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Assessment of aerobic and anaerobic capacity among female track and field athletes: A comparative study

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Abstract

The purpose of the present investigation was to compare Aerobic and Anaerobic Capacity of female Players of Track and Field events (Sprinters, Jumpers and Throwers). To achieve the set objective, one hundred and twenty 120 Players (Sprinters =40, Jumpers =40 and Throwers =40) of individual games were selected from Haryana state. The age of the student ranged from 19 to 24 years. Total two variables Aerobic and Anaerobic were selected for the study. Aerobic Capacity was measured by the performance of 9 min run/walk test on standard track with the help of stop watch in second/minute. Anaerobic Capacity was measured by the performance of 50 meter dash in second. The analysis of variance (ANOVA) tests was applied for the treatment of the data with the help of sps (16.00) computer software.

Keywords: Aerobic capacity, anaerobic capacity, track and field, female

Introduction

In the present day world games and sports is very much competitive. Everyone tries to become successful by surpassing the others. For that reason, every competitor must enhance his technical and tactical abilities along with conditional abilities and psychological abilities. Two individual having the same technical, tactical or psychic ability can differ in performances when there is a differences in their conditional ability. The word aerobic meaning with oxygen to represent idea. Even so the dynamics of the idea are more complicated that implied by the definition. Aerobic can be viewed as an intricate system of bodily supply and demand. That is the body needs energy for any kind of activity and the need is filled by burning off the foods that eat. Oxygen is the spark the fuel needs to burn regardless aerobics is the word in general use. Aerobic capacity is the ability to mobilize energy for continuous performance of specific movement for prolonged time i.e. capacity for prolonged physiological functioning under continuous supply of required oxygen under conditions of required oxygen completely available. The glucose molecule is completely broken down to CO₂ and H₂O, and energy is made available as needed. Anaerobic capacity is the ability to mobilize energy during activities of intensive nature i.e. executing intensive work with explosive action in short duration of time, such as, kicking the football faster and for explosive take off in jumps, maximum rate for about two to three minutes under water swimming. The physiological systems of the body interact to accomplish a variety of tasks. There inter dependence can be linked to a symphony orchestra whose different musical instrument represent various organ systems and whose conductor represents the higher Brain center.

Objective

The purpose of this study was to compare the Aerobic and Anaerobic capacity among female track and field athletes.

Methodology

The subjects for this study were female athletes among sprints, jumps and throwing events randomly selected from Inter-collegiate and district level Athletic Competition. A total number of 120 female athletes, 40 (sprinters), 40 (jumpers) 40 (Throwers) were selected.

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The age of the subject range from 18-25 years. The selected variables were aerobic capacity and anaerobic capacity. Aerobic capacity was measured by 9-minute cooper run and walk test. The scoring will be in meters and nearest to 25 meters. Anaerobic capacity was measured by 50-meter dash. The score was that time elapsed in the nearest 1/10th of a second. To compare aerobic and anaerobic capacity of Sprinters, Jumpers and Throwers. The analysis of variance was used at 0.05 level of significance.

Statistical procedure

In this section data were analyzed through one way analysis of variance (ANOVA) among female athletes.

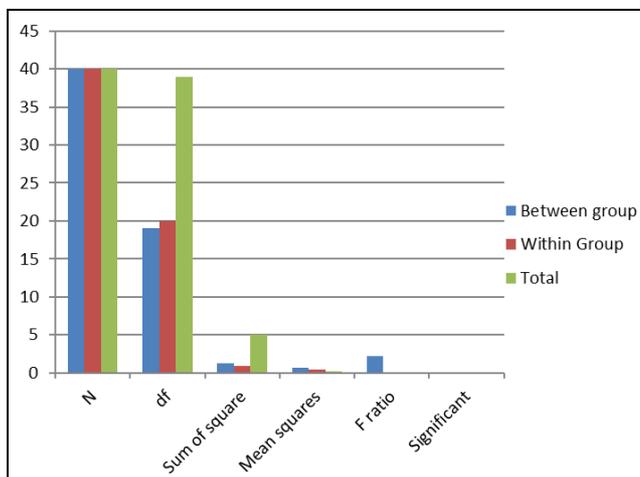
Results

Table 1: One way analysis of variance of aerobic capacity among female sprinters, jumpers and throwers of Haryana

Source of treatment	N	df	Sum of square	Mean squares	F ratio	Significant
Between group	40	19	1.227	0.65	2.163	0.047
Within Group	40	20	0.904	0.45		
Total	40	39	5.089	0.18		

Significant at 0.05 level

The mean squares value of the aerobic capacity in case of female sprinters, jumpers and throwers of Haryana is 0.65, 0.45 and 0.18 respectively. The obtained sum of squares between the groups is 1.227, 0.904 and 5.089 respectively. The obtained f-ratio value among the female sprinters, jumpers and throwers of Haryana is 2.163. The obtained significant value of table is 2.163 at the significant level of 0.05 levels. It appears from the table-1 that significance differences were found for aerobic capacity i.e. among sprinters, jumpers and throwers female players of Haryana.



Graph 1: Graphical representation of one way analysis of variance of aerobic capacity among female sprinters, jumpers and throwers

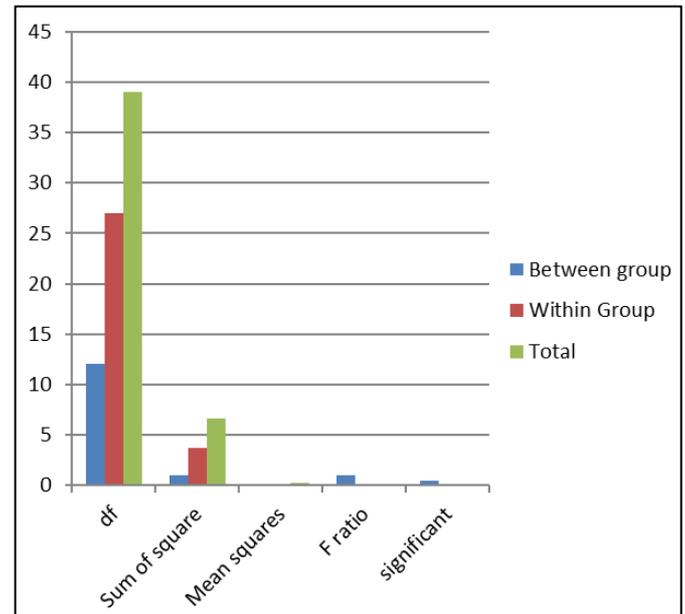
Table 2: One way analysis of variance of anaerobic capacity among female sprinters, jumpers and throwers of Haryana

Source of treatment	df	Sum of square	Mean squares	F ratio	significant
Between group	12	0.950	0.079	1.007	0.469
Within Group	27	3.701	0.137		
Total	39	6.649	0.171		

Significant at 0.05 level

The mean squares value of the anaerobic capacity in case of female sprinters, jumpers and throwers of Haryana is 0.079,

0.137 and 0.171 respectively. The obtained sum of squares between the groups is 0.950, 3.701 and 6.649 respectively. The obtained f-ratio value among the female sprinters, jumpers and throwers of Haryana is 1.007. The obtained significant value of table is 0.469 at the significant level of 0.05 levels. It appears from the table-2 that significance difference were found for anaerobic capacity i.e. among sprinters, jumpers and throwers female players of Haryana as the calculated value 1.007 was found less than the tabulated value 2.42 at 0.05 level.



Graph 2: Graphical representation of one way analysis of variance of anaerobic capacity among female sprinters, jumpers and throwers of Haryana

Conclusion

1. In relation to aerobic capacity significant difference was found between female sprinters, jumpers and throwers.
2. In relation to anaerobic capacity significant difference was found between female sprinters, jumpers and throwers.

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