

# A STUDY ON BODY COMPOSITION OF 100 METER ATHLETE

NAVNEET KUMAR  
C.G N P.G. College  
Golagokarnnath - Kheri

## *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 researcher have collected data of top ten fastest sprinter of the world. In second phase researcher calculated the BMI of all the athletes of 100-meter sprint. In the third phase it's explained what was the scientific causes to given excellent result during 100 MT race. In last phase we have concluded body composition that also plays an important role with the training in 100-meter race.

Keywords: - Sprint, Excellence, Events, BMI

## *INTRODUCTION: -*

This paper explains how body composition helps sprinter to achieve better results with a training schedule. First of all, we need to understand what is a body composition. 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" {1}. GENERALLY, HIGH RATIOS of fat-free mass (FFM) to fat mass (FM) are favorable for an athlete, but too little body fat may result in the deterioration of both health and performance {2}. According to the author fat is also essential in sports. The performance of the players depends upon the two main ratios that are FFM and FM. The total number of fatty tissues in the body called fatty mass. On the other side fat free mass is consist of weight of Skelton system, blood, water, organ, soft tissues a muscle weight." Moreover, many sports are weight-classified; therefore, athletes must stay within a certain body mass range. {3}. In sports activity players required to lose weight to participate in lower weight category but 100 mt race is total unique plate form for athlete because in this race a player required balance of Fat free mass and fat mass. It's also challenge for the coaches and the players to maintain body composition with a fitness training plan. Diet chart is the most important for any fastest runner in sprint races. If composition of player

will low than there are more chances of injury like hamstring muscle pull and knee bent. So before to choose sprint event a player must have knowledge of their body composition.

### 1. **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 index. 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" [4]. Sprint races need rhythm, power, speed and balance to achieve a goal. A good start also plays an important role in 100 Mt race. Body composition describes and quantifies various elements within the human body [5]. 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.

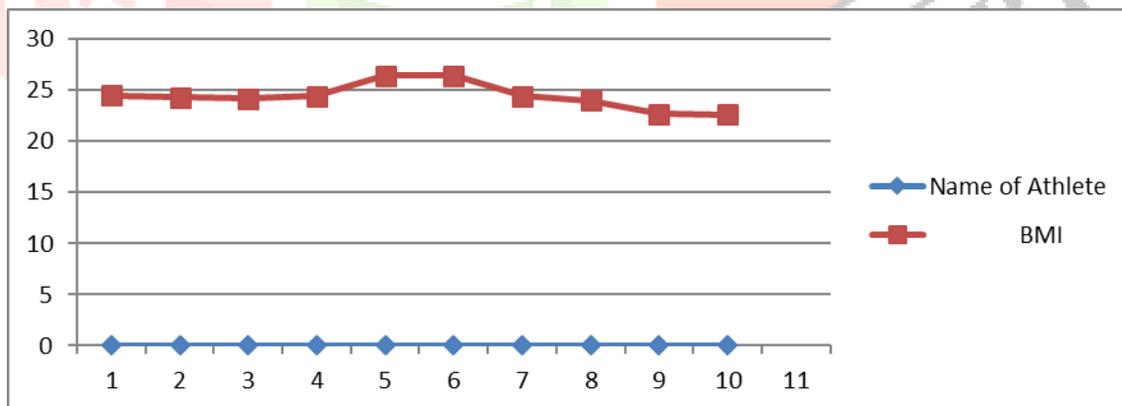


## 2. STATICAL DATA: -

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
	CARL LEWIS (U.S)	9.86 Sec.	6' 2"	80	22.6

### ➤ BMI CHART OF TOP 10 SPRINTERS: -



## 3. RESULTS: -

In this chart first four and seventh, eight 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.

#### 4. CONCLUSION: -

This study shown that, BMI can enhance the performance of an athlete and help to win a Sprint races. This paper is very useful for the physical education teachers, sports coaches, researchers and sports scientist.

#### 5. BIBLIOGRAPHY: -

1. <http://www.ncaa.org/health-and-safety/sport-science-institute/body-composition-what-are-athletes-made>.
2. Houtkooper L.B.,Going S.B.Body composition: How should it be measured? Does it affect sport performance? Sports Sci. Exchange 71994116120.
3. Franchini E., Brito C.J., Artioli G.G. Weight loss in combat sports: Physiological, psychological and performance effects. *J. Int. Soc. Sports Nutr.* 2012;9:52. doi: 10.1186/1550-2783-9-52
4. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2267441/>
5. Saltzman E., Mogensen K.M. *Nutrition in the Prevention and Treatment of Disease*. Elsevier Inc.; Amsterdam, The Netherlands: 2013. Physical and clinical assessment of nutrition status; pp. 65–79.

