getting advice that addresses a symptom rather than the cause. Yes, pitch recognition is failing on offspeed. But it is failing because the swing plane is optimized for a pitch type that arrives higher in the zone, and the changeup that drops through the hole beneath his hands is a mechanical problem as much as a recognition problem. Working on recognition without addressing the attack angle is treating the fever without treating the infection.

The second cost is roster inefficiency. Every time an organization calls up a player who fails at the MLB level due to an undiagnosed mechanism, then sends him back down and cycles through the process again, they are spending a roster spot, service time implications, and development resources on a problem they are not solving. The player is not improving on the specific dimension that matters. The team is not getting the production they need. Both sides lose.

The MiLB This Is The Place Problem

The callup candidate list generated in this series illustrates the gap precisely.

The modified MiLB This Is The Place Score can only use the metrics available: wOBA, xwOBA, K rate, whiff rate, ISO, hard hit rate, and exit velocity. Without bat speed, attack angle, and contact point data, it is running on roughly half the diagnostic inputs the full framework requires.

That partial score is still useful. It identifies players producing above MiLB average with controlled contact and power metrics. It flags the defense caveat where MiLB defensive quality may be inflating wOBA beyond what xwOBA predicts. It surfaces names that deserve attention.

But it cannot catch the Jimmy Crooks case. It cannot identify the Contact Cliff hitter whose deceleration gap has been widening for three seasons. It cannot flag the Steeps hitter whose attack angle trajectory is heading toward catastrophic offspeed failure at the MLB level. Those require inputs that are not in the MiLB dataset.

An organization with Hawk-Eye data at the minor league level, which most organizations now have at least at Triple-A, could run the full diagnostic. Bat speed tracking exists in the Hawk-Eye system. Attack angle is derivable from the same skeletal tracking that produces contact point data. The inputs are there at the organizational level. The framework to apply them now exists in this series.

The gap is not technological. It is conceptual. Nobody was asking these questions systematically before the Contact Cliff, The Steeps, and the This Is The Place framework gave them names and algorithms.

What Good Development Would Look Like

If an organization implemented this framework across its minor league system, the development process would change in three specific ways.

Before any callup decision, every position player at Triple-A would receive a Contact Cliff Score and a Steeps Score calculated from their Hawk-Eye data. A hitter with a CC Score above 35 would receive a box position adjustment before the callup, not after the struggle. A hitter with a Steeps Score above 40 would receive targeted offspeed work that explicitly addresses the attack angle mechanism, not generic pitch recognition drills.

During development, the deceleration gap would be tracked as a leading indicator alongside bat speed. A young hitter whose decel gap is widening from 1.5 MPH to 2.5 MPH to 3.5 MPH over three seasons is climbing the Contact Cliff regardless of what his slash line looks like. That trend is the early warning system the current framework does not have.

When a player does struggle at the MLB level and gets sent back down, the diagnostic would happen first. Which failure mode is active? Is the CC Score elevated? Is the Steeps Score elevated? Is the This Is The Place Score deteriorating? The answer determines what the development team works on. Not the visible symptom. The underlying mechanism.

None of this requires new technology. It requires new questions applied to existing data.

The Uncomfortable Truth

The minor league development system is sophisticated in many ways. Organizations have invested hundreds of millions of dollars in technology, analytics infrastructure, and coaching expertise. The quality of player development has improved significantly over the past decade by most measurable standards.

And yet the Contact Cliff and The Steeps have been operating undetected throughout that same period. Players have been cycling through the system with undiagnosed failure modes while coaches worked on visible mechanical variables and approach adjustments. The data to name these mechanisms was always available. The framework was not.

This is not a criticism of the coaches or the analysts. They were working with the questions they had. The Contact Cliff and The Steeps are not obvious from visual observation or conventional metrics. They require specific diagnostic inputs applied in a specific way. That framework is what this series provides.

The question now is how long before the sport builds it into the development system.

A player bouncing between Triple-A and the majors, never quite sticking, working hard on the wrong thing while coaches try to help with the tools they have, deserves better than that. The data has always been there. Now the questions have names.

The Development Gap is closeable. The tools exist. The framework exists. What remains is the willingness to ask different questions of data the sport already has.

The Missing Coordinate, Again

The first piece in this series observed that the batter's box stance data has been publicly available at Baseball Savant throughout the period this research covers. Nobody built a prescriptive framework around it because nobody was asking the question.

The Development Gap is the same observation applied to the player development system. Hawk-Eye data at Triple-A has been available to organizations. Bat speed tracking exists. Attack angle is measurable. Contact point by pitch velocity is derivable. The inputs for the Contact Cliff Score and The Steeps Score exist in the organizational data infrastructure.

The framework to convert those inputs into a development diagnosis did not exist until this series named it.

The most important work in player development right now is not adding new technology. It is asking new questions of the technology that already exists. A player sent back to the minors deserves a diagnosis, not just a prescription to work harder on the things the coach can already see.

The sport measures everything. It has not yet learned to ask everything.