

## Detailed Overview of the Sprint Phases

### Phases of the 100-Meter Sprint for Men

1. **Start Phase**
2. **Acceleration Phase**

#### 1. Start Phase

- **Description:** The Start Phase includes the time from the starting signal to the first 10 meters. This phase is crucial as it sets the tone for the rest of the race. A quick and powerful start can significantly affect the overall performance.
- **Mean Values:**
  - **Stride Length:** 1.2 - 1.5 meters
    - **Feedback:** In the start phase, a stride length within this range indicates strong initial propulsion. Shorter strides may indicate a lack of power, while longer strides may suggest overreaching.
  - **Stride Frequency:** 2.5 - 3.5 strides/second
    - **Feedback:** Higher stride frequency is typically associated with a quicker start. Frequencies at the lower end may suggest slower reaction times.
  - **Acceleration:** 3.0 - 4.5 m/s<sup>2</sup>
    - **Feedback:** High acceleration values indicate effective force application. Values below 3.0 m/s<sup>2</sup> might indicate a need for improved strength and explosive power.
  - **Velocity:** 0 - 4 m/s
    - **Feedback:** Reaching a velocity of up to 4 m/s in the first 10 meters is indicative of a good start. Lower velocities might suggest inefficiencies in the initial drive phase.
  - **Touchdown:** 0.18 - 0.25 seconds
    - **Feedback:** Shorter touchdown times are ideal, reflecting quick ground contact and effective use of elastic energy.

#### 2. Acceleration Phase

- **Description:** The Acceleration Phase includes the segment from 10 to 30 meters. During this phase, the athlete continues to build speed, striving to reach their maximum velocity.
- **Mean Values:**
  - **Stride Length:** 1.6 - 2.0 meters
    - **Feedback:** Increased stride length in this phase indicates continued effective propulsion. Strides shorter than 1.6 meters may indicate insufficient power.
  - **Stride Frequency:** 3.5 - 4.5 strides/second
    - **Feedback:** Maintaining or increasing stride frequency while increasing stride length is a sign of good technique and power application.
  - **Acceleration:** 2.5 - 3.5 m/s<sup>2</sup>
    - **Feedback:** Sustained acceleration within this range indicates effective force application as the athlete approaches maximum velocity.
  - **Velocity:** 4 - 8 m/s
    - **Feedback:** Achieving a velocity of up to 8 m/s by 30 meters is indicative of excellent acceleration capabilities.
  - **Touchdown:** 0.15 - 0.20 seconds

- **Feedback:** Quick ground contact times suggest efficient transition of force from the ground to forward motion.

## Summary of Mean Values for Each Phase (Men)

- **Start Phase :**
  - Stride Length: 1.2 - 1.5 meters
  - Stride Frequency: 2.5 - 3.5 strides/second
  - Acceleration: 3.0 - 4.5 m/s<sup>2</sup>
  - Velocity: 0 - 4 m/s
  - Touchdown: 0.18 - 0.25 seconds
- **Acceleration Phase :**
  - Stride Length: 1.6 - 2.0 meters
  - Stride Frequency: 3.5 - 4.5 strides/second
  - Acceleration: 2.5 - 3.5 m/s<sup>2</sup>
  - Velocity: 4 - 8 m/s
  - Touchdown: 0.15 - 0.20 seconds

## Phases of the 100-Meter Sprint for Women

1. **Start Phase**
2. **Acceleration Phase**

### 1. Start Phase

- **Description:** The Start Phase includes the time from the starting signal to the first 10 meters. This phase is crucial for setting a strong foundation for the rest of the race.
- **Mean Values:**
  - **Stride Length:** 1.0 - 1.3 meters
    - **Feedback:** Effective propulsion is indicated by stride lengths within this range. Shorter strides might indicate a need for more power, while longer strides could suggest overextension.
  - **Stride Frequency:** 2.3 - 3.2 strides/second
    - **Feedback:** A higher stride frequency indicates a quick start. Lower frequencies may suggest slower initial movements.
  - **Acceleration:** 2.8 - 4.2 m/s<sup>2</sup>
    - **Feedback:** Higher acceleration values reflect strong initial force application. Values below 2.8 m/s<sup>2</sup> might suggest a need for improved explosiveness.
  - **Velocity:** 0 - 3.5 m/s
    - **Feedback:** Achieving up to 3.5 m/s velocity in the first 10 meters is indicative of a strong start. Lower velocities may indicate inefficiencies.
  - **Touchdown:** 0.20 - 0.28 seconds
    - **Feedback:** Shorter touchdown times are ideal, showing quick ground contact and effective use of elastic energy.

### 2. Acceleration Phase

- **Description:** The Acceleration Phase includes the segment from 10 to 30 meters. During this phase, the athlete continues to build speed towards maximum velocity.
- **Mean Values:**
  - **Stride Length:** 1.4 - 1.8 meters

- **Feedback:** Increased stride length indicates continued effective propulsion. Strides shorter than 1.4 meters may suggest insufficient power.
- **Stride Frequency:** 3.3 - 4.3 strides/second
  - **Feedback:** Maintaining or increasing stride frequency while increasing stride length is a sign of good technique and power application.
- **Acceleration:** 2.3 - 3.3 m/s<sup>2</sup>
  - **Feedback:** Sustained acceleration indicates effective force application as the athlete approaches maximum velocity.
- **Velocity:** 3.5 - 7.5 m/s
  - **Feedback:** Achieving a velocity of up to 7.5 m/s by 30 meters is indicative of excellent acceleration capabilities.
- **Touchdown:** 0.17 - 0.23 seconds
  - **Feedback:** Quick ground contact times suggest efficient force transition from the ground to forward motion.

## Summary of Mean Values for Each Phase (Women)

- **Start Phase :**
  - Stride Length: 1.0 - 1.3 meters
  - Stride Frequency: 2.3 - 3.2 strides/second
  - Acceleration: 2.8 - 4.2 m/s<sup>2</sup>
  - Velocity: 0 - 3.5 m/s
  - Touchdown: 0.20 - 0.28 seconds
- **Acceleration Phase :**
  - Stride Length: 1.4 - 1.8 meters
  - Stride Frequency: 3.3 - 4.3 strides/second
  - Acceleration: 2.3 - 3.3 m/s<sup>2</sup>
  - Velocity: 3.5 - 7.5 m/s
  - Touchdown: 0.17 - 0.23 seconds
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