



EARLY TRUNK ROTATION

Nothing Left *to Turn*

When the chest arrives square at foot contact, the delivery has spent its rotation before the part that needed it. The arm has no space left to be carried through, so it pushes, and every fault downstream follows from that one frame.

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Rotation is a finite budget. Open the chest before the front foot lands and you have **spent it on the stride instead of the throw.**

What makes this fault expensive is that it removes the mechanism the whole upper half depends on. The arm is supposed to be left behind by a chest that turns underneath it. A chest already facing the plate has nothing left to turn, so the arm has to get there on its own. That is the pushing pattern, and it arrives with a bill at the elbow, a flatter ball, and layback that cannot develop no matter how much range the shoulder has.

The frame that decides it

Freeze the moment the front foot touches

At foot contact the chest should still be turned roughly **10 degrees away from the plate**. Not square, not open. Staying stacked and closed at that instant is **inversely associated with elbow load** in the published data, which is unusual for a position this easy to see.

That one frame tells you most of what you need. If the chest is already square there, everything the arm does afterward is a consequence rather than a separate problem, and coaching the arm will not touch it.

Why it happens

Eight causes, and only two of them are actually about the chest. This is another fault that mostly lives somewhere other than where it appears.

From below

The pelvis takes the chest with it. Most flying open starts here.

- 01 **Front hip has no rotational range.** The pelvis cannot turn around the planted femur, so it turns the leg and opens early. The chest goes along. Covered in *Swing or Rotate*.
- 02 **Back hip cannot hold counter rotation.** Missing range or strength on the drive side means the pelvis unwinds early on its own, with the chest following.
- 03 **Front foot lands open.** Frequently a compensation for the missing front hip range, and it gives the pelvis permission to leak.

From the trunk itself

The two causes that genuinely are about the chest.

- 04 **Limited mid back rotation.** The thoracic spine supplies most of the chest's usable turn. Stiff there and the chest has to rotate the instant the pelvis does, because there is no independent range between them.
- 05 **Anterior core cannot resist the stretch.** Holding the chest closed against a rotating pelvis is work. Weak or disconnected, with the ribs flared, and there is nothing holding the position.

From the front side

Where the athlete pulls himself open.

- 06 **Pulling the glove.** Yanking the glove arm to the glove side hauls the chest around with it. Frequently a compensation for weak back leg drive, and it produces linear trunk movement rather than rotation.

From the coaching

Two causes that come from instruction rather than from the body.

- 07 **Overcueing strikes.** Accuracy pressure reads to the athlete as a demand for control, and control gets delivered as a linear, chest first finish. This is on Tread's list of causes for a pushing arm, and it works by opening the upper half first.
- 08 **Cueing rotation directly.** Asking a pitcher to rotate, turn, or clear the hips produces exactly what was asked for, earlier than wanted. The rotation was never the missing piece. The holding was.

What it costs, in order

These are sequential rather than separate. Each one follows from the last.

- 01 The chest arrives square at foot contact. **Separation collapses**, because the two segments got there together.
- 02 Nothing is on stretch. The side abs and lat never loaded, so **there is no stored energy to return** through the trunk.
- 03 Chest rotation speed never spikes, because it is rotating from a position it already reached rather than being **accelerated against a held one**.
- 04 The arm has **no rotational space to be carried through**. Being left behind requires something to be left behind by.
- 05 Layback cannot develop. It is produced by trunk rotation acting on the arm, and **the trunk rotation is gone**.
- 06 The arm **pushes**, because extension is the only route left to the plate. Triceps driven, linear, finishing out front.

07	Elbow load rises. Faster elbow extension is associated with more load, and the velocity does not follow because none of it came from the trunk.
08	Ball flight flattens and cuts, because the hand travelled through the ball rather than around it.

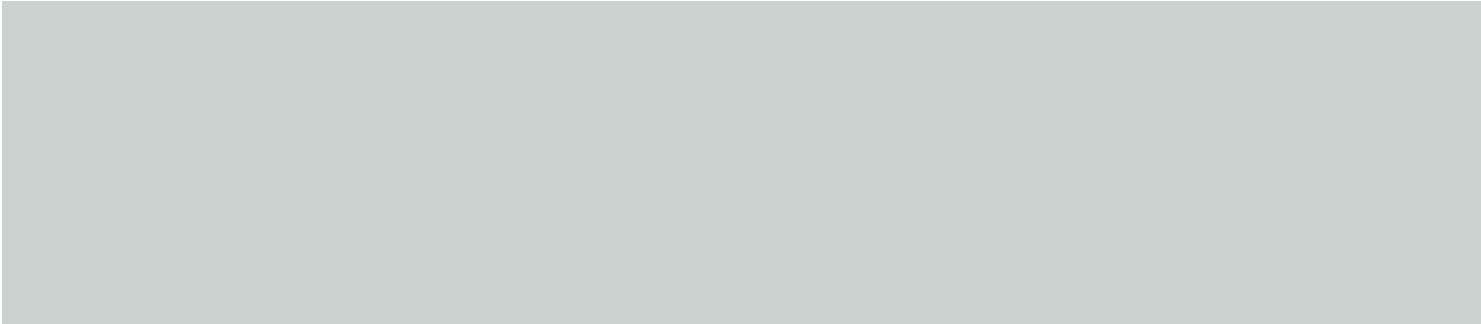
What it looks like

Film from behind or from the open side. This is difficult to judge from the closed side, which is where most bullpen video gets shot.

CONTACT FRAME The chest is already square The whole diagnosis in one frame. Freeze the moment the front foot touches and look at where the sternum points. Roughly 10 degrees closed is the target.	TIMING Hips and chest arrive together They should arrive in sequence, not as a unit. Watch the belt line and the sternum reach square and see whether there is any gap between them.	GLOVE The glove yanks and the chest follows If the chest opening is being led by the glove side rather than by the pelvis, the cause is the front arm rather than the hips.
FRONT FOOT It lands open Toe pointing toward the on deck circle. Usually the athlete borrowing rotation his front hip cannot supply, and it lets the pelvis leak.	ARM Pushed finish, out front A carried arm finishes across the body. An arm with no rotational space finishes extended toward the target, because that is where it went on its own.	BALL Cutting and flat Especially a fastball that has started cutting with no grip change. The hand is travelling through rather than around, which is what a linear finish produces.

Fixing it

The order matters more here than usual, because the two most common causes are both below the chest and neither responds to anything done at the chest.



STAGE 1

Screen the hips before you touch the trunk

Three of the eight causes are hip range. If the pelvis is opening early because a hip cannot do its job, holding the chest closed is asking the athlete to fight his own pelvis.

- **Front hip rotational range**, both directions, both sides
- **Back hip range and strength**, since holding counter rotation is work
- **Front foot landing direction**, treated as evidence rather than as the fault
- If a hip is the cause, go to *Swing or Rotate* and come back

STAGE 2

Give the chest somewhere to be

Independent rotation between pelvis and chest requires mid back range. Without it there is no closed position available to hold.

- **Side lying windmill with a full exhale**, open books, all fours rotation
- **Rib position work** first if the ribs are flared, since a flared rib cage makes mid back screens read better than they are
- **Load the new range** with rotational med ball work, or it will be gone inside a week

STAGE 3

Build the capacity to hold it

Staying closed against a rotating pelvis is an active job. It is resisting rotation, not producing it, and it needs to be trained that way.

- **Pallof press** and half kneeling anti rotation holds
- **Full exhale core work** to reconnect the rib cage over the pelvis
- **Suitcase and offset carries** for the same job under load
- Only then add rotational power work. Med ball on top of an uncontrolled trunk is how oblique strains happen

STAGE 4

Change the task, not the cue

Two of the eight causes came from instruction. Adding more instruction is unlikely to be the fix.

- **Roll in style drills** and step back patterns, which make staying closed the easy solution rather than the instructed one
- **Stop cueing strikes** during development work. Accuracy pressure produces the chest first finish
- **Fix the glove arm** if it is leading: let it decelerate over the front hip instead of being pulled
- **Do not cue rotation.** He rotates fine. The problem is that he starts early

When an early chest is not the problem

CASE 01

The pelvis is early, not the chest

If both open early together, the chest is doing nothing wrong. Measure the gap between them rather than the absolute position, and go to the hips.

CASE 02

He is a one piece turner

Some athletes organise rotation as a unit rather than a spiral, and close the hips more to compensate. A smaller gap is native for them, and forcing a spiral pattern usually relocates the rotation to the low back.

CASE 03

The chest turns fast anyway

If chest rotation speed is high and elbow load is normal, the loading mechanism is working by some route you have not identified. Judge the outputs, not the frame.

BUT PRICE IT

Two things to keep watching

Even in the tolerated cases: an early chest costs layback, and it makes the arm the last segment with a job. Watch elbow load and watch whether the arm action is being carried or pushed.

Where this sits in the library

The hinge between the lower half and the arm

Three documents describe faults below this one: a back hip that never loaded, a front hip that cannot rotate, and a front hip that blocks late. Two describe what happens above it: an arm that pushes, and layback that never develops.

Flying open is where those two halves meet. It is the most common route by which a lower half problem becomes an arm problem, which is why an arm fault so often screens clean at the shoulder and resolves when the hips are fixed.

Sources

- Fleisig et al. — Kinematic Parameters Associated With Elbow Varus Torque in Elite Adult Baseball Pitchers, trunk orientation at foot contact
- Tread Athletics — How to Fix a Pushing Arm Action, upper half flying open and strike cueing
- Driveline — How We Interpret Biomechanics Reports
- Driveline — Why We Don't Teach Equal and Opposite or Firm Front Side
- Driveline — A Different Model for Cueing Pitching Mechanics
- The Effect of Trunk and Lower Body Mechanics on Fastball Velocity, SportRxiv
- Decreased Hip Internal Rotation Increases the Risk of Back and Abdominal Muscle Injuries
- ASMI — The Clinician's Guide to Baseball Pitching Biomechanics

He rotates fine. The problem is when he starts, and the answer is almost never at the chest.