

AIM SMALL, MISS SMALL

THE PITCHER'S COMPLETE
GUIDE TO COMMAND



VERT. BREAK
-6.2

HORIZ. BREAK
+1.3

RELEASE HEIGHT
6'2"

EXTENSION
6.4 FT

**Florida
Baseball
ARMory**



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AIM SMALL, MISS SMALL

The Pitcher's Complete Guide to Command

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The Pitcher's Complete Guide to Command

Chapter 1:

What Command Actually Is

(And Why You Cannot Aim Your Way There)

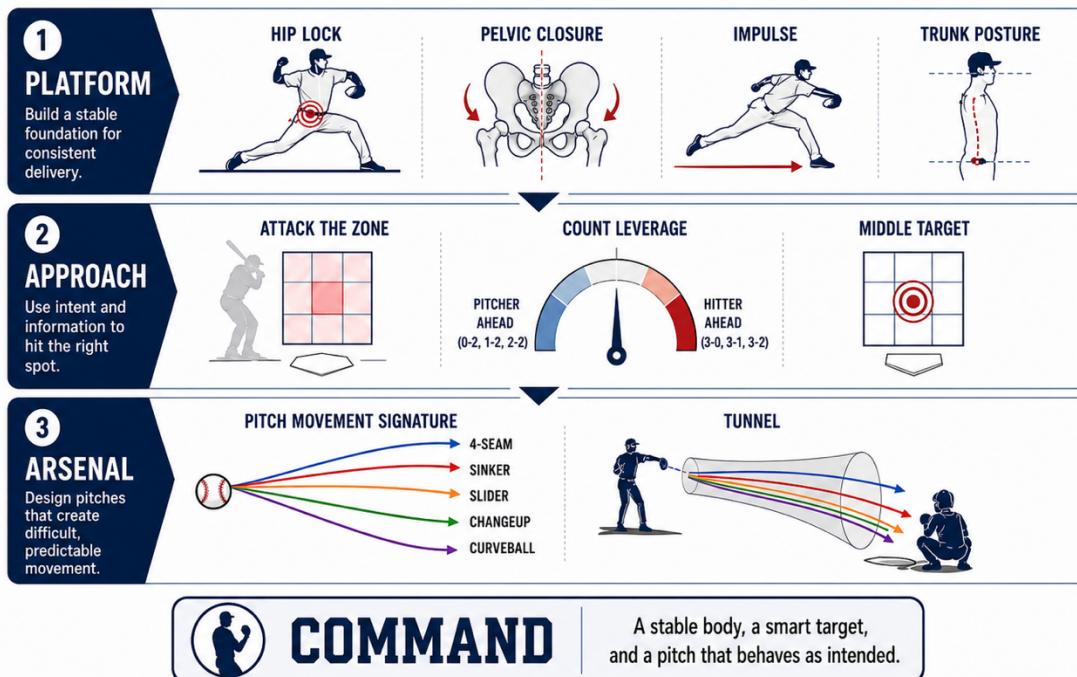
Every pitcher has heard it. Every coach has said it. "Just throw strikes."

It sounds simple. It even sounds helpful, until you are the kid standing on the mound with the game speeding up and the zone shrinking by the pitch. Then it is useless. Not because strikes do not matter. Of course they matter. But "throw strikes" does not tell a pitcher how to throw them, where to throw them, or why the ball suddenly will not go there when the inning starts to get loud.

Behind every case of "command issues" are really two separate problems. The first is a movement problem: the body is not organized well enough to produce a consistent result. The second is a strategy problem: the pitcher is aiming at the wrong spots, spots that make the count harder to manage, the miss more damaging, and the hitter's job easier.

The Command Equation

Movement Stability + Strategic Targeting + Pitch Design = Command



Most coaches mash those two problems together and throw the same cue at both of them. More focus. Better target. Hit the glove. Stay closed. Finish. Compete.

That is not enough. This book separates the problem. Then it gives the pitcher a way out.

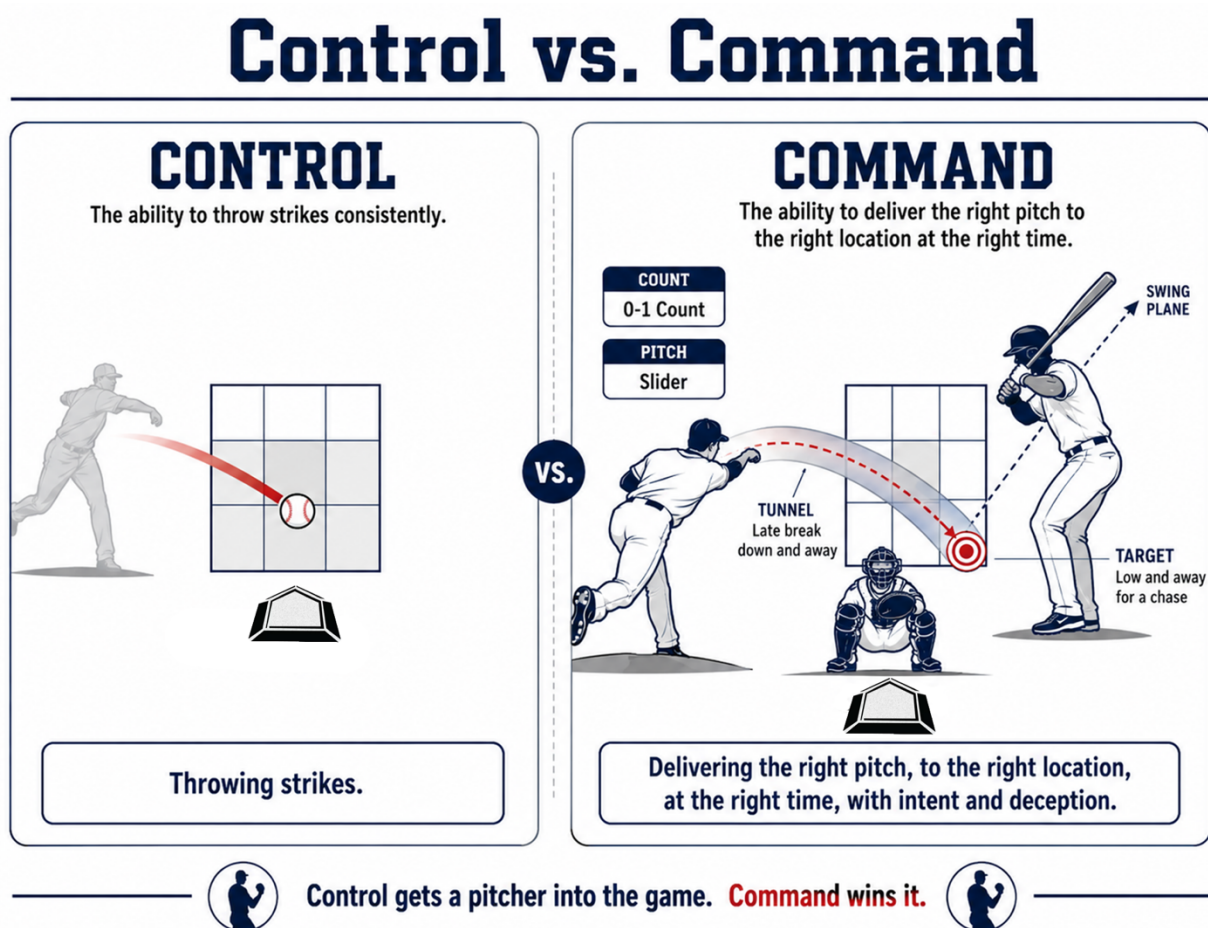
1.1 Control vs. Command: Two Different Skills

Baseball uses these words like they mean the same thing. They do not.

Control means you can throw strikes. You can keep the ball in the zone, limit free bases, and make hitters swing at pitches that at least have a chance to get them out. For a young pitcher, control changes everything. He starts trusting himself. He gets ahead. He stops pitching like he is afraid of the next ball.

Control is the ticket in.

Command is different. Command is throwing the right pitch, to the right part of the zone, at the right time, for the right reason. It is not just getting it over. It is moving the hitter's eyes. It is changing his barrel. It is making him defend something he did not want to defend, in a place he was not ready to cover.



Command is not polite. It is not just accurate. It is surgical.

Control gets a pitcher into the game. Command wins it.

Here is the part most coaches skip: control and command are movement outcomes. They are not created by concentration alone. A pitcher can stare a hole through the catcher's mitt and still spray the ball all over the yard if his body is not organized well enough to deliver it.

As I laid out in The Attractor Code, stable attractors in the hip hinge, pelvic closure, trunk rotation, and arm path show up downstream in the things everyone notices: arm path, release point, trunk posture at release, and the direction and timing of ball flight. When those upstream pieces are stable, control starts to show up. Command has a chance. When they are unstable, aiming harder does not fix much. It usually just makes the kid tighter.

A pitcher does not really command the ball. The ball goes where the body sends it. The better question is whether the body is organized well enough to send it where it needs to go, and whether the pitcher understands where "where it needs to go" actually is.

1.2 The Covariation Study: Why You Cannot Repeat Your Mechanics

In 2020, Matsuo and colleagues studied 12 semi-professional pitchers with motion capture. They tracked the wrist, elbow, shoulder, trunk, pelvis, hip, knee, and ankle across successful pitches.

What they found should make every pitching coach slow down for a second.

The release point of high-level pitchers moved only about 3 centimeters from pitch to pitch. A little over an inch. That is tight. Really tight.

But here is the catch. They were not getting that tight release point by repeating the same joint positions. The joint angles were changing all over the place. The body parts were adjusting together, quietly and constantly, so one piece could cover for another. That is covariation. The system was not freezing variability. It was managing it.

RESEARCH NOTE: Matsuo et al. (2020) studied 12 semi-professional pitchers using the permutation method. They compared actual joint angles from single pitches against randomly scrambled joint data from separate pitches. If pitchers were truly repeating mechanics, the scrambled readings should not have looked much different from the real ones. They did. The scrambled readings varied more than twice as much. Their conclusion was blunt: "Regulating variabilities, rather than reducing them, is necessary to pitching accuracy."

That last line matters. Regulating variabilities. Not eliminating them.

The goal is not a repeatable delivery. I know that phrase is everywhere. I have used it too. But it is not really true. The goal is a stable, adaptable movement system that can find the release window under pressure, fatigue, different mounds, different baseballs, different counts, different hitters, and whatever else the game throws at it.

The old model tells a pitcher to repeat his mechanics. Then the coach starts correcting every pitch like the next delivery is supposed to look exactly like the last one. But the body cannot do that. Bernstein showed that decades ago, and the movement science world has been confirming it ever since. No complex movement repeats itself mechanically, not exactly. Not a pitch. Not a golf swing. Not a free throw. Not a step.

So when we tell a kid to repeat his mechanics, we are asking him to chase something that is not there.

What the body does, when it is working well, is self-organize. It makes hundreds of little adjustments that happen too fast for the pitcher to think about and too complex for a coach to micromanage. The

arm gets back to the release window not because the pitcher ran the same program twice. It gets there because the system has something stable to organize around.

That stable thing is an attractor.

A stable attractor is a movement solution the body can return to without being begged, reminded, or verbally dragged there. When those attractors are strong, the body compensates. It self-corrects. It finds the window. When they are weak, the ball wanders, and the pitcher starts looking like he has a focus problem.

Most of the time, he does not. He has a stability problem.

1.3 The Carousel and the Grandmother

Let me give you the picture I keep coming back to.

Picture a five-year-old on a spinning carnival carousel. His grandmother is sitting on a park bench about 20 feet away. She holds out her hands and asks him to throw her the ball.

If the kid is standing still, this is easy. He can look at her, set himself, and toss it right to her.

CHAPTER 1

THE CAROUSEL AND THE GRANDMOTHER

Why you cannot aim your way to command.

THE SPINNING PLATFORM: YOUR PELVIS
If the platform spins unpredictably, your arm will release early or late.

Stabilize the platform, and your arm passes through the window.

The pelvis is the central platform of the delivery.
UNSTABLE PLATFORM = MOVING RELEASE WINDOW.
STABLE ATTRACTORS = WIDER RELEASE WINDOW / SOLUTION SPACE.

THE RELEASE WINDOW (CORRIDOR)

Too Early (Arm-Side High) **On Time (Strike)** **Too Late (Glove-Side Low)**

A moving pelvis creates a moving window.
PASS THROUGH THE WINDOW TO GET A STRIKE.

WHAT CHAPTER 1 MEANS

1. COMMAND IS A MOVEMENT OUTCOME.

2. A MOVING PELVIS SHRINKS THE SOLUTION SPACE.

3. STABILIZE THE PLATFORM BEFORE CHANGING THE TARGET.

★ YOU CAN'T AIM AT GRANDMOTHER. YOU HAVE TO ORGANIZE THE BODY SO YOU CAN PASS THROUGH THE RELEASE WINDOW. ★

But now the platform is spinning. He cannot stop it. He has to throw while the ground underneath him keeps turning.

If he lets go a hair early, the ball sails off to grandma's right.

If he holds it a hair too long, it spikes into the ground on her left.

To hit grandma from a spinning carousel, the release has to be perfect. Not close. Perfect. And the timing keeps changing with every revolution.

That is what a pitcher with an unstable pelvis is dealing with every pitch.

The pelvis is the central platform of the delivery. When the back hip locks at toe-off and the front door of the pelvis closes after foot plant, the carousel slows down. In the best deliveries, it basically stops long enough for the trunk to rotate around a stable base. The arm can arrive from a familiar direction, at a familiar time, into a familiar release window.

Now the body can organize itself. Now covariation has something to work with.

But when those stabilizing events do not happen, the pelvis keeps spinning. The trunk chases it. The arm has to catch up to a platform that is never quite in the same place twice. The pitcher can still throw a good pitch when the timing hits perfectly. That is why this problem fools people. He looks great for three pitches. Then he misses arm-side high. Then he yanks one glove-side low. Then everyone starts yelling about finishing, staying closed, or throwing it through the glove.

That pitcher is not random. He is oscillating. Arm-side high when he is early. Glove-side low when he is late. A moving release window. A spinning platform. Same story, different uniform.

You will find him on every team at every level.

The fix is not a new target. It is not another arm action cue. It is not a louder reminder to focus on the glove.

The fix is stopping the carousel. We will get to that in Chapters 2 and 3.

1.4 Solution Space: What Stable Attractors Actually Give You

Karl Newell's constraints model gives us a useful way to think about this. Human movement is shaped by three kinds of constraints at the same time: the athlete's body, the task he is trying to perform, and the environment around him.

The solution space is the room the athlete has to solve the movement problem. That is the simplest way to say it. How many useful options does his body have in that moment? How much margin does he have when the delivery is not perfect?

That matters for command because an unstable movement system shrinks the room.

If the pelvis is still spinning, the release window is tiny. It is not really a window. It is a pinhole. The pitch can work if the ball leaves at the exact right instant. Miss that instant by a fraction, and the ball leaks arm-side, dives glove-side, or rides out of the zone. The pitcher is threading a needle, and the needle is moving.

When the movement system is stable, the room opens up. The back hip locks. The pelvis closes. The trunk has a platform. The release window becomes less like a dot and more like a corridor. The body has time and space to make small corrections without the pitcher consciously ordering them to happen.

That is what people are often seeing when they say a guy has clean mechanics or an easy delivery. They may not have the language for it, but they are watching a wider solution space. The body has enough stability to adjust. The release point shows up again and again, not because the delivery is a photocopy, but because the system can find its way home.

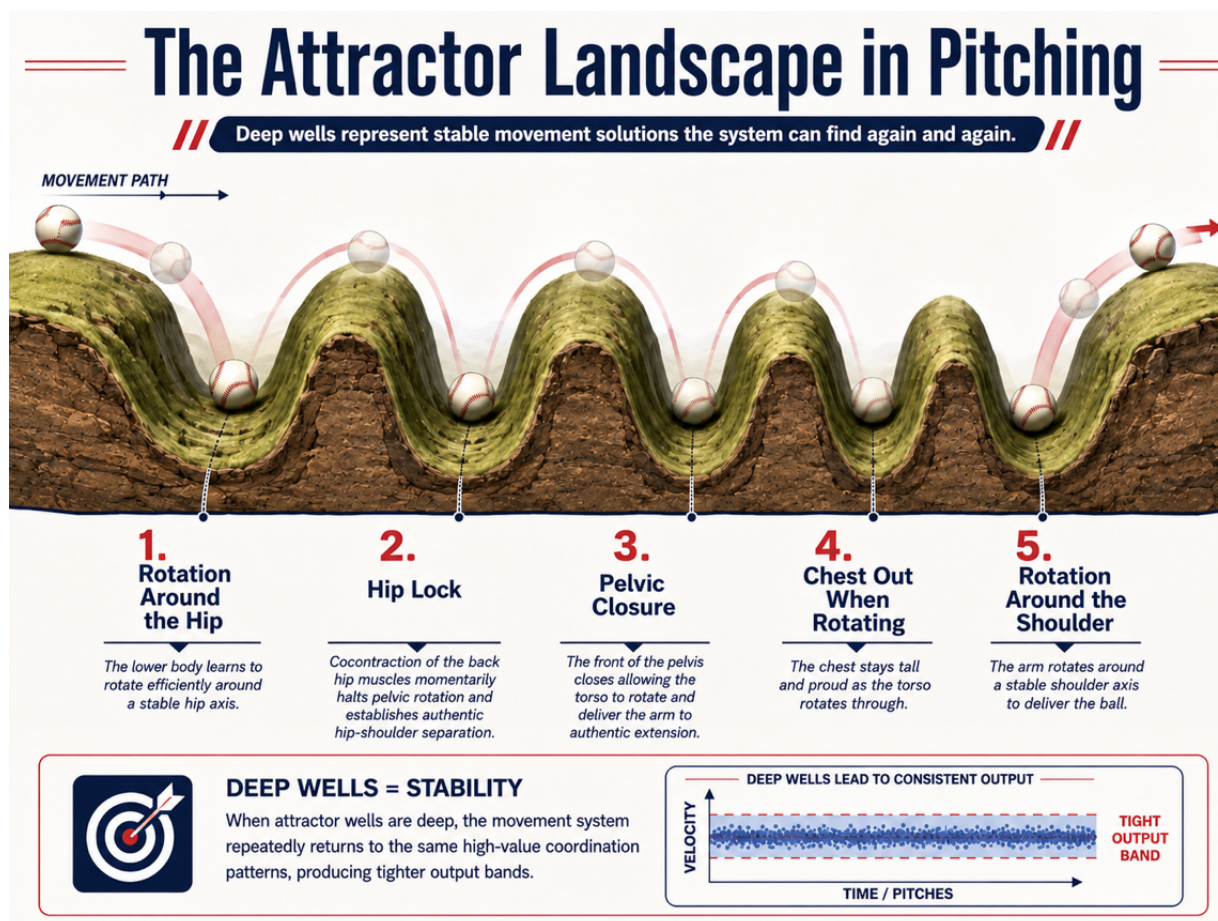
That changes how we train command.

Every drill, exercise, and constraint that stabilizes the core attractors of the delivery is a command drill. Building a more stable platform is not separate from command training. It is command training.

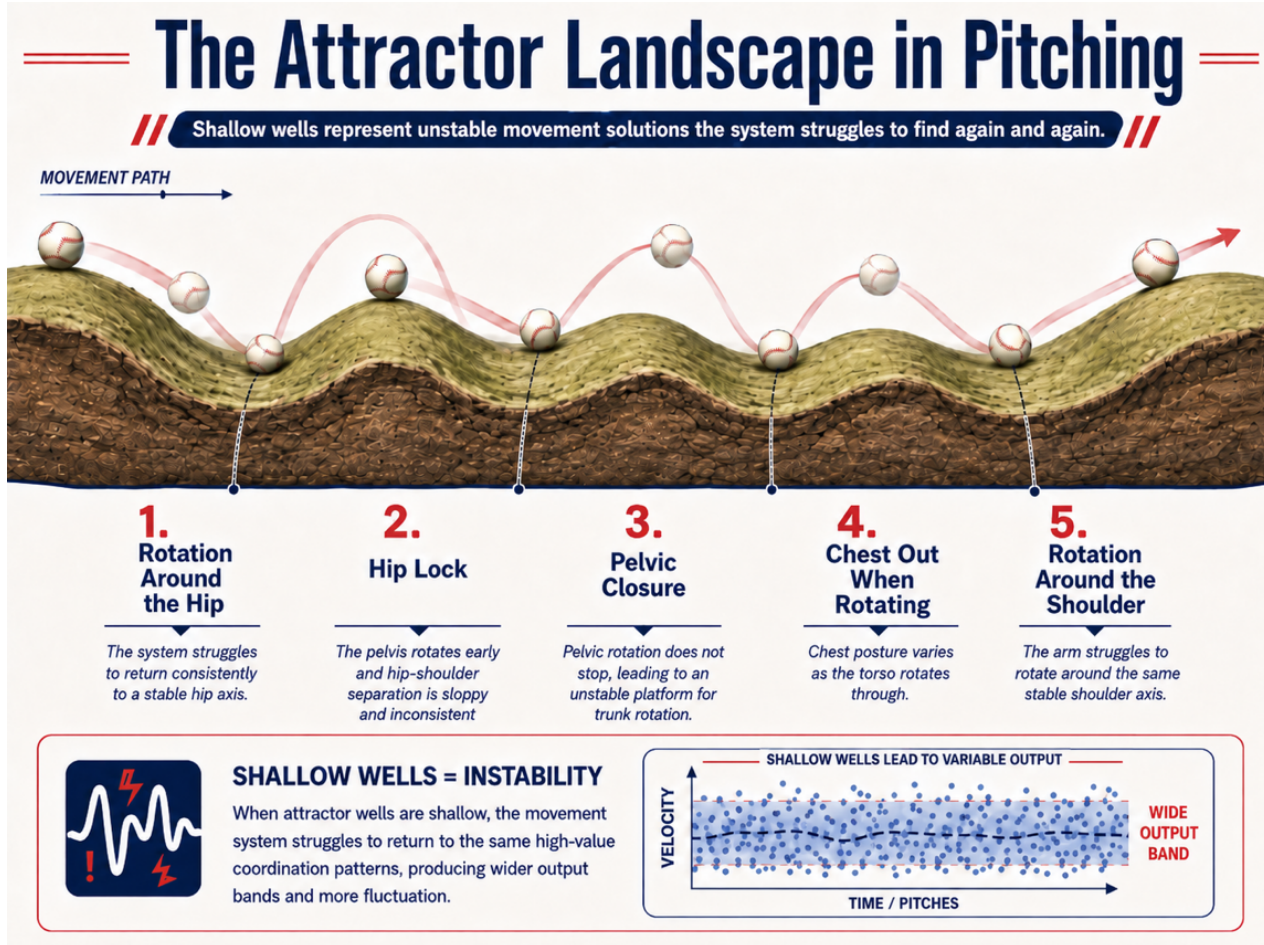
The Attractor Landscape: Deep Wells and Shallow Wells

The best way to picture what attractor stability actually looks like is a rolling landscape of hills and valleys. Each valley represents one of the key attractors of the pitching delivery: rotation round the hip, hip lock at toe-off, pelvic closure, chest out while rotating, rotation round the shoulder. The ball rolls through the landscape as the delivery unfolds.

When the wells are deep, the ball drops in. It finds the same valley again and again, not because someone told it to, but because the landscape pulls it there. The output is tight. Velocity lives in a narrow band. Command lives in a narrow band. The system is not perfect on every pitch, but it is consistent in ways that matter.



When the wells are shallow, the ball skims the surface. It might drop into the right place occasionally (when everything lines up by chance) but it cannot find that same valley on the next pitch. The output scatters. The pitcher looks inconsistent. And from the dugout, the coach usually starts talking about mechanics.



A few weeks ago I got a text from a friend who coaches pitching at the AAA level. He had a big prospect throwing 91 and 95 in the same inning, and he wanted to know what I thought was going on.

Here is the short version of what I told him.

If I see 91 and 95 in the same inning, my first thought is not that he found a mechanical cue. My first thought is that he has shallow attractor wells.

The 95 tells you the capacity is there. Everything lined up: rotation round the hip, hip lock, pelvic closure, chest out, rotation round the shoulder. All five valleys were deep enough to catch the ball on the same pitch, and the output was elite.

The 91 tells you the system does not own it yet. One or more of those wells was too shallow to hold. The ball skimmed across the surface, the coordination did not come together the same way, and the velocity dropped four miles an hour.

This is not a mechanical problem, and it is not a mental problem. It is a stability problem. The landscape is not consistent enough to produce a consistent output.

The same logic applies to command. A pitcher who hits his spot on pitch four and misses badly on pitch five did not forget how to aim between those two pitches. His attractor wells are shallow. The system found the right valley on pitch four and drifted off it on pitch five. The ball is telling you exactly what the Newtonforce would tell you if you put him on a force plate: the coordination is not stable yet.

There is a related version of this that coaches see but rarely explain: the pitcher who gets better as the outing goes on. This one is less common, but it is real, and it makes sense through the same lens. Early in the outing, some pitchers are too amped. Too much co-contraction. Too much conscious control trying to run the delivery. The system is noisy. The wells cannot do their job because the athlete is fighting the landscape instead of letting the ball roll through it.

Then, as the outing settles, something changes. Rhythm. Fatigue. Game flow. Whatever it is, the excess tension comes off the system. The co-contraction settles into a more useful level. The attractor wells can finally do what they are built to do. The ball starts finding the right valleys. Velocity climbs. Command sharpens.

Fatigue did not make him better. It removed the noise that was preventing the attractors from organizing. That is a very different explanation with very different training implications.

In both cases — the guy oscillating between 91 and 95, and the guy who improves as the outing progresses — the question worth asking is not "what mechanical flaw is he making?" It is "which attractor wells are shallow, and what would it take to make them deeper?"

That is the question this book is built to answer.

1.5 Every Miss Tells a Story

Before we build anything, we have to learn to read what is already happening.

Miss patterns are not just mistakes. They are information. Sometimes brutally honest information. A cluster of bad pitches is usually telling you something specific about the movement system. The coach's job is to hear it before he starts throwing cues at it.

Here are the common ones.

Arm-side and high: Early trunk rotation, lead leg instability, or failure of pelvic closure. The pelvis is still rotating when it should be decelerating, so the trunk pulls open and the arm gets dragged across the body. The release climbs and leaks to the arm side.

Glove-side and down: Over-rotated pelvis, linear deceleration through the front leg, or failure to achieve form closure at foot plant. The pitcher runs out of rotation before the trunk has really fired, and the arm gets pulled down and across.

Spiked breaking balls: Slack mismanagement. The trunk unloads too early, or the elbow flexes before the system has carried force to the hand. The pitch loses late energy and dies before it gets there.

High overall: The trunk is not getting forward enough, or the lower body deceleration is breaking down. When the chest does not work over the front knee at release, the release point rises and the ball sails.

Random scatter with no clear bias: This is the hard one. The inconsistency is spread across multiple attractors instead of living in one obvious place. Start proximal. Always. If the center of the system is unstable, the outer pieces will lie to you. When this pattern is present in a pitcher whose attractor landscape otherwise appears organized, the 6-4-5 bullpen protocol in Chapter 9 provides a direct stress test of whether that apparent stability is genuine.

The habit is simple, but not easy. Before you change the target, read the miss. Before you adjust the grip, identify the pattern. Before you hand out a new cue, find the movement root.

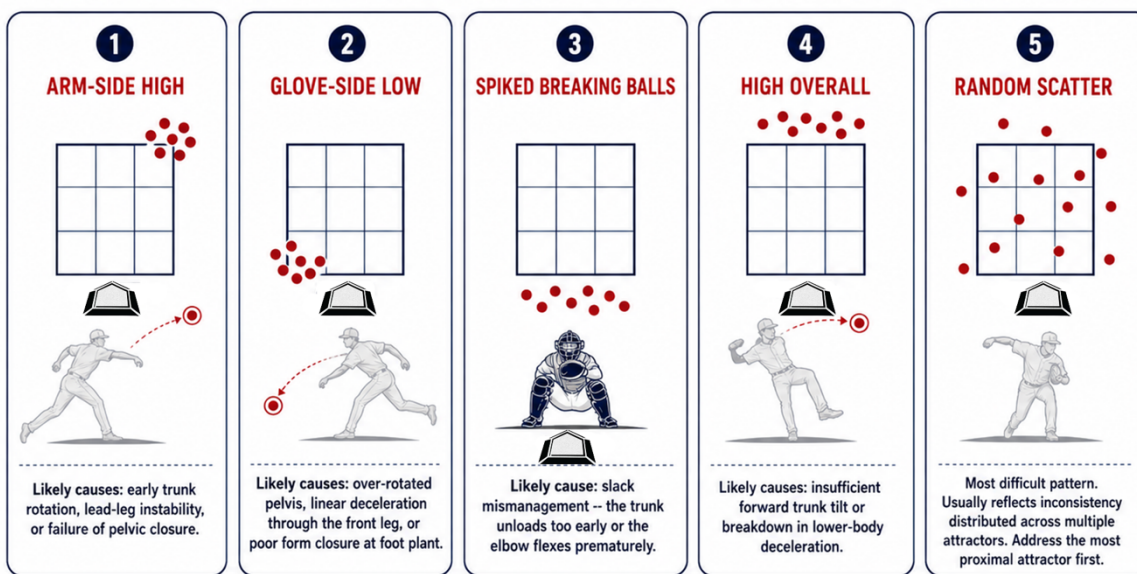
The ball is talking on every pitch. Most people are too busy correcting to listen.

Miss patterns are also one of the most honest ways to measure command development. As attractor stability improves, two things usually happen. First, the miss clusters tighten. The bad pitches are not as bad. The distance between the best pitch and the worst pitch gets smaller. Second, the bias becomes clearer. The pitcher may still miss, but now the miss starts leaning in one direction, which means the problem is becoming more specific and more coachable.

That is progress, even before the strike percentage jumps. The pattern is the leading indicator. The strike percentage is the lagging one.

EVERY MISS TELLS A STORY

Miss patterns are diagnostic. Read the miss before you change the target.



**TIGHTER CLUSTERS AND MORE CONSISTENT BIAS =
A MORE SOLVABLE COMMAND PROBLEM.**



What Comes Next

This chapter laid the foundation. Command is not just a targeting skill. It is not a concentration trick. It is a movement outcome shaped by how the body organizes itself under the real demands of pitching.

When the system is stable, the body can self-organize. Covariation has something to work with. The release window widens. The carousel slows down.

Chapters 2 and 3 build that platform. We will look at the first and most potent attractor in the delivery - - what SAVAGE Training calls Rotation Round the Hip Hinge -- and how it governs the width of the impulse curve and the solution space available to the body. Then we get into the two events that stop the carousel: Hip Lock at Toe-Off and Form or Force Closure of the Pelvis.

Once that movement foundation is in place, then we can talk about where to aim from it.

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The Pitcher's Complete Guide to Command

Chapter 2: Impulse, Pelvic Tilt, and the Width of Your Solution Space

Every pitcher has heard it.

Push off the rubber harder.

It sounds right. More force from the back leg should mean more velocity. More velocity should give you more room for error. More room for error should lead to better command.

That is the story, anyway.

But it is not what we see.

When a pitcher just pushes harder, without controlling when and how long that force is applied, he usually does not widen his command window. He squeezes it. The force shows up as a quick spike. The time gets shorter. The impulse curve gets narrow. And now the pitcher has to be perfect.

So yes, he may throw a little harder. He may also miss worse.

Force matters. Of course it does. But force by itself is not the answer. The timing of the force is where the command story starts.

2.1 What Impulse Actually Means

Impulse is force multiplied by time.

That is the simple definition. In pitching, the impulse we care about most is back-leg impulse in the posterior direction. In plain English, that means rearward force toward second base, applied by the back leg, across the loading phase.

On a Newtforce force plate, it shows up as the area under the positive-Y force-time curve on the back leg. Positive-Y is the rearward direction. The curve tells us two things at once: how much force the pitcher is sending back toward second base, and how long he can keep that force alive.

Impulse: *Force multiplied by time. On the Newtforce report, back-leg posterior impulse is the area under the positive-Y force-time curve. In ARMory assessments, it has been the strongest movement predictor of velocity.*

A quick, violent spike of force can look impressive. It can make a coach feel like the athlete is being explosive. But the area under that curve may still be small. The force came and went too fast.

A slightly lower force held longer can create a much bigger impulse. That is what we want.

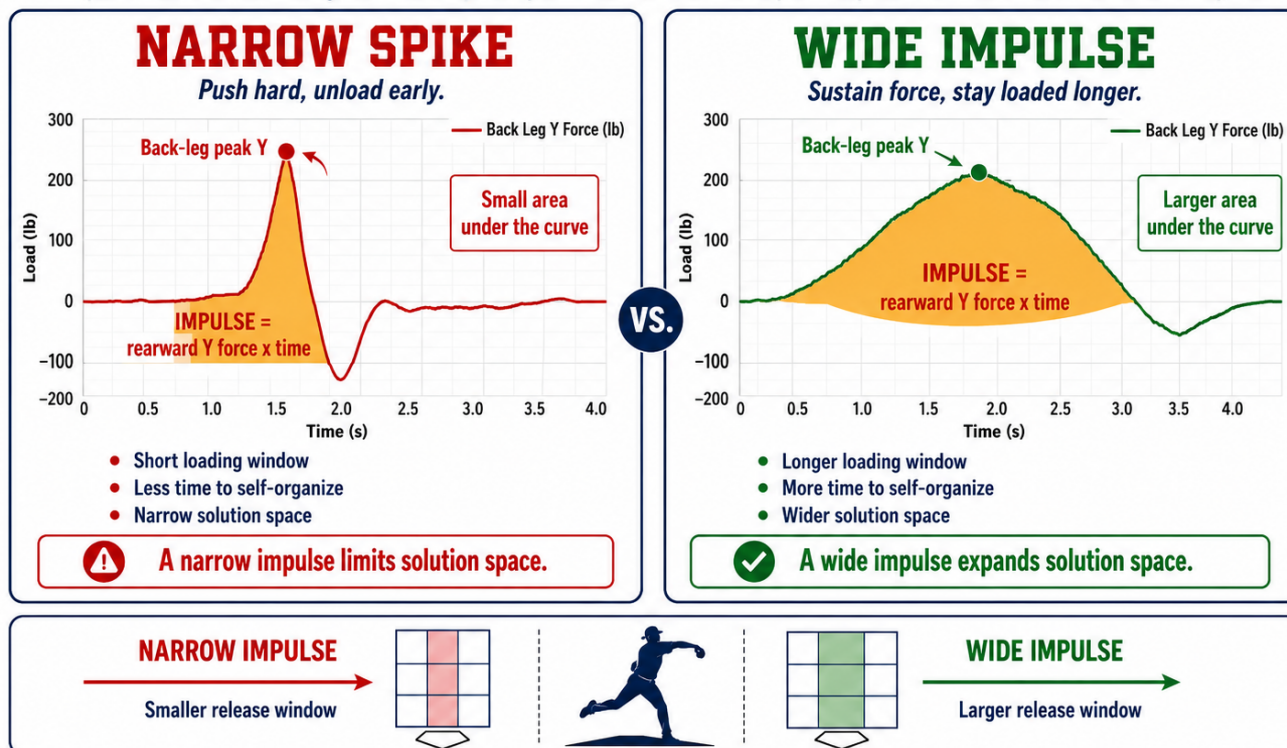
Not just for velocity.

For command.

Across the Newtforce data we have collected at the ARMory, pitchers with wide, sustained impulse curves tend to throw harder than pitchers with narrow, spiky ones, even when the peak force number looks similar. The total area matters more than the tallest point on the graph.

NARROW SPIKE VS. WIDE IMPULSE

Impulse is rearward back-leg Y force multiplied by time. The width of the impulse helps determine the width of the solution space.



Force multiplied by time is not just a velocity equation. It is a command equation.



But here is the part people miss: the width of the impulse curve is tied to the width of the release window. A wider impulse means more time in the loading phase. More time in the loading phase means more room for the movement system to organize. More room means the body has a better chance to find the release window without the pitcher consciously steering the ball.

Force multiplied by time is not just a velocity equation. It is a command equation.

2.2 The Pelvic Tilt Mechanism

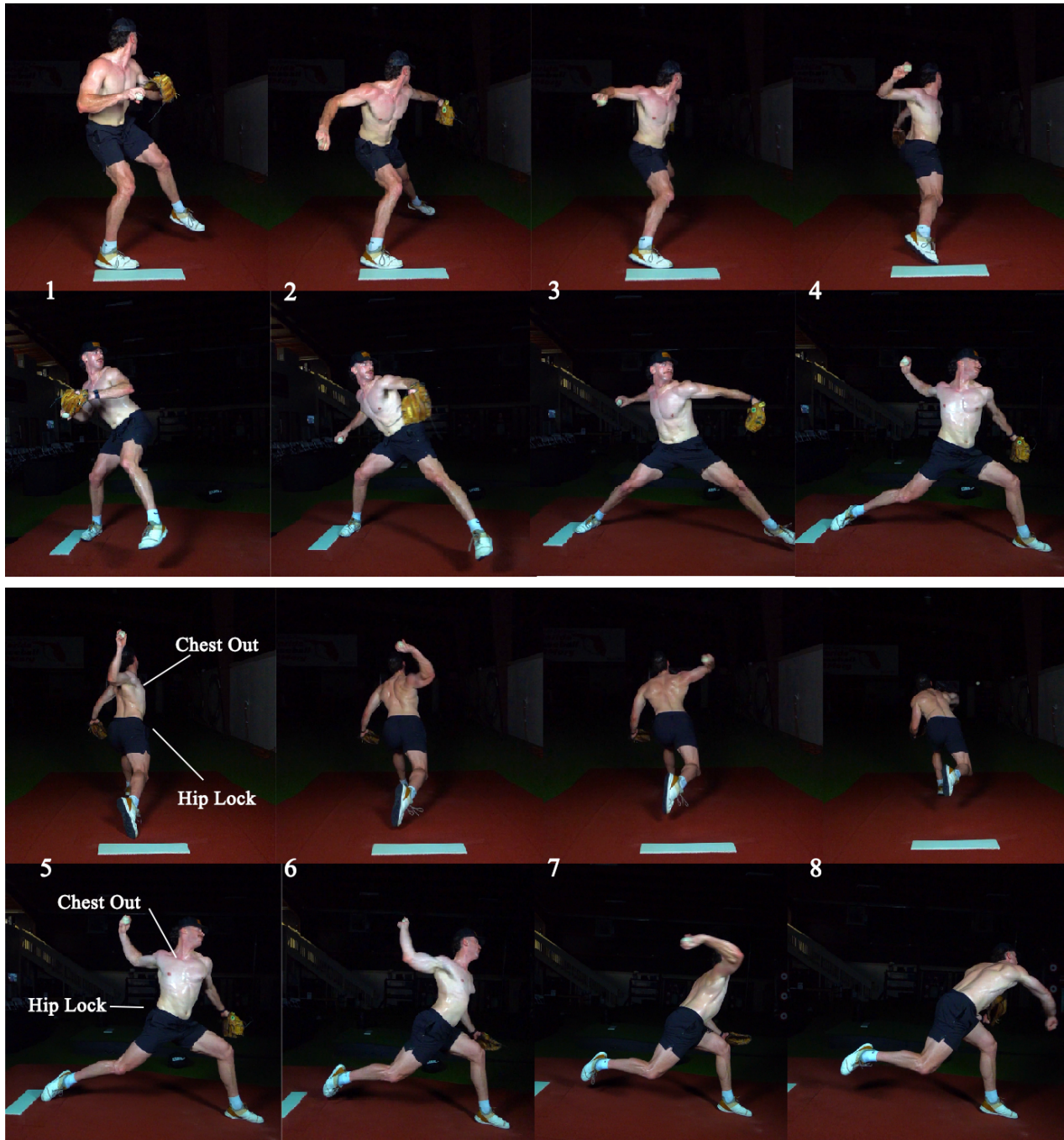


Figure 2.1: Rotation round the hip across the pitching delivery: Two angles of a pitcher demonstrating the hinge attractor from wind-up through release. The lower two rows (frames 5–12) label "Chest Out" and "Hip Lock" at the key moments where the hinge attractor supports the downstream events. When this attractor is stable, the pelvis stays tilted, the impulse curve widens, and the release window opens.

So how do we widen the impulse curve?

Not by yelling, 'Push harder.'

That usually makes the problem worse.

The real answer is body position during the ride to the plate. More specifically, the position of the pelvis in the frontal plane. In SAVAGE Training, this mechanism is called Rotation Round the Hip Hinge -- the first and most potent attractor in the entire pitching delivery. The Newtonforce impulse width is its diagnostic signature. When this attractor is present and functioning, the impulse curve is wide and sustained. When it is absent or collapsing, the curve spikes and drops before the loading phase is finished.

As the pitcher moves down the mound, the back hip begins to internally rotate. The stride foot has left the rubber, the body is riding forward, and the back-leg complex is trying to store and then transfer energy up the chain. The timing of that transfer matters. A lot.

The thing that helps control that timing is frontal-plane pelvic tilt.

Think of the frontal plane as the plane that divides the body into front and back halves. In that plane, the pelvis can stay relatively organized, or it can dump. What we want during the ride is the free-leg side, the stride-leg side, staying elevated relative to the stance-leg side. The pelvis stays tilted. The shoulders and pelvis stay in a useful relationship. The athlete keeps riding the back hip instead of falling off it.

When that happens, two things happen at once. The loading window gets longer, and the glute complex in the back hip stays in a better length-tension relationship for longer.

In normal language, the pitcher stays on the back hip longer. He loads deeper. He does not blow through the ride. The area under the positive-Y curve grows. The impulse widens.

When the pelvis drops early, everything changes. Some coaches call it losing the hip hinge. Some call it collapsing toward the plate. Whatever name you give it, the back hip comes out of its loading position too soon. The curve spikes, then dies. The pitcher has unloaded before he ever really finished loading.

And when that happens, the release window tightens.

This pelvic tilt is not passive. It is not posture. It is not a pretty position for a picture. It has to be held by active co-contraction during the ride.

The key co-contraction: *Gluteus medius, gluteus minimus, TFL, adductors, and hip flexors working together isometrically to hold the pelvis tilted in the frontal plane. The goal is to keep the free-leg side elevated while the back hip keeps loading.*

The timing of rear-femur internal rotation matters too. If the rear femur begins to internally rotate while the athlete is still loading, the glute complex can reach a high-value length-tension position. That is where potential energy lives.

But if internal rotation starts too early, or if the pelvis drops before the athlete gets to that position, the system leaks. The glute complex loses its leverage before it can transfer the energy.

That is not a small miss in the movement. It is the movement equivalent of spending the money before it hits the account.

2.3 Why This Matters for Command

The path from pelvic tilt to command is not mystical. It is mechanical, but not in the old, stiff sense of mechanics. It is a chain.

Link 1: A pelvis that stays tilted in the frontal plane, held by glute med and glute min co-contraction, gives the back hip more time to load.

Link 2: More loading time widens the impulse curve. Force is applied across a longer window. Total impulse goes up. The system has more stored energy available to transfer.

Link 3: A wider impulse curve gives the delivery more room to organize. The release window is no longer a single tiny instant. It becomes more like a corridor. That gives the covariation mechanism from Chapter 1 enough room to do its job.

That is the point. The pitcher is not commanding the baseball because he decided to focus harder. He is commanding it because the movement system had enough time, enough stability, and enough margin to find the release point on its own.

Now narrow the impulse.

Drop the pelvis early. Straighten the back knee too soon. Collapse out of the hip hinge. Rush the ride.

Every link tightens. The release window shrinks. The solution space collapses. The pitcher who looked calm and connected a few pitches ago is now trying to throw a dart through a keyhole.

In the Newtforce data, the difference between a pitcher who holds pelvic tilt and one who loses it can often be 30 to 50 milliseconds of loading time. That may not sound like much on paper. On the mound, it is a lifetime. At pitching speed, 30 to 50 milliseconds can be the difference between a tight command pattern and balls leaking everywhere.

PELVIC TILT AND HIDDEN COMMAND MUSCLES

Frontal-plane pelvic tilt widens the loading window, sustains impulse, and expands solution space.

STABLE PELVIC TILT

stride-leg side up

back hip stays loaded

during load and ride, before foot plant

longer loading window

More time to self-organize.

PELVIC DROP

pelvis drops early

back hip unloads too soon

during load and ride, before foot plant

short loading window

Less time to self-organize.

Pelvic tilt maintained → Wider impulse → Larger release window

THE HIDDEN COMMAND MUSCLES

Hold frontal-plane pelvic tilt and keep you loaded.

GLUTEUS MEDIUS

GLUTEUS MINIMUS

TFL (Supporting)

ADDUCTORS (Supporting)

HIP FLEXORS (Supporting)

"The real command muscles are not in the hand. They are in the outer hip."

WHY IT MATTERS FOR COMMAND

Pelvic drop → narrow impulse → smaller release window.

SMALLER RELEASE WINDOW

STRIKE ZONE (VIEWED FROM PITCHER)

Stable pelvic tilt → wider impulse → larger release window.

LARGER RELEASE WINDOW

STRIKE ZONE (VIEWED FROM PITCHER)

Stable pelvic tilt helps a pitcher stay loaded longer, widen impulse, and arrive at a more consistent release window.

You can see it in the miss clusters almost immediately when pelvic tilt improves. The misses tighten. The scatter calms down. The pitcher still has work to do, but the ball starts behaving like it came from the same body twice.

2.4 The Gluteus Medius and Minimus: The Hidden Command Muscles

When coaches talk about command, they usually talk about the hand.

Grip pressure. Finger placement. Finish. Extension. Focus. Hit the glove.

Almost nobody starts with the outer hip.

That is a problem.

The gluteus medius and gluteus minimus are not sexy muscles in baseball language. They do not make for great Instagram clips. But they help govern the exact mechanism we just described.

The gluteus medius originates on the outside of the ilium and inserts on the greater trochanter of the femur. Its job includes hip abduction and frontal-plane pelvic stabilization. When it does what it is supposed to do, the free-side hip does not just fall. The pelvis stays level or tilted in the direction that keeps the back hip loaded.

The gluteus minimus sits underneath and a little in front of the medius. It helps with abduction, medial rotation, and the same frontal-plane stability job. Together, the medius and minimus help form the stabilizing unit that lets the pitcher ride the back hip instead of spinning or collapsing off it.

The real command muscles are not in the hand. They are in the outer hip.

During the pitching delivery, these muscles are working isometrically. That means they are contracting without producing much visible movement. They are holding. They are buying time. They are keeping the pelvis tilted while the athlete rides.

This is not something a pitcher can usually think his way into during a game. Nobody stands on the mound and consciously fires the glute med at the right millisecond under full-speed throwing conditions. That is not how the body works. This has to be trained until the system owns it.

A pitcher can have strong glutes in the weight room and still fail here.

He can squat. He can lunge. He can hinge. He can look strong on every sagittal-plane test you give him. And then he gets on the mound, moves fast in the frontal plane, and the outer hip disappears.

Sagittal strength and frontal-plane stability are not the same thing. They do not automatically transfer just because both involve the word 'glute.'

That is why targeted glute med and glute min training in pitching-specific positions is not just strength work. It is a command intervention. When those muscles learn to fire and hold during the ride, the impulse curve changes. When the impulse curve changes, the release window changes. When the release window changes, command changes with it.

When we assess a pitcher at the ARMory and see a narrow positive-Y impulse curve with an early peak and a fast drop-off, I do not start by blaming the arm. I start with the outer hip.

Are the medius and minimus firing? Are they holding through the ride? Or is the athlete falling off the back hip and asking his arm to clean up the mess?

A lot of command problems are hiding right there.

2.5 The Hitter Who Cannot Tilt: A Mirror Image

This does not stop with pitching.

You can see the same problem on the hitting side. In fact, looking at hitters makes the pitching lesson clearer.

A hitter who strides without enough frontal-plane pelvic tilt loses solution space too. The stride is his loading phase. His pelvis has to tilt and hold so the hip can load, the torso can separate, and the swing can still adjust when the pitch tells him the truth.

When he cannot do that, he rides forward on a dropping or spinning hip. The loading window gets short. His solution space collapses. Now he has almost no room left to adjust to speed, and very little room to adjust to location. He has to commit early.

Which means he has to guess.

You see it in batting practice all the time. Give that hitter a pitcher who changes speeds and his contact quality falls apart. He is early on the breaking ball and late on the fastball in the same at-bat. It is not because he is not trying to adjust. It is because once his stride commits, there is no movement room left to make the adjustment.

For a pitcher, that is useful information.

The hitter whose pelvis cannot tilt is the hitter who has to guess. So make him guess. Change speeds. Tunnel a curveball off the fastball. Throw the changeup when his body is screaming fastball. Force a commitment out of a system that cannot adapt after it commits.

He rolls over. He checks up. He takes a strike he should have hit. Either way, the pitcher wins.

Same mechanism. Different side of the ball.

For the pitcher, a pelvis that cannot tilt costs command. For the hitter, it costs barrel control. The body does not care which dugout you are in.

What Comes Next

Chapter 2 gave us the mechanism. Frontal-plane pelvic tilt, held by gluteus medius and minimus co-contraction, widens the impulse curve. A wider impulse curve opens the release window. That gives the pitcher more solution space and a better shot at real command.

The pitcher who can hold that position through the ride has a physical foundation for command.

The pitcher who cannot is back on the carousel.

Chapter 3 gets into the two attractor events that decide whether the carousel actually stops: hip lock and pelvic closure. Hip lock closes the back door at toe-off. Pelvic closure closes the front door after foot plant. When both show up, the platform stabilizes. The trunk has something to rotate around. The arm can arrive in the release window from a more stable place.

When either one is missing, the platform keeps spinning. And the ball tells on you.

Chapter 2 sets the table. Chapter 3 starts serving the meal.

Chapter 2 References

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AIM SMALL, MISS SMALL

The Pitcher's Complete Guide to Command

Chapter 3: Hip Lock, Pelvic Closure, and the Release Window

Chapter 1 gave us the spinning carousel. Chapter 2 explained why it starts spinning: the pelvis loses its tilt, the impulse curve gets narrow, and the release window shrinks until the pitcher is trying to hit a moving keyhole.

Now we get to the two events that stop it.

Hip lock closes the back door. Pelvic closure closes the front door. When they happen in order, the platform finally settles down. The trunk has something solid to rotate around. The arm does not have to chase a pelvis that is still drifting through space. It can show up in the release window the same way, or close to it, over and over.

When either door stays open, everything downstream gets expensive. The pitcher may still throw a good one. He may even throw a bunch of good ones when the timing happens to line up. But he is living on timing. And timing, by itself, is a lousy foundation for command.

These are not mechanical positions. That matters. Hip lock and pelvic closure are attractor events. They are movement solutions the body has to find without a speech from the brain every time the leg lifts. You do not cue your way into them. You train them until they show up under speed, under fatigue, under pressure, when nobody has time to think about anything.

3.1 Hip Lock: Closing the Back Door

Hip lock is the moment at toe-off when the rear hip internally rotates and locks its connection to the ground. That is the back door closing.

Start at the beginning. The pitcher is loaded on the back leg. The back hip is hinged. It usually has a little external rotation in it. There is stored energy there. Not magic. Just a loaded spring.

As the stride foot lifts and the pitcher starts riding toward the plate, the rear hip begins to internally rotate. The question is not just whether it rotates. It is when it rotates, how fast it rotates, and whether it finishes the job before the rest of the delivery runs away from it.

When hip lock is good, the rear hip internally rotates hard and clean at the right moment in the ride. The femur drives into the socket. The glute complex lights up. The back leg stops being a soft post and becomes a real anchor. The back door shuts. The energy that was building in the back-leg spring gets trapped in the system long enough to be transferred.

When hip lock fails, the rear hip hangs out in external rotation too long, or it starts to internally rotate but never really finishes. The back door is still open. The pelvis can spin around the back leg without much resistance. Energy leaks early. The sequence is already compromised before the front foot ever gets down.

What hip lock gives you: the pelvis goes first, the trunk waits a beat, then the trunk fires. That lag is not cosmetic. It is the signature of an organized delivery. It is the doorway into real hip-to-shoulder separation.

What failed hip lock gives you: pelvis and trunk turning together. One big spinning block. No lag. No clean transfer. No fixed base for the arm to throw from.

This is why I do not like calling it an upper-body problem when a pitcher looks like he is all arm or all shoulders. A lot of the time, the upper body is just the messenger. The real problem happened behind it. The back door never closed.

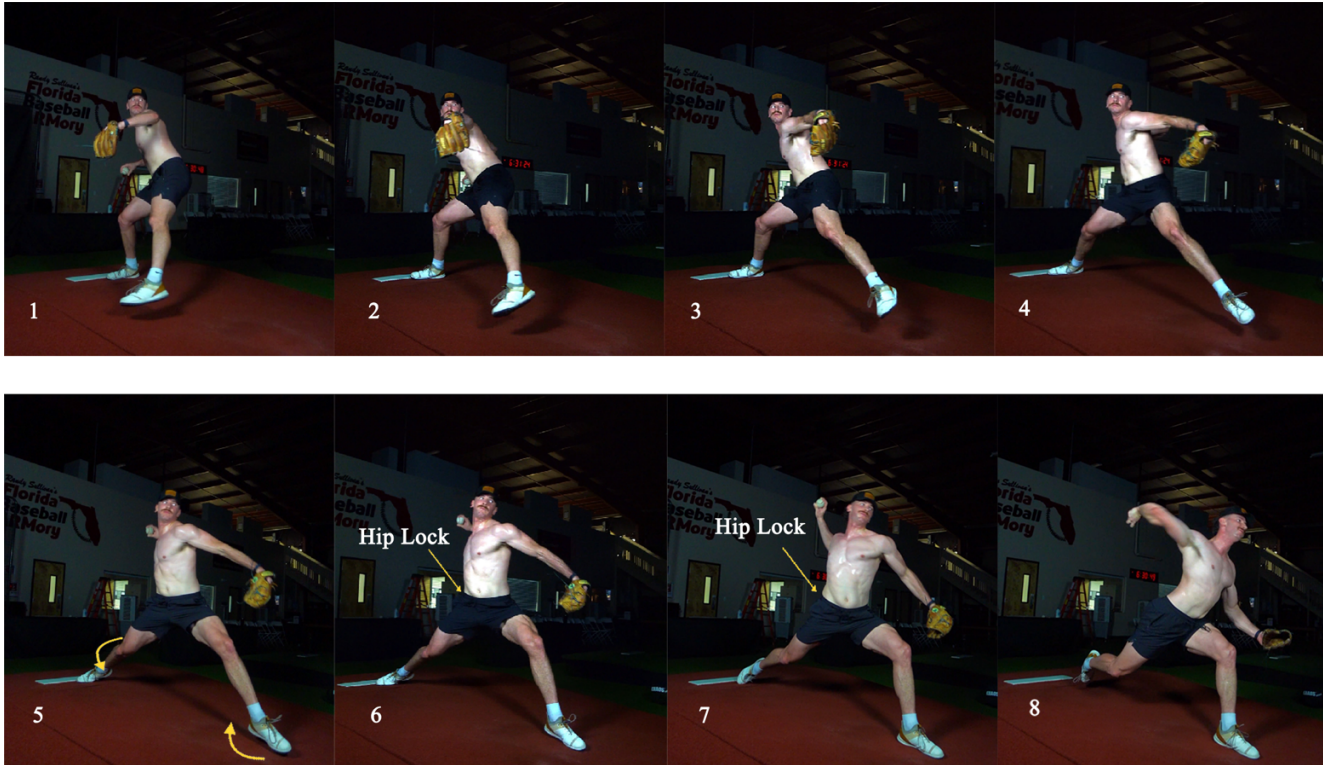


Figure 3.1: Hip lock at toe-off. The eight-frame sequence shows the full delivery from wind-up through release. Frame 5 shows the back foot making its final ground contact as the stride extends. Frames 6 and 7, labeled "Hip Lock," show the rear hip locking its connection to the ground, momentarily halting pelvic rotation and creating the lag between pelvis and trunk angular velocity that produces genuine hip-to-shoulder separation. Frame 8 shows the delivery completing from a stable front-leg post.

Hip lock is too fast to babysit consciously. It happens inside a slice of time no pitcher can manage with a thought. You can show him video. You can explain it. Fine. But on the mound, it has to be automatic. In the data, you see it as a wider positive-Y impulse on the back leg, a real gap between pelvis and trunk angular velocities, and usually a miss pattern that starts to become more organized instead of sprayed all over the map.

When it is missing, the rotation profiles sit on top of each other. The impulse is narrow. The delivery looks rushed and spun. And the coach says, "Use your lower half," which is not wrong exactly, but it is not nearly specific enough to help.

3.2 Pelvic Closure: Closing the Front Door

If hip lock is the back door, pelvic closure is the front door.

This one happens after the stride foot lands. The pitcher has arrived at foot contact. Now the whole delivery asks one question: does the pelvis stop, or does it keep spinning?

If it stops, the trunk has a base. If it keeps going, the trunk has to fire from a moving floor. That is a very different delivery.

Pelvic closure is the rapid deceleration of the pelvis after foot contact. The front door shuts. The pelvis slows down hard enough that the trunk can rotate around it. This is the whip-crack moment. The front end stops so everything behind it can snap through.

There are two types of pelvic closure. I separate them because pitchers can have one and not the other, and that is where a lot of confusion starts.

The front door closes so the trunk can fire. Without closure, you spend your rotation moving your body instead of accelerating the ball.

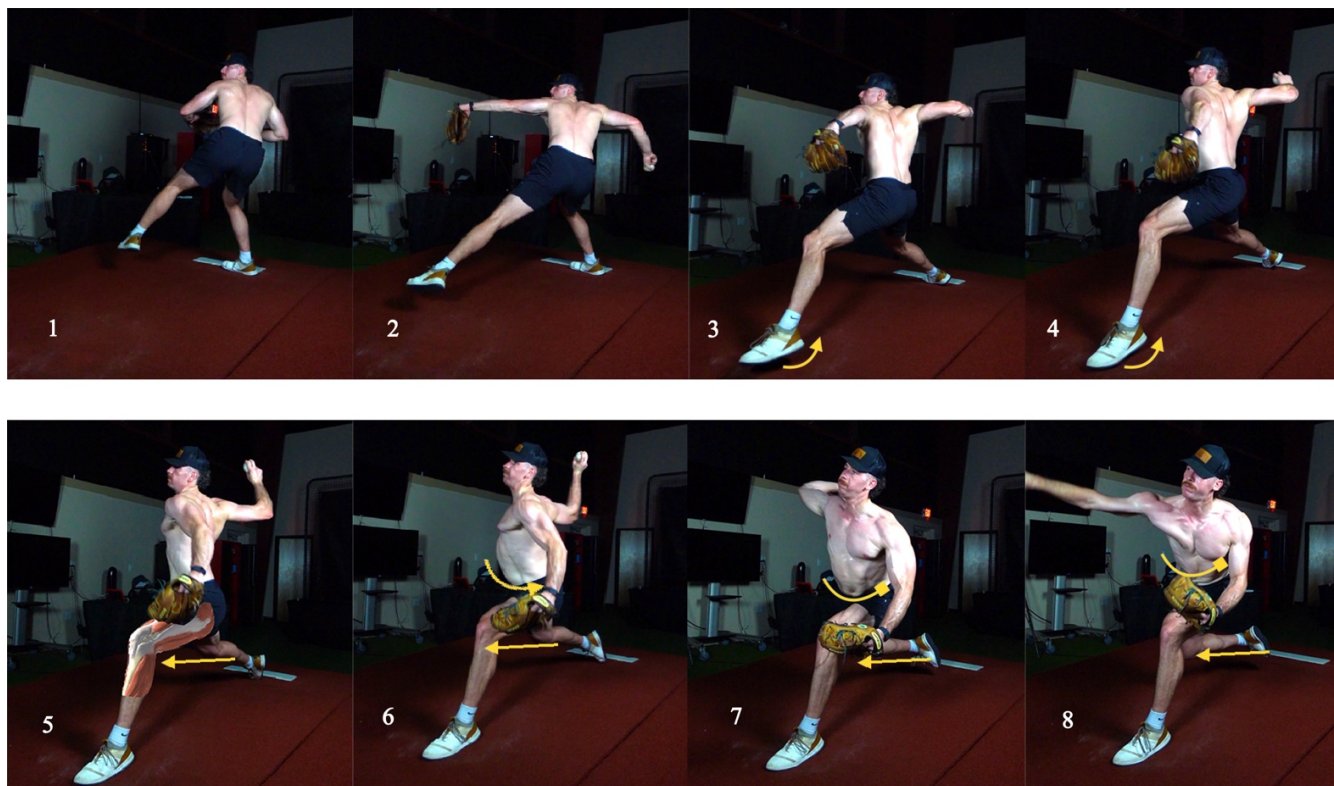


Figure 3.2: Force closure of the pelvis. In this sequence filmed from behind and to the arm side, frames 1–4 show the stride and arrival at foot contact. Frames 5–8 show the lead leg driving internal rotation (indicated by the lateral arrow) while the rotational arrow at the pelvis in frames 6 and 7 confirms the front door closing actively rather than passively. The lead leg remains stiff and braced. This is force closure: not just landing, but shutting the door.

The first style is form closure. That is the structural part. It comes from the way the stride foot lands and how the joints are stacked when the foot hits the ground.

When the stride foot lands slightly closed, or at least not flying open, and the lead knee is in a position to brace, the geometry itself helps slow the pelvis. The shape of the landing helps close the door. That is why foot plant angle matters for command. Not because we are trying to win a beauty contest with foot position. Because an open front foot gives the pelvis an escape route.

For a right-handed pitcher, if the toe is pointed way toward first base, the front door is already cracked open. He can try to “stay closed” all he wants. The bones are not helping him.

The second method is force closure. That is the muscular part. After foot contact, the lead hip has to engage. The lead-side glute medius and minimus help pull the pelvis into closure. The front door is not just passively shaped shut. It gets actively pulled shut from the inside.

Form closure is geometry. Force closure is muscle. You need both. A pitcher with a pretty foot plant and no lead-hip engagement gets partial closure. A pitcher with strong lead-hip activation but a bad landing shape also gets partial closure. Partial closure leaks.

BACK DOOR / FRONT DOOR

Hip Lock and Pelvic Closure

The back door closes at toe-off. The front door closes after foot plant. Together they stabilize the platform for trunk rotation and release.

1. BACK DOOR -- HIP LOCK

TOE-OFF (BEFORE LEAD FOOT PLANT)

- ✓ Back hip stabilizes
- ✓ Platform begins to organize
- ✓ Rear side stops leaking energy

✓ Hip lock closes the back door and prevents the pelvis from spinning open too early.

2. FRONT DOOR -- PELVIC CLOSURE

AFTER FOOT PLANT (EARLY BRACE)

- ✓ Pelvic closure
- ✓ Front side organizes the platform
- ✓ Rotation now has a stable base

✓ Pelvic closure closes the front door so the trunk can rotate around a more stable platform.

⚠ WHAT HAPPENS IF THE DOORS STAY OPEN?

BACK DOOR OPEN (No hip lock)

- Pelvis spins early
- Arm chases timing
- Release becomes less consistent

FRONT DOOR OPEN (No pelvic closure)

- Front side leaks
- Rotation on unstable base
- Arm-side high
- Glove-side low

THE PLATFORM STOPS SPINNING

TOO EARLY
(Back door open)

Platform spins open before the arm can store energy.

ON TIME
(Both doors closed)

Platform is stable. Rotation is efficient. Arm passes through a consistent release corridor.

TOO LATE / POORLY ORGANIZED
(Front door open)

Front side leaks late. Rotation is late. Release drifts and becomes inconsistent.

MISS PATTERN TENDENCY

WHY IT MATTERS

➔

➔

➔

HIP LOCK (Back door closes at toe-off) → **PELVIC CLOSURE** (Front door closes after foot plant) → **STABLE TRUNK ROTATION** (Platform stops spinning) → **MORE CONSISTENT RELEASE WINDOW** (Better command and results)

WHEN THE BACK DOOR AND FRONT DOOR CLOSE ON TIME, THE PLATFORM STOPS SPINNING AND THE ARM CAN PASS THROUGH THE RELEASE WINDOW.

When pelvic closure is complete, the trunk finally gets a real fixed base. Hip-to-shoulder separation peaks just after foot contact. The trunk snaps. The arm comes through the release window with speed instead of effort. The pitcher is not just rotating his body. He is converting rotation into ball speed.

When pelvic closure fails, the pelvis and trunk rotate together. There is no clean stop. No real separation. No crack of the whip. The arm gets dragged around. The pitcher works hard and gets less than he should.

3.3 What Happens When Both Doors Are Closed

When hip lock and pelvic closure both show up, the delivery has a look. More important, it has a data signature. You can see it before you ever argue about what the video looks like.

On the Newtforce plates, the back leg gives you a wide positive-Y impulse. It builds. It sustains. It does not just spike and disappear. Then the front leg shows a distinct braking event at foot contact. Back leg stores. Front leg braces. One job, then the next job. That is what organization looks like.

In motion capture, the pelvis leads and the trunk follows. There is a measurable lag. Hip-to-shoulder separation reaches its maximum right after foot contact, then releases as the trunk fires. The sequence moves from the ground up instead of everything turning at once.

In the delivery, it looks like a pitcher finishing over the front leg with his chest actually getting through the target line. The back foot comes off the rubber clean. The finish does not look like a bailout. It looks like the body had somewhere to go and got there.

For command, here is the whole point: the arm gets to the release window from a more stable route. Not identical. That word gets people in trouble. The body will not repeat the exact same delivery. But it can keep finding the same neighborhood when the platform underneath it is stable enough.

That is where covariation can do its job. The system has something to organize around. The release point cluster tightens. The misses start telling a clearer story. Command stops being a concentration trick and starts becoming an outcome of the movement system.

The command sequence: *hip lock creates the lag. Pelvic closure creates the base. The trunk fires over the base. The arm whips through a usable release window. The body organizes the release point from pitch to pitch. Command follows.*

3.4 The Tilt-a-Whirl Pitcher: What the Data Shows

The tilt-a-whirl pitcher is the same story with both doors left open.

You have seen him. Every staff has one. Good stuff. Big arm. Looks unhittable for three batters, then suddenly cannot find the same zip code. Everybody says he is inconsistent. Maybe. But that word hides more than it explains.

In the Newtforce data, the back leg usually shows a narrow, early positive-Y impulse. The force arrives too soon and leaves too soon. The back door never really shuts. The front leg shows a braking pattern that is too soft or too long. The front door never really closes either. The back leg spends its force early. The front leg catches the body instead of stopping it.

In motion capture, pelvis and trunk rotation stack on top of each other. Little lag. Little separation. The system turns as one unit. The trunk is not firing from a base. It is firing from a moving pelvis, which means a lot of the energy gets spent just trying to survive the delivery.

On the miss chart, the story is usually obvious. Arm-side high. Glove-side low. Sometimes in the same inning. Sometimes back to back. The release point is moving because the platform is moving. When the ball comes out a little early, it rides arm-side and up. When it comes out a little late, it gets yanked or buried glove-side and down.

This pitcher is not two different people. He is not locked in on Tuesday and broken on Friday. He is the same pitcher with the same unstable platform. Some days the timing miracle happens. Some days it does not.

He is not inconsistent. He is consistent at having an unstable platform. Fix the platform and the inconsistency starts to resolve.

This is also why normal mechanical advice does not touch him. “Get on top.” “Drive through the ball.” “Stay closed.” “Finish.” Those cues may describe something we want to see, but they do not build the two events that are missing. They are downstream comments about an upstream failure.

Until the back door and front door close, most of that advice is just noise. The pitcher may try harder. He may care more. He may concentrate until his head hurts. It still will not give him a stable platform.

3.5 Diagnosing Hip Lock and Closure Problems

Hip lock and pelvic closure are hard to see with video alone because they are events, not poses. They happen fast. And the body is very good at making a bad event look acceptable if you only watch from one angle.

That said, the signals are there. You just need to know which ones matter.

Hip Lock: What to Look For

Motion capture: the trunk velocity peak happens too early, sometimes at the same time as the pelvis peak, or even before it. The normal pelvis-to-trunk lag is absent or reversed. Hip-to-shoulder separation at foot contact is usually under 30 degrees.

Newtforce: low positive-Y impulse on the back leg, with an early peak and a quick drop. The rearward force is not held through the ride. It flashes and disappears.

Video: the pitcher spins out. The torso turns early compared with the stride. The finish is more east-west than chest-through-target. The back foot may drag toward the arm side instead of coming off cleanly.

Miss pattern: arm-side and high is the common one. The platform is rotating early, and the ball leaves from that early angular position.

Pelvic Closure: What to Look For

Motion capture: pelvis and trunk arrive together. There is not much separation at foot contact, and their angular velocities look too similar. The front door did not stop the rotation.

Newtforce: the front-leg braking signature is shallow or stretched out. The lead leg accepts the landing instead of bracing against it. The force profile is more smear than punch.

Video: the front knee keeps bending, sometimes collapsing inward, and the pitcher falls off toward the arm side instead of posting up over the front leg.

Miss pattern: glove-side and down, or glove-side and buried. The pelvis over-rotates, the arm gets carried past the release point, and the ball comes out late.

When Both Are Missing

This is the tilt-a-whirl pattern: arm-side high and glove-side low living together with no clean bias. Start with hip lock. It happens first. It is more proximal in the sequence. If the back door never closes, the front door has a much harder job.

3.6 Training the Stable Platform

Training hip lock and pelvic closure is not about giving the pitcher five new thoughts on the mound. That is how you freeze an athlete. The point is to build training environments where the right movement becomes the easiest available answer.

The nervous system learns from problems. It learns from the task, the constraint, the miss, the feel of solving it. Verbal instruction can set the stage, but it cannot run the show.

These are the drills we use at the ARMory. They move from lower velocity demand to higher velocity demand. Do not throw all of them at a pitcher at once. Layer them. Let the movement learn.

For Hip Lock

Aquabag Hip Lock Step-Down with Rotation



Figure 3.3 Aquabag Hip Lock Step-Down with Rotation: This drill challenges proximal-to-distal stability by combining hip lock with torso rotation. The athlete steps over a hurdle (frame 5) while rotating the aqua bag across the body (frame 8), perturbing the front hip and knee. This exercise encourages swing leg retraction and helps stabilize the lead IT band, ensuring effective pelvis control in the transverse plane during pitching.

Armside Drop-In: Standing on a 6- or 12-inch box, the athlete steps off toward the arm-side foul line, lands in a clean hinge on the back leg, and immediately rotates to make a throw. The drop creates a force that demands a hinged landing. Landing laterally makes any attempt to tuck the butt under the spine immediately uncomfortable.



Figure 3.4: Armside Drop-In: Frames 1 and 2 show the starting position on the box and the initial step off toward the arm-side foul line. Frames 3 and 4 show the lateral drop in flight. The box creates a downward force on landing that the body cannot absorb softly. Frames 5 and 6 show the critical attractor moment: the athlete lands in a deep hinge on the back leg, chest tall, weight loaded through the hip rather than the spine. The lateral direction of the drop makes compensation nearly impossible. Any attempt to tuck the butt under the spine or extend the knee early is immediately uncomfortable and mechanically penalized. Frames 7 and 8 show rotation through the throw from the hinged base, the back leg anchored, the trunk firing over the front leg. This drill does not cue the hinge attractor. It creates conditions under which the hinge is the only useful landing solution the body can find.

Hip Lock at Toe-Off Drill: With an aqua ball held overhead and a baseball in the throwing hand, the athlete pulls rapidly into a hip lock and holds the clinch as he falls forward to land on the front leg. He shakes the aqua ball to perturb the hip lock, then drops it, loads, and throws to a target. The back leg stays anchored throughout the delivery and never moves forward.



Figure 3.5: Hip Lock at Toe-Off Drill: Frame 1 shows the starting position with the aqua ball held at chest height and a baseball in the throwing hand. Frame 2 shows the athlete pulling rapidly into a hip lock position -- knee drive high, back hip loaded and internally rotated, the aqua ball raised overhead to add an unpredictable load that demands active stabilization of the back hip. Frames 3 and 4 show the perturbation phase: the athlete shakes the aqua ball aggressively while holding the hip lock clinch. The red wave indicators in frames 4 and 5 show the aqua ball being shaken side to side, creating an unstable overhead load that challenges the back hip's ability to stay locked under external perturbation. This is the diagnostic moment. If the hip lock is a genuine attractor, it holds. If it is not, the perturbation exposes it. Frame 5 shows the back leg remaining anchored as the athlete begins to fall forward, still holding the clinch. Frame 6 shows the aqua ball being dropped (indicated by the gold downward arrow) releasing the overhead load as the stride leg arrives at foot contact. The back leg does not follow forward. It stays. Frames 7 and 8 show the throw completing from a stable back-hip anchor, the trunk firing over a braced front leg. The back leg's refusal to drift forward is not a position being held consciously. It is the hip lock attractor doing its job.

For Pelvic Closure

Aqua Ball Lunge with Pulse/Stick: The athlete pre-tenses with an aqua ball overhead, lifts the stride leg, and falls firmly onto a stiff front leg. Upon landing, he bounces into a full hip lock on the back leg, then falls again into front foot plant. As the foot touches down, he rotates and braces the lead leg. Bracing rather than absorbing is the entire point. The aqua ball adds an unpredictable load throughout.



Figure 3.6: Aqua Ball Lunge with Pulse and Stick: The opening frames show the starting position with the aqua ball held overhead, creating pre-tension throughout the trunk and shoulder girdle before the stride leg has moved. The overhead load is not decorative. It raises the system's co-contraction baseline so the landing has to manage an already-demanding environment. The early frames show the stride leg lifting and the athlete falling forward, aqua ball still overhead, committing weight to the movement before the front foot has landed. This is the pulse phase: the athlete lands on the front leg and immediately bounces back, driving into a full hip lock on the back leg. The back hip loads deep, glute complex engaged, the system riding the rebound rather than absorbing it passively. The aqua ball continues shifting overhead throughout, providing an unpredictable perturbation that demands the hip lock hold under load rather than simply be achieved and released. The stick phase follows: the athlete falls forward again into front foot plant and stops. The front leg braces. It does not give. The knee does not collapse inward or continue to flex. The rotation fires over the braced leg while the aqua ball is still moving overhead, still creating an unstable load that the trunk must manage simultaneously. The critical distinction in this drill is not the landing. It is what happens at the landing. Absorbing the landing is a compensation. Bracing against it is the front door closing. Every rep is teaching the system the difference.

Lead Leg Plate Hops: The pitcher stands in his stride position with the lead leg on a 6-inch box. He lifts the leg and drives it hard into the box two or three times, then steps over the box as he makes a throw. The large landing force triggers the crossed-extension reflex to induce hip lock on the back leg. Stepping over the box encourages swing leg retraction and form closure of the front door of the pelvis.



Figure 3.7: Lead Leg Plate Hops: Frame 1 shows the starting position on the 6-inch box, the pitcher in his stride stance with the glove and throwing hand at chest height, back leg loaded and ready. Frame 2 shows the lead leg lifting off the box surface, initiating the first hop. Frame 3 shows the lead leg driving hard back into the box — the starburst graphic and "3x" label indicating this impact is repeated two to three times before the throw. This is the mechanism: the repeated high-force impact of the lead leg into the box activates the crossed-extension reflex, a neurological response in which forceful activity on one side of the body drives reflexive activation on the opposite side. In this case, each hard lead-leg strike into the box is inducing co-contraction and internal rotation in the back hip — training the hip lock attractor through a reflex rather than a cue. Frame 4 shows the system resetting between impacts, tension held throughout. Frame 5 shows the lead leg lifting high as the pitcher steps over the box, the back leg anchored on the step, the delivery loading. The step-over motion encourages swing leg retraction and the foot-plant-from-above pattern that promotes form closure of the front door. Frame 6 shows foot plant at the base of the step — the second starburst indicating the arrival force at landing — with the arm beginning to accelerate. Frames 7 and 8 show the throw completing from a stable front-leg post, the back leg releasing cleanly behind, the chest driving over the front knee at release. The box is not teaching a position. It is teaching a neurological event that produces the attractor automatically.

A note on order: build hip lock before pelvic closure. Hip lock happens before foot contact. Pelvic closure happens at and after foot contact. A pitcher who tries to close the front door without ever loading the back door is closing a door that leads nowhere.

Once the Newtforce data shows the positive-Y impulse widening, then front-leg bracing work starts to make more sense. The two events feed each other when they are trained in the right order.

The measure of progress is not a perfect position. It is the miss cluster getting tighter. It is random scatter becoming a consistent bias. A pitcher who used to miss everywhere and now misses arm-side high has not failed. He has organized the problem. Now we know what to fix next.

Organized instability is the bridge between chaos and command.

What Comes Next

Chapters 1 through 3 have built the movement foundation of command. Attractor stability creates solution space. Impulse mechanics help define the width of the release window. Hip lock and pelvic closure are the two events that stop the carousel. Without them, aiming harder does not help much. Neither does wanting it more.

Chapter 4 adds the next layer. Once the platform is stable, a pitcher can make small, quiet setup adjustments that redirect the whole kinetic chain without turning the delivery into a thought project. The sternum becomes the rudder. Inches at the rubber become feet at the plate.

Chapter 4 is where the pitcher starts reading his own misses and correcting between pitches. No mound visit. No mechanical speech. No panic. Just better information and a body organized well enough to use it.

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AIM SMALL, MISS SMALL

The Pitcher's Complete Guide to Command

Chapter 4: The Sternum as Rudder -- Quiet Adjustments for Command

Chapters 1 through 3 built the platform. That was the hard part. You now know why command cannot be fixed by aiming harder. You know why impulse matters. You know why the release window gets wider or tighter. You know what hip lock does. You know what pelvic closure does. You know what the carousel looks like when it keeps spinning, and you know what it looks like when it finally stops.

This chapter is about what you do after that.

A stable platform is not frozen. It is not a statue. It is a connected system. And once a system is connected, you can steer it. Not by yanking the hand around. Not by changing the arm action between pitches. Not by fiddling with the grip because the last fastball leaked off the plate.

You steer it earlier than that. Quieter than that.

The sternum is the rudder.

THE STERNUM AS RUDDER

Quiet Adjustments for Command

Small changes at the source. Big results at the plate.

CHAPTER 4

RIGHT-HANDED PITCHER'S VIEW

THE STERNUM-AS-RUDDER PROTOCOL

Four misses. Four small corrections. Make the adjustment early. Keep it quiet. Let the chain do the work.

1 MISS GLOVE-SIDE
Nudge sternum toward ARM SIDE.

PITCHER'S VIEW

EFFECT

- ✓ Reorients the chain.
- ✓ Arm path tracks back to glove-side.
- ✓ Fix happens upstream.
- ✓ Result shows up at the plate.

Toward Arm Side

2 MISS ARM-SIDE
Nudge sternum toward GLOVE SIDE.

PITCHER'S VIEW

EFFECT

- ✗ Pulls arm path back.
- ✗ Tracks the pitch to arm-side.
- ✗ Do not chase the hand.
- ✗ Correct the source.

Toward Glove Side

3 MISS HIGH
LOWER the sternum.
Increase forward tilt slightly.

PITCHER'S VIEW

EFFECT

- ✓ Brings release point down.
- ✓ Do not try to throw down.
- ✓ Change body orientation.
- ✓ Let the chain carry it forward.

Lower Sternum

4 MISS LOW
RAISE the sternum.
Reduce forward tilt slightly.

PITCHER'S VIEW

EFFECT

- ✗ Lifts release point up.
- ✗ Do not try to lift the ball.
- ✗ Change body orientation.
- ✗ Let the chain carry it forward.

Raise Sternum

MAKE IT QUIET

- ✓ Below the noise line.
- ✓ Small enough to miss.
- ✓ No change to arm action.
- ✓ No change to grip.
- ✓ No change to stride or timing.

THE GOLDEN RULE

MORE IS NOT BETTER. FELT MORE THAN SEEN.

- A 1/2-inch shift is enough.
- A 2-inch shift is a different delivery.
- If they can see it, it's too much.

TRAIN IT

In bullpens with a location chart:

- ✓ Make one adjustment.
- ✓ Throw five pitches.
- ✓ Watch the miss pattern.
- ✓ Learn the feel before the game.

REMEMBER

You do not steer the hand.
You steer the chain at its source.
The hand goes where the chain sends it.

WHEN IT WORKS
On a stable platform.
Connected kinetic chain.

HIP LOCK

Solid and on time.

PELVIC CLOSURE

Stable and efficient.

TRUNK ROTATION

Sequenced and strong.

ARM PATH

On line to target.

RELEASE WINDOW

Clear and repeatable.

SMALL INPUT → STABLE CHAIN → CLEAN OUTPUT

WHEN IT DOESN'T WORK
Unstable platform.
Disconnected kinetic chain.

HIP LEAKS

Early, late, or too much.

PELVIS DRIFTS

Slides, tilts, or opens.

TRUNK YANKS

Spins early or late.

ARM DRIFTS

Off line, inconsistent.

WINDOW CHAOS

No consistent window.

NO STABLE SOURCE → NO CONSISTENCY → NO COMMAND

THE KEYS

- 1 Adjust upstream.
- 2 Adjust early.
- 3 Adjust small.
- 4 Adjust quiet.
- 5 Trust the chain.

ONE QUIET ADJUSTMENT. MANY BETTER OUTCOMES.

STEER THE CHAIN. TRUST THE SYSTEM. WIN THE AT-BAT.

4.1 How Upstream Adjustments Work

The kinetic chain is an amplifier. Small things early become big things late. Every coach knows this when something goes wrong. A tiny leak in the first move turns into a ball two feet off the plate. A little early rotation turns into arm-side run and a high miss. A little late posture turns into a spike.

But that same amplifier can help you, too. That is the part most people miss.

Small errors early can create big misses late. Small corrections early can create clean redirections late.

If a pitcher shifts his starting orientation just a little -- say he nudges the sternum a half inch toward the arm side -- the chain starts from a slightly different axis. That sounds too small to matter. It is not. It changes the way he enters hip lock. It changes the geometry of pelvic closure. It changes the path of the scapula, the way the arm moves through the release zone, and the direction the ball leaves the hand.

One small adjustment at the beginning. The rest of the chain takes it from there.

The pitcher does not steer the hand. He does not try to feel the release point. He does not talk himself through some five-part checklist while the hitter is standing there waiting. He makes one quiet upstream adjustment and lets the connected system do what connected systems do.

You do not steer the hand. You steer the chain at its source. The hand goes where the chain sends it.

That is the difference between mechanical change and navigation.

Mechanical change is a bigger deal. New arm path. New stride angle. New timing pattern. Those changes may be necessary in training, but they are not what you want a pitcher trying to manage in the third inning with two runners on.

Navigation is different. Navigation does not rebuild the delivery. It redirects the delivery from the source. It is small. It is fast. It is mostly invisible. And it keeps the pitcher out of his own head.

The sternum works as that source for three reasons. First, it is high enough in the chain that a small shift changes the orientation of everything below and around it: hip entry, pelvic closure, scapular path, trunk axis. Second, it sits close enough to the arm slot that the effect shows up clearly at release. Third, a pitcher can move it a little in the set position without looking like he is doing anything strange or risking a balk.

That last part matters. The best in-game adjustments are the ones nobody notices except the pitcher and the baseball.

4.2 The Sternum-as-Rudder Protocol

The protocol is simple. Four misses. Four small corrections. That is it.

The adjustment happens at setup or early in the delivery. It has to be below the noise line. Quiet enough that the hitter cannot see it. Small enough that it does not change the whole delivery. Simple enough that a pitcher can use it between pitches without turning the mound into a classroom.

Miss glove-side: Nudge the sternum slightly toward the arm side during setup. That arm-side orientation reorients the chain so the arm path tracks back toward the glove-side target. The fix happens upstream. The result shows up at the plate.

Miss arm-side: Nudge the sternum slightly toward the glove side. The glove-side orientation pulls the arm path back toward the intended line. Again, do not chase the hand. Correct the source.

Miss high: Lower the sternum. Increase the forward tilt of the trunk slightly at setup. This brings the release point down without asking the pitcher to throw the ball down. He changes his body orientation and lets the chain carry that correction forward.

Miss low: Raise the sternum. Reduce the forward trunk tilt slightly at setup. This lifts the release point and brings the ball back up in the zone. One small change. Then leave it alone.

None of these adjustments change the arm action. None of them change the grip. None of them ask the pitcher to lengthen the stride or rotate differently or think his way into a better release point. They change the starting orientation of the chain. That is all.

And that is enough, if the chain is connected.

The biggest mistake is making the adjustment too big. More is not better here. More is usually worse. A two-inch sternum shift is not a better version of a half-inch shift. It is a different delivery. The shift should be felt more than seen. If the catcher, hitter, and opposing dugout can spot it, it is too much.

Training rule: *Practice each adjustment in bullpens with a location chart. Make one adjustment, throw five pitches, and watch what happens to the miss pattern. The pitcher has to learn what each correction feels like before he can trust it in a game.*

4.3 Why This Only Works on a Stable Platform

There is one catch, and it is not a small one.

The sternum-as-rudder protocol only works if the kinetic chain is connected.

If the pelvis is unstable -- if hip lock is missing or pelvic closure is leaking -- the sternum adjustment will not travel cleanly through the system. It may move the upper body. It may change the look of the torso. But the lower half will keep doing whatever it was doing before. The correction dies somewhere between the sternum and the pelvis, and the ball does not care what the pitcher meant to do.

That makes the protocol a pretty good diagnostic tool. If the pitcher makes the adjustment and the miss pattern does not respond, do not blame the rudder. The rudder just told you the ship is not solid yet. The platform is still moving underneath it. Newtforce and motion capture would probably say the same thing: the chain below the sternum is not stable enough to transmit the correction.

When the work from Chapters 2 and 3 has been done, the response is different. The pitcher makes the adjustment and sees it within two or three pitches. He feels the redirection. The miss pattern moves. The chain carries the change from sternum to hip entry, to pelvic closure, to scapular path, to trunk axis, to arm path, to finger orientation at release.

The rudder works on a solid ship. Without platform stability, the sternum steers the upper body while the lower body keeps spinning.

This is why the book is ordered the way it is. Chapters 1 through 3 are not setup chapters you skip so you can get to the good stuff. They are the good stuff. This chapter is the finishing layer. It only works because the foundation underneath it is solid.

A pitcher who skips the platform work and jumps straight to sternum corrections will get fooled. Once in a while, he will hit a spot and think the adjustment worked. Two pitches later, it will disappear. That is not the protocol failing. That is the delivery telling the truth. The chain is not stable enough yet.

4.4 Real-World Application: The One-Thought Correction

Here is what this looks like in a real inning.

A pitcher is in the third. He has thrown six pitches, and four of them have missed glove-side. He does not know why. His mechanics do not feel terrible. The catcher is setting up where he is supposed to. Nobody in the dugout has said anything useful yet. It just keeps leaking over there.

From the framework in Chapter 1, glove-side misses from a pitcher who is warm and moving pretty well often point toward pelvic over-rotation. The front door has opened a little. The pelvis is drifting past its stopping point. The arm is getting dragged glove-side and usually down with it.

The sternum protocol gives him something he can do right now. No mound visit. No full mechanical lecture. No panic.

Between the sixth and seventh pitch, he steps back, breathes, and sets up with the sternum nudged slightly toward the arm side. Then he throws the seventh pitch. It finds the target.

He did not change his arm action. He did not tell himself to stay through the ball. He did not dig through a mental junk drawer of old cues. He moved the starting orientation about half an inch and let the chain redirect itself.

That is the one-thought correction.

Not a checklist. Not an overhaul. Not a crisis. One adjustment, upstream, mostly invisible, made in the time it takes to reset on the rubber.

At the ARMory: *We teach pitchers to build a personal correction library. Three or four sternum adjustments. Practiced in bullpens until they can be used in a game without turning the pitcher into a thinker instead of a competitor. Glove-side miss gets one correction. Arm-side miss gets another. High gets another. Low gets another. Small library. Felt. Automatic.*

The goal is not to make pitchers think about their sternum all game. That would be missing the point. The goal is to make the correction familiar enough that it barely feels like thinking. Read the miss. Make the adjustment. Throw the next pitch.

That is command in the form that actually matters. Not just throwing the ball where you meant to throw it. That is part of it. But the better version is this: when the result and the intention do not match, you know how to correct yourself before the inning gets away from you.

That is the difference between a pitcher who needs a mound visit and a pitcher who has already solved the problem before the coach gets to the foul line.

Build the platform. Widen the release window. Stop the carousel. Then pick up the rudder and steer.

Part One is complete. Four chapters have built the movement foundation of command: what command actually is, how impulse widens or tightens the release window, how hip lock and pelvic closure create the stable platform, and how the sternum gives a pitcher a way to self-correct in the game without tearing the delivery apart between pitches.

Part Two turns to the other half of the command problem. Once a pitcher has a body that can find the strike zone, the next question is where he should aim.

The answer is probably not where most coaches have told him.

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The Pitcher's Complete Guide to Command

PART TWO: THE APPROACH

Movement builds the foundation. Strategy turns it into a weapon.

Chapter 5: The Strike Zone Is Not Your Enemy

Every pitcher who has ever picked up a baseball has heard it. Paint the corners. Work the edges. Do not give them anything good. Make the hitter earn it.

It sounds smart. It sounds like real pitching. It sounds like the kind of thing a coach says when he wants to sound like he respects the craft.

And it gets a lot of pitchers beat.

Not because the idea is evil. There are times to live on the edge. There are times to expand. There are times when a ball just off the plate is exactly the right pitch. But as a base philosophy -- especially for amateurs -- paint the corners is one of the quickest ways to fall behind, pile up pitches, walk guys you should never walk, and leave the game in the third inning wondering why nothing felt easy.

The corners are not where most pitchers think they are. The middle is not nearly as dangerous as they have been taught. And the data from two of the sharpest organizations in professional baseball points in the same direction.

Part Two is about strategy. Chapters 1 through 4 built the movement side: the stable platform, the wider release window, the body that can actually find the zone often enough to compete. Now we deal with the other half of command.

Once you have a body that can throw strikes, where should you aim?

The answer is probably going to bother some people. Good. It should.

5.1 The Tampa Bay Rays and “Remember the 95”

In the spring of 2017, I was at the Tampa Bay Rays spring training complex in Port Charlotte. The Rays already had a reputation as one of the most analytically aggressive organizations in baseball, and that spring they were putting the numbers in front of the people who needed to hear them most: the pitchers.

They brought every minor league pitcher in the organization into the clubhouse. Lights down. Big screen. Then they played a video.

It was not a hype video. It was not a highlight reel. It was a loop of every 0-0 fastball Rays pitchers had thrown to the center of the strike zone during the previous major league season.

First pitch of the at-bat. Fastball. Center cut.

The video froze right before the hitter made his swing decision, so the pitchers could see what the hitter saw. No trick. No hidden context. Just a big league hitter looking at a first-pitch fastball in the middle of the plate.

It ran for a while. There were a lot of pitches.

When it ended, the lights came back on. The presenter turned to the room and asked one question.

What percentage of those pitches do you think went in favor of the pitcher? Strike, foul ball, or out?

The answers started coming from the room. Twenty percent. Thirty. Maybe forty. A few guys said fifty, probably trying to be brave.

That tells you everything. These were professional pitchers. Not Little Leaguers. Not dads in the stands. Professional pitchers, inside one of the smartest organizations in baseball, and they still believed the middle of the plate was where baseballs go to die.

The answer was 95 percent. Not 50. Not 60. Ninety-five percent of first-pitch center-cut fastballs went in favor of the pitcher.

The room got quiet.

And it should have.

Think about that. Out of every 100 first-pitch fastballs thrown to the center of the zone by major league pitchers, 95 turned into a strike, a foul ball, or an out. The hitter won four or five times out of a hundred. These were the best hitters in the world, and even they were not punishing the pitch anywhere close to the way pitchers had imagined.

The Rays did not treat that as trivia. They changed behavior. The next season, they had their catchers set up in the middle of the strike zone on 0-0. Every hitter. Every at-bat. They did not start moving the target until the count got to two strikes.

That takes guts. It also takes trust in the math.

The following spring I was back in Port Charlotte. The pitchers were wearing new shirts. The shirts said, Remember the 97.

I asked what happened to the 95.

One of the coaches laughed. We executed the plan so well, he said, the number went up.

A full year of attacking the zone early raised their favorable outcome rate on first-pitch center-cut fastballs from 95 to 97 percent.

Ninety-seven out of a hundred.

Sit with that for a second before you go back to telling a 16-year-old to paint the black on 0-0.

5.2 The Cardinals and the 8-Inch Cookie

A few years later, my friend Dusty Blake became the pitching coach for the St. Louis Cardinals. Dusty is one of the more analytically sophisticated pitching coaches in the game, but he is not a spreadsheet guy pretending baseball is played in a lab. He knows what the numbers mean because he knows what the game feels like.

During his first season with the Cardinals, he asked their analytics department to look at Hawkeye data from the previous two seasons and isolate one spot.

An 8-inch by 8-inch square in the dead center of the strike zone.

Not the corner. Not the black. Not that mythical low-away dot coaches love to talk about. The center. The cookie. The place pitchers are told never to throw the ball unless they enjoy watching hitters jog. The question was simple. When a Cardinals pitcher threw a pitch into that 8-inch center square, what happened?

The answer was not what most coaches would guess.

Eighty-eight percent of those pitches went in favor of the pitcher.

Again, these were not spring-training tosses. Not batting practice. Not scripted bullpens. These were major league games, against major league hitters, with consequences. And the supposedly dangerous cookie produced a pitcher-favorable result nearly nine times out of ten.

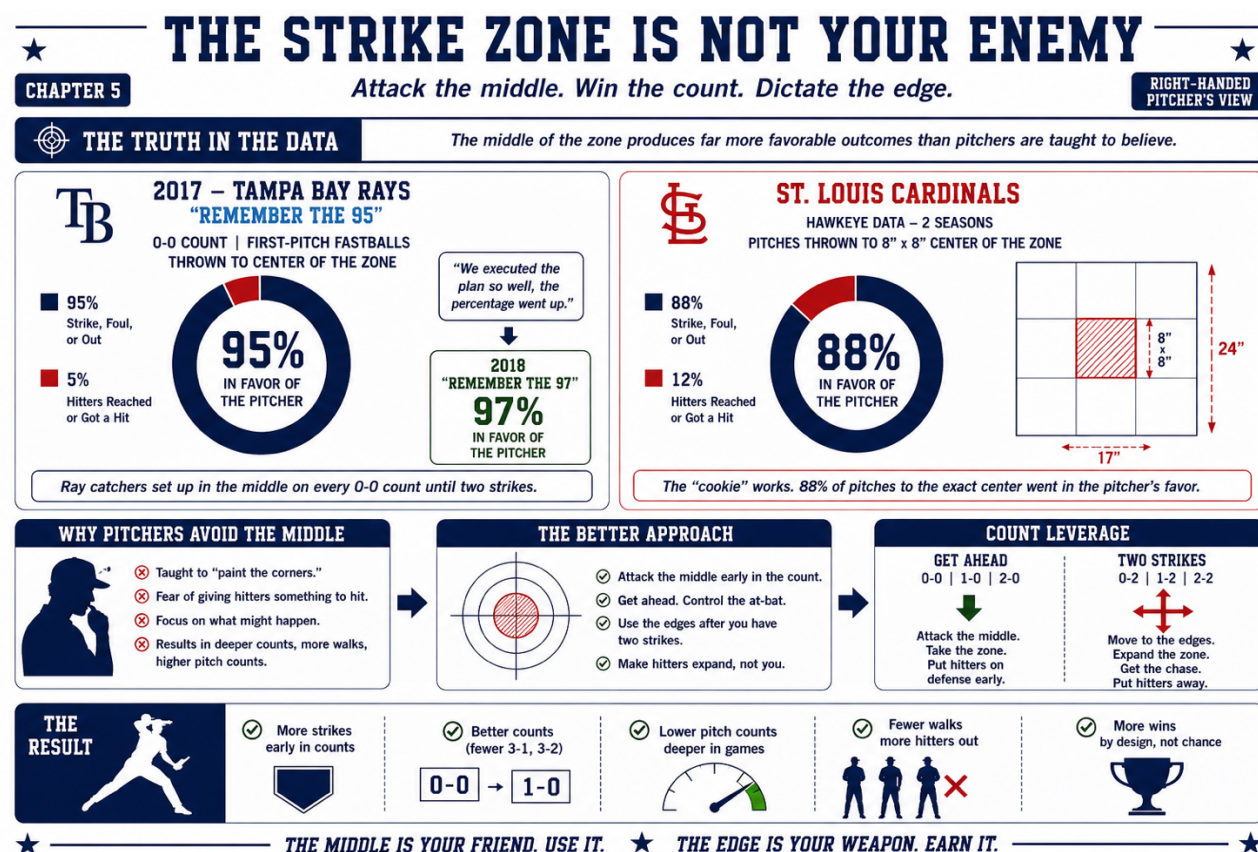
Now drop that into the amateur game.

High school hitters. College hitters. Travel ball hitters. Adult league hitters who have jobs on Monday. They do not see the ball as well as big leaguers. They do not recognize spin as early. Their swing decisions are not as clean. Their bat speed is lower. Their discipline is worse. Their ability to punish a mistake is not even in the same zip code.

So what happens when an amateur pitcher throws to that same 8-inch square? The outcome is not likely to get worse. It is almost certainly better.

And yet the mid-80s high school pitcher keeps nibbling. He tries to be fine. He tries to prove he can hit a corner he probably cannot hit. He falls behind, then gets mad at himself for not throwing strikes under pressure.

That is not just a physical problem. It is a belief problem.



5.3 The Average MLB Miss: Why You Must Aim for the Middle

The Rays story and the Cardinals data tell us something important: the middle is safer than pitchers think. But there is another reason to aim middle, and this one is even more basic.

Pitchers miss. Everybody misses.

Major league tracking systems can compare where a pitcher intended to throw the ball with where it actually went. That distance -- the miss distance -- can be averaged across thousands of pitches. And remember, we are talking about the best pitchers in the world.

Here are the average miss distances by pitch type:

Four-seam fastball: 12.7 inches

Sinker: 11.7 inches

Cutter: 11.4 inches

Slider: 11.7 inches

Curveball: 13.0 inches

Changeup: 11.4 inches

That should make every coach who teaches corner-painting on 0-0 pause for a minute.

These are major league pitchers, and they miss their intended target by about a foot. Not once in a while. On average.

Now run the old corner strategy through that reality.

A pitcher aims a four-seam fastball at the low-and-away corner to a right-handed hitter. The corner is already roughly six inches from the center of the plate. He makes a pretty normal miss -- about twelve inches -- toward the edge. Now the ball is six inches off the plate. Ball one.

Same pitcher. Same pitch. Same miss. But this time he aims at the middle of the zone. He misses twelve inches toward the corner. Now the pitch ends up on the corner. Strike.

Nothing magical happened. He did not command it better. He did not suddenly learn how to paint. He just picked a target that allowed a normal miss to stay in the strike zone.

You do not aim middle because it is easy. You aim middle because your miss takes you to the corner. Aim corner and your miss takes you off the plate.

That is the whole math of it.

If the best pitchers on earth miss by nearly a foot, then an amateur pitcher who aims at the corner is usually aiming at a ball. He may not admit that. His coach may not see it that way. But the geometry does not care.

Aim middle and miss by a foot in any direction, and a lot of those pitches are still competitive. Aim corner and miss by a foot toward the edge, and the count just moved against you.

You are going to miss. That is not negative thinking. That is baseball. So build a plan where the miss still gives you a chance.

5.4 The Velocity Objection

Whenever I teach this, somebody eventually gives me the same look. Usually a coach. Sometimes a dad. Sometimes a pitcher who thinks he has caught me missing the obvious.

Yeah, that is fine if you throw 100. What about the kid throwing 82? He cannot just throw it down the middle.

I get the objection. I really do. It sounds right. It is also backwards.

The guy throwing upper 90s has a weapon that changes everything. The ball gets on the hitter faster than the hitter can comfortably process it. That pitcher can survive more location mistakes because the velocity itself buys him margin.

The low-to-mid 80s pitcher does not have that margin. His fastball lives inside the hitter's decision window. The hitter can see it, track it, time it, and make a real swing decision. So if that pitcher falls behind, he is in trouble. He cannot waste pitches. He cannot scare the hitter with pure stuff. He cannot just rear back and erase a bad count.

That is exactly why he has to attack earlier.

The average-velocity pitcher needs count leverage more than the elite-velocity pitcher does. That is the part people miss. The power arm can survive a hitter's count. The 82-86 guy usually cannot.

If he nibbles his way into 2-0 and 3-1, now he has built the exact situation everybody is afraid of. The hitter knows a strike is coming. The hitter is probably sitting fastball. The hitter can shrink the zone in his mind and get aggressive. Now a middle fastball is dangerous because the pitcher gave the hitter permission to expect it.

But a middle fastball on 0-0 is a completely different animal. The hitter does not know what is coming. He has not narrowed anything yet. He is still covering speed, shape, height, and side. That is when the strike zone belongs to the pitcher.

So no, the mid-80s pitcher should not be more careful. He should be less careful early and more intelligent late. He has to grab leverage before the hitter does.

The pitcher with elite stuff can survive hitter's counts. The pitcher without elite stuff cannot. So the pitcher without elite stuff has to attack first.

The paint-the-corners philosophy hurts the average-velocity pitcher the most. It sounds protective, but it is not. It puts him in the exact counts where his stuff plays down and the hitter's confidence goes up.

If your stuff is not elite, count leverage is not a nice bonus. It is the weapon.

5.5 You Can Throw It in the Middle -- With One Condition

So yes, you can throw the ball in the middle of the strike zone.

But there is a condition, and it matters.

You can throw it in the middle when the hitter does not know you have to throw it there.

That is the line. Cross it, and everything changes.

A center-cut fastball on 0-0 is not the same pitch as a center-cut fastball on 3-1. Same velocity. Same location. Same baseball. Completely different pitch.

On 0-0, the hitter has almost no useful information. He does not know speed. He does not know shape. He does not know whether you are going in, out, up, down, hard, soft, straight, or moving. He has to cover too much. That is why the Rays could throw first-pitch fastballs to the middle and win the pitch 95 to 97 percent of the time.

On 3-1, the hitter has plenty of information. He knows you need a strike. He knows you probably do not want to walk him. He can sit on a smaller part of the zone. He can hunt a pitch instead of defending against everything. Now the middle is not your friend. It belongs to him because you gave it to him.

That is the difference. Not location alone. Location plus count. Location plus expectation. Location plus leverage.

This is why attacking early is not reckless. It is the thing that keeps you from becoming predictable later.

The pitcher who attacks 0-0, 0-1, and 1-0 keeps the hitter broad. The hitter still has to defend the whole at-bat. The pitcher who nibbles himself into 2-0 and 3-1 has narrowed the hitter's world for him. He has done the hitter a favor.

Do not do favors for hitters. They already have bats.

Attack the zone before the hitter has leverage. Stay in pitcher's counts. Then the middle is safe. Fall behind, and the middle belongs to the hitter.

The Rays did not teach their pitchers to throw everything down the middle. That is the lazy misunderstanding of the point. They attacked the middle on the first pitch because the first pitch is the leverage pitch. Win that one, and the at-bat changes. Lose it, and the hitter starts taking pieces of the plate away from you.

Chapter 6 builds on this directly. Count leverage is the engine that makes this whole approach work. The Rays and Cardinals data is not the strategy by itself. It is evidence that the strategy is sound.

The strategy is simple, but not easy: get ahead, stay ahead, and make the hitter compete on your terms. The strike zone is not your enemy. Falling behind is.

What Comes Next

Chapter 5 laid down the first strategic brick. The middle of the strike zone is safer than most pitchers believe, and the average miss distance in baseball makes a middle target far more rational than a corner target.

The velocity objection has it backwards. The pitcher without elite stuff needs count leverage more, not less. And the condition is non-negotiable: the middle is safe before the hitter has leverage. Fall behind, and that same pitch turns into danger.

Chapter 6 goes straight at count leverage: what it is, what it is worth, and how to build it over the course of a game. Getting ahead is not a side effect of command. It is the strategic objective that gives every other pitch its value.

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The Pitcher's Complete Guide to Command

Chapter 6: Count Leverage – The Strategic Foundation of Command

There is one thing in an at-bat the pitcher can actually own.

Not the hitter. He is who he is. Not the park. Not the wind. Not the umpire. The pitcher can influence all of it, sure. But he does not control it.

The count is different.

Every ball and every strike comes from a pitch the pitcher chose to throw. That does not mean every call goes his way. It does not mean every pitch lands exactly where he wanted it. But the count is still the one part of the at-bat that starts in his hands.

So when a pitcher gives it away, he is giving away the one thing he could have managed.

Chapter 5 made the case that the middle of the strike zone is a lot safer than most pitchers think. But there was one condition: the hitter cannot know you have to throw it there. Count leverage is what protects that condition. Get ahead early and the middle belongs to you. Fall behind and the middle belongs to him. Same pitch. Different world.

6.1 What Count Leverage Means

Count leverage is the ability to keep the at-bat tilted in your favor, pitch after pitch, inning after inning. Not once. Not by accident. As a pattern.

Every count in baseball tells a story. It tells the hitter what he can eliminate. It tells the pitcher how much freedom he still has. And it tells the game, quietly, who is in charge at that moment.

PITCHER'S COUNTS: 0-1, 0-2, 1-2. *The pitcher can miss and it does not cost him much. The hitter has to protect. The pitcher can expand, tunnel, tease, elevate, bury, or make the hitter defend a pitch he does not want to defend.*

NEUTRAL COUNTS: 0-0, 1-0, 1-1. *Nobody owns it yet. But 0-0 is not just neutral. It is the pitch that decides which way the at-bat starts leaning.*

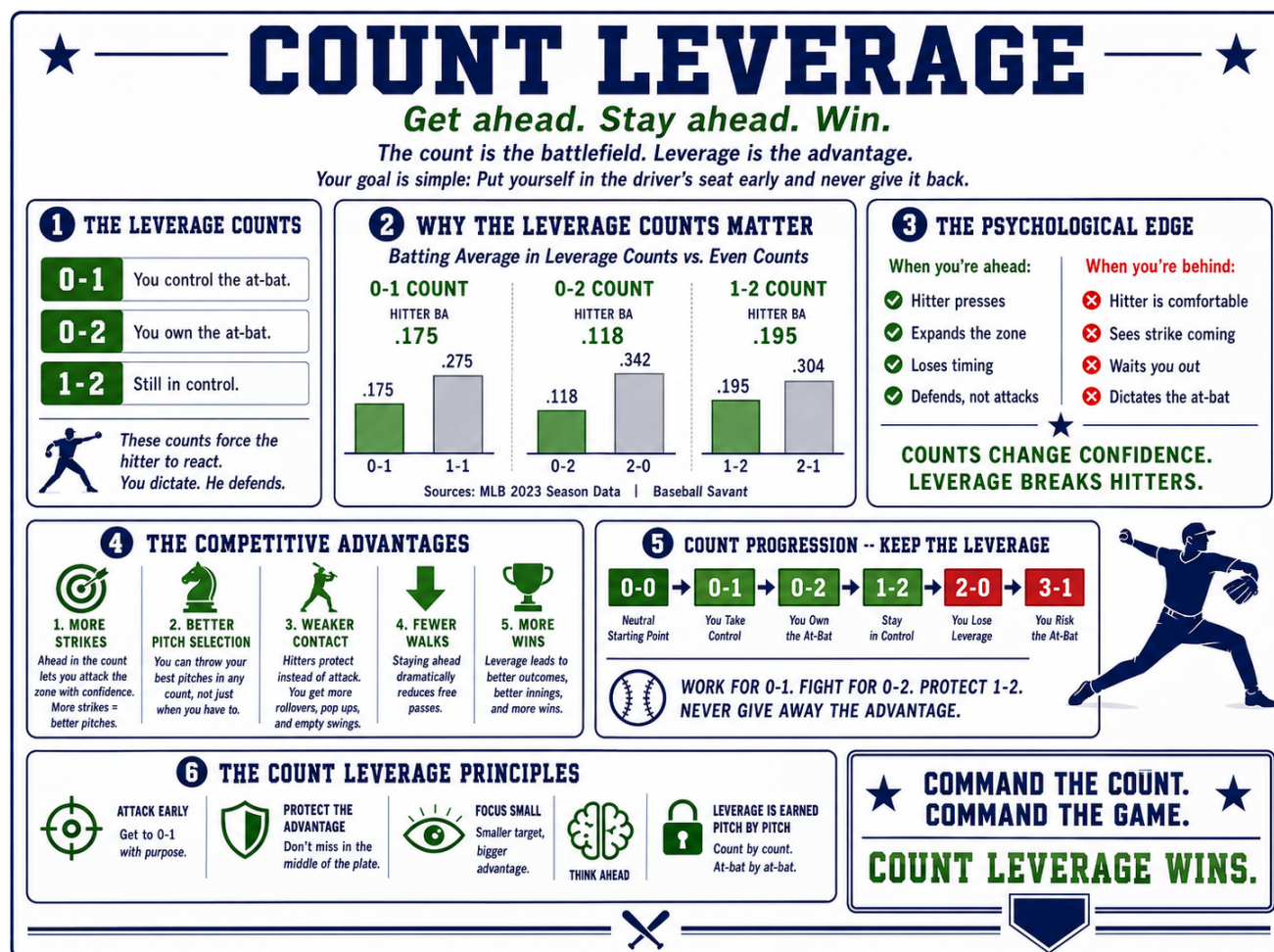
HITTER'S COUNTS: 2-0, 2-1, 3-0, 3-1. *The pitcher needs a strike. The hitter knows it. The menu shrinks. The hitter can stop guessing at everything and start hunting something.*

A seven-inning, 90-pitch outing and a seven-inning, 100-pitch outing are usually not separated by some magic velocity jump or a new breaking ball. Most of the time, the difference is first-pitch strikes and the counts that follow them.

The pitcher who lives in pitcher's counts gets weak contact. He limits walks. He saves pitches without trying to save pitches. The pitcher who lives behind in the count spends the whole night trying to escape damage he created two pitches earlier.

Count leverage is not a sexy topic. Nobody makes a hype video out of 0-1. But it is the frame that holds everything else. Secondary pitches, tunnels, chase plans, sequencing -- none of it works the same if the pitcher has already handed the hitter the count.

The pitcher who controls the count controls the at-bat. Control enough at-bats and you start controlling innings. Control enough innings and the game starts looking a whole lot different.



6.2 The 0-0 Count: Your Biggest Asset

The 0-0 pitch is the most valuable pitch in the at-bat. It is also the one pitchers waste the most.

On 0-0, the hitter has nothing. No pitch type. No location pattern. No speed read. No sequence. He has to cover too much of the plate with too little information. He is as uncertain as he is going to be.

That is the moment to attack him.

A strike on the first pitch -- any strike -- moves the count to 0-1 and immediately gives the pitcher options. Now the secondary pitch is in play. The fastball to a better spot is in play. The chase pitch later in the at-bat is in play. The hitter is already defending instead of hunting.

A ball on the first pitch does the opposite. Now it is 1-0. The hitter has one piece of information. The pitcher has burned one of his three misses. Get to 2-0 and the hitter's world gets smaller. Get to 3-0 and everybody in the park knows what is coming.

From Chapter 5: *Rays pitchers got a favorable result on 95 to 97 percent of first-pitch, center-cut fastballs in a major league season. That is not a typo. The 0-0 count, attacked with conviction, is almost automatic in the pitcher's favor.*

Pitchers usually mismanage 0-0 in one of two ways.

The first is the nibble. The catcher sets up on the edge, the pitcher tries to be fine, misses by a few inches, and now the at-bat starts 1-0. That is not command. That is handing the hitter a coupon.

The second is the automatic take pitch. First-pitch breaking ball, not really meant to be a strike, because the pitcher assumes the hitter is taking. The hitter takes. The umpire says ball. Congratulations, you guessed right and still lost leverage.

The first pitch deserves more conviction than that. Not recklessness. Conviction. The hitter is unsure. The count is even. A strike costs the pitcher nothing. A ball costs him leverage he may spend the rest of the at-bat trying to buy back.

There is no better risk-reward pitch in baseball than a first-pitch strike thrown with a real plan.

6.3 Pitcher's Counts: What to Do With the Advantage

Once you earn a pitcher's count, do not act like it is still 0-0.

This is where a lot of pitchers give the leverage right back. They get to 0-1 or 1-2, then panic and throw the same safe strike they were trying to throw before. That is wasting the count.

The general rule in pitcher's counts is expansion. Make the hitter make uncomfortable decisions. Move him off the strike zone without letting him completely off the hook. Save the true middle-middle competitive pitch for the counts where you actually need it.

From 0-1:

Everything is alive. Fastball. Secondary. Tunnel. Edge. Speed change. The hitter has to consider too much. Use that. This is a great count to show him something he has not seen, or to begin building the pitch that will beat him later in the at-bat.

From 0-2:

This is the most powerful count in the game. It is also where baseball has argued with itself for a long time.

The traditional answer is simple: expand hard. You have three balls to play with. Bury the breaking ball. Elevate the fastball. Run the changeup off the plate. Make him chase something he cannot hurt.

There is nothing wrong with that. It works. Especially for pitchers who do not yet have the command to make a precise competitive pitch under pressure.

But Greg Maddux saw it differently. Maddux hated the automatic waste pitch. His thinking was blunt: the hitter is already beaten. He is defensive. He cannot take a full, committed swing. Why give him a free pitch to see? Why move the count from 0-2 to 1-2 on purpose? Execute a real pitch and get the out.

Why give him a free pitch to look at? He is already beaten. Execute and get the out now. -- Greg Maddux on 0-2 waste pitches

Both ideas are right, depending on the pitcher in front of you.

If your command is sharp, the Maddux answer is the better answer. Not a cookie. Not a lazy strike. A competitive pitch to a difficult location. Something that forces a decision and has a chance to end the at-bat right now.

If your command is still developing, use the cushion. Expand. Make the hitter chase. Do not pretend you have Maddux's option until your movement system has earned it.

Practical rule: *If you can execute a precise competitive pitch under pressure, finish the hitter on 0-2. If you cannot, expand the zone and make him chase. The movement work in Part One is what earns you the Maddux option.*

There is another reason Maddux was right more often than people admit: pitch count. Every wasted 0-2 pitch that becomes a ball is one more pitch on the arm and one more look for the hitter. Efficiency is not just a box-score stat. It is a career-management skill.

From 1-2:

Still your count. Do not get scared. The hitter has to protect. You can miss to an uncomfortable spot and still be fine. The count says expand, so expand. The only mistake here is acting like the hitter has the leverage when he does not.

Rule in pitcher's counts: *In 0-1 and 1-2, expand and set traps. In 0-2, finish the hitter if your command is good enough. If not, expand. Either way, the at-bat belongs to you.*

6.4 Hitter's Counts: The Damage Zone

Hitter's counts are not problems to solve. They are taxes to avoid.

In 3-0 and 3-1, the hitter is hunting a strike. Usually fastball. Usually somewhere he can handle. He has eliminated almost everything else. He can swing harder because the count has done the thinking for him.

The same thing starts happening at 2-0. He is leaning fastball. He can take anything close but not perfect. The pitcher needs a strike, and the hitter knows it. That is the whole problem.

By 3-1, the pitcher has one pitch of margin. One. That is not a strategy. That is a narrow hallway with a hitter standing at the end of it waiting on a fastball.

The goal is not to pitch better in hitter's counts. The goal is to stay out of them.

Coaches tell pitchers to make a quality pitch and battle when they get into those counts. Fine. Sometimes that is all you can do. But do not confuse damage control with good pitching.

A pitcher who throws a good strike at 3-0 and feels proud of it is missing the point. He got to 3-0 because something earlier in the at-bat failed. Maybe he missed 0-0. Maybe he nibbled at 1-0. Maybe he bounced a chase pitch at 1-2 that had no chance to be tempting. Whatever the path was, he is now paying for it.

Most hitter's counts trace back to the same root: the pitcher did not attack early enough, or he failed to execute the attack when the count gave him the chance.

Eliminate first-pitch balls and 2-0 and 3-0 counts almost disappear from an outing. That is the real point of the attack-first philosophy. It is not about being brave. It is about making bad counts rare.

6.5 The Attack-First Philosophy

Traditional pitching language loves the phrase, do not give in.

There is a good version of that advice. In a big spot, against a dangerous hitter, when the pressure is screaming at the pitcher to lay one in there, he cannot let fear make the pitch for him. Do not give in means do not surrender your conviction just because the moment got loud.

But a lot of pitchers have turned that into something else. They hear do not give in and translate it as do not throw strikes until you absolutely have to.

So they work the corner on 0-0. They steal a breaking ball early and miss. They try to be fine on 1-0 and go 2-0. Then they call it pitching. It is not pitching. It is falling behind with a vocabulary.

Do not give in was never meant to mean avoid the strike zone. It meant this: when the count forces you to throw a strike, do not let pressure make you throw a pitch the hitter can destroy.

Attack-first starts earlier than that. It says attack the zone on 0-0. Attack again on 0-1, but with purpose. When you earn a pitcher's count, expand. When you get two strikes, decide whether your command is good enough to finish him or whether you need to make him chase. But stop giving hitters free leverage before they have earned anything.

The attack-first pitcher puts the hitter on defense immediately. He does not let him get comfortable taking a ball and shrinking the game down. He starts the fight. Then he keeps the leverage.

Complete picture: Attack on 0-0 to earn leverage. Use pitcher's counts to expand or finish. Stay out of hitter's counts by refusing to start at-bats with a ball you did not need to throw.

This only works if the movement foundation exists. A pitcher who cannot find the strike zone cannot simply decide to attack 0-0 and expect it to work. He will accidentally create 1-0 counts and call it aggression.

That is why Part One matters. Attractor stability gives the pitcher a body that can find the zone. Count leverage gives him a reason to go there now, before the hitter has organized his expectations.

When those two pieces come together, command starts to look like a full system. The body sends the ball where the strategy demands it. The strategy demands it early. And early is when the hitter knows the least.

That is the window. Use it.

What Comes Next

Chapter 6 put the count leverage system in place: what it is, how to build it, how to spend it, and how to stop giving it away. Attack-first is not a slogan. It is a way of keeping the at-bat tilted before the hitter gets a vote.

Chapter 7 brings the book into pitch-by-pitch application. Every pitch already has a direction it wants to take. The four-seamer wants to ride. The sinker wants to run. The curveball wants to drop. Chapter 7 is about discovering where each pitch naturally wants to go, aiming at targets that deploy that movement, and building sequences that make the whole arsenal harder to read.

Aim Small, Miss Small | Florida Baseball ARMory | Randy Sullivan, MPT, CSCS

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AIM SMALL, MISS SMALL

The Pitcher's Complete Guide to Command

Chapter 7:

Pitch Design and Command – Throw the Pitch Where It Wants to Go

Everything in the first seven chapters has been dragging us toward one simple question.

If the body is organized well enough to find the zone, and the pitcher understands when to attack, where should each pitch actually go?

The answer is not as complicated as the pitch-design world sometimes makes it. Every pitch already has a direction it wants to take. It moves that way because of the grip, the spin axis, the arm path, the release, and the attractor landscape underneath the delivery. That movement is not a flaw. It is information. More than that, it is the weapon.

A pitcher who throws his four-seamer where the four-seamer already wants to go is working with his body. A pitcher who tries to force a pitch into a location that fights its natural movement is working against his body. And command is usually the first thing to disappear when that happens.

Throw the pitch where it wants to go. Natural movement is the weapon. The target should deploy it, not fight it.

This chapter walks through the major pitch types. Where they want to go. How to aim them. What happens when a pitcher tries to make them do something they were never built to do.

Then we tie the whole thing together with sequencing -- not sequencing as a cute chart in a notebook, but sequencing built around what the ball is actually doing out of that pitcher's hand.

7.1 The Movement Signature

Every pitcher has a movement signature. Not a brand. Not a pitch-design label. A real signature -- the way his body, his arm, his fingers, and his delivery tend to send the ball into the world.

That signature shows up as spin direction, spin axis, approach angle, and ball flight. It comes from the attractor landscape: hip lock, pelvic closure, trunk rotation, arm path, finger orientation at release. All of it. The pitch is never just the grip. The grip is the last mile of a much longer road.

Two pitchers can both say they throw a slider and produce two completely different pitches. One sweeps across the plate. Another drops late with tight gyro depth. Neither one is wrong. They are just different bodies producing different solutions. The mistake is asking one pitcher to throw the other pitcher's slider because it looked good on Twitter or in a big league overlay.

Before anything in this chapter matters, the pitcher has to answer a basic question: what does my pitch actually do when I throw it with intent and stop trying to steer it?

The diagnostic question: where does each pitch go when the pitcher throws it with full intent and no compensations? That natural destination is the starting point. Build the target around the movement. Do not bend the movement around some target you borrowed from somebody else.

The movement signature also includes vertical approach angle -- the angle at which the pitch is descending as it crosses the plate. Some pitchers naturally produce a steep VAA, meaning the ball

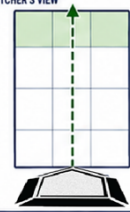
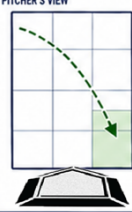
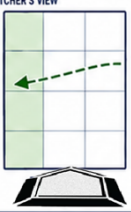
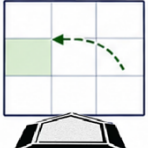
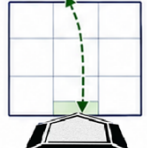
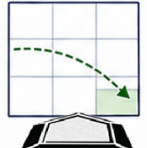
arrives on a sharper downward path. Others produce a shallower VAA, where the ball arrives more horizontally. The practical rule is simple: a pitcher with a steep VAA gets the most from his pitches by keeping the ball down in the zone, where the steep descent amplifies the plane mismatch against the hitter's upward swing path. A pitcher with a shallow VAA gets the most from working the top of the zone, where the flat arrival makes the ball hardest to square up. Know which one your body produces and design your targets accordingly. The pitch-by-pitch sections that follow account for both.

So when we talk about pitch design here, we are not talking about inventing pitches in a lab. We are talking about discovering what is already there, cleaning it up, and pointing it where it can do the most damage.

★ PITCH-TYPE TARGET ATLAS ★

Throw the pitch where it wants to go.

All strike-zone diagrams are shown from a right-handed pitcher's perspective.

1 FOUR-SEAM FASTBALL RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Ride 'carry,' sink down VA, minimal horizontal break. BEST TARGET: Top third of the zone. COMMON MISTAKE: Aiming low and fighting the carry. IDEAL PAIRING: Changeup or cutter.	2 SINKER / TWO-SEAM RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Arm-side run with sink, steeper VAA. BEST TARGET: Bottom third of the zone. COMMON MISTAKE: Forcing it glove-side. IDEAL PAIRING: Cutter or glove-side slider.	3 CUTTER RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Late glove-side movement with fastball-like speed. BEST TARGET: Glove-side edge, starting from middle or slight arm-side. COMMON MISTAKE: Aiming at the inner half to "cut" it. IDEAL PAIRING: Four-seam or sinker.	4 SWEEPER SLIDER RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Wide, horizontal sweep. BEST TARGET: Start middle/inner half and finish off the glove-side edge. COMMON MISTAKE: Aiming at the finish point instead of the starting point. IDEAL PAIRING: Sinker or four-seam.
5 TIGHT GYRO SLIDER RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Late break with depth. BEST TARGET: Free-high to below the zone. COMMON MISTAKE: Leaving it in the middle. IDEAL PAIRING: Four-seam.	6 CURVEBALL RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: True downward drop, steep VAA. BEST TARGET: Bottom of the zone or below, starting higher. COMMON MISTAKE: Aiming too low and creating a hanger or spike. IDEAL PAIRING: Elevated four-seam.	7 CHANGEUP RIGHT-HANDED PITCHER'S VIEW  NATURAL MOVEMENT: Arm-side fade with sink. BEST TARGET: Arm-side bottom of the zone. COMMON MISTAKE: Trying to throw it glove-side. IDEAL PAIRING: Four-seam.	

THE COMMAND RULE

The target should be built around the movement, not the movement adjusted to fit the target.

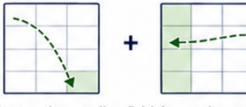
SEQUENCING / TUNNEL IDEA

1 FOUR-SEAM UP + CHANGEUP DOWN/FADE



Same tunnel, different speed and depth.

2 SINKER ARM-SIDE + CUTTER GLOVE-SIDE



Start on the same line, finish in opposite spots.

3 FASTBALL INNER-HALF + CURVEBALL BOTTOM EDGE



Different heights, same release.

★ **One release point. Multiple outcomes.** ★

7.2 The Four-Seam Fastball: Ride, Do Not Fight Gravity

The four-seam fastball is built on backspin. True backspin creates upward Magnus force against gravity. The ball does not actually rise, no matter how many hitters swear it did. It just drops less than the hitter's brain expected it to drop. That is enough.

That reduced drop creates the illusion of rise and the real geometric advantage of a shallower vertical approach angle. The pitch gets to the plate flatter than the bat path is built to handle, especially at the top of the zone.

Movement signature: Induced vertical break from backspin, minimal horizontal movement, and a shallow VAA when spin efficiency and extension are real.

Where it wants to go: The top third of the strike zone. Above the zone when ahead. Glove-side upper edge for certain backdoor looks against opposite-handed hitters.

The command instruction is simple: aim the four-seamer up and let the carry work. The elevated four-seamer gives the hitter a geometry problem. His barrel is rising. The ball is arriving flatter. The planes do not stay together very long. A hitter can recognize it, time it, make what feels like a good swing, and still swing under it or foul it straight back.

The pitcher who tries to live at the bottom of the zone with a true riding four-seamer is fighting his own pitch. He either forces it down and spikes it, or the natural carry takes over and the ball leaks back into the most dangerous part of the zone. That is how a good fastball becomes a very ordinary one.

Working against it: Aiming low with a high-riding four-seamer kills the advantage. It fights the VAA and puts the pitch closer to the hitter's barrel path. Bad trade.

Extension matters here too. Authentic extension preserves the carry. When the pitcher cuts off his arm, pulls the front side open, or loses trunk posture before release, the fastball loses its shape. It stops carrying. The VAA gets steeper. What should have been a riding fastball becomes a flat one in a hitter's happy place.

That is why the movement work in Part One is not separate from pitch quality. Stable trunk posture and real extension do not just help command. They keep the four-seamer alive.

7.3 The Two-Seam Fastball and Sinker: Let It Run

The two-seamer and sinker are not four-seamers with worse carry. They are different weapons. They are supposed to move arm-side. They are supposed to get down. The whole point is run and sink, not ride.

A good sinker takes a tilted spin axis, seam effects, gravity, and arm-side movement, and turns them into uncomfortable contact. Not pretty contact. Not launch-angle contact. Ground balls, rollovers, chopped balls, balls off the end, balls off the handle. That is the job.

Movement signature: Arm-side run with downward movement. Steeper VAA than the four-seamer. The ball fades toward the throwing-arm side and sinks as it gets to the plate.

Where it wants to go: Arm-side bottom of the zone. In on the hands of a same-handed hitter. Down and away from an opposite-handed hitter.

The command instruction is to aim the sinker at the arm-side half and let it finish where the movement wants to take it. If it starts middle and runs, it can end up on the arm-side edge. If it starts on the edge and runs more, it may finish just off. Depending on the count and the hitter, that can still be a good pitch.

The sinker gets dangerous when it stays up. Then the hitter's upward swing can get underneath it and lift it. A sinker up in the zone is not a sinker doing its job. It is a batting-practice fastball with arm-side drift.

Working against it: Trying to backdoor a sinker to the glove-side corner asks the pitch to be something it is not. The pitcher over-aims, loses feel, or leaves it middle. The sinker does not want to live glove-side. Stop dragging it there.

The sinker pairs naturally with pitches that move the other way. Sinker arm-side, cutter or slider glove-side. Now the hitter has to cover both lanes. The release looks similar, the early window looks similar, and then the ball splits in opposite directions. That is a real problem.

7.4 The Cutter: Glove-Side Is the Destination

The cutter is a fastball that refuses to stay in the fastball lane. It has most of the speed, but late glove-side movement. That late move is the whole reason the pitch exists. If the pitch does not move late, it is usually just a slower fastball with attitude.

Movement signature: Fastball velocity with late glove-side movement. Similar approach angle to a four-seamer, but with horizontal deflection at the end.

Where it wants to go: Glove-side edge. Away from a same-handed hitter. In on the hands of an opposite-handed hitter.

The cutter should usually be aimed more middle or even a shade arm-side of its final destination. Let the cut take it to the glove-side edge. If the pitcher aims the cutter at the glove-side corner, the cut may carry it off the plate before it ever threatens the hitter.

That is the part a lot of pitchers miss. The target is not where the ball starts. The target is where the ball finishes. With a cutter, those two places are not the same.

Working against it: Aiming the cutter at the glove-side corner usually creates one of two problems: it cuts off the plate for a ball, or the pitcher subconsciously holds onto it and kills the cut. Either way, the pitch loses its point.

The cutter pairs beautifully with the four-seamer because the hitter sees fastball out of the hand. One stays true or carries. The other moves late. Both look the same long enough for the hitter to commit. Then one is no longer where the barrel thought it would be.

7.5 The Slider: Match the Target to the Break Shape

Slider is a lazy word. It covers a lot of different pitches. A sweeper and a tight gyro slider may both be called sliders, but they are not trying to go to the same place. Treating them the same is how pitchers turn good stuff into bad counts.

First, know the shape. Then choose the target. Not the other way around.

The Sweeper

Movement signature: Big horizontal break with some depth. It starts in or near the zone and moves hard across it.

Where it wants to go: Start on the inner half or middle. Finish off the outer edge or in chase territory.

The sweeper's command rule is this: aim where you want it to start, not where you want it to finish. If you aim a sweeper at the outer edge, it probably starts outside and finishes farther outside. That is a ball the hitter never had to think about.

The good sweeper starts where the hitter has to respect it. Middle. Inner half. Somewhere that looks like strike. Then it leaves. That is the deception. Movement that starts outside and finishes outside is just a pretty ball.

Working against it: Aiming the sweeper at the corner it is already sweeping toward gives the hitter no decision. It breaks away before he has to commit. All movement, no pressure.

The Tight Gyro Slider

Movement signature: Tighter, later break with cut and depth. Less sweep, more late drop.

Where it wants to go: The bottom of the zone and below it. Knee height or lower.

The tight slider wants room to finish. Aim it at the knee and let the late depth take it below the barrel. If the pitcher aims it at the middle of the zone, it often hangs, not because the pitch is bad, but because the target gave the break nowhere useful to go.

Different slider, different job. The sweeper wins by moving across the zone. The tight slider wins by disappearing under the barrel. Both can be great. Neither should be aimed like the other.

The principle does not change: identify what the slider actually does, then pick a starting point that lets the natural movement produce the finish you want. The target belongs to the movement. Not the other way around.

7.6 The Curveball: It Wants to Go Down -- Trust It

The curveball is built on topspin. It wants to go down. That sounds obvious, but a lot of pitchers still target it like they are trying to place a fastball. Then they wonder why it hangs or bounces.

A real curveball should create the most obvious plane mismatch in the arsenal. It starts where the hitter thinks he can swing, then falls under the barrel when he has already made his decision.

Movement signature: Pronounced vertical drop from topspin, steep VAA, and a ball flight that keeps falling through the bottom of the zone.

Where it wants to go: Bottom of the zone and below. The best curveballs either clip the bottom or finish just under it.

The command instruction is counterintuitive for a lot of pitchers: aim higher than the final destination. If you want the curveball at the knees, it probably has to start near the belt or middle. If you want it in the dirt, it has to look like a strike first. The pitch needs space to break.

A curveball that is thrown for a called strike in the heart of the zone is often not as good as it looks. It may be a strike, but it did not finish low enough to create the problem that makes a curveball valuable. It stayed in a hittable lane.

Working against it: Trying to throw a curveball for a called strike in the middle of the zone often produces a hanger. The pitcher aimed it too low, released it too late, and the pitch never got to finish.

There is also a movement-system issue here. Spiked curveballs are usually blamed on the hand. Grip. Wrist. Finger pressure. Sometimes that matters. But very often the real problem is upstream. The trunk unloads early, the arm drags behind, the ball comes out too low in the arc, and the pitch drops straight into the dirt.

Fix the pelvic closure timing, and a lot of those spiked breaking balls clean themselves up without changing the grip at all.

7.7 The Changeup: Trust the Arm-Side Dive

The changeup has two jobs: slow the hitter down and move away from the barrel. The velocity separation handles the first part. The arm-side fade handles the second. When both are there, the pitch is miserable to hit. When either one disappears, the pitch becomes a slow fastball with hope attached to it.

Movement signature: Arm-side run with downward fade, usually similar in direction to the sinker, with clear velocity separation from the fastball.

Where it wants to go: Arm-side bottom of the zone or below the arm-side edge. Against opposite-handed hitters, that becomes down and away, which is one of the best locations in baseball.

The command instruction is to aim the changeup at the arm-side middle and let the fade take it to the arm-side edge. If the pitcher aims it at the edge from the start, he has already spent the margin before the pitch moves. If it fades, it misses. If he fights the fade to keep it over the plate, he kills the pitch.

Against an opposite-handed hitter, the changeup can be devastating because the pitcher's arm-side is the hitter's outside edge. The pitch comes out looking like a fastball, then slows and dives away. The hitter who commits early rolls over it. The hitter who waits sees it leave the barrel path.

Working against it: Trying to throw the changeup glove-side fights the pronation and arm-side run that make the pitch work. The pitcher either kills the fade or misses to the side he did not intend.

A flat changeup is usually not just a grip problem. Often it is a timing problem. If the trunk opens early and the arm is late, the wrist never gets to pronate through the pitch. The ball leaves before the movement can finish. Once again, the fix may live in the pelvic closure sequence, not the fingers.

7.8 Pitch Sequencing: Build the Tunnel Around Natural Movement

Commanding one pitch is useful. Building an arsenal is different. Sequencing is where natural movement turns into a plan.

A tunnel is the shared visual path two pitches take before they split. The hitter sees the same release. The same first window. The same early flight. Then the pitches separate too late for him to do anything useful about it.

Good tunneling requires two things: a consistent release point and pitch pairs that share an early lane but diverge late. The first one comes from attractor stability. If the release point wanders, there is no tunnel. The hitter is seeing a different movie every pitch.

The second one comes from honest pitch design -- not forcing pitches to match, but pairing pitches that already want to separate in useful ways.

Four-seamer elevated + changeup diving: Same release look, different vertical fate. One stays up and flat. One slows down, fades, and drops. The hitter has to choose a plane before he knows which pitch he is getting.

Sinker arm-side + cutter or slider glove-side: One runs to the arm side. The other breaks glove-side. Same early corridor, opposite late outcomes. The hitter has to cover both lanes with one swing.

Fastball inner half + curveball bottom edge: The fastball forces protection. The curveball starts in a similar window, then falls out of the zone after the hitter has already started solving the wrong problem.

The rule is simple: pair pitches that share a release corridor and then diverge late. The later the split, the worse it is for the hitter. Vertical split, horizontal split, both -- it does not matter. What matters is that the hitter sees one thing long enough to commit and then gets something else.

A pitcher who fights his movement signature cannot tunnel consistently. If the four-seamer sometimes runs, sometimes cuts, and sometimes stays straight because the pitcher is manipulating it pitch to pitch, the hitter gets different early windows. There is no stable picture. No tunnel. No trap.

One release point. Multiple outcomes. That is sequencing built on natural movement. The hitter sees the same thing until it is too late to react to what is actually coming.

That is why this chapter is not really about pitch design in the trendy sense. It is about finding the repertoire the pitcher already owns. The body is already telling the truth. The ball is already showing its preferred path. The coach's job is not to overwrite that. It is to organize it, target it, and sequence it so the hitter has to deal with it.

A pitcher who does that is not forcing a repertoire into existence. He is finally listening to the one he already has.

What Comes Next

Chapter 7 brought the book into pitch-by-pitch application. Natural movement comes first. Targeting is built around it. Sequencing makes it harder to read by pairing pitches that share a tunnel and split late.

Chapter 8 moves into the training framework: how to build this over time instead of throwing it all at a pitcher in one bullpen and calling it development. Five phases, in order. Movement stability first. Strategy next. Pitch design after that. Each phase depends on the one before it. Skip the foundation and the rest turns into decoration.

Aim Small, Miss Small | Florida Baseball ARMory | Randy Sullivan, MPT, CSCS

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AIM SMALL, MISS SMALL
The Pitcher's Complete Guide to Command

Chapter 8: Building Command -- The Training Framework

Most command training starts at the wrong end.

A pitcher falls behind in counts. He walks too many guys. He looks fine in catch play, maybe even fine in the bullpen, and then the game starts and everything gets jumpy. So the coach tells him to attack the zone. Be aggressive. Commit to the first pitch. Stop nibbling. Trust your stuff.

That advice is not crazy. It is just late. It belongs near the end of the process, not the beginning. That coach is talking about Phase 4. The pitcher may still be living in Phase 1. He does not need a better philosophy yet. He needs a body that can give that philosophy a chance to work.

The first eight chapters gave us the pieces: the movement foundation, the impulse mechanism, the release window, count leverage, approach angle, and pitch design. This chapter puts them in order.

"Every pitcher enters the framework at a different point. Assessment decides where. Not age. Not velocity. Not level. The movement system decides."

A New Way to Get Better at Pitching

For as long as baseball has existed, there has been one primary constraint on pitcher development: you cannot throw enough to get good at throwing. You cannot simply rep it out. Arm tissue cannot tolerate the workload that true skill mastery would require. This has been the central developmental problem in pitcher development for over a century.

Understanding attractors changes that for the first time.

The SAID principle -- Specific Adaptation to an Imposed Demand -- tells us that the body adapts specifically to the demands placed on it. For most of baseball's history, the only demand that improved pitching was pitching. But pitching too much destroys arms. The profession has been caught between two forces it could not reconcile.

Here is what the attractor framework reveals: the adaptations that produce command -- stable hip hinge, hip lock, pelvic closure, trunk organization, arm path sequencing -- are not exclusive to the pitching environment. They are movement attractors. And as Frans Bosch and the research underlying SAVAGE Training confirm: attractors transfer. Fluctuations do not.

That distinction is everything. Attractors are the stable movement solutions that the body returns to across varying conditions. Fluctuations are the surface-level mechanical details that look different pitch to pitch. When you train an attractor specifically, it transfers into the skill. When you train a fluctuation -- a specific joint angle, a position to hold, a mechanical shape to copy -- it does not.

"Attractors transfer. Fluctuations do not. For the first time in the history of pitcher development, we can get better at pitching without pitching. (SAVAGE stands for Specific Adaptation through Variability And Goal-directed Experiences -- the philosophy that guides every training decision at the ARMory.)"

This means a pitcher can build attractor stability in the gym and on the training floor -- using SAVAGE Strength and SAVAGE Power exercises that are specific to the attractors, not to the mechanical positions -- and those attractors will emerge in the pitching delivery when the two are eventually coupled together. The arm does not have to absorb pitching-specific load to build pitching-specific movement. The training can be decoupled from the pitching environment to build the attractor, and then progressively coupled back to the throwing task.

This gives us an exponentially greater return on training time. We work on attractor stability in the gym and on the training floor, and it emerges in the skill.

Task Simplification, Not Task Decomposition

Before we walk through the framework, one distinction requires absolute clarity, because violating it undermines everything that follows.

There are two ways to make a training task smaller. One of them works. One of them does not.

Task decomposition breaks a skill into isolated parts and trains those parts separately, on the assumption that the whole skill is just the sum of its pieces. For pitching, it sounds like this: "Let's work on your hip lock. Now let's work on your arm path. Now let's put it back together." This approach assumes the delivery is assembled like a machine. Fix the parts, bolt them back together, and the whole thing improves. But skilled movement is not stored as a sequence of parts. It emerges from the relationship between the athlete, the task, and the environment. The important thing is not the part by itself. It is the coupling -- perception and action, intention and movement, constraint and solution.

Task simplification makes the task easier, safer, slower, shorter, or smaller while still preserving the essential problem the athlete must solve. A young pitcher may not throw from 60 feet 6 inches right away. Move him to 40 feet. That is simplification. He is still throwing to a target. He still has to organize his body around ball flight, distance, release, direction, and outcome. The information is still there. The problem is just scaled down.

Task decomposition: "Practice this body part." Removes the athlete from the real performance problem. Does not transfer to skill.

Task simplification: "Solve this throwing problem under an easier set of constraints." Keeps the athlete inside the problem. Transfers to skill.

The exercises in Phase 1 of this framework are attractor-specific but not decomposed. They use the SAVAGE tools -- aqua balls, waterboys, hydrovests -- to introduce pre-tension, unpredictable loads, and time pressure into training experiences that are specific to the attractors of pitching. The athlete is not practicing a body part. The athlete is being placed in an environment that makes the correct attractor the easiest available solution.

The SAVAGE Specificity-Load Continuum

SAVAGE Training manages the tension between specificity and load with a three-level continuum that applies directly to this framework.

At one end of the continuum is the SAVAGE Strengthening program: high load, lower specificity.

Heavy gym exercises that build the tissue capacity and movement infrastructure the pitching delivery demands. These are not conventional isolation exercises and not traditional strength movements. They are attractor-specific experiences with unpredictable loads, pre-tension, and time pressure that teach the body to co-contract around the pitching attractors under load.

In the middle is the SAVAGE Power program: medium load, medium specificity. Exercises that blend athletic movement, loading, and throwing-like patterns together. These are the bridge between pure gym work and the throwing program. They ask the athlete to express attractor stability under dynamic, throwing-adjacent conditions.

At the other end is the Throwing Program: high specificity, lower load. Task-simplified throwing drills that progressively couple the attractors built in the gym back into the actual pitching movement. This is where the gym work emerges in the skill.

The rule: *At both ends of the continuum, you weave in as much of the other end as possible. The throwing program adds perturbation through variable ball weights and distances. The strengthening program adds specificity through throwing-like positioning and attractor-specific loading patterns.*

All five phases of this framework live on this continuum. Phase 1 begins on the strengthening end and moves toward the throwing end. By Phase 5, the athlete is in full game competition. The continuum never disappears -- it becomes the organizational backbone of all ongoing development.

Goal-Directed Intention: The G in SAVAGE

The G in SAVAGE stands for Goal-Directed. In ecological dynamics, that is not a motivational concept. It is a movement science principle. Every action should be guided by a clear intention. We do not move just to move. We move to accomplish something. And when we move without a clear goal, the movement system has no real problem to solve. Which means it learns nothing worth keeping.

Applied to throwing, this is literally what the title of this book says. Aim small. Miss small.

Every throw should have a specific target. Not a general area. Not an approximate zone. A spot. The catcher's logo. The far shoulder. The center of the chest. The top of the numbers. Something precise enough that hitting it would mean the throw was excellent and missing it would tell you something useful. The pitcher who throws into space during drill work is not developing command. He is developing the habit of throwing without intention. And habits built in training survive into the game. Every time.

Drill Work

Every drill in this framework should be performed to a specific target. The sock throw does not go to the wall. It goes to a spot on the wall. The flat-ground throw does not go to the catcher. It goes to the catcher's chest, or his left shoulder, or the top of his belt. The Hip Lock at Toe-Off drill does not end with the ball somewhere near the glove. It ends with the ball somewhere specific.

When the target is precise, the movement system has a real problem to organize around. When the target is vague, it does not. The ecological dynamics principle of goal-directed movement is what turns a drill into a genuine training intervention rather than a rehearsal of effort. No target, no learning. A blurry target produces blurry adaptation. The V-Flex system described in the next section is built on exactly this principle: the ball either found the space or it did not.

Long Toss

Long toss presents its own opportunity to train goal-directed intention, and the ARMory has a specific rule for it.

You do not move back to the next distance until you hit your partner three consecutive throws without him needing to move his feet. His feet stay anchored. The pivot foot does not release. Every ball he catches arrives at a location he can reach without breaking that anchor. Three in a row. Then you step back.

This rule changes everything about how long toss is practiced. It stops the mindless rhythm of step-and-throw. It makes every single throw matter. It creates immediate, honest feedback: your partner either moved his feet or he did not. There is no ambiguity, no coach required, and no room for self-deception. And it directly connects the title of this book to the act of throwing a baseball in practice. Aim small. If you miss, you stay. If you hit it three times in a row, you earn the right to make it harder.

When long toss is practiced this way, moving back becomes evidence of actual command development rather than a function of how long you have been throwing. The pitcher does not earn the next distance by surviving it. He earns it by commanding it.

A Note on Training Tools: The V-Flex Strike Zone System

At the ARMory, we use the V-Flex Strike Zone Training System as one of our primary environmental constraint tools in Phases 2 through 4 of this framework. V-Flex gives the pitcher a visible strike zone and immediate feedback from the environment. The ball either found the space or it did not. No speech needed. Better constraints, not more instruction.

The Strike Zone Trainer defines the zone and gives the pitcher a clear visual reference. The Focus Tunnel creates a corridor the ball must travel through. The Premium Focus Mat, used with the 5x5 catch net, breaks the zone into specific locations. Each tool has a specific role in the phases that follow. The V-Flex system does not enter until Phase 2, because in Phase 1 the pitcher is primarily working in the gym and on the training floor, not in the pitching environment.

THE V-FLEX STRIKE ZONE SYSTEM

Visual target. Immediate feedback. Built for command training.



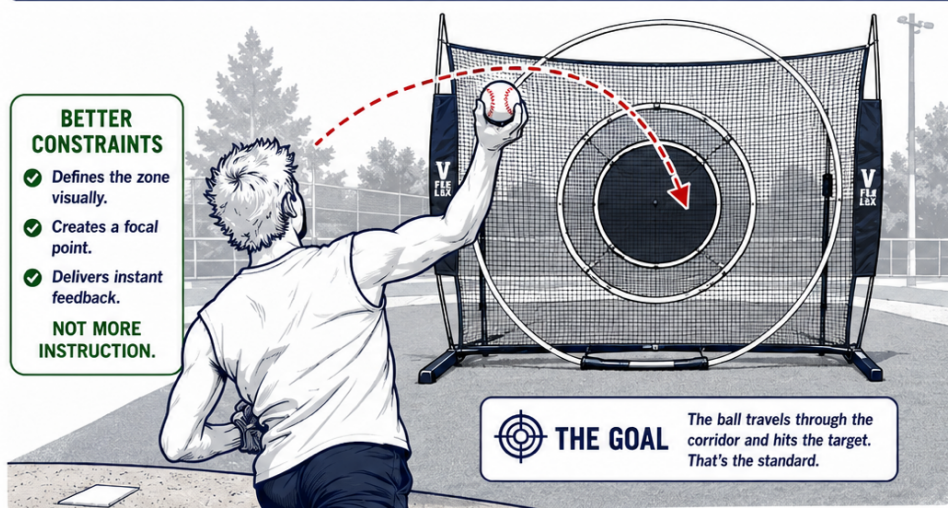
WHY WE USE V-FLEX

Less talk. Better constraints. The environment gives the feedback so the pitcher can learn from the result.

BETTER CONSTRAINTS

- ✓ Defines the zone visually.
- ✓ Creates a focal point.
- ✓ Delivers instant feedback.

NOT MORE INSTRUCTION.



THE GOAL

The ball travels through the corridor and hits the target. That's the standard.

THE V-FLEX TOOLKIT



1 STRIKE ZONE TRAINER

Defines the strike zone with a clear, visible reference.



2 FOCUS TUNNEL

Creates a corridor the ball must travel through to reach the target.



3 PREMIUM FOCUS MAT (5x5 CATCH NET)

Breaks the zone into locations so targeting work becomes specific and measurable.

HOW IT WORKS IN THE FRAMEWORK

Used across phases to train what matters now. The task changes. The tool stays the same.



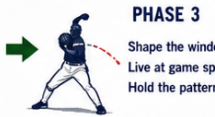
PHASE 1

Reduced velocity.
Flat-ground work.
Build the platform.
Organize misses.



PHASE 2

Widen the window.
Add movement.
Impulse & pelvic tilt under control.



PHASE 3

Shape the window.
Live at game speed.
Hold the patterns.



PHASE 4

Attack with intent.
Use count leverage.
Command in games.

★ ————— The environment shapes the task. The pitcher learns from the result. That's how command is built. ————— ★

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PHASE 1 Build the Attractors -- SAVAGE Strength and Power

PHASE GOAL: Build attractor stability across the entire pitching delivery using SAVAGE Strength and SAVAGE Power training. The arm does not need to throw for the attractors to develop. Build them first. Integrate into the throwing skill in Phase 2.

Phase 1 is the phase most coaches want to skip. It is also the phase that determines whether everything else works.

At the ARMory, Phase 1 happens primarily in the gym and on the training floor. We are building the movement solutions that the pitching delivery depends on -- the hinge, the hip lock, the pelvic closure, the trunk organization, the arm path sequencing -- through SAVAGE Strength and SAVAGE Power experiences that are specific to the attractors, not to the pitching motion itself.

This is the decoupling we described above. The training is specific to the attractor, not to the performance environment. It uses pre-tension, unpredictable loads, and time pressure -- the SAVAGE tools -- to make the co-contractions that produce attractor stability louder, more learnable, and more durable. The arm does not absorb pitching stress during Phase 1. The attractors develop anyway.

How do we know Phase 1 is working? The Newtforce force plate tells us. As the hinge attractor stabilizes, the back-leg positive-Y impulse curve widens. The pitch's back-leg impulse is the area under the rearward force-time curve, and it is the most reliable Newtforce predictor of pitching velocity in ARMory data. But impulse width is not a separate training goal -- it is evidence of hinge attractor stability. Wide impulse means the hinge is holding. Narrow, spiky impulse means the hinge is collapsing or the athlete is substituting effort for organization. The Newtforce tells us whether the SAVAGE Strength work is transferring. It does not define the goal.

Phase 1 Assessment

Newtforce / force plate: Back-leg positive-Y impulse: is the curve wide and sustained, or narrow and early? Front-leg braking event at foot contact: sharp or passive? These confirm whether the hinge and hip lock attractors are emerging from Phase 1 work and whether the front door is closing.

Motion capture / video: Look for lag between pelvis and trunk angular velocity peaks. Watch the finish: chest-to-target or east-west? Is the arm being dragged behind a pelvis that never stopped rotating? These are the downstream signatures of the upstream attractor landscape.

Miss chart (once throwing begins): Random scatter means the attractors are not yet stable. Directional clustering means they are organizing. The miss pattern is the diagnostic map. Phase 1 is not complete until the misses have a direction.

Phase 1 Training: SAVAGE Strengthening

SAVAGE Strengthening targets each attractor specifically using unpredictable loads, pre-tension, and time pressure. These are not isolation exercises and not traditional gym movements. They are co-contraction challenges that make attractor stability the only available solution. The target is 60-70 percent success per session: not too easy, not so hard the athlete loses the co-contraction entirely.

Rotation Round the Hip Hinge Attractor

This is the first and most potent attractor of the delivery. When the pitcher hinge-loads the back hip appropriately, the gluteus medius and minimus co-contract to tilt the pelvis, raising it on the stride-leg side. Impulse width is the Newtforce signature of this attractor. The following SAVAGE Strengthening experiences build it progressively.

Aqua Ball Single Leg Hinge Chop (Beginner): Standing with weight on the back leg and holding an aqua ball at chest height, the athlete rapidly chops the ball diagonally to the rear of the back hip. The force of the ball drives him into a hinge. He stops the ball aggressively and returns to start. The unpredictable water load and time pressure encourage co-contraction of the glute med and min in the hinge position.

Heiden Shakes (Beginner): Holding an aqua ball at chest height, the athlete hinges and pushes laterally off one leg, catching a clean hinge on the opposite leg with an isometric co-contraction. The landing must be a catch, not a collapse. Properly executed, the Heiden Shake replicates the ground reaction force signature we look for on the Newtforce in efficiently moving pitchers.

Waterboy Lateral Lunge with Clean (Intermediate): Holding a waterboy at thigh height, the athlete steps laterally into an isometric hinge -- not a standard lunge where the knee gives, but a hip-dominant

hinge with the landing leg bent but stiff. As the foot lands, the athlete pulls the waterboy into a clean. The shifting water adds an unpredictable load that demands co-contraction in the hinge position.

Waterboy Lateral Lunge with Halo (Advanced): Starting in the same position as the intermediate exercise, the athlete steps sideways into the isometric hinge-lunge. As the foot lands, he rapidly moves the waterboy in a circle overhead, stopping it suddenly before reversing direction. The halo and reverse-halo create an intense, unpredictable perturbation of the hip hinge, demanding maximal co-contraction to maintain stability.

Hip Lock at Toe-Off Attractor (Back Door)

Hip lock closes the back door of the pelvis at toe-off. The transition out of the hinge sets the stage for the hip lock -- if the athlete tucks his butt under his spine, he may not be able to lock the back hip and close the back door. The following SAVAGE Strengthening experiences address hip lock stability.

Waterboy Snatch to Box (Beginner): Standing in front of an 18-inch box and holding a waterboy at thigh height, the athlete bends to a two-leg Romanian deadlift (RDL) then explodes up to a hip lock on the back leg while catching the waterboy in a clean. He holds the hip lock briefly before smashing the lead leg onto the box. The cross-extension reflex triggered by the lead-leg landing reinforces the back-hip lock.

Waterboy Rotational RDL to Box (Intermediate): Starting in front of the box with a waterboy at thigh height, the athlete initiates a rotational RDL. From that position, he explodes into a combination hip lock and overhead snatch, locking the back hip before pounding the swing leg onto the box. The feedback from the lead leg hitting the box encourages co-contraction in the trail hip. This experience bridges the hinge and hip lock attractors.

Waterboy Hip Lock to Box with Rotation (Advanced): With the waterboy behind the neck, the athlete moves through an RDL before rising explosively to a hip lock, then smashing the swing leg onto an 18-inch box. As the swing leg lands, he rotates his torso away from the back leg hip lock. This experience simultaneously addresses four key attractors: Rotation Round the Hip Hinge, Hip Lock at Toe-Off, Force Closure of the Pelvis, and Upper Body First (Chest Out While Rotating).

Form or Force Closure of the Pelvis (Front Door)

Once the back door is closed, the front door must close too. Form closure comes from the geometry of how the stride foot lands. Force closure comes from active internal rotation of the lead hip. The following SAVAGE experiences build front-door stability.

Aqua Ball Lunge with Pulse (Beginner): The athlete pre-tenses the lead leg with an aqua ball overhead, lifts the stride leg, and leans forward into landing on a stiff front leg. Upon landing, he

bounces into a full hip lock on the back leg, then falls again into front foot plant. As the foot touches down, he rapidly rotates his torso and braces the lead leg. Bracing the lead leg encourages force closure of the front door while introducing pre-tension, time pressure, and unpredictable load simultaneously.

Aqua Ball Lateral Lunge to Box with Rotation (Intermediate): The athlete stands in a pitcher's stretch position with an aqua ball. He steps onto a 6-inch box with a pre-tensed lead leg. As he lands, he rotates his trunk into the lead leg, punching the aqua ball and then stopping it suddenly. The rotation and sudden deceleration of the shifting water elicits co-contraction of the lead leg and torso and encourages force closure of the front door of the pelvis.

Foot Plant from Above 2 Box (Advanced): With a waterboy behind the neck, the athlete stands between a 12-inch and 6-inch box, rear leg elevated on the 12-inch box. With the lead leg, he rapidly steps on and off the 6-inch box, using time pressure, pre-tension, and unpredictable load to train swing leg retraction, foot plant from above, and form closure of the pelvis simultaneously.

Chest Out While Rotating / Respect the Sagittal Plane (Trunk Attractor)

When the athlete fails to maintain chest out and respect the sagittal plane during rotation, the abdominals become too long, the dorsal spinal muscles become too short, and both are rendered insufficient. The arm extends into a dangerous linear deceleration pattern and the stable platform for the release window disappears. These SAVAGE experiences build trunk attractor stability.

Half-Kneeling Aqua Ball Chop (Beginner): In a half-kneeling position, the athlete holds an aqua ball overhead and above one shoulder. He aggressively chops the ball diagonally across the body, stops it at the bottom, waits for the water to settle, then rapidly reverses. The time pressure and unpredictable load encourage abdominal co-contraction. The half-kneeling position freezes lower-body degrees of freedom so the athlete can explore trunk synergies in isolation.

Waterboy Single Leg Wall Rotations (Intermediate): With a waterboy on his neck and one leg elevated in a hinged position, the athlete rotates his spine and the waterboy from side to side, stopping abruptly at each end of range. The sudden stop applies time pressure to the unpredictable load, demanding co-contraction from the abdominals and lead leg simultaneously.

Hydrovest Drop Down Side Toss (Advanced): Wearing a hydrovest and standing on a 6-inch box, the athlete receives a toss of a 4-6 pound medicine ball as he steps down with the lead leg. He catches the ball turning toward the arm-side hip, then returns the toss with a twisting scoop toss. The step-down encourages pre-tension in the lead leg while the hydrovest provides continuous unpredictable load throughout the trunk rotation.

Reverse Throws (Modified): In a half-kneeling position, the athlete holds a weighted ball around the shin of the front knee. He pulls the arm back into the position it would occupy at weight-bearing foot plant in a forward throw -- not extended directly behind, but loaded as in a throw. He expands his chest and moves the throwing-side shoulder blade downward and toward the back pocket. The thoracic extension associated with Chest Out While Rotating positions the head of the humerus directly in the

socket. This is the reverse throw modified to reinforce the chest-out attractor rather than the traditional reverse throw, which is not specific to the pitching motion.

Arm Action Attractor: Proximal to Distal Sequencing and Rotation Round the Shoulder

Shakey Weight: Hanging a 2-pound kettlebell from an elastic band, the athlete holds the band at arm's length and shakes the weight randomly through a wide range of shoulder movements. The unpredictable load promotes reflexive shoulder stability and co-contraction of the rotator cuff through a throwing-range arc.

Floppy Thing: A long elastic band folded into thirds with a mini-band wrapped at the center. The athlete holds the band at center and rapidly moves the forearm between supination and pronation while taking the arm through a throwing motion. The load elicits co-contraction through the forearm and elbow in the positions and at the speeds pitching demands.

Connection Ball Position 1: For athletes with elbow angles that are too long and arm paths that are inefficient, the connection ball is placed between the biceps and forearm. During throwing drills, the ball should project directly forward or slightly to the arm side. If it flies to the arm side, the elbow angle is too wide. Time pressure in a quick pick drill reinforces a more efficient arm path.

Connector Club: The Connector Club is an 18-ounce end-loaded wooden device. The distal weight changes the sensory information delivered to the hand and arm and provides a force that encourages stability in the Rotation Round the Shoulder attractor. The only instruction: keep the club's head above the hand throughout the motion.

Phase 1 Training: SAVAGE Training

SAVAGE Training exercises blend multiple attractors under medium load and medium specificity.

These are the bridge between the strengthening environment and the throwing environment. They ask the athlete to express attractor stability under dynamic, throwing-adjacent conditions where multiple attractors must co-operate simultaneously.

Armside Drop-In: Perched on a 12-inch box and holding an aqua ball, the athlete steps forward toward the first or third baseline, lands in a hinge on the back leg, then rotates around that hinge into a simulated throw with the aqua ball. Stepping off the box introduces a large force that demands pre-tension. The aqua ball adds unpredictable load. The lateral direction forces the athlete to hinge and rotate rather than tuck and extend.

Aqua Ball Armside Double Hop: Standing in the stretch position with an aqua ball at the waist, the athlete hops forward toward the arm-side baseline twice, lands in a hinge on the back leg, then rotates around that hinge into a simulated throw with the aqua ball. The double hop builds pre-tension. The landing direction encourages the active attractor and discourages butt-under-spine compensation.

Hip Lock at Toe-Off (SAVAGE Power Version): The athlete stands feet shoulder-width apart with an aqua ball overhead and a baseball in the throwing hand. He pulls rapidly into a hip lock, holds the clinch as he falls forward to land on the front leg, then shakes the aqua ball to perturb the hip lock before dropping the ball, loading, and throwing. The back leg remains anchored through the entire throw, reinforcing hip lock simultaneously with pelvic closure and upper-body first rotation.

Jump Armside: The pitcher stands in his set position, then hops 90 degrees toward his arm side, landing on his back leg in a clean hinge. He immediately rotates to make a throw to the target. The hop toward the arm side creates a force that demands a hinged landing -- the body has no comfortable compensation available when it lands facing the wrong direction.

COMPLETION MARKER: *Newtforce shows a widening positive-Y impulse profile on a consistent basis -- evidence that the hinge attractor is stabilizing. In the gym, attractor stability is holding across beginner and intermediate SAVAGE Strength exercises. Progress to Phase 2 when SAVAGE Power exercises show consistent co-contraction across multiple attractors, even if full pitching has not yet occurred.*

PHASE 2 Integrate Attractors into the Skill -- Task-Simplified Throwing

PHASE GOAL: Progressively couple the attractor stability built in Phase 1 back into the pitching delivery through task-simplified throwing drills. The pitcher is solving a version of the real throwing problem at every step. Miss patterns become directional. The carousel begins to slow.

Phase 1 decoupled the training from the pitching environment to build the attractors. Phase 2 couples them back.

The drills in this phase are throwing drills -- not gym exercises. But they are task-simplified throwing drills, not full-intensity pitching from 60 feet 6 inches. Each drill preserves the essential problem the pitcher must solve: organize the body to deliver a ball to a target. The task constraints are modified -- shorter distance, changed starting position, reduced intensity, specific constraint on one attractor -- to make the attractor the path of least resistance.

This is not task decomposition. The pitcher is not practicing a body part. He is solving a throwing problem under constraints that make the correct attractor easier to find. The information is still there:

the ball in the hand, the target on the wall, the feel of the throw. The perceptual-motor coupling is intact. The task is just scaled.

Phase 2 Throwing Drills

Hip Lock at Toe-Off Drill: The athlete stands with a baseball in the throwing hand. He pulls himself rapidly into a hip lock, falls forward to land on the front leg while maintaining the back-hip lock, then loads and throws to a target. The back leg stays anchored and never moves forward. This drill is the throwing equivalent of the Phase 1 SAVAGE Power Hip Lock exercise. The attractor that was built in the gym is now expressed in the throwing context.

Lead Leg Plate Hops: The pitcher stands in his stride position with the lead leg on a 6-inch box. He lifts the leg, holds pre-tension, and crashes the lead leg into the box with force before stepping over the box to make a throw. The large landing force activates the crossed-extension reflex and the stumble reflex to induce hip lock on the back leg. The step over the box encourages swing leg retraction and foot plant from above, producing form closure of the front door.

Armside Double Hop (with baseball): The pitcher stands in his set position and hops twice toward the arm-side baseline before landing in a clean hinge and making a throw to a target. The double hop provides pre-tension. The lateral direction forces a clean hinge on landing. This is the more specific version of the Phase 1 aqua ball drill -- the baseball is in the hand, the target is real, and the attractor is expressed in a throwing context.

Armside Drop-In (with baseball): The pitcher stands on a 6-inch box and steps off 90 degrees toward the arm-side baseline, landing in a clean hinge on the back leg. He immediately turns to throw. The drop off the box provides a force that demands a hinged landing -- there is no way to tuck and extend comfortably when landing laterally at this angle. This drill bridges directly from Phase 1 to full throwing mechanics.

Quick Pick Drill: The pitcher stands with his back to the target. Moving rapidly, he hinges his hips, drop-steps with the back leg, pivots, and throws as the lead leg lands. The time pressure created by starting with the back to the target encourages efficient arm path, promotes hip lock, and demands pre-tension of the lead leg. It is one of the most effective tools in the SAVAGE throwing program for reinforcing multiple attractors simultaneously under time constraint.

Reverse Pronations with Switch (Throwing Version): The athlete stands with the back leg in front of the lead leg, sets the trunk in counter-rotation with the throwing hand positioned in front of the throwing shoulder. Once the abdominals are stretched and the chest is out, he throws to the target. Between repetitions, he grabs an aqua ball and rotates side to side while switching foot placement. After assuming the starting position, he rapidly advances the rear leg as he throws. The foot switch uses time pressure to demand the trunk co-contraction necessary for segmental rotation.

Marshalls with Switch: Standing in the normal stretch position, the athlete rapidly switches his feet two or three times while simultaneously bringing the arm back to throw. The multiple switches provide intense sensory information to educate the trunk muscles in the co-contraction pattern. Blending aqua ball reps adds even louder sensory information through unpredictable load.

Training Sock Throws: Using the SAVAGE Training Sock -- a canvas sleeve that wraps around the wrist and tethers to the ring and index fingers while the remaining fingers hold a 7-ounce ball -- the pitcher executes full-intent throwing motions. As the ball impacts the end of the sock, the posterior musculature remains active through the entire deceleration phase. The Sock meets the SAID principle's specificity requirements for the deceleration musculature: high speed, shoulder distraction, and eccentric contraction. Sock throws can be performed in volume that arm tissue cannot tolerate from full pitching, which is exactly the training leverage Phase 2 provides.

Progressive Distance (Flat Ground): Once attractor stability is appearing in the constraint-based drills above, the pitcher begins throwing from progressive distances: 20 feet, then 40 feet, then 60 feet 6 inches on flat ground. At each distance, intensity is sub-maximal. The task is to maintain attractor stability -- clean hinge, hip lock, pelvic closure, chest out -- as the throwing demand increases. V-Flex Strike Zone Trainer is introduced here, giving the pitcher a concrete visual target while movement work builds the foundation underneath it.

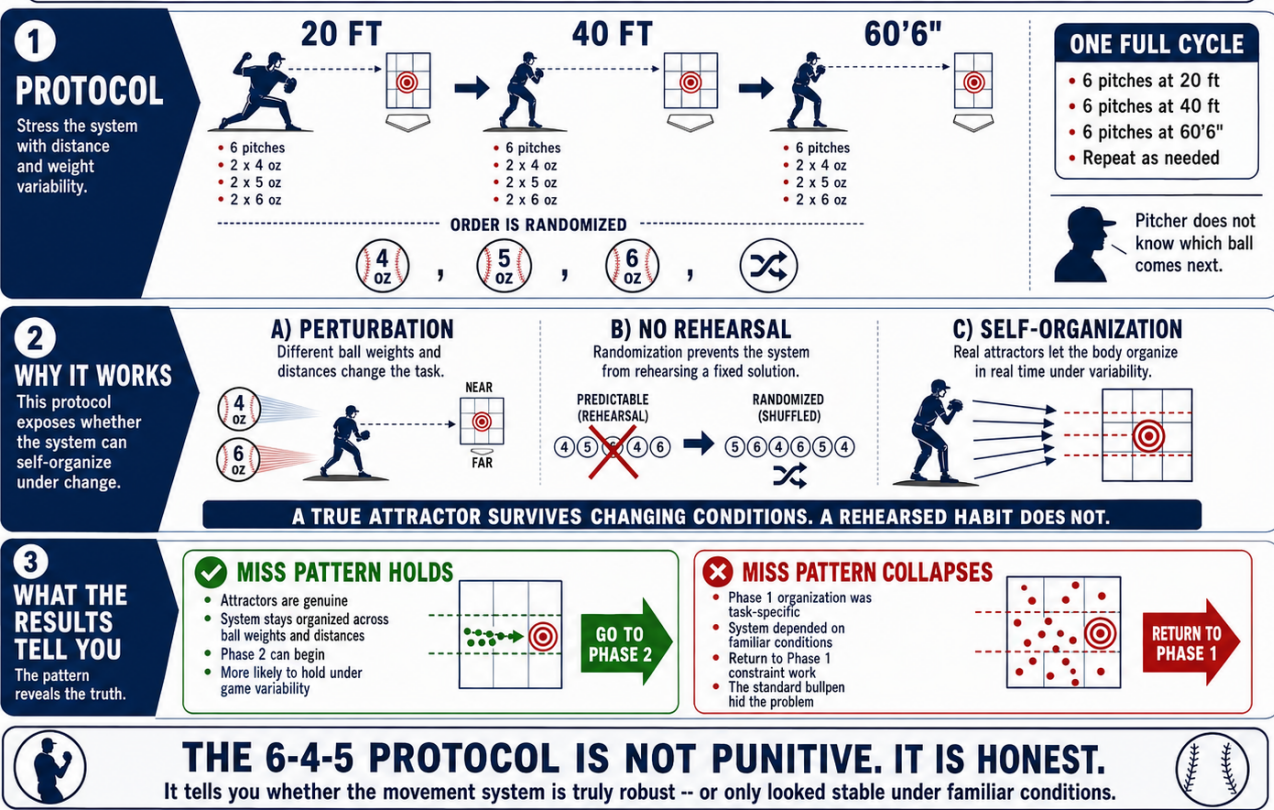
Testing Attractor Robustness: The 6-4-5 Bullpen Protocol

★ THE 6-4-5 BULLPEN PROTOCOL ★

TESTING ATTRACTOR ROBUSTNESS BEFORE PHASE 2

A stable-looking miss pattern is not enough. It has to hold under perturbation.

ORGANIZED MISSES + PERTURBATION = TRUE ATTRACTOR TEST



Before advancing to Phase 3, the attractors that have emerged in the task-simplified throwing drills must be tested for robustness -- not just presence under controlled conditions, but durability when the constraints change unexpectedly.

When we see organized miss patterns in the Phase 2 drills and bullpens but persistent command problems in games, we run the 6-4-5 protocol.

The Protocol: The pitcher throws from three distances in sequence: 20 feet, 40 feet, and 60 feet 6 inches. At each distance, he throws 6 pitches -- 2 with a 4-ounce ball, 2 with a standard 5-ounce baseball, and 2 with a 6-ounce ball -- in a randomly determined order. He does not know which ball is coming next. One full cycle is 6 pitches at 20 feet, then 40 feet, then 60'6". The cycle may be repeated for any desired duration.

The logic: if an attractor is truly stable, task constraint perturbation -- different ball weights, different distances, randomly varied -- should not collapse the movement pattern. The system will organize around its attractors regardless of what the hand is holding or how far the target is. If the apparent stability is fragile, the perturbation reveals it.

Miss pattern holds under perturbation: The attractors are genuine. Phase 3 can begin. These attractors are likely to hold when the game introduces its own perturbations: different mounds, weather, fatigue, consequence.

Miss pattern collapses into random scatter: The apparent organization was task-specific, not attractor-based. Return to Phase 1 SAVAGE Strength and Power work. The 6-4-5 protocol revealed what the controlled bullpen did not.

COMPLETION MARKER: *Miss patterns are consistently directional in task-simplified drills and in the early-distance bullpen work. The 6-4-5 protocol shows that attractors hold under perturbation. The pitcher does not have command yet. He has organized instability from a genuine attractor foundation. That is what Phase 3 requires.*

PHASE 3 Train the Rudder: Sternum Adjustments Under Load

PHASE GOAL: Build the personal correction library from Chapter 4 until it becomes a game-speed response, not a thought project.

Do not start Phase 3 too early. The sternum-as-rudder protocol only works if the chain is connected. If the pelvis is still spinning, a sternum adjustment just moves the upper body and leaves the lower half doing whatever it was already doing. The tool looks unreliable. The tool is not the problem. The platform is.

Once Phases 1 and 2 have done their job, Phase 3 can begin. Now the pitcher learns to read a miss and make one small upstream correction without turning the next pitch into a mechanical seminar.

Phase 3 Bullpen Protocol

The bullpen structure is simple. Throw five pitches with no adjustment. Chart the miss. Apply the matching sternum correction. Throw five more. Did the miss pattern move? Write it down. Repeat across all four directions.

The goal is not just to feel the correction. The goal is to connect the feel to the ball flight. That is the personal correction library. Glove-side miss has a feel. Arm-side miss has a feel. High and low have their own feels. Over time, the pitcher stops searching for the answer and just reaches for the correction.

V-Flex Focus Tunnel in Phase 3: *The Focus Tunnel gives the pitcher a corridor and an objective result: the ball passed through, or it did not. That turns the read-adjust-throw cycle into a clean, coach-free feedback loop. At the ARMory, the Focus Tunnel is a Phase 3 staple because it strips away debate. The environment answers the question.*

Phase 3 Competition Transition

The first few times this shows up in games, most pitchers go back to mechanical tinkering under pressure. That is normal. Pressure pulls athletes back toward whatever they trust most, even if it does not work. The coach's job is simple: read the miss, use the rudder. That is enough.

COMPLETION MARKER: *The pitcher can self-correct a miss pattern within two to three pitches in a bullpen without thinking through the mechanism. The correction has moved from deliberate to automatic.*

PHASE 4 Layer the Approach: Count and Zone Strategy

PHASE GOAL: Add the attack-first philosophy and count leverage work to a movement system that can actually support first-pitch strikes.

This is where many coaches want to start. Attack the zone. Get ahead. Stop nibbling. All true. But if the pitcher cannot find the zone, that philosophy becomes a wish. Phase 4 requires a body that can throw a first-pitch strike often enough for the strategy to make sense. Without Phases 1 through 3, the pitcher tries to attack and accidentally creates 1-0 counts all day. The approach was fine. The platform was not ready.

Phase 4 Bullpen Structure

0-0 attack commitment: Every simulated at-bat starts with a first-pitch fastball aimed at the center of the zone. No nibbling. No edge-hunting. No automatic breaking ball just because the hitter might take. Attack. Track the first-pitch strike rate. The center zone is the target until two strikes are established.

Count progression work: After 0-1, practice expanding the zone. After 0-2, practice both options from Chapter 6: the expansion approach and the Maddux execution approach. After 1-0 and 2-0, practice getting back into the count with intent instead of panic.

Pitch design integration: Build the Chapter 7 principles into every target. Four-seamers up. Sinkers arm-side bottom. Changeups arm-side bottom. Curveballs aimed high enough to finish low. Throw the pitch where it wants to go until that becomes habit, not theory.

V-Flex Premium Focus Mat in Phase 4: *The 5x5 Catch Net with the Premium Focus Mat gives us specific, visible zone locations. Center zone for 0-0 attack work. Top of the zone for four-seamers. Arm-side bottom for sinkers and changeups. The mat removes the ambiguity. The target is visible. The miss is easier to classify. The feedback is immediate.*

Phase 4 also includes count awareness. After each simulated at-bat, the pitcher names the count category he ended in: pitcher, neutral, or hitter. Then he answers the only question that matters: did my

pitch selection match the count? That is how count leverage becomes instinct instead of something he heard in a meeting.

COMPLETION MARKER: *First-pitch strike rate in bullpen simulations reflects the movement stability underneath it. The pitcher stays ahead, expands the zone in pitcher counts, and recognizes leverage situations in real time.*

PHASE 5 Integrate: Live Competition Under Constraint

PHASE GOAL: Test all four phases under real pressure. Use the breakdowns as information, not drama.

Bullpen command and game command are not the same animal. In the bullpen there is no hitter, no umpire, no consequence. In the game, all of that enters the system. The question is whether the movement and strategy hold up anyway.

Phase 5 is not a teaching phase. It is an integration phase. The pitcher competes. We observe. The data tells us what stayed and what broke.

Phase 5 Measurement Tools

Location charts under game conditions: Does the directional miss pattern hold under pressure, or does it go back to random scatter? Scatter under stress is a platform problem showing itself. Directional miss under pressure is a diagnosable, addressable finding.

First-pitch strike percentage: If Phase 4 transferred, the first-pitch strike rate should be higher in games than before the work began. If it is not, the attack-first commitment is not holding under pressure, or the movement foundation has a gap the bullpen did not expose.

Count profile across an outing: Track how often the pitcher lives in pitcher counts versus hitter counts. An outing full of 2-0 and 3-1 counts means the Phase 1 through 4 work has not transferred yet.

In-game sternum use: Is the pitcher using the Phase 3 correction, or reverting to mechanical tinkering? The goal is for the rudder to become the default response, not the mound visit.

V-Flex in Phase 5: *This is where the V-Flex constraints come away. The pitcher has trained with the Strike Zone Trainer, Focus Tunnel, and Focus Mat in Phases 2 through 4. Phase 5 removes the scaffolding and tests what stayed. If command disappears when the visual constraint disappears, more Phase 3 and Phase 4 work is needed before the pitcher is truly ready for live competition.*

Regression Is Expected. Regression Is Information.

Regression in games is not failure. It is the best diagnostic tool in the whole framework. When a pitcher breaks down in a specific direction under pressure, he is telling you which attractor is least durable. Do not get emotional about it. Read it. Go back to the phase that addresses it.

Arm-side high under pressure: Hip lock is failing when the moment speeds up. Return to Phase 1 back-hip work: Aqua Ball Single Leg Hinge Chop, Waterboy Rotational RDL to Box, Armside Drop-In. Rebuild the attractor before re-entering competition.

Glove-side low when behind in counts: Pelvic closure is failing when urgency replaces organization. Return to Phase 1 front-door work (Aqua Ball Lunge with Pulse, Foot Plant from Above 2 Box) and Phase 4 count management.

Random scatter in high-leverage situations: The platform is not durable enough yet. Return to Phase 1 SAVAGE Strength and Power work. The 6-4-5 protocol may reveal which attractor is most vulnerable.

Inconsistent miss direction that was directional in the bullpen: The Phase 3 correction is not automatic under pressure yet. Return to the Phase 3 bullpen protocol and Focus Tunnel work to deepen the automatic response.

COMPLETION MARKER: *Miss ellipses tighten across multiple game appearances. First-pitch strike rate holds in competition. Miss direction stays readable rather than returning to chaos. The sternum correction fires without prompting. The framework is working.*

The Framework as a Diagnostic Tool

The five phases are in order because each phase creates the conditions for the next one. Phase 1 builds the attractors in the gym and on the training floor. Phase 2 integrates them into the throwing skill through task simplification. Phase 3 adds the in-game correction protocol on top of the stable platform. Phase 4 layers on the strategic approach. Phase 5 tests the whole system against real baseball and reports back with information about what needs more work.

Every pitcher enters at a different place. A new athlete with stable attractors and a clean miss pattern may start at Phase 3 or Phase 4. A pitcher with random scatter and a spinning pelvis starts at Phase 1. The assessment decides. The work decides. The data at each phase tells us when to advance.

The framework is also a re-entry map. Regression in Phase 5 does not mean starting over. It means identifying which attractor broke down under pressure, returning to the phase that addresses it, and rebuilding before re-entering competition. The phases are not a ladder you climb once and discard. They are a structure you return to whenever the data tells you to.

"Command is not a talent. It is a sequence. Build the attractors first. Integrate them into the skill. Layer the strategy on top. Test it under pressure. Rebuild when it breaks."

The most important thing a pitcher and coach can understand is the order. The strategic work depends on the attractor work. Directly. Mechanically. The approach only works if the platform can support it. The rudder only steers a connected chain. The tunnel only functions when the release point is stable.

And for the first time in the history of baseball pitcher development, we do not have to wait for the arm to accumulate enough pitching reps to build that platform. We can build it in the gym, on the training floor, through SAVAGE Strength and Power training that is specific to the attractors. Then we integrate. Then we compete. The arm's workload goes down. The development speed goes up. The return on training time is exponential.

Build the sequence. Measure it. Read the regressions. Go back when the data tells you to. Build it again.

Chapter 8 References

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Conclusion: Command Is Not a Talent. It Is a System.

Let me go back to the five-year-old on the carnival carousel.

In Chapter 1, I described the pitcher without stable hip lock and pelvic closure as a child on a spinning platform, trying to throw the ball to grandma sitting on a bench outside the ride. Releasing too early, he sails the ball arm-side high. Hanging on too long, he spikes it glove-side low. Every pitch is a timing miracle. Every miss is a mystery.

That is where most command conversations end. The pitcher is told to focus harder, aim more carefully, trust his stuff, and stop nibbling at the corners. None of those instructions stop the carousel. And a pitcher on a spinning platform cannot command the baseball regardless of how hard he concentrates, how carefully he aims, or how determined he is to execute.

This book is about stopping the carousel. And then, once it has stopped, pointing it in the right direction.

Part One built the platform. Hip lock closes the back door. Pelvic closure closes the front door. The impulse mechanism widens the release window. The sternum becomes the rudder that steers a connected and stable chain. None of those events require conscious thought during competition. They require training, constraint, and patient repetition until the attractor is present and the carousel stops on its own.

Part Two aimed the platform. The center of the strike zone is dramatically safer than most pitchers believe -- the Rays proved it, the Cardinals confirmed it, and the miss data from every major league pitcher in the game explains why mathematically. Count leverage is the strategic foundation that

makes the zone-attack philosophy work at every velocity level. Approach angle adds an invisible dimension that turns location command into a geometric problem the hitter cannot fully solve. And every pitch in the arsenal has a natural movement signature that, when respected rather than fought, produces the command and deception that aggressive targeting alone cannot.

Chapter 8 organized all of it into a sequence. Five phases, in order, because the order is what makes it work. The movement foundation must precede the strategic approach. The platform must be stable before the rudder can steer it. The zone must be consistently findable before the approach decides where to find it.

"A body organized well enough to find the strike zone, aimed intelligently enough to find it in the right place at the right time. That is command at its fullest definition."

These two things together are command as the ARMory understands it. Not painting corners. Not nibbling the edges. Not concentrating harder. A movement system organized to produce consistent outcomes, paired with a strategic approach built on what the data actually says about where to throw the ball.

Command is not a talent. It is not something that some pitchers are born with and others are not. It is not a concentration skill or a maturity skill or an experience skill that accumulates on its own over years of innings. It is a movement skill first, and a strategic skill second, and both can be trained.

Every pitcher who struggled with command in these pages was not lacking something permanent. He was missing an attractor that had not been built yet or aiming at a target the data said was wrong or working against a natural movement signature that deserved to be worked with instead. All of those things are fixable. All of them have a phase. All of them have a protocol.

The pitcher who reads this book and walks away thinking "I just need to throw more strikes" has missed the point. The pitcher who reads it and thinks "I know exactly which phase I am in and what I need to build next" has found it.

If this book has done its job, you now know the difference between a movement problem and a strategy problem. You know what a tilt-a-whirl pitcher looks like in the data and what to do about it. You know that 95 percent of first-pitch center-cut fastballs go in favor of the pitcher, and you understand both why that number is real and what a pitcher must build to take advantage of it. You know that your four-seamer wants to go up, your curveball wants to go down, and your changeup wants to fade arm-side -- and that fighting any of them costs you both command and deception at the same time. And you know that there is a sequence, five phases in order, that can take any pitcher from movement chaos to organized command if the work is done correctly.

That sequence is what we build every day at the Florida Baseball ARMory. We measure it with Newtforce data and motion capture. We map the miss clusters and track the impulse curves and monitor the first-pitch strike rates. We use the V-Flex system to create environmental constraints that make the correct outcome the path of least resistance. And we have watched pitchers at every level -- high school freshmen and professional veterans, pitchers who had been told they just needed to throw more strikes for years -- move through the phases and come out the other side throwing with conviction, precision, and a clear understanding of what they are doing and why it works.

The carousel stopped. The platform is stable. The rudder works.

Aim small. Miss small.

About the Author



Randy Sullivan is a physical therapist, Certified Strength and Conditioning Specialist, researcher, author, and founder and CEO of The Florida Baseball ARMory.

He earned his BS in Physical Education from The Citadel: The Military College of South Carolina in 1986, where he played baseball and was named a GTE-CoSIDA First Team Academic All-America catcher.

After college, Sullivan served ten years as an officer in the United States Air Force. His first five years were spent as a Nuclear Missile Launch Officer. He later earned a master's degree from the Army-Baylor Graduate Program in Physical Therapy and was named Associate Director of Physical Therapy at MacDill Air Force Base in Tampa, Florida.

In 1996, he left the Air Force honorably and opened Sullivan Rehab Services, a private physical therapy practice in Brandon, Florida.

Baseball never really left him. Sullivan raised and coached three sons who went on to play college baseball, with one reaching professional baseball. In 2011, he finally brought the two worlds together - baseball and physical therapy -- by opening The Florida Baseball ARMory.

Since then, Sullivan has worked with thousands of baseball players, from youth athletes to professionals. He has coached sixteen first-round draft picks and more than fifty Major Leaguers. He has also served as a paid player-development consultant for dozens of Major League organizations and has worked in some capacity with coaches and players from every MLB organization.

His work has also taken him around the world. Sullivan has consulted with professional baseball organizations and national federations in Taiwan, Korea, Japan, the Netherlands, and Italy.

He has written and published eight other baseball training books, more than 100 blog articles, and over 100 instructional videos on baseball player development, pitching, skill acquisition, and baseball strength and conditioning.

Coach Sullivan's previous books include:

- Integrated Anatomy of Pitching
- A Constraints-Led Approach to Baseball Coaching, with Rob Gray
- SAVAGE Revolution: Overthrow the Status Quo in Baseball Pitcher Development
- SAVAGE Training: Transferring Your Gains from the Gym to the Game

- Start With the Pain: The Complete Guide to Managing Arm Pain in the Throwing Athlete
- Scaptivation: Bulletproofing the Next Generation of Elite Throwing Athletes
- Engineering the Superhuman Pitching Machine, Volume 3: Targeting Your Training
- Engineering the Superhuman Pitching Machine, Volume 2: Conducting a World-Class Pitcher Evaluation
- Engineering the Superhuman Pitching Machine, Volume 1: The Fab Four Pillars of Power Pitcher Development

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