Leg Length and Mid Thigh Girth of Top Indian Male Sprinters

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ABSTRACT

This study was aimed to establish the difference in the Leg Length and Mid Thigh Girth of 100m, 200m and 400m of Sprinters. The data was collected from top six male Indian sprinters of each category during 22nd Federation cup National Senior Athletics Championship 2018 held at, Netaji Subhash National Institute of Sports, Patiala, Punjab from 5th to 8th March 2018. F-test analyses revealed insignificant differences in the Leg Length and Mid Thigh Girth of 100m, 200m and 400m of Sprinters at .05 level of significance.

KEYWORDS

Sprinters, Leg Length and Mid Thigh Girth.

INTRODUCTION

Sprinting is a highly individual sport. Running process involves unique rhythmic style that creates specific physical and physiological demands. Some rely on speed, for others its starting strength (reaction ability), and for most a combination of speed and strength. Kumar (1995) studied the relationship between selected anthropometric variables and performance in athletics programme of high school and senior secondary school students. He concluded that performance in all running events 100 meters, 200 meters, 400 meters, 800 meters 1500 meters, 5000 meters and 10000 meters events have significant relation with age, body weight height, leg length, thigh length, shoulder, chest, abdomen, hip, upper arm, thigh, calf girth, femur bycondylar, biacromial, fat weight and lean body mass.

The human physique differs in a many ways. It can be analyzed by studying the size, shape and form of an individual. For this purpose, a set of selected anthropometric measurements is taken on an individual. The intergroup comparisons are made to understand the physical form, from such body measurements, it is also possible to estimate the distribution of fat and development of bone muscle in the case of athletes, where the physical fitness plays a vital role in the competitive performances. The purpose of this study was to assess the significant difference existing in the mean leg length and mean mid thigh girth of 100m, 200m and 400m sprinters.

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METHODOLOGY

The appropriate anthropometrical techniques and instruments approved by ISAK (1986) were used for measuring Leg length and Mid Thigh Girth of 100m, 200m and 400m sprinters.

Leg Length

The subject was made to stand erect with equally weight distributed on both feet. Trochanterior and border of sole of feet of the right leg was marked. The distance between these two points was measured with the help of anthropometric rod.

Mid Thigh Girth

Subject stand ease with equal weight on the both feet. Mid of the thigh steel-tape is wrapped around the thigh at the level horizontal line and touching lightly to the skin all around these circumferences recorded in centimeters.

Collection of Data

For the current study, the Researcher selected the top six Indian athletes of each sprinting events from 22nd Federation cup National Senior Athletics Championship 2018 held at Netaji Subhash National Institute of Sports, Patiala, Punjab, from 5th to 8th March, 2018. For assessing the significant difference in the means of three groups the data was subjected to F-test at 0.05 level of significance.

RESULTS & DISCUSSION

Table-1 : Leg Length and Mid Thigh Girth of 100m, 200m and 400m Sprinters

S. No.	Leg Length			Mid Thigh Girth		
	100m	200m	400m	100m	200m	400m
1.	91.40	91.50	95.80	55.80	54.00	51.21
2.	98.70	92.00	95.80	55.90	59.00	53.50
3.	100.00	89.30	93.70	50.00	49.30	49.10
4.	91.50	90.50	86.70	54.00	53.80	51.20
5.	86.10	88.00	88.50	51.80	57.00	48.80
6.	97.00	100.00	95.80	55.00	50.00	53.40

*All subject score recorded in Centimeters

Since calculated F-value is lesser than tabulated F-value, it is concluded that insignificant difference is existing in the mean thigh lengths of three groups.

Table-2 : ANOVA Leg Length of top Indian male sprinters

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Sig.
Between Groups	15.284	2	7.642	0.363	0.701
Within Groups	315.605	15	21.040		
Total	330.889	17			

*Significance at .05 level Tab. F (2, 15) =3.68

Table: - 3 ANOVA Mid Thigh Girth of top Indian male sprinters

Source of Variance	Sum of Squares	d.f.	Mean Square	F	Sig.
Between Groups	27.035	2	13.518	1.681	0.219
Within Groups	120.610	15	8.041		
Total	147.645	17			

*Significance at .05 level Tab. F (2, 15) =3.68

Since calculated F-value is lesser than tabulated F-value, it is concluded that insignificant difference is existing in the mean thigh girths of three groups.

The results of the study lead us to conclude that insignificant difference is existing in the mean leg lengths and mid thigh girths 100, 200 and 400 meter sprinters. This shows that the mechanical requirement in relation to stride lengths, frequency of strides and leverage required to generate full force for propelling the body ahead is almost similar for all the three sprinting events. In the history of track events we had seen sprinters competing in all three sprints and getting medals for example Carl Lewis (Frederick Carlton Lewis) got medals in 100 and 200 m sprinting events. However, majority of sprinters confine themselves for competing in only one of the sprinting events. Sprinting is an anaerobic activity and 100 m spiriting event is supported by ATP-PC system and 200, 400 m sprinting events are supported by lactic acid system. (Foss, R. & Keteyian, S. J. (1998). As regards to the proportion of the lower extremities, the relatively long legs and shorter thigh girth are characteristics of good sprinters confirmed well documented in study conducted by Brisswalter, J. Legros, P. and Durand, M. (1996). The development of power lies at the frame foundation of all movement, especially in athletic performance mainly depends on much muscular effort, unlike the sprinters. The force applied on the lower limbs depends upon the utilization of oxygen in the muscles throughout the period of running. Under these circumstances, the athlete runs at some cruising speed without putting the pace to maximal. The natural greater length of the lower extremities will help to provide them with the greater stride. Therefore, those athletes, who are endowed

with proportionally longer lower extremities, have an additional advantage as H. S. Sodhi and L. S. Sidhu (1984), Eliben (1972), Tom Ecker (1985) and Singh (2012) suggested it.

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