

COMPARATIVE STUDY OF AEROBIC CAPACITY AND ANAEROBIC CAPACITY OF SELECTED TEAM GAME PLAYERS

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ABSTRACT

The sportsman is able to achieve a high level of performance by concentrating on the physiological efficiencies. The physiological demand is entirely different from player to player and game to game. A good base of aerobic and anaerobic parameters are the foundation of elite sport performance of athletes.. The purpose of the study was to compare aerobic capacity and anaerobic capacity of selected team game players. for this purpose, Ninety female players were selected randomly for this study from volleyball (N = 30), football (N = 30) and basketball (N = 30) games participated in inter-university tournaments. The aerobic Capacity and anaerobic Capacity were measured through 12 minute run/ walk test and 50 meters dash. The distance in 12 minute run/ walk test was recorded in meters and the 50 meters dash time recorded in seconds. To compare the aerobic capacity and anaerobic capacity of inter university female volleyball, football and basketball players, Analysis of Variance (ANOVA) was computed. The results of study revealed that there was no significant difference among female players of Volleyball, Football and Basketball in their aerobic and anaerobic capacity.

Keywords: Aerobic Capacity, Anaerobic Capacity, Team Games, Female players

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INTRODUCTION

Aerobic conditioning supplies the energy for low intensity exercise over a long duration and allows a player to recover more completely and quickly. It is ability of the individual to work under the condition of fatigue with desired movement. (Singh, 1995.)

Anaerobic literally means without air. Anaerobic fitness determines the level at which one can work at high intensity. This means short bursts of activity with the maximum or sub-maximum intensity, where a player will often be out of breath. Players are working at a level where their body cannot provide enough oxygen.

Helgerud et.al., (2001) concluded that enhanced aerobic endurance in soccer players improved soccer performance by increasing the distance covered, enhancing work intensity, and increasing the number of sprints and involvements with the ball during a match.

Meckel et.al.(2009) expressed that the aerobic system plays a significant role in the maintenance of intensity level during a soccer game, which is characterized by short bursts of activities. Anaerobic performance of repeated brief efforts imposes different physiological stress than a single prolonged activity and, thus, may reflect different physiological capabilities Hoff (2002) expressed that the Soccer specific exercise using ball dribbling or small group play may be performed as aerobic interval training. Heart rate monitoring during soccer specific exercise is a valid indicator of actual exercise intensity. McMillan et.al., (2005) indicated that the performing high intensity 4 min intervals dribbling a soccer ball around a specially designed track together with regular soccer training is effective for improving the VO₂max of soccer players, with no negative interference effects on strength, jumping ability, and sprinting performance

Popadic et.al., (2009) expressed that the influence of anaerobic capacity in different sports and the referral values of these variables for the elite male athletes. Explosive power presented a new dimension of anaerobic power, i.e., how fast maximal energy for power development can be obtained, and its values are high in all sports activities that demand explosiveness and fast maximal energy production

Banne and Sharma (2015) concluded in their investigation that the twelve weeks systematic training programme consisting of plyometric exercises had contribute effect on anaerobic capacity of football players. But the plyometric exercises did not have any significant effect for improving the aerobic capacity of football players.

Talent identification and development has given new dimension to the selection and nurturing of sports talents which concludes that participation is only enjoyed by the talented and gifted youngsters. So, the process of selection of young budding athletes into different sports and games should be according to their age, physique, ability and interest should be done after thorough scientific investigations made by the sports science experts.. The purpose of the present study was to compare aerobic capacity and anaerobic capacity of selected team game players.

METHODOLOGY

Selection of Subjects:

Ninety female players were selected randomly for this study from the inter-university tournaments from the three different team games i.e. Volleyball (N = 30), Football (N = 30) and Basketball (N = 30) for this study.

Selection of Variables:

The following variables were selected for the purpose of the study:-

1. Aerobic Capacity,
2. Anaerobic Capacity.

Criterion Measure:

To determine the aerobic capacity, 12 minute run/ walk test was used and the distance recorded in meters. To determine the anaerobic capacity, 50 meters dash was used and the time recorded in seconds.

Collection of Data:

The data pertaining to the physiological characteristics were collected from the subjects belonging to different games, who had represented the respective university at inter university tournaments.

RESULTS AND DISCUSSION

To compare the aerobic capacity and anaerobic capacity of inter-university level female volleyball, football and basketball players, Analysis of Variance (ANOVA) was computed and data pertaining to this have been presented in Table 1 and 2

TABLE 1
ANALYSIS OF VARIANCE OF VOLLEYBALL, FOOTBALL AND
BASKETBALL PLAYERS IN RELATION TO
AEROBIC CAPACITY

Sources of Variance	d.f.	SS	MSS	F-value
Treatment	2	270.781	135.3905	1.30
Error	87	9056.886	104.1021	

Insignificant at .05 level

Table 1 indicates that there was no significant difference among female volleyball, football and basketball Players of inter-university level in relation to aerobic capacity, as the obtained t-value of 1.30 was lower than the required value of $F_{.05}(2, 87) = 3.011$.

TABLE 2
ANALYSIS OF VARIANCE OF VOLLEYBALL, FOOTBALL AND
BASKETBALL PLAYERS IN RELATION TO
ANAEROBIC CAPACITY

Sources of Variance	d.f.	SS	MSS	F-value
Treatment	2	108.213	54.1065	1.081
Error	87	4351.452	50.0166	

Insignificant at .05 level

Table 2 reveals that there was no significant difference among the female volleyball, football and basketball Players in relation to Anaerobic Capacity, as the obtained t-value of 1.081 was lower than the required value of $F_{.05}(2, 87) = 3.011$.

DISCUSSION

To compare the three different team games female player of inter-university level in relation to anaerobic capacity and aerobic capacity, one way ANOVA resulted insignificant difference among female volleyball, football and basketball players in their anaerobic capacity as well as in their aerobic capacity. Mostly, these three different team games were of aerobic in nature and for few second, they were anaerobic in nature. This similarity in physiological capacities may be due the similarity in nature of games and training for physical, technical and tactical aspect of the players.

CONCLUSION

It was concluded from the present physiological investigation that the significant difference was not observed among the inter-university level female volleyball, football and basketball Players in their aerobic and Anaerobic Capacity.

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