



Complete Sprint Mechanics Evaluation

Johnny Q. Public | Multi-Angle Video Review of the 40-Yard Sprint

Athlete	Johnny Q. Public	Evaluation date	August 21, 2026
Age	12 years	Location	City Park, Anytown
Height / weight	5 ft 8 in / 135 lb	Review date	August 27, 2026
Conditions	Outdoor dry turf; 2K / 240 fps	Timing data	Electronic 0/10/30/40 splits

1. Executive Coaching Summary

Overall assessment. Johnny is a 12-year-old, 5-foot-8, 135-pound athlete. Across three timed 40-yard trials his best is **6.707 s** and his average is **6.780 s** (12.07 mph average over the full 40). That clock already shows a usable mid-segment: 13.67 mph from 10 to 30 yards. The film from five cameras (close side start, wide side, finish-line side, rear, and front) shows a sprinter who can stay low and put the first contact under or slightly behind the hips — those are real strengths. The same film shows a start that is not yet standardized, an arm path that sweeps outside the shoulder line, and a last-10-yard fade of 7.3% that repeats on every trial.

Session conditions that matter. The five clips do not show one identical setup. Close side video includes both a two-point stance in neon spikes (hands on the thighs) and a three-point stance barefoot. Rear-view work is barefoot. Finish and front clips are barefoot. Footwear and stance were mixed in the same session. Times and mechanics in this report are therefore read as a session profile, not as a single-condition test. The next timed day should lock one stance and one shoe.

Primary opportunity (0–10 yd). The opening split ranged from 2.108 s to 2.295 s — a **0.187 s** swing that accounts for the entire gap between his slowest and fastest 40. Sprint 2 is the problem trial (slowest start and slowest finish). Close side film of the three-point shows why the start is unstable: the grounded hand reaches in front of the shoulder, the front foot is closer to flat than loaded, the torso folds at the waist, and the rear camera shows a laterally offset base before he ever leaves. He stays low. Low is not the same as organized.

Secondary opportunity (30–40 yd). Average speed drops from 13.668 mph (10–30) to 12.671 mph (30–40), a **0.997 mph / 7.3%** decline. The last-10 range is only 0.019 s, so the fade is a pattern, not a random bad step. Late side frames show a shin that opens earlier than the mid-run and a support foot that lands on or slightly ahead of the pelvis on some contacts. That is a reaching tendency worth coaching. High heel recovery is visible on the same camera. Train the strike down under the moving hip.

2. Verified Timing and Speed Analysis

Segment speed is average speed over the measured distance, not instantaneous peak velocity. Conversion used: 1 yard/second $\approx$ 2.045 mph. Arithmetic on the supplied splits checks out.

Trial	0–10 yd	10–30 yd	30–40 yd	40 yd total	Overall mph
Sprint 1	2.114 s	3.035 s	1.607 s	6.756 s	12.110
Sprint 2	2.295 s	2.955 s	1.626 s	6.876 s	11.899
Sprint 3	2.108 s	2.989 s	1.610 s	6.707 s	12.199
Average	2.172 s	2.993 s	1.614 s	6.780 s	12.068
Best	2.108 s	2.955 s	1.607 s	6.707 s	12.199

Segment	Distance	Average time	Average speed	Fastest trial	Range
Start / acceleration	0–10 yd	2.172 s	9.416 mph	9.703 mph	0.187 s
Acceleration / transition	10–30 yd	2.993 s	13.668 mph	13.844 mph	0.080 s
Late transition / finish	30–40 yd	1.614 s	12.671 mph	12.728 mph	0.019 s
Complete sprint	0–40 yd	6.780 s	12.068 mph	12.199 mph	0.169 s

What the clock says. Sprint 3 is the fastest 40 because it pairs the best 0–10 (2.108 s) with a clean middle and close. Sprint 2 owns the best 10–30 (2.955 s / 13.84 mph) and still finishes last because the 2.295 s opening cannot be repaid. The 0.187 s start range is larger than the 0.169 s total-time range — later segments partially offset start errors. The 0.019 s closing range is the opposite story: the last 10 yards are almost identical on every trial, and they are identically slower than the middle. That is a posture-and-strike pattern, not noise.

3. Multi-Angle Video Review

Five high-speed cameras (2K capture at 240 fps) covered the run: close side start, wide side, finish-line side, rear, and front. Joint-path overlays are drawn on the source video. Still frames below are taken from those cameras.

Stance comparison — same camera, same session. The close side start clip records both a spiked two-point and a barefoot three-point. Figures A and B place those shapes next to each other so the differences are visible on stills, not only described in text.

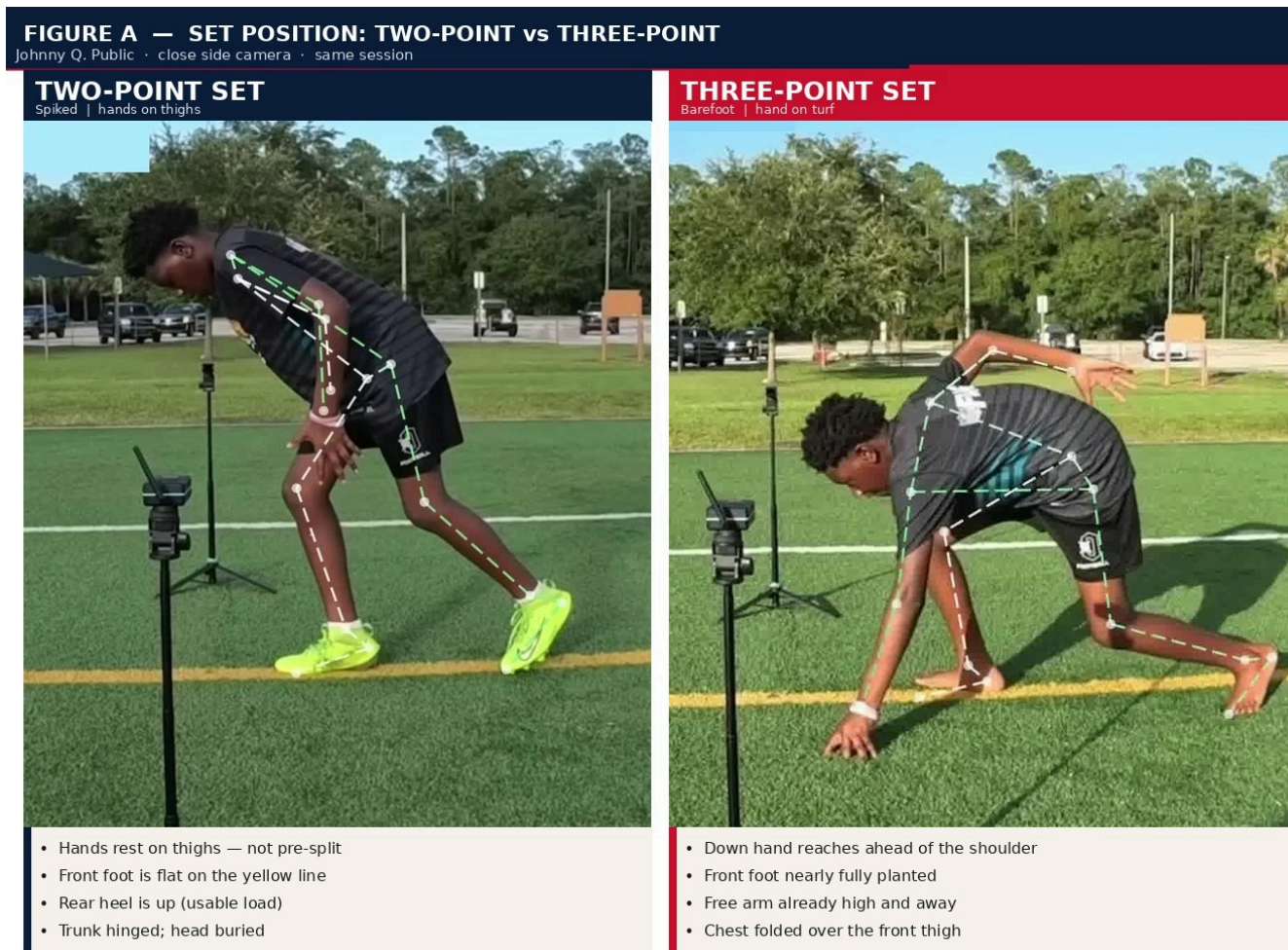


Figure A. Set position from the same side camera. Left: two-point in spikes. Right: three-point barefoot.

Set-position differences. The two-point is taller, hands-on-thighs, with a usable rear-heel load. The three-point is lower and more folded: down hand ahead of the shoulder, front foot nearly fully planted, free arm already high and away, chest over the front thigh. Both front feet are too flat. Footwear is different in the two takes (spikes vs barefoot), so this is mixed-condition film.

FIGURE B — FIRST STEP: TWO-POINT vs THREE-POINT

Johnny Q. Public · close side camera · same session

TWO-POINT FIRST STEP

Spiked | first push



- Leaves low — projection is present
- First contact stays near the hip
- Lead arm already reaching / open hand
- Shin angle is usable

THREE-POINT FIRST STEP

Barefoot | hand leaving



- Hand comes off while opposite arm is high
- Waist fold still defines the line
- Front foot has not yet left a loaded heel
- Open hands from the first exchange

Figure B. First action from the same side camera. Left: two-point first push (spiked). Right: three-point hand-leaving (barefoot).

First-step differences. Both takes leave low — that is the shared strength. The two-point first push shows a more projected shin and a first contact near the hip. The three-point first step is still a waist fold: the hand comes off while the opposite arm is already abducted, and the front foot has not yet left a loaded heel. Neither take starts with a split, stacked, pre-loaded shape.

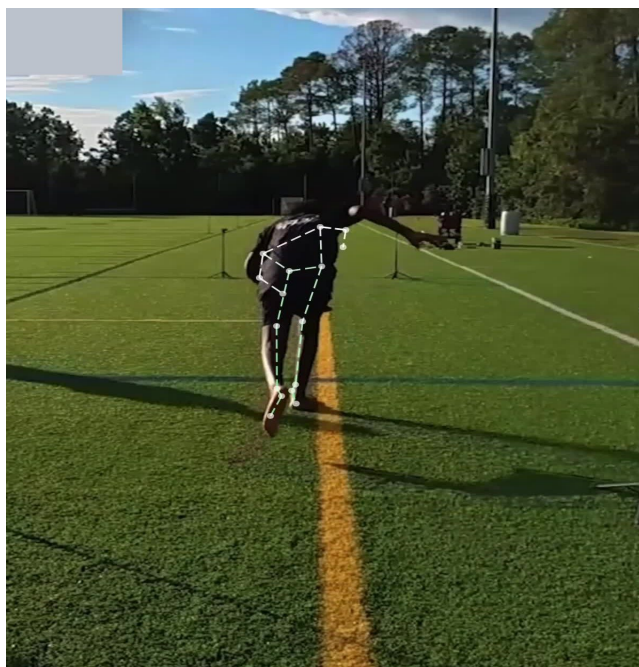
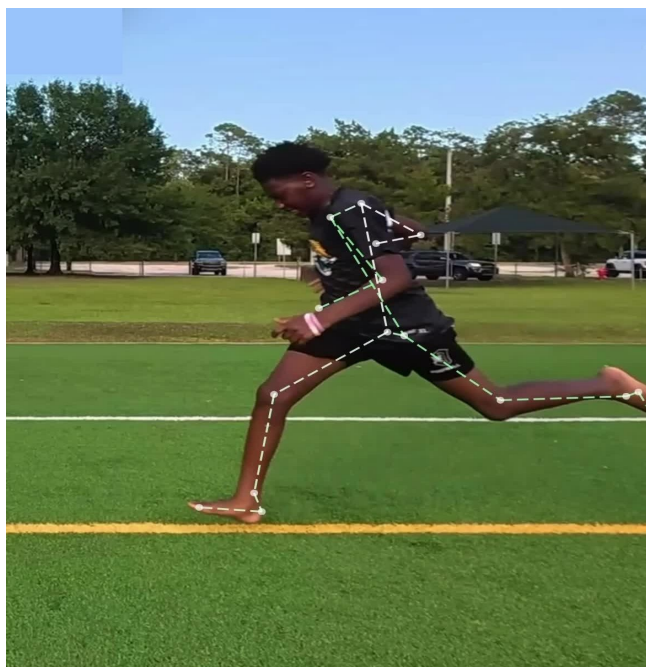


Figure 5. Late-phase side — shin more vertical, support foot on/near the pelvis, heel recovery present.

Figure 6. Rear view, early run — one arm well outside the shoulder line; both feet hunting the paint.

What the rear and late cameras show. Figure 6 is the clearest technical picture in the set. One arm leaves the shoulder line on the first exchange and stays wide. Shoulders rotate with that swing. Feet converge onto the yellow line rather than owning a lane on either side of it. Figure 5 at the finish does *not* show a locked-out reaching stride on every step. The support shin is more vertical than in early acceleration, the foot is on or slightly ahead of the pelvis, and the recovery heel is reasonably high. That combination matches a 7.3% fade better than it matches a “collapsed front side.” Cue a quieter head, ribs down, and a downward strike under the hip. Do not prescribe longer steps.

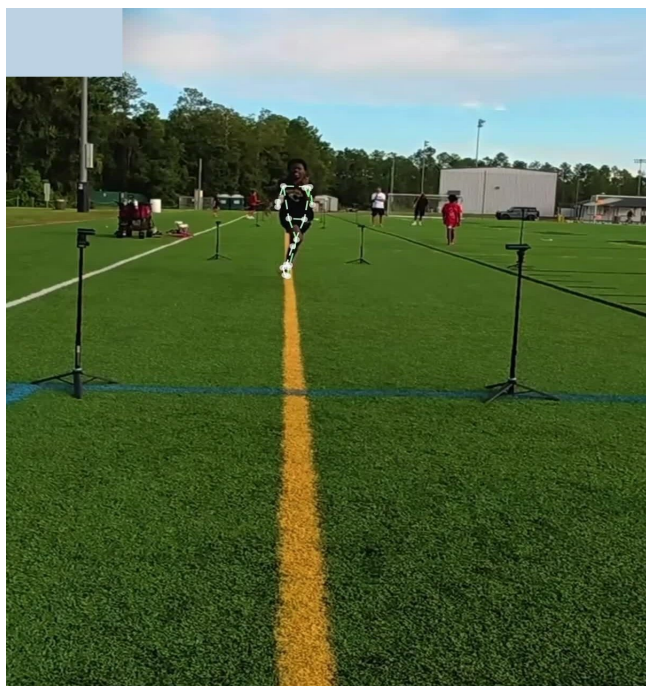


Figure 7. Front view down the lane — path stays on the yellow line.

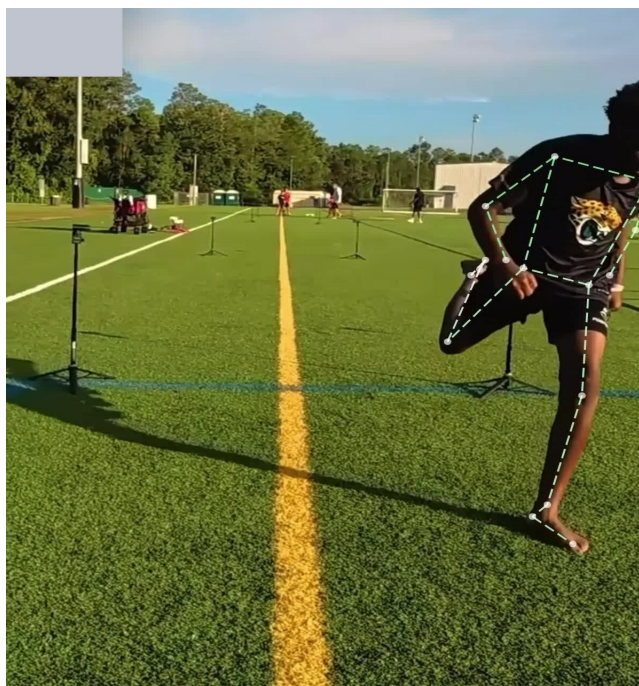


Figure 8. Front close-up — front-side thigh recovery is present; contact is under the body.

What the front camera shows. From dead ahead Johnny tracks the painted line rather than weaving off it. That is lane-seeking, not chaotic drift. The torso stays reasonably square. Figure 8 catches a high front-side recovery — the thigh does come through. Contacts in the close front frames are under the hip, not across the midline as a consistent crossover.

4. Sprint Mechanics Performance Profile

Scores are a 12-year-old field-sport sprint model. A 10 is a clean youth pattern for his age and size: organized start, matched arms, stacked posture, and a finish that holds mid-segment speed.

Category	Score	What the five videos show
Starting setup	4.0 / 10	Two stances and two footwear conditions in one session. Three-point: down hand ahead of the shoulder, front foot flat, folded trunk, offset rear-view base. Two-point: usable stagger and rear heel, hands still on the thighs.
First-step projection	5.0 / 10	He does leave forward and low. First contact is under/slightly behind the hip. The first arm exchange is already wide and the trunk is hinged rather than a rigid projection line.
Acceleration posture	5.5 / 10	Best relative quality on film. He can hold a low shin-to-trunk relationship through the first 10–15 yards. Head is down early. Rise later is earlier than the clock wants.
Force application	5.5 / 10	Mid-segment average 13.67 mph shows real drive once he is moving. Wide arms and line-tracking leak some of that output sideways.

Arm mechanics	3.5 / 10	Clearest technical fault. Rear camera: one arm sweeps outside the shoulder line while the other collapses closer to the torso. Hands stay open. Shoulders rotate with the swing.
Front-side mechanics	5.0 / 10	Thigh recovery exists; front close-up shows a real front-side lift. Late-phase shin opens earlier. Not a collapsed front side. Not an elite front-side model either.
Upright / late posture	4.5 / 10	Two postures: early hinge with the head down, late rise with the ribs opening. Neither is a stacked head-ribs-pelvis line. He does not throw into a full layback on the best late frames.
Rhythm and coordination	5.5 / 10	After the start, the clock is stable (0.080 s mid-range, 0.019 s finish range). Arms, trunk, and feet are not yet one pattern, but the motor system repeats the same finish.
Finish execution	4.5 / 10	He runs through the line. 7.3% mid-to-finish fade is real and repeatable. Modest reach plus a rising chin is the fixable piece — not a dramatic overstride on every step.
Overall sprint efficiency	4.7 / 10	Effort and size are assets. Organization at the start and the arm path are the tax on those assets. This is a developmental 12-year-old model with two high-leverage faults.

5. Detailed Phase-by-Phase Assessment

A. Starting Position and Pre-Tension

Pick one stance and own it. Right now Johnny rehearses two. The spiked two-point with hands on the thighs is workable for youth football if the front heel is light and the arms are already split. The three-point he actually uses on the barefoot takes is not a clean three-point: the down hand is ahead of the shoulder, the front foot is too flat, the torso is folded, and the rear camera shows the feet offset across the paint before the first push. Pre-tension is inconsistent because the shape is inconsistent. A folded three-point with a reaching hand cannot load the front hip the way a stacked three-point can.

Primary cue: “Same stance every time. Hand under the shoulder. Front heel light. Hips loaded.”

B. First Movement and 0–10-Yard Projection

This is the largest timing variable (0.187 s range) and the second-clearest video finding after the arms. He does stay low and the first contact is not out in front. That is why first-step projection scores above the setup. What leaks is direction and sequence. The first arm exchange opens outside the shoulder, the trunk rolls, and the feet start hunting the yellow line. Do not chase turnover here. Square the base, put the down hand under the shoulder, and push the ground back. Sprint 2's 2.295 s opening is the entire reason that trial is the slowest 40.

Primary cue: “Hand off, hips through, push the ground — don't fold and swing.”

C. 10–30-Yard Acceleration and Transition

This is Johnny's best relative phase. 13.668 mph average, 0.080 s trial range, peak trial 13.844 mph. Once moving he finds a rhythm and he can keep producing. Rear video from this part of the run is where the wide arm path and line-tracking show up most clearly. As he rises, the head and chest start to separate from the pelvis. Protect this segment's output. Do not add volume that makes the rise sloppy. The mid-segment is the reason the overall 40 is already a usable number.

Primary cue: “Keep pushing back. Rise from the ankles, not the waist.”

D. 30–40-Yard Speed Maintenance

Average 12.671 mph, 7.3% below the middle segment, range only 0.019 s. Visible faults: earlier shin opening on some steps, support foot on or slightly ahead of the pelvis, chin and ribs opening, open hands. Treat it as a posture-and-strike problem. Do not prescribe longer steps. The fact that all three finishes land inside 0.019 s means the fade is rehearsed. Changing the finish on film should move the last-10 time; if the film does not change, a lucky isolated 40 is not proof of a new model.

Primary cue: “Eyes level, ribs down, step down under the hip.”

E. Arm Action

Most correctable technical category on film. The rear camera is unambiguous: one arm sweeps outside the shoulder line while the other collapses closer to the torso. Elbow angles change from step to step. Hands stay open. Shoulders rotate with the swing. At upright speed

the arms are managing balance more than they are driving. Youth athletes do this when the trunk is not stable and when the start is already rotated. Square the three-point first; then shorten the path to cheek-to-hip. An arm cue layered on a rotated start will just rehearse a prettier version of the same swing.

Primary cue: *“Cheek to back pocket. Drive straight, not wide.”*

F. Lower-Body Mechanics and Foot Contact

Barefoot on turf and spiked takes were mixed in the same session. Contact quality is therefore interpreted cautiously — a barefoot plant on turf is not the same stiffness story as a spiked plant. Early contacts are generally under the hips. Later contacts drift onto the yellow line and, on some finish-camera steps, slightly ahead of the pelvis. Front-side recovery exists. Cue a downward strike under the moving hip. Longer reaching steps are how the 7.3% fade gets rehearsed.

Primary cue: *“Knee through, toe up, punch down under the hips.”*

G. Posture, Head Position, and Lane Control

Johnny moves between two postures: early hinge with the head down, late rise with the ribs opening. Neither is a stacked head-ribs-pelvis line. Lane behavior is “on the line,” not chaotic weaving. Using the painted line as a target is fine at this age if each foot stays on its own side of that line instead of both feet chasing the paint. The rear start already gives the feet different addresses. Fix that before talking about crossover. The film does not prove a consistent crossover step.

Primary cue: *“Stack head, ribs, pelvis. Each foot owns its side.”*

6. Coaching Plan by Split

0–10 yards — square the start, first two pushes

Objective: shrink the 0.187 s opening range and standardize one stance. Sprint 2’s 2.295 s start is the entire reason that trial is the slowest 40.

Drill	Purpose	Volume
Stance check + freeze	One stance only. Hand under the shoulder. Front heel light. Hold 3 seconds, then first two steps.	8–10 freezes + 6 × 2-step
Three-point to two-step	Teach the sequence: hand off as hips go. No wide first arm swing.	6–8 × 10 yd
Wall / push posture	Rigid shin-to-trunk line so the first projection is not a waist fold.	2 × 20 s holds + 4 push-outs
Very-light sled or partner march	Feel pushing back, not reaching. Stop the set if the arm sweeps wide.	4–5 × 10 yd

10–30 yards — continue the push, quiet the arms

Objective: keep the mid-segment speed and clean up the outside arm sweep so the finish does not inherit it.

Drill	Purpose	Volume
10-to-25 yd build	Extends the push and teaches a gradual rise without the chin leaving the ribs.	4–6 runs, 2–3 min rest
March-to-sprint arms	Matched cheek-to-hip path before speed is added. Rear-camera standard.	2 × 10 yd march + 4 × 15 yd
Two-lane mini-corridor	Each foot returns under its own hip. Stop the set if both feet chase one line.	4–5 × 15 yd
Low wickets (age spacing)	Front-side timing without reaching. Conservative gaps only.	4 passes

30–40 yards — upright posture and finish

Objective: cut the 7.3% mid-to-finish fade by keeping the head quiet and putting the foot down under the hip. More raw 40s without a constraint will rehearse the current finish.

Drill	Purpose	Volume
15 yd build + 10 yd fly	Upright speed with eyes level and ribs down.	3–4 reps, 3 min rest
Dribble into sprint	Ankle stiffness and a downward strike.	2 × 10 yd dribbles + 2 × 20 yd
Run-through finish	Hold posture 5 yards past the timing line. Do not throw the head at the gate.	4 × 35–45 yd

7. Eight-Week Training Progression

Two short speed sessions per week — one acceleration / mechanics day and one upright-speed day — with at least 48 hours between high-intensity exposures. Every fast rep is full recovery. This is not conditioning. At age 12 the speed portion ends the moment posture, arms, or foot placement slip.

Weeks	Primary emphasis	Session content	Success marker
1–3	One stance, first action, trunk control	Stance checks, three-point freezes, two-step freeze, wall postures, very-light sleds, short 10 yd accels.	Same stance every take. First two contacts stay straight. Head, ribs, and hips leave together.
4–5	Transition, arm path, lane ownership	10–25 yd builds, march-to-sprint, two-lane accels, low wickets, light contrast.	Arms stay front-to-back on rear film. Contacts stop collapsing onto one line. Body rises gradually.
6–8	Upright posture and speed retention	Build-to-fly, dribble-to-sprint, wickets, full-recovery 30–40 yd, run-through finishes.	Eyes stay level. Touchdown moves toward the hip. Mid-to-finish fade shrinks from 7.3%.

8. Football Game-Speed Transfer

No position was specified. At age 12 the game-speed priority is the same first two steps from square, split, and lateral entries. A rotated three-point and a wide arm sweep will show up on a snap, jet, or go-call until they are cleaned up. Line-chasing will grow when he has to turn. The mid-segment speed he already produces is the quality worth protecting once the start is square.

Weeks	Game-speed emphasis	Examples
1–3	Clean entry and reactive first step	Three-point and two-point reaction starts; color or coach-point cues only after the stance is square; shuffle-to-sprint 5–10 yd.
4–5	Hip turn and reacceleration	S-curves, hip-flip to sprint, crossover accel, short pursuit angles, brake-and-go.
6–8	Competitive speed with the same standards	Mirror-and-go, short chase, direction-change reactions. If the arm sweeps wide or the head flies up, the rep does not count.

9. Reassessment Metrics

Re-test on the same surface after eight weeks. Record footwear (barefoot vs spiked/cleated) instead of mixing conditions. Use the same stance on every timed trial and the same 0 / 10 / 30 / 40 protocol. Use the same five-camera setup: close side for the start, rear for early acceleration, side plus front for 30–40.

Metric	Current session	Eight-week target
Stance consistency	Two-point and three-point mixed; spiked and barefoot mixed	One stance, one shoe, every timed take
0–10 range	0.187 s (2.108–2.295)	Under 0.10 s
Best 40	6.707 s	Faster only if process markers also improve
10–30 speed	13.668 mph average	Hold or slightly raise without a sloppy rise
30–40 fade vs 10–30	0.997 mph / 7.3%	Toward ~0.50 mph / ~3–4%
Arm path (rear camera)	One arm outside the shoulder line	Matched cheek-to-hip path, closed hands

Metric	Current session	Eight-week target
Lane ownership	Both feet hunting the yellow line	Each foot stays on its own side of the paint
Finish posture	Chin and ribs opening late	Eyes level, ribs down 5 yd past the line

10. Session Notes

Capture: five synchronized high-speed cameras at 2K / 240 fps (close side start, wide side, finish-line side, rear, front), with joint-path overlay on the source video. Timing: electronic electronic 0 / 10 / 30 / 40 splits. Surface: outdoor dry turf at City Park, Anytown , August 21, 2026. The session mixed a spiked two-point and a barefoot three-point. Lock one stance and one shoe on the re-test so the next clock isolates the mechanics work.

11. Final Tenacity Evaluation

At age 12, a 6.707 s best and a 6.780 s average are a working baseline with a real mid-segment behind them. The clock already says Johnny can producenear 13.7 mph from 10 to 30 yards. The film says that speed is taxed by a start that is not yet standardized and by an arm path the rear camera makes impossible to ignore. Those habits are coachable. They are not a reason to bury a 12-year-old under adult sprint language.

Train in order. Pick one stance. Put the down hand under the shoulder. Push the first two contacts straight down the lane. Match the arm paths. Give each foot its own side of the paint. Arrive with the head and ribs over the pelvis. Reaching farther, throwing the head back, or running extra uncorrected 40s will practice the current 7.3% fade.

A successful eight-week reassessment is simple to see on film: one stance, a square release, matched arm paths on the rear camera, fewer double-foot visits to the paint, a quieter head, and a last-10 speed closer to the mid-segment. If those process changes are absent, a faster isolated time is not proof of improvement.

Train the Athlete. Build the Person. Be Tenacious.
Tenacity Sports Performance · Multi-camera high-speed sprint evaluation · 2K / 240 fps