MotionAthlete Research Unit

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100-Metre Sprint Performance in Athletic Young Men Under Standardised Track Conditions

A Descriptive Observational Study

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Data collected at Stade de Dorigny, Lausanne, Switzerland. Participant cohort drawn from the Bachelor in Sport and Movement Science programme, University of Lausanne (UNIL).

Abstract

Sprint speed is a core performance variable in athletics and a critical input for biomechanical modelling and motion visualisation. While elite 100-metre times are extensively documented, the performance range of physically trained but non-specialist young men under controlled track conditions is seldom reported. This study describes the 100-metre sprint performance of twelve male Sport and Movement Science students (ages 22–26; mean height 1.82 m) at the University of Lausanne (UNIL), measured at Stade de Dorigny under standardised outdoor conditions. Timing was provided by an electronic photo-finish system (±1 ms precision); all participants used regulation starting blocks. Ten of twelve wore spike shoes. The group produced a mean time of 12.31 ± 0.44 s (range: 11.63–13.25 s). When placed alongside elite hurdle world records — the women's 100 m hurdles (12.12 s, Tobi Amusan) and the men's 110 m hurdles (12.80 s, Aries Merritt) — the data reveal that these athletic young men, running flat, post times that bracket those achieved by the world's best hurdlers over obstacles. The dataset provides a practical, reproducible sprint benchmark for a physically selected young adult male population.

Keywords: *100-metre sprint · athletic performance · sport science · sprint benchmarking · biomechanics · photofinish timing*

1. Introduction

The 100-metre sprint is the event through which athletic speed is most commonly defined, yet its performance benchmarks are discussed almost exclusively at the elite level. Olympic finalists run between approximately 9.6 and 10.2 seconds — a range so removed from everyday athletic experience that it offers little practical reference for anyone outside that narrow tier. The question of how fast an ordinarily athletic young man actually runs the 100 m, under genuine track conditions, is rarely answered with any rigour.

This question has direct relevance for biomechanical modelling and sports animation. The MotionAthlete project produces three-dimensional motion analyses of athletic performance for educational and production purposes, and a recurring requirement is to assign a plausible sprint time to a physically fit but non-elite character. A poorly grounded estimate risks producing content that feels either implausibly fast or unconvincingly slow. A small, well-documented dataset removes that ambiguity.

The participants were third-year Bachelor students in the Sport and Movement Science programme at UNIL. Admission requires passing a multi-discipline entrance examination covering swimming, athletics, gymnastics, ball games, and movement education, with benchmarks set at a high recreational to low competitive level. The process selects for broad physical literacy rather than event-specific excellence, producing athletes who are genuinely fit and multi-skilled, but not specialised sprinters. Within their athletics practical examination, students chose between the 100-metre and 1500-metre options; only those who selected the 100 m are represented here — implying at least a subjective preference, if not a training background, in explosive events.

The study makes no claim to be a statistically powered investigation. It is, instead, a transparent description of a well-defined cohort measured under reproducible conditions, with the explicit aim of providing a reliable order-of-magnitude reference for an athletic young adult male population.

2. Methods

2.1 Study Design and Participants

This is a cross-sectional observational study. Twelve male students (age range: 22–26 years; mean ± SD: 24.1 ± 1.6 yr; mean height: 1.82 ± 0.07 m) were recruited from a third-year practical athletics examination at UNIL. All had previously passed the Sport and Movement Science entrance examination and reported regular multi-sport practice (≥3 sessions per week), with a self-identified primary sport. Participants self-selected the 100-metre option over the 1500-metre alternative for their practical assessment. Four students who did not respond to the post-examination data-collection request are not represented; no other exclusion criteria were applied. All data were fully anonymised prior to analysis (participants labelled P01–P12, ordered by ascending time).

2.2 Setting and Environmental Conditions

All measurements were taken at Stade de Dorigny, Lausanne, Switzerland (altitude: ~500 m above sea level), on a certified tartan athletics track, 100-metre straight. The session took place on a single morning (approximately 11:30 local time) in May 2025, under overcast skies, mild ambient temperatures, and a light variable breeze. No anemometer data were recorded; wind-assisted correction was therefore not applied. All twelve participants ran during the same session under identical ambient conditions.

2.3 Protocol

Each participant completed a single 100-metre attempt from regulation starting blocks. The start was commanded by an official starter using an audible signal. Warm-up was self-directed; no standardised protocol was imposed. Ten of twelve participants wore athletics spike shoes; two wore standard running shoes. All chose their own athletic attire. Participants were informed of their time at the conclusion of the session.

2.4 Timing System

Timing was provided by an electronic photo-finish system, precision ±1 ms (0.001 s). Secondary video footage was recorded as a backup reference. Only the final 100-metre elapsed time was retained; no split times, reaction-time measurements, or intermediate data were collected.

2.5 Statistical Analysis

Given the descriptive nature of the study and the small sample size (n = 12), analysis was limited to summary statistics: mean, standard deviation (SD), median, range, and interquartile range (IQR). A descriptive subgroup comparison by footwear type is included. No inferential tests were applied; the sample is too small to support meaningful hypothesis testing. All calculations were performed in Python 3 (NumPy 1.26).

3. Results

3.1 Group Performance

The group mean 100-metre time was **12.31 ± 0.46 s** (median: 12.285 s; range: 11.63–13.25 s; IQR: 12.03–12.59 s). Ten of twelve participants recorded times between 11.63 and 12.80 s. One participant (P12: 13.25 s) stood approximately 0.45 s behind that cluster. The two participants wearing running shoes posted times of 11.92 and 12.28 s (subgroup mean: 12.10 s), marginally below the spike-wearing subgroup mean of 12.35 s. Given the unbalanced subgroup sizes (n = 2 vs n = 10) and the absence of random assignment, this difference should be read descriptively only.

Participant	100 m Time (s)	Height (m)	Age (yr)	Footwear
P01	**11.630**	**1.930**	**26**	**Spikes**
P02	11.730	1.900	22	Spikes
P03	11.920	1.845	26	Running shoes
P04	12.060	1.850	25	Spikes
P05	12.150	1.860	23	Spikes
P06	12.280	1.770	25	Running shoes
P07	12.290	1.920	22	Spikes
P08	12.400	1.740	25	Spikes
P09	12.570	1.760	23	Spikes
P10	12.650	1.750	24	Spikes
P11	12.800	1.720	26	Spikes
P12	13.250	1.830	22	Spikes

Table 1. Individual anonymised results, sorted by performance (fastest first). The highlighted row indicates the best time recorded. Footwear is noted as reported; assignment was not controlled.

3.2 Descriptive Statistics

Statistic	100 m Time (s)	Height (m)	Age (yr)
n	12	12	12
Mean ± SD	12.311 ± 0.463	1.823 ± 0.073	24.1 ± 1.6
Median	12.285	1.837	24.5
Min – Max	11.630 – 13.250	1.720 – 1.930	22 – 26
IQR (Q1 – Q3)	12.025 – 12.590	—	—
Spikes subgroup mean (n = 10)	12.353	—	—
Running shoes subgroup mean (n = 2)	12.100	—	—

Table 2. Summary statistics for all twelve participants. Footwear subgroup means are included for descriptive reference only.

3.3 Contextual Comparison with Elite Hurdle World Records

Figure 1 plots individual times alongside three reference lines: the group mean (12.31 s), the women's 100 m hurdles world record (12.12 s, Tobi Amusan, 2022), and the men's 110 m hurdles world record (12.8 s, Aries Merritt, 2012). The group mean sits between the two records. The fastest participant (P01: 11.63 s) finished 0.49 s behind Amusan's hurdle mark; the slowest (P12: 13.25 s) was 0.45 s behind Merritt's. The reference lines were selected specifically because these athletes cover a comparable total distance but clear ten hurdles along the way.

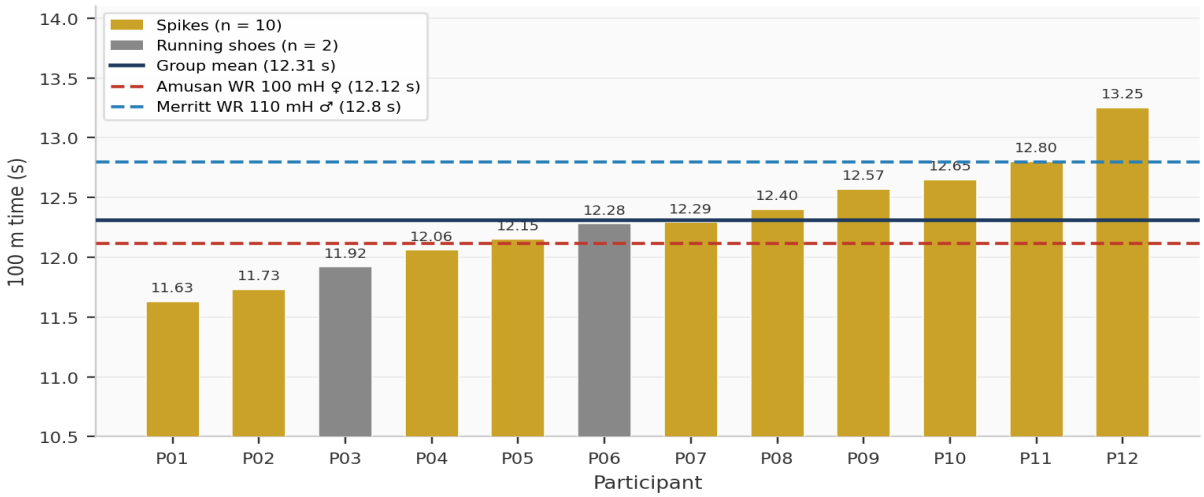

Figure 1. Individual 100-metre times for all twelve participants, sorted by performance. Gold bars: spike shoes (n = 10); grey bars: running shoes (n = 2). Horizontal lines indicate the group mean (12.31 s, navy), Tobi Amusan's women's 100 m hurdles world record (12.12 s, red dashed), and Aries Merritt's men's 110 m hurdles world record (12.8 s, blue dashed).

4. Discussion

The main finding is straightforward: athletic but non-specialist young men, measured under proper track conditions, cluster around 12.3 seconds for the 100 m. Ten of twelve participants landed within a 1.17-second window (11.63–12.80 s), suggesting reasonable homogeneity within a cohort that was physically pre-screened at programme entry and trains consistently. This is probably close to a realistic ceiling for the non-specialist athletic young male — the kind of person you would describe, without exaggeration, as genuinely good at sport.

The choice of elite hurdle world records as reference points deserves explanation. The framing is deliberate and communicative rather than statistical. Tobi Amusan and Aries Merritt run a comparable distance to these students but clear ten obstacles placed at regular intervals. The world's best female hurdler, navigating those obstacles, would on average finish ahead of this group; the world's fastest male hurdler ran on the slower end of their distribution. No single fact better illustrates what separates elite sprint conditioning from the athletic general population. For the MotionAthlete production context, the comparison confirms that a target time in the 12.0–12.5 s range is appropriate for a physically credible but non-specialist male character.

The UNIL cohort is not a random sample. These individuals were filtered through a competitive entrance examination, have trained regularly since childhood, and chose the sprint over the middle-distance option — all of which likely skews the sample toward the faster end of the general athletic distribution. The 12.31 s average is therefore an honest upper bound for the non-specialist athletic population, not an inflated one.

Several limitations bear noting. The sample is small (n = 12), and a single attempt per participant means within-individual variability cannot be estimated. Wind speed was unrecorded; conditions were described as a light variable breeze, but a favourable component could account for a few hundredths of a second in individual cases. Warm-up was self-directed, introducing a potential source of performance variability. The two footwear conditions represent an uncontrolled covariate rather than an experimental factor: the marginally faster running-shoe subgroup mean almost certainly reflects individual ability differences rather than footwear effects, and should not be over-interpreted. The modest altitude (~500 m) has negligible aerodynamic impact on 100-metre performance but is reported for completeness. Finally, the Swiss nationality of all participants and the single-site design limit generalisability.

5. Conclusion

This study provides a concise, reproducible sprint benchmark for athletic young men under standardised track conditions: a group mean of **12.31 ± 0.46 s** over 100 m, with a performance range of 11.63–13.25 s. The cohort — physically pre-selected sport science students at a Swiss university — represents a credible upper-athletic-end reference for the

non-specialist young adult male.

Placed alongside elite hurdle world records, the data offer a memorable frame: the world's best male and female hurdlers, clearing obstacles every 8–9 m, run within the same performance corridor as these students running flat. The precision of elite sprinting is, by that measure, quite otherworldly — and this small dataset is a grounded, measurable reminder of that fact.

These findings are intended to serve as a reference input for biomechanical modelling, sports animation, and any context requiring a realistic sprint time for a genuinely athletic but non-elite male. Future work could expand the sample, incorporate split times and reaction data, include female participants, and standardise warm-up protocols to build a more complete reference dataset.

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