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## Impact of anthropometric variables on athletes

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#### Abstract

Sports activities are different kinds of physical activities which aim to improve or maintain physical development or skills. These could be structured or casual. It is based on the physical dexterity of an individual. Sport is usually governed by a set of rules. Sports activities are different kinds of physical activities which aim to improve or maintain physical development or skills. These could be structured or casual. It is based on the physical dexterity of an individual. Sport is usually governed by a set of rules.

Anthropometric variables are supposed to be the key element for athletes. It is also said that higher the percentage of these variables better will be the performance of the athletes. The performance of an athlete also depends on how much does he/she do the physical exercises and running as a good-run is also beneficial for good rhythm.

For the current research work, 50 College-level athletes were asked about the factors which influenced their performance. The current article highlights various factors which are responsible for influencing the performance of an athlete.

**Keywords:** Athlete, Performance, Anthropometric

#### Introduction

As sport has developed into a distinctive scientific branch in itself and each nation is competing with each other to produce world-class player to win medals in international competitions, great research is being done to discover factors that will be prognostic of achieving high level of skill in a given sports with proper coaching. Sports hold outstanding place in modern life. But the influence of sports on modern society has made it clear that sport is a reasonable field of academic study.

Sport has grown massively in scope and in social importance, but the meaning of sport has received little in the way of serious attention. Physical education and sports should form a fundamental part of life long education in the overall educational system and their support from pre-school age to old age should be treated or one of the basic rights.

Sports is very popular in India. India has produced a lot of athletes like Milkha Singh, Sushil Kumar, P.T. Usha etc. There are many factors which affect the performance of athletes. The factors such as body shape, weight and height etc. are the key points to succeed as an athlete. Any sport demands a good physical fitness and stamina so as to perform better at any level. So an athlete needs to be highly fit so as to perform better.

It is observed that an athlete having good stamina and fitness can generate good performance and even can do much better using his/her abilities. To survive in the competitive field of sports, an athlete has to prevent his/her body from injuries. It is observed that athletes suffering from injuries can't have long career or has to struggle to perform better.

Gym activities can also enhance the stamina of an athlete. As gym activities improves the physical fitness of the athletes and an athlete can make extra effort to perform better in the field. The other factor which is supposed to be ideal for an athlete is power. As more powerful the athlete, better will be the performance and an athlete can also improve the performance by working on the limitations.

There are many anthropometric variables which were used in the current research work. Some of these variables are height, weight, thigh length, hand length, shoulder width, chest girth and calf girth etc. The correlation of these variables was performed with the performance and was observed that these variables certainly influence the performance of the athletes.

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Weight is also a very crucial factor for the athletes as the balanced weight can do wonders in the performance of an athlete. It is observed that the athletes with moderate weight can perform better as compared to that with higher weight. Height and length of leg also contribute in the performance of the athletes. It is also observed that to perform better in the game, some athletes take the aid of banned medicines. These medicines can make difference in the performance but for a longer consequence, these medicines are not helpful for the athletes as they have to suffer from a lot of side-effects in the body.

**Hypotheses of the study**

The hypotheses for the current research work are as follows:

1. Anthropometric variables can influence the performance of an athlete.
2. Anthropometric variables can predict the performance of an athlete.

**Methodology**

The main purpose of the study is to find out some anthropometric variables, agility and body mass index of bodybuilder and athletes. The present researcher will take the male subjects for the study. The sources from bodybuilder and athletes of Amravati city health center will be taken as

sources of data. The researcher was select 50 athletes. The 50 Subjects would be selected by purposive sampling method.

Following equipments and test would be used for collection of data:

1. Anthropometric measurement would be measured by using sliding beam caliper.
2. Agility would be measured by shuttle run.
3. Body Mass Index with measuring stadio meter, weighing machine would be used.

**Results**

Table-1 reveals that there is insignificant difference in arm length between athletes and bodybuilder. The obtained t-value of 0.88 is less than the table value of 2.02. Table-1 reveals that there is insignificant difference in palm length between athletes and bodybuilder. The obtained t-value of 1.62 is less than the table value of 2.02.

Table-1 reveals that there is significant difference in chest girth between athletes and bodybuilder. The obtained t-value of 9.24 is more than the table value of 2.02. Table-1 reveals that there is insignificant difference in lower leg length between athletes and bodybuilder. The obtained t-value of 1.97 is less than the table value of 2.02.

**Table 1: Showing Comparison between Athletes and Bodybuilder in Anthropometric components**

| Anthropometric components | Group       | Mean  | S.D. | S.E. | M.D.  | O.T.  | D.F. |
|---------------------------|-------------|-------|------|------|-------|-------|------|
| Arm Length                | Athletes    | 74.05 | 7.92 | 2.38 | 2.10  | 0.88  | 38   |
|                           | Bodybuilder | 76.15 | 7.10 |      |       |       |      |
| Palm Length               | Athletes    | 17.93 | 1.16 | 0.38 | 0.61  | 1.62  |      |
|                           | Bodybuilder | 18.54 | 1.22 |      |       |       |      |
| Chest Girth               | Athletes    | 69.99 | 4.78 | 1.81 | 16.75 | 9.24* |      |
|                           | Bodybuilder | 86.74 | 6.55 |      |       |       |      |
| Lower-Leg-Length          | Athletes    | 51.73 | 3.42 | 1.16 | 2.29  | 1.97  |      |
|                           | Bodybuilder | 54.02 | 3.90 |      |       |       |      |
| Foot Length               | Athletes    | 24.62 | 1.62 | 0.50 | 0.43  | 0.87  |      |
|                           | Bodybuilder | 25.06 | 1.54 |      |       |       |      |
| Thigh Girth               | Athletes    | 50.66 | 2.44 | 1.14 | 5.81  | 5.08* |      |
|                           | Bodybuilder | 56.47 | 4.50 |      |       |       |      |
| Calf Girth                | Athletes    | 30.55 | 3.47 | 0.99 | 2.15  | 2.18* |      |
|                           | Bodybuilder | 32.71 | 2.74 |      |       |       |      |

\*Significant at 0.05 level of confidence.

Tabulated 't' 0.05 (38) = 2.02

Table-1 reveals that there is insignificant difference in foot length between athletes and bodybuilder. The obtained t-value of 0.87 is less than the table value of 2.02. Table-1 reveals that there is significant difference in thigh girth between athletes and bodybuilder. The obtained t-value of 5.08 is more than the table value of 2.02. Table-1 reveals that there is

significant difference in calf girth between athletes and bodybuilder. The obtained t-value of 2.18 is more than the table value of 2.02.

Table-1 reveals that there is significant difference in agility between athletes and bodybuilder. The obtained t-value of 2.75 is more than the table value of 2.02.

**Table 2: Showing Comparison between Athletes and Bodybuilder in Agility**

| Group       | Mean  | S.D. | S.E. | M.D. | O.T.  | D.F. |
|-------------|-------|------|------|------|-------|------|
| Athletes    | 11.64 | 1.00 | 0.33 | 0.92 | 2.75* | 38   |
| Bodybuilder | 12.56 | 1.10 |      |      |       |      |

\*Significant at 0.05 level of confidence.

Tabulated 't' 0.05 (38) = 2.02

**Table 3: Showing Comparison between Athletes and Bodybuilder in Body Mass Index**

| Group       | Mean  | S.D.  | S.E. | M.D. | O.T.  | D.F. |
|-------------|-------|-------|------|------|-------|------|
| Athletes    | 21.14 | 23.95 | 0.67 | 2.81 | 4.21* | 38   |
| Bodybuilder | 2.57  | 1.52  |      |      |       |      |

\*Significant at 0.05 level of confidence.

Tabulated 't' 0.05 (38) = 2.02

### **Conclusion**

In the present study it is found that there was a significant difference in chest girth, thigh girth, calf girth, agility and body mass index between athletes and bodybuilder because calculated 't' more than tabulated value. Also there was a no significant difference in palm length, arm length, lower-leg length, foot length between athletes and bodybuilder because calculated 't' less than tabulated value.

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