

THE SCREENING BATTERY

Twenty *Minutes*

One assessment that feeds every other document in this library. Run it in order, ground up, and by the end you know which faults are physically possible for this athlete and which ones you would be coaching against his own body.

OUTLIER PERFORMANCE LAB BIOMECHANICS LIBRARY

Every document here starts the same way: **screen before you coach**. This is the screen.

The point is not to generate a report. It is to answer one question at each joint — *can he, or can't he* — because a fault an athlete cannot physically avoid needs the opposite intervention from a fault he could. Twenty minutes on a table and a floor separates those two cases everywhere in the delivery, and without it you spend months coaching positions that were never available.

How to use it

RULE 01

Ground up, always

Run it in delivery order. A hip finding changes what a shoulder finding means, because the arm is frequently compensating for something below it. Reading the shoulder first inverts the logic.

RULE 02

Compare sides before norms

Side to side asymmetry is more informative than population averages for almost everything here. The athlete is his own control group.

RULE 03

Note the end feel

Soft and springy means tissue you can change. Hard, early and bony means structure you cannot. This single observation prevents more wasted work than any other item on the list.

RULE 04 Retest tired Half of what matters only shows up under fatigue, and fatigue is the state most faults appear in. A pass when fresh is not a pass.	RULE 05 Ask where he feels things The cheapest instrument you own. Location of effort separates loading from hiking, and apprehension from restriction, in about four seconds each.	RULE 06 A finding is a hypothesis Confirm it on video before you act. A restriction that does not show up in the delivery may not be worth chasing.
---	---	---

The battery

Grouped by region, in the order to run them. The last column points at the document that covers what you found.

PART ONE, THE LOWER HALF			
TEST	FLAG IF	WHAT IT MEANS	POINTS TO
Ankle knee to wall , both sides	Under about 4 inches, or a side difference	Gates stride length and how long he can apply force against the ground.	Deficiency, link 01
Hip rotation , both directions, both sides	5 degrees or more difference in inward rotation	The highest yield test on the list. A 5 degree deficit predicted back and abdominal injuries across 258 professional player seasons.	Swing or Rotate
Total hip rotation per side	Large asymmetry in the sum	Distinguishes a hip tight in one direction from a hip that has lost motion overall. Changes the plan.	Swing or Rotate
Single leg stance , 30 seconds, hands off hips	Pelvis drops or hikes	A drop is a weak side hip. A hike is the compensated version of the same weakness, and it is what a false load looks like standing still.	False Load
Same, under fatigue	Passes fresh, fails tired	Where most athletes get exposed, and it matches what the video shows across an outing.	False Load
Hip airplane	Cannot control rotation over the loaded leg	Separates passive range from usable range. Passing a table test and failing this is a control problem, not a mobility one.	Swing or Rotate
Single leg Romanian deadlift	Loses position, knee drifts	Can the front leg brake and hold. This is whether he can be an axle at all.	The Long Way Back
Drop and stick landing	Sinks, or the knee tracks outside the foot	Tests whether a stacked landing is available before you ask for it at full intent.	The Long Way Back
Copenhagen hold	Short hold time, or asymmetry	Adductor capacity, which decelerates the stride and resists the limb bowing.	The Long Way Back

PART TWO, THE TRUNK			
TEST	FLAG IF	WHAT IT MEANS	POINTS TO
Rib position at rest , and on a full exhale	Ribs flared, pelvis tipped forward	Do this before any mid back test. A flared rib cage makes rotation screens read better than they are.	Deficiency, link 08
Seated mid back rotation , both directions	Limited, or asymmetric	Supplies most of the chest's usable turn. Stiff here and the chest rotates the instant the pelvis does.	Nothing Left to Turn
Mid back extension	Rounded, limited	Gates shoulder blade posterior tilt, so this is a shoulder test as much as a trunk one.	Allowed, Not Made
Single leg lift test , back leg, watching pelvic tilt	Swing much beyond about 6 degrees	Better drive leg pelvic control came with lower shoulder loading in high school pitchers.	False Load
Side plank hold , both sides	Asymmetry, or a hiked pelvis	Frontal plane trunk capacity, and whether he holds a level pelvis or hikes to get there.	False Load
Pallof press hold	Cannot resist rotation cleanly	Anti rotation capacity, which is what holding the chest closed against a turning pelvis actually is.	Nothing Left to Turn

PART THREE, THE SHOULDER AND ARM			
TEST	FLAG IF	WHAT IT MEANS	POINTS TO
Shoulder rotation both directions , lying face up at 90 degrees	Loss on the throwing side	Run it twice: once with the shoulder blade free, once with it held down. A large difference means the blade is the limiter, not the joint.	Adaptation or Loss
Total rotational motion , both shoulders	Throwing side notably lower in the sum	More informative than either direction alone. This is the number that separates normal adaptation from actual loss.	Adaptation or Loss
End feel at the limit	Hard, early, abrupt	Bone rather than tissue. Stop working on it and build around it.	Allowed, Not Made
Small chest muscle length , lying face up	Shoulder sits up off the table	The most common mechanical block on layback.	Allowed, Not Made
Lat and teres major length , arms overhead, low back flat	Cannot reach without arching	Separates a genuine tissue restriction from a lumbar cheat.	Allowed, Not Made
Wall slide , watching the inner border of the blade	Winging, or no upward rotation	Serratus and lower trapezius. The force couple that lets the arm finish moving.	Allowed, Not Made
External rotation strength against internal	Back of the shoulder well outmatched	The deceleration muscles. Test fatigued as well as fresh, since that is the state they fail in.	Stopping It

TEST	FLAG IF	WHAT IT MEANS	POINTS TO
Wrist tilt toward the thumb	Limited	The gate on any arm slot change. Without it, dropping the slot subtracts the pitch.	Who Should Drop
Grip strength , fresh and late in a session	Large drop when tired	Forearm endurance, which is the armour standing between elbow load and the ligament.	Position, Not Effort
Where he feels the end of shoulder range	Front of the joint, apprehension	Guarding rather than restriction, and it changes the plan completely.	Allowed, Not Made

The three questions

Free, fast, and each one replaces a test you would otherwise have to run.

"At the top of your leg lift, where do you feel that?"

GLUTE, INNER THIGH, DEEP IN THE HIP

Loading

The tissue under tension is the tissue that drives the pitch.

LOW BACK, SIDE, OBLIQUES

Hiking

Real work in a plane the pitch does not use. Go to *False Load*.

"Where do you feel the throw itself?"

ALMOST NOTHING IN THE ARM

Carried

The chest is delivering rotation and the arm is along for the ride.

TRICEPS, FRONT OF THE SHOULDER

Pushed

The arm is generating what it should have inherited. Go to *Push or Whip*.

"Where are you sore the day after an outing?"

BACK OF THE SHOULDER, GLUTES

Expected

The deceleration muscles and the drive leg. Watch that it clears on schedule.

SIDE, LOW BACK, FRONT OF THE UPPER ARM

Compensating

The low back doing hip work, or the elbow paying its own deceleration bill.

What to capture on video

Three camera positions and four frames. Everything else is detail.

FILMING, AND WHAT EACH ANGLE IS FOR		
ANGLE	WHAT IT SHOWS	FRAMES TO FREEZE
Open side, side on	Stride length, arm elevation, layback, forward tilt, block quality	Foot contact, peak layback, release
From behind	Belt line angle, femur direction at landing, whether the knee bows, arm path and finish	Peak leg lift, foot contact, the four frames after it
Front on	Chest orientation at landing, glove side behaviour, head line	Foot contact, release

Foot contact is the frame that carries the most information

Chest orientation, arm elevation, elbow bend, femur direction, belt line angle and stride length are all decided there, and it is the last stable moment before everything spins. It is also the frame whose consistency has been associated with command.

If you only capture one thing well, capture foot contact from behind and front on.

What you can measure without a lab

PHONE Almost every position in this library Stride length as a share of height, belt line angle, chest orientation at contact, femur direction, arm elevation and finish. Slow motion on a modern phone is enough for all of it.	RADAR Velocity, and its trend within an outing The trend matters more than the peak. A pitcher losing velocity across innings while his mechanics degrade is the fatigue pattern.	BALL FLIGHT UNIT Three of the four release numbers Release height, side, extension and spin. The highest return per dollar of anything in a facility, because it prices mechanical changes in the currency that matters.
NOTHING AT ALL The three questions above Location of effort and location of soreness. Genuinely diagnostic, and most people never ask.	NEEDS A LAB Elbow load and joint kinetics Cannot be estimated from video. If arm health is the question, this is what a capture session is for.	NEEDS A LAB Peak segment velocities and timing The sequence order and gaps. Visible in rough terms on video, measurable only with capture.

Sources

- Decreased Hip Internal Rotation Increases the Risk of Back and Abdominal Muscle Injuries, 258 player seasons
- Lumbopelvic-hip Control, Upper Extremity Joint Moments, and Drive Leg Ground Reaction Force in Adolescent Pitchers
- Driveline — Pitching Assessments and Changing Mechanics
- Driveline — Making Movement Changes in the Weight Room
- Driveline — The Interaction of Biomechanics and Command, foot plant consistency
- ASMI — The Clinician's Guide to Baseball Pitching Biomechanics
- Gluteus Medius and Scapula Muscle Activations in Youth Baseball Pitchers
- Cressey — The Importance of Hip Rotation

A fault he cannot physically avoid needs the opposite intervention from one he could. That is the only thing this screen is for.