EXPLORING THE RELATIONSHIP BETWEEN BMI AND ANAEROBIC POWER IN ATHLETES OF DIFFERENT SPORT

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ABSTRACT

The success and good performance in any sports depends on several characteristics, such as, physical fitness level of the athletes, aerobic capacity, anaerobic capacity, anthropometric factors, body composition factors, psychological factors, training level, skill level, techniques, tactics and etc. And each sport requires some specific characteristics to gain the success.

The aim of this study was to explore the relationship between body mass index and anaerobic capacity in athletes engaged in different type of sport. To accomplish the aim of the study 51 athletes of volleyball (17), Football (17) and handball (17) were selected as subjects from Christ PU Junior Residential College, Bangalore. The running-based anaerobic capacity test (RAST) was used to examine the anaerobic capacity of selected subjects. The statistical techniques mean, SD and Pearson correlation technique was used to analyze the data.

KEYWORDS : *Anaerobic power, athletes and BMI.*

INTRODUCTION

The success and good performance in any sports depends on several characteristics, such as, physical fitness level of the athletes, aerobic capacity, anaerobic capacity, psychological factors, training level, skill level, techniques, tactics and etc. And each sport requires some specific characteristics to gain the success.

The athletes who pursue a sport will take part in training according to the character of the sport for longer duration. The regular training for longer duration causes the change in specific condition, which will become the psychological and psychomotor character of the athlete (1).

Every sport discipline must be observed individually, Because of the different influences that each characteristic has on sport results. For example, the most important part in rowing will be aerobic capacity, anaerobic capacity in sprint, volleyball, basketball, and hockey, technique in jumping, and other components in soccer, with the advantage of anaerobic capacity (2).

The preparation of anaerobic capacity level is one of the basic monitored parameters in high-speed-forced competitions (3). Anaerobic capacity is the ability of the athlete to maintain anaerobic movements (4). These anaerobic capacity measurements help to the sports man in attaining the desired results in their sporting event. RAST is one of the tests which in natural field conditions, can be used for the estimation of the power of anaerobic capacity and the calculation of the fatigue index (3).

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OBJECTIVE OF THE STUDY:

The aim of this study was to explore the relationship between body mass index and anaerobic capacity in athletes engaged in different type of sport.

METHODOLOGY:

Selection of Sample:

A total 51 athletes of volleyball, football and handball were selected to participate in this study, each sport consists 17 subjects. The selected subjects were 16-18 years old, healthy and practicing regularly.

Data Collection:

The orientation about the test and the research was given to the participants. Running-based anaerobic sprint test (RAST) was used to collect the data. Participants' height, weight was measured and 10-15 minutes warm up was done by the athletes before conducting the test. Athletes performed 6 sprints 35 meters distance at their maximal pace with the 10 second interval between each sprint. The power in each sprint was then calculated by the formulas as the following;

Power= (Body mass x Distance2)/Time3
Maximum power=the highest value
Minimum power=the lowest value
Average power=sum of all six value/6
Fatigue index= (maximum power-minimum power)/total time for the 6 sprints

ANALYSIS AND RESULT:

The statistical techniques mean, SD and Pearson Coefficient of Correlation was used to analyze the data.

Table 1: Minimum, Maximum, Mean, SD of Maximum Power, Minimum Power, Average Power, Fatigue Index and BMI of athletes of different sports

	N	Minimum	Maximum	Mean	Std. Deviation
BMI	51	14.25	25.51	20.4480	2.68016
Maximum Power (in watts)	51	306.00	799.00	506.2549	115.07525
Minimum Power (in watts)	51	150.00	345.00	232.1961	45.58553
Average Power (in watts)	51	228.00	490.00	342.3529	59.84507
Fitness Index	51	2.02	15.23	7.4916	3.08281

The table 1 shows the maximum, minimum, mean and SD of maximum power, minimum power, average power, fatigue index and BMI of athletes of different sports. The selected subjects mean value of BMI was 20.4480 and SD 2.68016 was which shows that the subjects were under normal weight category. The selected subjects mean value and SD of maximum power, minimum power, average power and fatigue index was 506.2549±115.07525, 232.1961 ±45.58553, 342.3529±59.84507 and 7.4916±3.08281 respectively.

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Table-2: Coefficient of Correlation between BMI and Anaerobic Power

Parameter	BMI
Maximum Power	.155
Minimum Power	.317*
Average Power	.323*
Fatigue Index	-.006

*Significant at 0.05 level

The table 2 describe the relationship between anerobic power and BMI of selected athletes of present study. The minimum power and average power have significant relationship with the BMI. Maximum power has not significance positive relationship with BMI and fatigue index has negative relationship with BMI.

CONCLUSION:

On the basis of the finding the study was concluded that the sports training increases the anaerobic power and decreases the fat percentage in athletes of different sports.