



COMPARISON OF THE ANTHROPOMETRIC MEASUREMENTS AMONG SWIMMERS AND SPRINTERS

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Abstract

The purpose of the study was to compare the anthropometric measurements among the swimmers and sprinters in selected speed event. Twenty male students belonging to inter college level acted as subjects for this study. In measuring the anthropometric measurement of selected subjects, various equipments was used. To measure standing height of the subject stadiometer was used and score were recorded in centimeters. To measure weight of the subject weighing machine was used and score were recorded in kilogram. To measure upper arm girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure forearm girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure thigh girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure calf girth of the subject flexible steel tape was used and score were recorded in centimeter. In order to analysis the collected data independent 't' test was applied and level of significant was set at 0.05. The findings of this study with reference to anthropometric measurements reveal that the sprinters are not significantly differ than the sprint swimmers. The sprinters might possess more lean body mass and bone weight developed through maximum exertion on the land. Whereas the lesser weight of sprint swimmers may be due to the presence of more fat and less lean body mass when compared to the sprint runners. Fat is less dense than lean body mass and yet helps to improve swimming performance by increase the buoyancy. No significant difference was found between the two groups in all the selected variables.

Keywords: Anthropometric, Measurements, Sprinters, Swimmers, Girth, Height, Weight.

Introduction

The human physique differs in a thousand ways. It can be analyzed by studying the size, shape and form of an individual. For this purpose, a set of selected anthropometric measurements are taken on an individual. From such body measurements it is also possible to characteristics estimate the distribution of feet, bone and muscle in one's body. This seems to be more important in the case of athletes and sport men where the physical fitness plays a vital role in the performance. Anthropometry is the science of measuring the human body and its parts. It is used to the study of human evaluation and variations. Anthropometry is that branch of anthropology that is concern with the measurement of human body build. The definition will be confined to the kind of measurement commonly use in associate physical performance with body build. According to Phillips and hornek the measurements of the structure and proportions of the body is called anthropometry

Methodology

Ten (10) male swimmers and ten (10) male sprinters who participated in inter college level swimming and athletic meets, were selected as the subject for this study. The age of the subjects ranged between 20 to 25 years. The anthropometric variables selected for this study were standing height, weight, upper arm girth, fore arm girth, thigh girth and calf girth.

Procedure for Administration of the Test

Standing Height: The standing height was measured with the subjects standing erect without shoes, against a mark scale on a wall. He touched the wall with heels, buttocks and back, the subjects was instructed to keep the heels together, head leave without tilt and to take and hold a full breath while measurement was taken. A stiff hard board was held horizontally on his head, slightly pressing his head and touching the skate marked on the wall. The subjects



were asked to step out and the reading indicated by the hard board was read on the scale. Height was recorded correct to the nearest half centimeter.

Weight: The weight of the subjects was taken with a lever type laboratory anthropometric weighing machine. The subjects wearing a vest only stood at the centre of the weighing machine and the weight was recorded from the indicator needle of dial. The weight was read and recorded correct to a half of a kilogram.

Upper Arm Girth: Upper arm girth was measured with a steel tape at level of half way between the tips of the acromial process, just on the top of the shoulder joint and elbow joint. This level was marked on skin first then the tape was placed around the arm so that it was in light contact with the skin all around, the arm hang down loosely at the side relaxed. The upper arm girth was recorded correct to the nearest half centimeter.

Fore Arm Girth: Fore arm girth was taken with a Celebrated flexible steel tape at the thickest part, just below the elbow. Measurement was recorded correct to the nearest half centimeter.

Thigh Girth: Thigh girth was measured with a steel tape placed round the thigh horizontally which was its top edge just under the fold of the buttock. The subject stood with his weight equally distributed on both feet. Measurement was recorded correct to the nearest half centimeter.

Calf Girth: Calf girth was taken with a flexible steel tape at the maximum circumference of the calf in a plane at right angle to its long axis. Measurement was recorded correct to the nearest half centimeter.

Statistical Technique: Independent 't' test was applied to find out the comparison of the anthropometry among swimmers and sprinters in selected speed events. The level of significance was set at the 0.05.

Findings

TABLE NO. 1
 COMPARISON OF STANDING HEIGHT AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	65.30	6.62	3.47	2.10	0.604
Sprinters	63.20	8.79			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.1 shows that the mean value of swimmers and sprinters are 65.30 and 63.20 respectively where as standard deviation value of swimmers and sprinters are 6.62 and 8.79 respectively. As the calculated 't' value i.e. 0.604 is lesser than tabulated value i.e. 2.101. Therefore, null hypothesis is accepted.

TABLE NO. 2
 COMPARISON OF WEIGHT AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	1.70	4.22	2.55	0.70	0.276
Sprinters	1.71	6.83			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.2 shows that the mean value of swimmers and sprinters are 1.70 and 1.71 respectively whereas standard deviation value of swimmers and sprinters are 4.22 and 6.83 respectively. As the calculated 't' value i.e. 0.276 is lesser than tabulated value i.e. 2.101 Therefore null hypothesis is accepted.



TABLE NO. 3
 COMPARISON OF UPPER ARM GIRTH AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	27.67	2.82	1.36	0.95	0.697
Sprinters	28.62	3.26			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.3 shows that the mean value of swimmers and sprinters are 27.67 and 28.62 respectively whereas standard deviation value of swimmers and sprinters are 2.82 and 3.26 respectively. As the calculated 't' value i.e. 0.697 is lesser than tabulated value i.e. 2.101 Therefore null hypothesis is accepted.

TABLE NO. 4
 COMPARISON OF FORE ARM GIRTH AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	25.60	1.58	0.67	0.70	1.04
Sprinters	26.30	1.43			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.4 shows that the mean value of swimmers and sprinters are 25.60 and 26.30 respectively whereas standard deviation value of swimmers and sprinters are 1.58 and 1.43 respectively. As the calculated 't' value i.e.1.04 is lesser than tabulated value i.e. 2.101 Therefore null hypothesis is accepted.

TABLE NO. 5
 COMPARISON OF THIGH GIRTH AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	53.44	3.44	1.72	0.81	0.472
Sprinters	52.63	4.20			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.5 shows that the mean value of swimmers and sprinters are 53.44 and 52.63 respectively whereas standard deviation value of swimmers and sprinters are 3.44 and 4.20 respectively. As the calculated 't' value i.e. 0.472 is lesser than tabulated value i.e. 2.101 Therefore null hypothesis is accepted.



TABLE NO. 6
COMPARISON OF CALF GIRTH AMONG THE SWIMMERS AND SPRINTERS

Players	Mean	Standard Deviation	Standard Error	Mean Difference	t-value
Swimmers	35.22	3.12	1.30	0.94	0.724
Sprinters	34.28	2.66			

* Significant at 0.05 level of significance 't' (0.05) (18) = 2.101

Table no.6 shows that the mean value of swimmers and sprinters are 35.22 and 34.28 respectively whereas standard deviation value of swimmers and sprinters are 3.12 and 2.66 respectively. As the calculated 't' value i.e. 0.724 is lesser than tabulated value i.e. 2.101 Therefore null hypothesis is accepted.

Discussion of Findings

The findings of this study with reference to anthropometric measurements reveal that the sprinters are not significantly differ than the sprint swimmers. The sprinters might possess more lean body mass and bone weight developed through maximum exertion on the land. Whereas the lesser weight of sprint swimmers may be due to the presence of more fat and less lean body mass when compared to the sprint runners. Fat is less dense than lean body mass and yet helps to improve swimming performance by increase the buoyancy. No significant difference was found between the two groups in all the selected variables. In both swimmers and sprinters arm action are involved and equal physiological change might have occurred in the upper extremities due to both types of activities. This might have result in the insignificant mean difference of these variables between the two groups. On the basis of findings null hypothesis related to standing height, weight, upper arm girth, fore arm girth, thigh girth and calf girth is accepted.

Conclusion

The researcher undertook the study to compare the anthropometric measurements among the swimmers and sprinters in selected speed event. Twenty male students belonging to inter college level acted as subjects for this study. In measuring the anthropometric measurement of selected subjects, various equipments was used. To measure standing height of the subject stadiometer was used and score were recorded in centimeters. To measure weight of the subject weighing machine was used and score were recorded in kilogram. To measure upper arm girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure forearm girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure thigh girth of the subject flexible steel tape was used and score were recorded in centimeter. To measure calf girth of the subject flexible steel tape was used and score were recorded in centimeter. In order to analysis the collected data independent 't' test was applied and level of significant was set at 0.05. On the basis of finding and within the limitation of the present study there were no significant differences found between the standing height of swimmers and sprinters. There were no significant differences found between the weight of swimmers and sprinters. There were no significant differences found between the upper arm girth of swimmers and sprinters. There were no significant differences found between the fore arm girth of swimmers and sprinters. There were no significant differences found between the thigh girth of swimmers and sprinters. There were no significant differences found between the calf girth of swimmers and sprinters.



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