

Mechanics Screening Report

Holden C. | Age 14 | RHP | June 12, 2026

338 frames analyzed	240 fps	33 landmarks tracked
2 ELEVATED	2 MONITOR	2 CLEAR

QUICK TAKE

Two elevated patterns (elbow stress + early trunk rotation) that commonly travel together. The early trunk rotation is likely contributing to the elbow stress — fixing the sequencing should help both. Two monitor-level patterns worth tracking over time. Two clear patterns that show strong, repeatable mechanics. Overall, this is a delivery with a solid foundation and specific areas to target.

Elbow Stress Pattern

ELEVATED

Arm acceleration phase, throwing-arm side

Movement pattern associated with elevated medial elbow stress during arm acceleration.

What this means mechanically

During the arm acceleration phase (arm cocking to ball release), the elbow showed a pattern associated with elevated medial stress. This happens when the forearm lags behind the shoulder rotation, creating an outward force on the inside of the elbow. Over time, repeated stress in this pattern is associated with UCL strain and medial elbow discomfort in overhead athletes.

WHAT YOU CAN WORK ON

Elbow spiral warm-up

Slow arm circles with a light band, keeping elbow ahead of wrist. 2 sets of 10 each direction before throwing.

Sleeper stretch

Lie on throwing side, elbow at 90 degrees, gently push wrist toward floor. Hold 20-30 seconds, 3 reps.

Forearm pronation holds

With 2-3 lb weight, arm at 90 degrees, slowly rotate palm down. 3 sets of 8.

Trunk Rotation Timing

ELEVATED

Stride through arm acceleration

Trunk begins rotating toward home plate before the lead foot has fully landed.

What this means mechanically

The trunk should stay closed (facing third base for a RHP) until the lead foot is firmly planted. When the trunk opens early, the arm gets dragged through the acceleration phase rather than whipping through it. Early trunk rotation is one of the most common compensations in young pitchers and is associated with increased arm stress because the arm has to do more of the work that the trunk should be doing.

WHAT YOU CAN WORK ON

Rocker drill

From mound, rock back then forward — freeze at foot strike. Check: chest/shoulders still closed? 10 reps.

Tall kneeling med ball throw

Kneel on back knee, lead knee up. Rotate hips first, then trunk follows to throw ball into wall. 3 sets of 8.

Thoracic spine rotation stretch

On all fours, hand behind head, rotate elbow to ceiling, hold 3 sec. 10 reps each side.

Hip-Shoulder Separation

MONITOR

Stride phase through foot strike

Separation measured at 38 degrees — slightly below the 40-55 degree optimal range for this age group.

What this means mechanically

Hip-shoulder separation is the rotational difference between the pelvis and the shoulders at the moment the lead foot strikes the ground. At 38 degrees, the hips and trunk are rotating together more than ideal. This reduces the elastic energy stored through the trunk and can lead to compensating with the arm. It's not a red flag at 14 — the pattern often improves with physical maturation and targeted mobility work.

WHAT YOU CAN WORK ON

Pivot pickoffs

From stretch, rotate hips to first while keeping shoulders closed to home. Feel the separation. 10 reps per side.

Medicine ball rotational throw

Sideways to wall, 4-6 lb ball, load back hip, rotate hips first. 3 sets of 8 each side.

90/90 hip stretch

Sit with both legs bent at 90 degrees, lean forward over lead leg. Hold 30 seconds each side.

Follow-Through Path

MONITOR

Ball release through deceleration

Follow-through path cuts short slightly. The arm decelerates over a shorter arc than optimal.

What this means mechanically

After ball release, the throwing arm should decelerate over a long, sweeping arc — across the body and toward the opposite hip. Holden's follow-through is slightly abbreviated, meaning the arm stops sooner in its deceleration path. This puts more stress on the posterior shoulder (the muscles and structures that act as brakes on the arm).

WHAT YOU CAN WORK ON

Towel drill (full finish)

Full delivery with towel, snap past opposite knee. If towel doesn't snap, follow-through is too short. 10 reps.

Posterior shoulder stretch

Cross throwing arm across chest, gently pull closer. Hold 20-30 sec, 3 reps.

Reverse throw (eccentric decel)

With 1-2 lb ball, slowly mimic deceleration phase through full arc. 2 sets of 10.

Lead Knee Stability

CLEAR

Foot strike through release

Stable knee flexion at foot strike with minimal collapse through ball release. Within optimal range.

What this means mechanically

When the lead foot strikes the ground, the knee should maintain a controlled flexion angle — not too stiff, not collapsing. Holden's lead knee showed stable flexion at foot strike and maintained its position through ball release. This means he's bracing effectively against the ground, which allows the trunk to rotate over a firm front side.

WHAT YOU CAN WORK ON

Single-leg RDL

Stand on lead leg, hinge at hip with slight knee bend. 3 sets of 8 each leg.

Walking lunges with pause

Lunge forward, pause 2 seconds at bottom, knee tracking over toes. 2 sets of 10 steps.

Arm Slot Consistency

CLEAR

Arm cocking through release point

Arm slot is consistent across all pitches in the video. Tight cluster at approximately 72 degrees (3/4 arm angle).

What this means mechanically

Arm slot consistency is one of the strongest indicators of repeatable mechanics. The arm angle at release across all pitches showed a tight cluster — less than 4 degrees of variation. A consistent arm slot means the body is finding the same positions pitch after pitch, which is both more efficient and reduces the chance of compensatory stress patterns.

WHAT YOU CAN WORK ON

Maintain this pattern

Positive finding. No corrective work needed — maintain consistency as workload increases.

Band pull-aparts

Light band at shoulder width, pull apart. 2 sets of 15 before throwing. Keeps scapular stabilizers engaged.

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Training Plan

Consolidated exercises based on screening results | 3x/week on non-throwing days

● Priority (address first)

Rocker drill	10 reps — fix trunk timing	From: Trunk Rotation
Tall kneeling med ball throw	3x8 — hip-trunk sequencing	From: Trunk Rotation
Elbow spiral warm-up	2x10 each direction — before throwing	From: Elbow Stress
Forearm pronation holds	3x8 with 2-3 lb — medial elbow support	From: Elbow Stress

● Maintain & monitor

90/90 hip stretch	30 sec each side — hip mobility	From: Hip-Shoulder Sep.
Posterior shoulder stretch	20-30 sec, 3 reps — shoulder range	From: Follow-Through
Towel drill (full finish)	10 reps — deceleration practice	From: Follow-Through
Med ball rotational throw	3x8 each side — separation work	From: Hip-Shoulder Sep.

● Keep doing

Sleeper stretch	20-30 sec, 3 reps — internal rotation	From: Elbow Stress
Band pull-aparts	2x15 before throwing — scapular stability	From: Arm Slot
Single-leg RDL	3x8 each leg — posterior chain	From: Knee Stability
T-spine rotation stretch	10 reps each side — trunk mobility	From: Trunk Rotation

This mechanics screening is based on AI-powered pose estimation and movement-pattern analysis. Findings reflect movement patterns associated with stress indicators identified in biomechanics research. This is not a medical diagnosis, injury prediction, or treatment plan. Consult a qualified healthcare professional for medical evaluation.

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