EchoTrak

Artificial Intelligence Report™

This report delivers a data-driven analysis of athletic performance powered by EchoTrak's proprietary artificial intelligence system. Using a combination of high-speed cameras, LiDAR-based motion tracking, and advanced biomechanical modeling, EchoTrak evaluates each athlete's movement, mechanics, efficiency, and decision-making in real time.

Whether you're a coach, athlete, scout, or performance staff member, this report gives you clear, actionable insight to help:

- Detect early signs of fatigue, inefficiency, or breakdowns in technique
- Identify strengths, weaknesses, and trends across individual or team performance
- Support real-time decision-making and long-term development
- Translate movement into measurable, repeatable results

This is more than just data — it's Performance Intelligence™.

Play Breakdown – Top of the 3rd, 1 Out
Play ID: FS-2026-03-14-T3-P04
Event: West Coast Showcase | **Field:** Field 3
Count: 0–1 | **Pitch #:** 47 | **Runners On:** 1st & 2nd

Pitcher: #12 Zoe Martinez (RHP)

Pitch #: 47 | **Count:** 0–1 | **Runners On:** 1st & 2nd

Pitch Execution Overview

Metric	Result	Insight
Pitch Type	Drop Curve	Confirmed by spin & trajectory model
Velocity	58.4 mph	Down 1.3 mph from inning start
Arm Slot	61°	3° drop vs baseline – fatigue emerging
Release Point Drift	-2.2" lateral	Horizontal deviation building
Release Height	2' 9.4"	Stable
Hip-Shoulder Separation	-19°	Slight energy loss

AI Flag: Increasing release variance + decreased velocity = mechanical fatigue in progress.

Pitcher Biomechanics Breakdown: Zoe Martinez (RHP)

Metric	Result	Insight
Stride Length	6'1"	94% of height – strong force output
Stride Direction	-3° closed	Slight inward landing – limits hip rotation, elevates joint load
Arm Circle Duration	0.51 sec	Efficient; in rhythm with pitch type
Arm Circle Peak Height	4'11"	Consistent loop, clean trajectory
Shoulder Line at Foot Strike	8° closed (toward 1B)	Can delay trunk rotation and pitch timing
Trunk Rotation Timing	-12 ms off optimal	Slight delay — common under fatigue
Hip-Knee Separation at Launch	35°	Slightly below ideal (40°–45°) for max torque
Glove Side Mechanics	Stable, firm tuck	Efficient torque generation — no collapse detected
Back Foot Drag Line	23"	Strong ground force transfer — efficient chain finish
Release Point Variance (10 Pitches)	2.1" (horizontal)	Drift detected — mirrors fatigue symptoms
Post-Release Follow-Through	Balanced finish, full torso rotation	Mechanics holding up despite workload

AI Summary: Zoe's mechanics remain structurally sound, especially in stride and ground-force usage. However, mild trunk delay and increasing lateral drift suggest mechanical stress is building. Monitoring fatigue over the next inning is recommended.

Batter Execution: #4 Jada Lewis (LHB)

Metric	Result	Insight
Stance Positioning	Back of box, closed	Positioned to cover curve; slight jam risk
Swing Trigger Time	0.34 sec Release to Swing Start	Slight delay in recognition
Swing Duration (**Load → Contact**)	0.42 sec	Minor delay in sequencing causing batter to be late
Swing to Contact Time	0.19 sec	Compact movement – efficient path
Bat Speed @ Impact	61.7 mph	Slightly under showcase average
Contact Point	Inner/low quadrant	Slight jam – reduced barrel extension
Launch Angle	-4°	Ground ball trajectory
Exit Velocity	58.9 mph	Underpowered contact
Swing Path Angle	+12° upward	Good shape, misaligned timing
Swing Plane Deviation	-7° from pitch plane	Pull occurred early → reduced lift
Hand Dominance	Heavy Top hand	Caused premature barrel turnover
Barrel Orientation @ *Contact)*	8° downward	Rollover effect confirmed
Barrel Spin	280 RPM Counter clockwise	Solid torque, poorly transferred at contact
Vertical Bat Angle	-19°	Over-steep = ground contact
Body Posture @ Impact	Hips closed, lead shoulder dipped	Timing lag → visual compensation
Follow-through Pattern	Over-the-top	Upper-body dominant, limited extension
Swing Technique Score (PI)	76 / 100	Compromised by early top hand

AI Summary: Compact swing setup with solid mechanics but top-hand takeover and delayed read caused barrel rollover. Slight jam led to weak contact.

Batted Ball Flight Analysis

Metric	Result	Insight
Exit Velocity	64.2 mph	Solid contact – sharper than earlier swings
Direction	6° left of center	Slight pull-side ground ball
Launch Angle	-5.4°	Low trajectory with minimal lift
Ball Spin (Inferred)	Topspin, 1:30 axis	Consistent with downward skip pattern
Ground Contact Time	0.72 sec	Reached fielder quickly – required fast reaction
Ball Travel Distance	≈55 ft	Grounder fielded near 2B – on infield dirt

AI Summary: The ball was struck with moderate exit velocity and clean barrel path, producing a hard grounder with topspin and minimal lift. It skipped once and was fielded cleanly just left of second base on the infield dirt, offering the defense a narrow window for execution.

Fielder: SS #6 Amari Johnson

Metric	Result	Insight
First Step to Ball Time	0.22 sec	Elite reflex response
Fielding Distance	14.3 ft	Quick move to clean hop
Position at Contact	6 ft left of 2B, 4 ft in front	Well positioned in infield dirt
Route Efficiency	93%	Clean angle and momentum
Fielding Angle	2.1° off centerline	Minor adjustment mid-route
Throw Distance	56.3 ft	Shortstop-to-1B from infield position
Throw Velocity	61.8 mph	Sharp and efficient
Time to Release	0.78 sec	Fast transition
Throw Flight Time	0.62 sec	Minimal arc; on target
Throw Flight Path	±0.9° from line	High-accuracy delivery

AI Grade: A+ defender execution — elite reaction, route, and throw speed. Margin for error minimized by speed.

First Base: #24 Lindsay Ellis

Metric	Result	Insight
Catch Reaction Time	0.38 sec	Well-timed stretch
Catch Location	5" above midline	Controlled, comfortable window
Footwork Pattern	Forward–right pivot	Textbook base coverage
Throw Sync	Perfect	Seamless timing → minimized runner opportunity

Play Timing & Tempo Metrics

Sequence	Time / Distance	Insight
Swing Start to Contact	0.19 sec	Compact swing path
Contact to Ground (Ball Flight)	0.72 sec	Fast ground ball, short hop
Contact to Fielded (SS)	1.05 sec	Quick fielding window
Throw Distance	56.3 ft	SS-to-1B
Throw Time (Air)	0.62 sec	Efficient velocity
Fielded to 1B Catch	1.68 sec	Total transition time
Home to First (Batter)	3.01 sec	Fast LHB split
Total Play Time (Contact to Out)	2.65 sec	Elite tempo
Fielder Coverage Grade	94%	Top-tier response efficiency
Out Margin	0.36 sec	Batter was out by a step

Closing Summary – Softball Performance Intelligence

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Artificial Intelligence Report™

This EchoTrak Performance Intelligence Report™ captures the complete motion sequence of a live game play, from pitcher mechanics to batter swing timing, ball flight, fielding response, and runner speed.

In this breakdown:

- The **pitcher** exhibited early fatigue, seen in decreased velocity and arm slot drift.

- The **batter's swing** featured compact mechanics, but a delayed trigger and early top-hand dominance led to rollover and weak contact.

- Despite the jam, the **batter reached home-to-first in 3.01 seconds**, applying pressure on the defense.

- The **shortstop fielded cleanly to the left of second base**, transitioned quickly, and delivered a 56.3 ft throw in under 0.8 seconds.

- The total play was completed in **2.65 seconds**, beating the runner by **0.36 seconds**.

EchoTrak doesn't just tell you what happened — it shows you why it happened, and where performance can be maximized.