



# 60 m Sprint — Sample Motion DNA Report

(with Echotrak LiDAR + High-Speed Video/Pose/Infrared)

**Athlete:** A. Sprinter

**Session:** Heat #3

**Date/Time:** 2025-09-05 10:12 am PST

**Surface:** Indoor Mondo

**Shoes:** Spikes

**Lanes:** 4–5 (head-to-head)

## Headline Results

- **Finish Time (LiDAR):** 6.72 s
- **Opponent Time (LiDAR):** 6.74 s
- **Finish Gap (LiDAR):** +2.8 cm (win)
- **Top Speed (LiDAR):** 11.7 m/s @ 42–48 m
- **Best 10 m Split (LiDAR virtual gates):** 1.01 s (20–30 m)



## Split Times & Speed Profile (LiDAR)

Segment	Time (s)	Cum. (s)	Avg Speed (m/s)	Notes
0–10 m	1.84	1.84	5.4	Drive building
10–20 m	1.09	2.93	9.2	Upright transition starts
20–30 m	1.01	3.94	9.9	Best split
30–40 m	0.98	4.92	10.2	Approaching max V
40–50 m	0.95	5.87	10.5	Peak velocity zone
50–60 m	0.85	<b>6.72</b>	<b>11.8</b>	Lean to finish (plane cross at torso)

*Virtual gates set at 0/10/20/30/40/50/60 m; PPS-synced. Finish is first torso fraction through the plane. (Optional Conversion of Average Speed to MPH)*



## Stride Mechanics (LiDAR + Pose)

Zone	Stride Length (m)	Stride Rate (Hz)	Contact (ms)	Flight (ms)	Notes
0–20 m	1.80–1.95	4.2–4.5	125–135	95–110	Strong push; slight over-reach on L at 8–12 m
20–40 m	2.05–2.15	4.5–4.7	105–115	110–120	Best stiffness; hips tall
40–60 m	<b>2.18–2.22</b>	<b>4.6–4.8</b>	<b>100–105</b>	120–130	PR-level stride length with stable rate

### Asymmetry (Pose):

- Hip drop (L vs R): **2.5° L>R** in 35–45 m zone (mild).
- Knee recovery peak angle: L **64°**, R **66°** (target 65–70°).
- Trunk tilt: 7–9° forward; improves to 6–7° after 30 m.

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## Finish-Line Detail (LiDAR)

- **First crossing points (torso cluster):** 17 points over 6.719–6.723 s → **6.72 s official training time.**
- **Opponent:** first torso cluster 6.742–6.746 s → **6.74 s.**
- **Gap at tape:** **2.8 cm** (center chest to center chest).
- **Order stability:** 4/4 torso-cluster checks agree (no occlusion).

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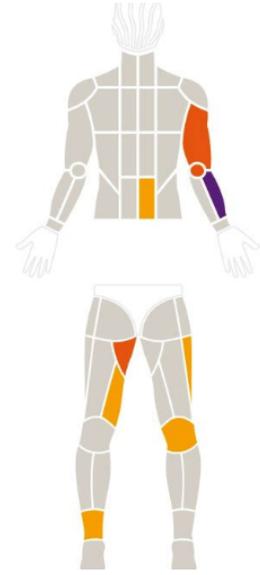
## Start Metrics (LiDAR start plane + Pose)

- **Block clearance (first continuous forward torso motion):** 0.145 s after gun.
- **Displacement criterion:** 4 cm past start plane sustained >8 ms (hands excluded).
- **First 5 steps avg length:** 1.63 m → 1.78 m progression (good).
- **Cue:** reduce pre-load shoulder rock; costs ~15–20 ms jitter at go.



## Thermal Notes (post-run 60–90s)

- **Left Hamstring Medial:** +0.9 °C vs contralateral (watch for tightening).
- **Left calf lateral:** +0.6 °C hotspot (self-report: “tight” last 15 m).
- **Cooling symmetry at 90 s:** within normal limits.



## Coaching Summary (What to keep / What to fix)

### Keep:

- Excellent stiffness 20–50 m (contact 100–115 ms).
- Peak stride length **2.22 m** with stable trunk angle.
- Finish lean timing (won by **2.8 cm**).

### Fix (priority):

1. **Early steps (0–15 m):** shorten step 2 slightly; aim for **1.70–1.74 m** to hit 95–110 ms contacts sooner.
2. **Left hip control (35–45 m):** drill lateral stability; goal hip-drop <2.0°.
3. **Right calf load:** add eccentric/isometric calf work; monitor with FLIR on next session.

### Targets for next test:

- 0–10 m: **1.80–1.82 s** (-0.02 to -0.04 s).
- Maintain 20–40 m contacts **≤110 ms**.
- Replicate finish lean timing; goal **6.69–6.70 s** total.

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## Data Quality (for staff)

- **LiDAR:** OS2, 128×2048 @ 20 Hz; PPS-locked; plane tolerance ±3 cm; torso cluster ≥5 points, 4-frame hysteresis.
- **Video/Pose:** 240 fps global-shutter; 25 m side-view + 10 m finish-line; multi-view calibration.
- **Infrared:** 30 Hz, ambient 21.5 °C; emissivity 0.98 skin proxy; ΔT normalized.