

ARM SLOT

Who Should *Drop*

The league is going low and the data supports it: a tick of velocity traded for more spin, a flatter angle and a lower elbow bill. But the same change produces the opposite kinetic result in high school pitchers, and one wrist measurement decides whether it works at all.

OUTLIER PERFORMANCE LAB BIOMECHANICS LIBRARY

Lowering the slot is one of the few changes in pitching with a **clean published price and a clean published return**. It is also one of the few where the answer flips depending on who you are.

The trade at the professional level is small velocity for better shape and less arm stress, which is close to a free lunch by the standards of anything else in this library. But arm slot is partly an expression of how a body organises movement rather than a choice, one wrist measurement gates whether the new position keeps its spin, and the high school data runs the other direction on elbow load. All three have to be checked before the change is worth making.

What dropping the slot actually bought

Averages across pitchers who lowered it. Small numbers individually, and they point the same direction together.

THE TRADE, ON AVERAGE		
WHAT CHANGED	BY HOW MUCH	WHAT IT MEANS
Velocity	about 0.15 mph lost	The cost, and it is remarkably small. Well inside the noise of a single outing.
Fastball spin	about 18 rpm gained	More of the spin ends up doing work rather than being wasted, which is what changes how the pitch plays.
Approach angle	flatter	The pitch arrives on a shallower line, which is what makes a four seam play at the top of the zone against a swing built for a normal descent.
Elbow load	about 4 percent lower	The part that gets least attention. A change that improves the pitch and reduces the bill at the same time is rare enough to be worth noticing.

Why a flatter angle is worth a tick

A hitter's swing plane is built around the descent angle he expects. A ball that arrives flatter than that plane anticipates behaves, from his point of view, like it rose. Nothing physically rises. The pitch simply fell less than the swing was organised for.

Which is why this change is worth more to some pitchers than others. If he lives at the top of the zone, a flatter angle is the whole game. If he lives at the knees trying to get under barrels, flattening the angle removes the thing that was working.

The gate: wrist range

Check this before anything else

Dropping the slot changes where the fingers sit on the ball at release and how the seams are oriented when it leaves. Keeping the spin working through that new position takes **wrist tilt toward the thumb**. Without the range, the slot change does not reshape the pitch. It subtracts it.

This is a prerequisite screen, not an afterthought. A pitcher sent down to a lower slot without the wrist range to support it comes back with less velocity, worse spin and no compensating gain, and the intervention gets blamed on the concept rather than on the missing measurement.

If the range is not there, either build it first or leave the slot where it is.

The finding that should stop most youth interventions

The same change, two populations, opposite kinetic results.

PROFESSIONAL PITCHERS

Lower slot, lower load

Professionals throwing from lower slots showed **lower** elbow varus torque and lower shoulder internal rotation torque than their higher slotted peers.

Which is the result the trade above is built on: better shape, slightly less velocity, less stress.

HIGH SCHOOL PITCHERS

Lower slot, higher load

High schoolers throwing from lower slots showed **higher** elbow flexion torque. The same positional change produced a different bill in a different population.

The plausible explanation is that professionals arrive at a low slot through years of organisation around it, while a young pitcher put there deliberately is holding an unfamiliar position with the wrong supporting tissue.

The general lesson, which is bigger than arm slot

A finding established in professionals does not automatically transfer down. Arm slot is the cleanest documented example, but the principle applies to most of this library: **the population a study was run in is part of the finding**, not incidental to it.

Transplanting a big leaguer's compensation onto a sixteen year old and expecting the same invoice is the single most common way good research produces bad coaching.

Who is a candidate

Driveline's stated profile, which is narrower than the enthusiasm for this change would suggest.

REQUIREMENT 01

Wrist range toward the thumb

The non negotiable one. Without it the spin does not survive the move and the change is a straight downgrade.

REQUIREMENT 02

He can generate very high active spin

Driveline's stated profile asks for near perfect backspin efficiency, in the region of 97 percent active spin. The flatter angle only pays if the spin is actually doing work once he gets there.

REQUIREMENT 03

His slot is already close

The stated profile asks for a natural arm slot that does not need a dramatic overhaul, and a willingness to trade a small amount of velocity. A big mechanical rebuild to reach a lower slot is a different and worse proposition than a nudge.

AGAINST 01 He lives at the knees A steeper angle is his asset. Flattening it removes the mechanism that gets him under barrels.	AGAINST 02 He is young The high school kinetic data runs the wrong way, and a developing athlete has not organised around the position the way a professional has.	AGAINST 03 His slot is a preference, not a habit Arm slot and release point are treated as expressions of how an athlete natively organises movement rather than as technique choices. Coaching across that is where resistance and injuries come from.
---	--	---

Raising it, which is a different conversation

Most attempts to raise a slot are attempts to add sideways lean

A higher release point can come from genuinely raising the arm, or from leaning further away from it. The second is the common one, because it is easier, and it is what most pitchers actually do when asked to get on top of the ball.

That matters because sideways lean at release is **positively associated with elbow load**, with a flag past about 48 degrees. Reference values are roughly 34 degrees for over the top pitchers and 24 for sidearmers. So a request to raise the slot frequently produces the elbow cost without the position.

And raising the arm itself runs into the other constraint: arm elevation drifting away from level with the shoulders reduces achievable layback, raises elbow load and reduces joint stability. There is not much room above level to work with.

The short version: **lowering the slot has a documented upside and raising it mostly does not**. That asymmetry is why the league is moving one direction.

How to do it, if he qualifies



STEP 1

Screen the gate and the baseline

Two measurements decide whether this is worth attempting, and one baseline decides whether it worked.

- **Wrist tilt toward the thumb**, both sides
- **Current ride and spin efficiency** on the fastball, per pitch rather than averaged
- **Current release height, side and extension**, so the change is measurable rather than felt
- **Current elbow load**, since a 4 percent expectation needs a starting figure

STEP 2

Change the trunk, not the arm

Arm slot is largely produced by trunk position rather than by shoulder position. Asking for a lower arm usually produces an arm dropped away from level, which is the expensive version.

- **Reduce sideways lean** first, which lowers the release without moving the arm relative to the shoulders
- Keep **arm elevation near level** throughout. That constraint does not change
- Let the slot fall out of the trunk change rather than cueing the arm down

STEP 3

Rebuild the pitch at the new slot

The spin has to be re established from the new release position. This is grip and seam work, not mechanical work.

- Grip and seam orientation experiments on a ball flight unit
- Expect efficiency to drop before it recovers
- Wrist mobility work continuing alongside, since the range is being used differently now

STEP 4

Judge it on the pitch, not the picture

The change succeeded or failed based on approach angle and results, not on whether the delivery looks different.

- Approach angle, spin efficiency and elbow load against the baselines
- Command, which is the thing most likely to have been spent
- If the pitch does not play better, put it back. The 0.15 mph was only cheap because something was bought with it

Sources

- Driveline — [Pitchers Are Going Low, And For Good Reason, But It's Not For Everyone](#)
- Kinematic and Kinetic Comparisons of Arm Slot Position Between High School and Professional Pitchers
- Fleisig et al. — [Kinematic Parameters Associated With Elbow Varus Torque in Elite Adult Baseball Pitchers](#)
- ASMI — [The Clinician's Guide to Baseball Pitching Biomechanics, trunk tilt reference values by slot](#)
- Driveline — [How We Interpret Biomechanics Reports](#)
- ActionTypes — [Motor preferences in baseball, arm slot as an expression rather than a choice](#)

Check the wrist before you move the arm. Without that range the change subtracts the pitch instead of reshaping it.