



## ASSESSMENT AND CLASSIFICATION OF BASEBALL PLAYERS OF VIDARBHA WITH RESPECT TO THEIR SOMATOTYPES

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### ABSTRACT

*Each person does not have to acquire a basic physical fitness without which his daily work would seem to be a burden nor would he be able to discharge his duties and responsibilities properly as a citizen. However, broadly speaking a person is said to possess good health when he has the required basic physical fitness, mental alertness and moral and spiritual favour – the combination of all these will make a life happy and worth living.*

**KEYWORDS:** basic physical fitness , possess good health , spiritual favour.

### 1.0 INTRODUCTION

Developing an individual's physical fitness is one of the major objectives of the process of physical education. Few decades ago, when the European and Western countries realized the need to develop the fitness standard of their youth, much research was carried out on youth fitness, and as a result, they could take proper steps to develop youth fitness, on a national scale. Surprisingly, in India physical fitness of youth is yet to be emphasized on a national scale though some positive steps are being taken to make physical education and yoga programs mandatory at the school level. But it is still inadequate for the uplift of youth physical fitness in India. Many research programs could be therefore, carried out in order to decipher this lacunae, with regard to physical fitness of Indian youth, at the regional levels. Hence, in the backdrop of the above information, this investigation is carried out to classify the baseball playing players with respect to their Somatotypes (Endomorphs, Mesomorphs and Ectomorphs). The somatotype technique is the most complete methodology to assess the physical characterization of both body morphology and composition. This technique also allows determining the body morphology and composition associated with a specific health condition, sports or aesthetic issues. Not only does it allow for the individuals to know himself/herself, but it aids to improve his/her physical condition, especially when it is associated to specific sportive activity and/or performance.

### 2.0 Research Methodology

#### 2.1 Sample Technique and Size

In this study, players participating in inter school baseball tournaments were considered as samples. The study area consisted of Nagpur, Wardha and Chandrapur districts of Vidarbha. In all 100 baseball players were selected from each District making the total sample size of 300.

#### 2.2 Criterion Measures

##### Somatotype Component

The somatotype characteristics will be measured with the help of Health Carter Somatotype Rating Form. In accordance with internationally accepted standards anthropometric Somatotyping will be done

incorporating the ten anthropometric measurements using Heath and Carter's method (Carter, 1980; Heath and Carter, 1967). A somatotype will be expressed in a three digit sequential numerals, representing endomorphy, mesomorphy and ectomorphy respectively. In order to obtain three somatotype components, the following measurements were recorded, which are height, weight, Skinfolds (Triceps, Sub scapular, Surprailiac and Calf), Bone Length (Humerus and Femur) and Girths (Upper Arm and Calf). For the purpose of somatotype rating Health-Carter somatotype rating form was used. The process of calculating anthropometric Somatotype through Health-Carter Somatotype Rating Form was carried out as per the standard procedure. All the measurements were obtained by following standard methods.

### 2.3 Statistical Techniques and Significance Level

To determine the somatypes and the classification of the baseball players on the basis of it, the collected data was analysed using various statistical tests and by using SPSS 18.0 software. Descriptive as well as inferential statistics was determined. The significance level was chosen to be 0.05 (or equivalently, 5%).

## 3.0 Results and Discussion

### Somatotype Component

The results of the various anthropometric components that were used to determine the three somatotype components are presented in the following section.

#### Height - Standing

**Table 1: Standing Height of Baseball playing school students of Vidarbha region**

Test	N	Mean (cm)	±SD	Min	Max
Height in cm	300	148.2	±18.3	120.5	159.4

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, the standing height of baseball players of Vidarbha region in Nagpur region was recorded following standard procedures. The mean standing height of baseball players of Vidarbha region was 148.2±18.3 cm with minimum 120.5 cm and maximum 159.4 cm.

#### Body Weight

**Table 2: Body Weight of Baseball playing school students of Vidarbha region**

Test	N	Mean	±SD	Min	Max
Weight	300	46.8	±7.1	39.3	52.3

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, the body weight of baseball players of Vidarbha region in Nagpur region was recorded following standard procedures. The mean body weight of baseball players of Vidarbha region was 46.8±7.1 Kg with minimum 329.3 Kg and maximum 52.3 Kg.

#### Skinfolds measurement

##### Triceps (Skin Fold)

**Table 3: Results of the triceps skin fold measurement of Baseball playing school students of Vidarbha region**

Test	N	Mean	±SD	Min	Max
Triceps Skinfold	300	22.3	±7.10	9.5	31.0

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, an assessment of Triceps skin fold measurement was carried out from group of baseball players of Vidarbha region in Nagpur region. The results showed the mean value of Triceps skin fold

measurement was  $22.3 \pm 7.10$ mm, whereas, the lowest and highest triceps skin fold measurement recorded was 9.5 and 31.0 mm respectively.

### Subscapular Skin Fold

**Table 4: Assessment of the subscapular skin fold measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	$\pm$ SD	Min	Max
Sub Scapular Skinfold	300	24.3	$\pm 8.3$	9.6	28.7

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, assessment of subscapular skin fold measurement was carried out for baseball playing school students of Vidarbha region. The results showed the mean value for subscapular skin fold measurement to be  $24.3 \pm 8.3$ mm, whereas, the lowest and highest subscapular skin fold measurement recorded was 9.6mm and 28.7mm respectively.

### Supra-iliac Skin Fold

**Table 5: Assessment of the Supra-iliac skin fold measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	$\pm$ SD	Min	Max
Suprailiac Skinfold	300	27.1	$\pm 6.3$	12.7	34.1

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, assessment of suprailiac skin fold measurement was carried out for baseball playing school students of Vidarbha region. The results showed that the mean value for supra iliac skin fold measurement was  $27.1 \pm 6.3$  mm; whereas, the lowest and highest supra iliac skin fold measurement recorded was 12.7 mm and 34.1 mm respectively.

### Calf Skinfold

**Table 6: Assessment of the calf skin fold measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	$\pm$ SD	Min	Max
Calf Skinfold	300	27.1	$\pm 8.4$	14.2	38.1

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, an assessment of calf skin fold measurement was carried out for baseball players of Vidarbha region in Nagpur region. The results showed the mean value for calf skin fold measurement was  $27.1 \pm 8.4$ mm, whereas, the lowest and highest calf skin fold measurement recorded was 14.2mm and 38.1mm respectively.

### Bone Length – Femur

**Table 7: Assessment of the femur length of baseball playing school students of Vidarbha region**

Test	N	Mean	$\pm$ SD	Min	Max
Femur length	300	29.6	$\pm 6.2$	21.8	34.1

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, an assessment of femur length measurement was carried out for baseball players of Vidarbha region in Nagpur region. The results showed the mean value for femur length measurement was  $29.6 \pm 6.2$ cm, whereas, the lowest and highest femur length measurement recorded was 21.8cm and 34.1cm respectively.

**Bone Length – Humerus****Table 8: Assessment of humerus length measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	±SD	Min	Max
Humerus length	300	23.9	±12.1	18.2	30.4

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, humerus length measurement was carried out for baseball playing school students of Vidarbha region. The results showed that the mean value for humerus length measurement was 23.9±12.1cm, whereas, the lowest and highest humerus length measurement recorded was 18.2 cm and 30.4 cm respectively.

**Girth measurements****Upper arm****Table 9: Upper arm girth measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	±SD	Min	Max
Upper Arm Girth	300	15.6	±4.93	2.05	45

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, upper arm girth measurement was carried out for baseball players of Vidarbha region in Nagpur region. The results showed that the mean value for upper arm girth measurement was 15.6±4.93cm, whereas, the lowest and highest upper arm girth measurement recorded was 2.05cm and 45cm respectively.

**Calf****Table 10: Calf girth measurement of baseball playing school students of Vidarbha region**

Test	N	Mean	±SD	Min	Max
Calf Girth	300	34.2	±8.2	28.4	38.5

**N:** Number; **SD:** Standard deviation; **Min:** Minimum; **Max:** Maximum

In the present study, calf girth measurement was carried out for baseball players of Vidarbha region in Nagpur region. The results showed the mean value for calf girth measurement was 34.2±8.2cm, whereas, the lowest and highest calf girth measurement recorded was 28.4cm and 38.5cm respectively.

**Somatotype Rating**

The somatotyping results of the baseball players of Vidarbha region of the Nagpur region are presented hereunder.

**Somatotypes****Table 11: Somatotypes of the baseball playing school students of Vidarbha region**

Somatotype	Nagpur		Wardha		Chandrapur	
	No	Per	No	Per	No	Per
Endomorphs	10	10	14	14	18	18
Mesomorphs	38	38	50	50	60	60
Ectomorphs	52	52	36	36	22	22
<b>Total</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>	<b>50</b>	<b>100</b>

$$\chi^2_{\text{calculated}} = 19.496; \text{df: } 4 \chi^2_{\text{critical}} = 9.49; p < 0.05$$

Above **Table 4.3.1** presents results pertaining to the somatotypes of the baseball playing school students of Vidarbha region. The results indicated that the endomorph of the baseball players of Nagpur

region is 10% whereas endomorph of the players of Wardha and Chandrapur region is 14% and 18% respectively. In addition to it Mesomorph of the baseball players of Nagpur region is 38% whereas Mesomorph of the baseball players of Wardha and Chandrapur region is 50% and 60% respectively. Furthermore Ectomorph of the baseball players of Nagpur region is 52% whereas Ectomorph of the baseball players of Wardha and Chandrapur region is 36% and 22% respectively.

## Conclusions

### Somatotype Components

#### Height - Standing

- The mean standing height of baseball players of Vidarbha region was  $148.2 \pm 18.3$  cm with minimum 120.5 cm and maximum 159.4 cm.

#### Body Weight

- The mean body weight of baseball players of Vidarbha region was  $46.8 \pm 7.1$  Kg with minimum 329.3 Kg and maximum 52.3 Kg.

#### Skinfolds – Triceps(Skin Fold)

- The results showed the mean value of Triceps skin fold measurement was  $22.3 \pm 7.10$ mm, whereas, the lowest and highest triceps skin fold measurement recorded was 9.5 and 31.0 mm respectively.

#### Skinfolds – SubscapularSkin Fold

- The results showed the mean value for subscapular skin fold measurement to be  $24.3 \pm 8.3$ mm, whereas, the lowest and highest subscapular skin fold measurement recorded was 9.6mm and 28.7mm respectively.

#### Supra-iliac Skin Fold

- The results showed that the mean value for supra iliac skin fold measurement was  $247.1 \pm 6.3$  mm; whereas, the lowest and highest supra iliac skin fold measurement recorded was 12.7 mm and 34.1 mm respectively.

#### Calf Skinfold

- The results showed the mean value for calf skin fold measurement was  $27.1 \pm 8.4$ mm, whereas, the lowest and highest calf skin fold measurement recorded was 14.2mm and 38.1mm respectively.

#### Bone Length – Femur

- The results showed the mean value for femur length measurement was  $29.6 \pm 6.2$ cm, whereas, the lowest and highest femur length measurement recorded was 21.8cm and 34.1cm respectively.

#### Bone Length – Humerus

- The results showed that the mean value for humerus length measurement was  $23.9 \pm 12.1$ cm, whereas, the lowest and highest humerus length measurement recorded was 18.2 cm and 30.4 cm respectively.

#### Girth measurements

##### Upper arm

- The results showed that the mean value for upper arm girth measurement was  $15.6 \pm 4.93$ cm, whereas, the lowest and highest upper arm girth measurement recorded was 2.05cm and 45cm respectively.

##### Calf

- The results showed the mean value for calf girth measurement was  $34.2 \pm 8.2$ cm, whereas, the lowest and highest calf girth measurement recorded was 28.4cm and 38.5cm respectively.

#### Somatotypes

- On the basis of study results it is concluded that majority of the baseball players of Chandrapur region are endomorph and mesomorph while most of the players of Nagpur region are ectomorphs.

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