



## A Study on Body Composition of 100 Meter Athlete

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### Abstract

*The purpose of this paper is to review, how body composition can help an athlete to perform better in sprint events. In first phase of the paper we have collected data of top ten fastest sprinter of the world. In second phase we had calculated the BMI of all the athletes of the 100 meter sprint. In the third phase we explained what the scientific causes to give excellent result during 100mt race. In last phase we have concluded body composition that also plays an important role with the training in 100 meter race.*

**Keywords:** Body Composition, Athlete, Sprint.

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### Introduction

This paper explains how body composition helps sprinter to give better results with a training schedule. First of all we need to understand what a body composition is. In the language of sports body composition is the overall weight and size of an athlete. In each game a player need different types of body composition. Body weight is made up of muscle, fat and bone. According to the Michelle Rockwell, MS, RD, CSSD, Virginia polytechnic Institute and state university, "Body composition is a physical measurement that provides more specific information about body make-up than body weight alone". Body composition can be defined as the proportion of fat and fat free mass (FFM) in the body. Fat free mass includes primarily muscle, bone, and water along with some other elements. Fat mass includes fat that is stored as an energy source and fat in the central nervous system, organs, bone marrow and sex tissues, known as essential fat"<sup>1</sup>.

### Skill Related Component and Body Composition

As we know a player need six body components to give best performance in sports? If a player skill related body components are not accurate then he can't give better performance. In this topic we are emphasizing only on the body mass. According to the research article of "Body composition in male elite soccer and ice hockey player" it's showing that a high proportion of body fat mass (FM) is related to a low power to weight-ratio, reduced acceleration and increased energy expenditure, while the opposite applies to a high proportion of fat free mass. On the other hand, a low proportion of body fat has also been shown to

reduce performance. The optimal body composition varies between sports; in precision sports such as golf, bowling and shooting, the results are less dependent upon body composition as in sports as soccer, gymnastics and figure skating and sprint races"<sup>2</sup>. Sprint races need rhythm, power, speed and balance to achieve a goal. A good start also plays an important role in 100 Mt race.

In sprint races an athlete need power in thighs, rhythm means to swing of hands and feet's, speed and balance in all body parts. In 100 meter race a player need three phase that is;

- Acceleration phase: - Starting point to 30 meter ahead called acceleration phase. In this phase starting of race and first step movement play important role to achieve acceleration. In first ten to twelve steps the body of the sprinter must be little bit down.
- Maximum Velocity: - This phase is between 30 to 60 meters. In the 100m race top speed of athlete is known as maximum velocity. This refers to is the highest possible sprint speed an athlete can achieve during this phase.
- Speed Maintenance: - This is the last phase of race between 60 to 100 mt. It called 100 meter finish line phase. In this phase athlete try to continue a cycle of movement till finish line in the fastest possible way. This phase again subdivided in three other parts.

### Statistical Data

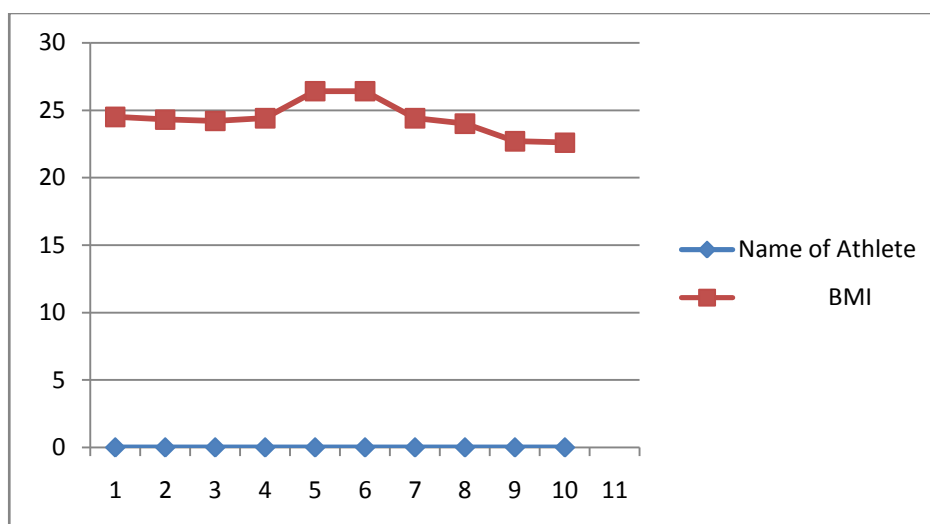
The data of top ten 100 meter sprinter was taken to proof the role of body composition in 100 meter race.

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**Table I.** The data of top ten 100 meter sprinter was taken to proof the role of body composition in 100 meter race.

S.N.	Name of Athlete	Event 100 Mt. Timing	Body Composition		
			Height (feet)	Weight (Kg)	BMI
1.	USAIN BOLT (JAMAICA)	9.58 Sec.	6' 5"	94	24.5
2.	TYSON GAY (U.S)	9.69 Sec.	5' 11"	79	24.3
3.	ASAFA POWELL(JAMAICA)	9.72 Sec	6' 3"	88	24.2
4.	MAURICE GREENE ( U.S)	9.79 Sec	5' 9"	75	24.4
5.	DONOVAN BAILEY(CANADA)	9.84 Sec	6' 1"	91	26.4
6.	BRUNY SURIN( CANADA)	9.84 Sec.	5' 11"	86	26.4
7.	LEROY BURRELL (U.S)	9.85 Sec	6'	82	24.4
8.	JASTIN GATLIN (U.S)	9.85 Sec.	6' 1"	83	24.0
9.	OLUSOJI FASUBA (NIGERIA)	9.85 Sec.	5' 9"	70	22.7
10.	CARL LEWIS (U.S)	9.86 Sec.	6' 2"	80	22.6

**Figure I.** BMI Chart of Top 10 Sprinters

## Results

In this chart first four and seventh, eighth athlete have the same BMI so on the behalf of this study we can conclude this;

- I. BMI score must be in range of 24.
- II. BMI also help to cover maximum distance in minimum time.

## Conclusion

On the behalf of results it can be concluded that BMI can enhance the performance of an athlete and help to win a sprint.

## Bibliography

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