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Effect of aerobic exercises on physical and physiological variables among college women badminton players

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Abstract

The purpose of the study was to find out the effect of aerobic exercise on selected physical and physiological variables among College women badminton players. To achieve this purpose, 40 women badminton players selected from Chennai were randomly selected as subjects. The age of the subjects were ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each. Group - I underwent aerobic exercises for five days per week for eight weeks and group - II acted as control. The selected criterion variables namely muscular endurance, cardio-respiratory endurance and resting pulse rate were assessed before and after the training period. The collected data were statistically analyzed by using Analysis of Covariance (ANCOVA). From the results of the study it was found that there was a significant change on muscular endurance, cardio-respiratory endurance and resting pulse rate among the aerobic exercise group when compared with the control group.

Keywords: Aerobic exercises, physical and physiological variables, muscular endurance, cardio respiratory endurance and resting pulse rate

Introduction

Today's world is a world of computers and spaceships. The result of such desire is scientific discoveries and their application for excellence. As civilization advances human being's desire to compete with counterpart also increases. The competitive nature of human being is as old as his origin. Competitive sports have developed very rapidly throughout the world in recent years. One of the most exciting and rewarding aspects of life is, the experience of going beyond what were once thought to be limitations. As a result of advanced, systematic scientific and continuous research in the field of physical education and sports, sportsmen have established setting new records in every sports activity which was previously considered as impossible. Sports activities are classified into several areas such as performance sports, physical education, rehabilitation sports, fitness, leisure sports and adventure sports. Each area of sports caters to the requirements and demands of a particular section of the society. The area of performance sports has gained much more publicity and importance than the other areas. During the past twenty years great deals of evidences have been reported by the medical researches supporting the value of vigorous exercise for the promotion of health. Health-related physical fitness components are those, development of which enrich one's health and on the other hand which are related to certain diseases. (Baumgartner and Jackson, 1987) ^[1]. A recent consensus conference also defined fitness, in a broad sense, so as to include both physical fitness and physiological fitness, which extends to biological systems influenced by the level of habitual physical activity (Gutin, 1993) ^[2].

Training is a system of process in which athletes improve their fitness to meet the demands of their sport. Training is a long term process that is progressive and meets individual athletes at their level of fitness and conditioning. Training uses both general and event specific exercises to develop an athlete for their sport. Training is a cyclical process tear down, recovery, super compensation and buildup (adaptation). The word aerobic, meaning with oxygen, to represent idea, even so the dynamics of the idea are more complicated than 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 we eat. Aerobic programs strengthen heart muscle, increase the efficiency of lungs and offer other

wonderful benefits. Aerobic refers to a variety of exercise that stimulates heart and lung activity for a time period sufficiently long to produce beneficial change in the body. Aerobics or endurance exercises are those in which large muscle groups are used in rhythmic repetitive fashion for prolonged periods of time.

By doing aerobics, the whole body is used and major muscle groups including legs, trunk and arm get involved. In aerobic exercise the heart rate increases substantially, but never reaches its maximum level. The heart is always able to deliver sufficient oxygen rich blood to muscles so that they can derive energy from fat and glycogen aerobically. Aerobic exercise builds stamina for sports and it also is the most important form of exercise for health, since it increases the efficiency of heart, circulation and muscles. Aerobic exercise is the keystone of fitness, by doing aerobics; it increases the capillary network in the body. Aerobics is a progressive physical conditioning programme that stimulates respiratory activity for a time period sufficiently long to produce beneficial changes in the body. Aerobic exercise refers to exercise that involves oxygen consumption by the body. Aerobic means "with oxygen", and refers to the use of oxygen in the body's metabolic or energy-generating process. Many types of exercise are aerobic, and are performed at moderate levels of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling

down period at the end.

Methodology

The purpose of the study was to find out the effect of eight weeks aerobic exercise on selected physical and physiological variables among College women badminton players. To achieve this purpose, 40 women badminton players were randomly selected as subjects from Chennai. The age of the subjects were ranged from 18 to 25 years. The subjects were further classified at random into two equal groups of 20 subjects each. Group - I underwent aerobic exercises for five days per week for eight weeks and group - II acted as control. The subjects were assessed on selected criterion variables namely muscular endurance, cardio-respiratory endurance and resting pulse rate before and after the training period. The selected variables were measured by using standard testing procedures (Muscular Endurance: Sit ups Test, Cardio-respiratory Endurance: Coopers 12 Minutes run, Resting pulse rate: radial pulse). The data collected from aerobic exercise and control groups before and after completion of the training period on selected variables were statistically examined by applying analysis of covariance (ANCOVA). All the data were analyzed using SPSS statistical package. The level of confidence was fixed at .05 level of significance. The Analysis of covariance on muscular endurance, cardio-respiratory endurance and resting pulse rate of the pre-test and post test scores of aerobic exercise and control group have been analyzed and presented in the below table.

Table 1: Analysis of co variance on selected variables among aerobic exercise and control groups

| Variable name | Group Name | Control Group | Aerobic exercise group | 'F' Ratio |
|------------------------------|---------------------------|----------------------|------------------------|-----------|
| Muscular endurance | Pre-test Mean \pm S.D | 33.85 \pm 3.94 | 33.30 \pm 4.31 | 0.178 |
| | Post-test Mean \pm S.D. | 34.45 \pm 3.83 | 40.25 \pm 4.25 | 20.53* |
| | Adj. Post-test Mean | 34.18 | 40.52 | 864.84* |
| Cardio respiratory endurance | Pre-test Mean \pm S.D | 1888.50 \pm 115.95 | 1883.50 \pm 114.03 | .019 |
| | Post-test Mean \pm S.D. | 1886.50 \pm 117.62 | 2017.50 \pm 109.68 | 13.27* |
| | Adj. Post-test Mean | 1884.09 | 2019.92 | 304.30* |
| Resting pulse rate | Pre-test Mean \pm S.D | 69.40 \pm 2.26 | 71.40 \pm 1.54 | 10.73 |
| | Post-test Mean \pm S.D. | 70.90 \pm 2.65 | 67.80 \pm 2.59 | 13.99* |
| | Adj. Post-test Mean | 60.65 | 55.98 | 20.92* |

*Significant at .05 level of confidence (The table value required for significance at .05 level of confidence for DF 1 and 38, 1 and 37 was 4.098 and 4.107 respectively)

Above table shows that the adjusted post-test means on muscular endurance of control group and aerobic exercise group are 34.18 and 40.52 respectively. The obtained 'F' ratio value of 864.84 of adjusted post-test data on muscular endurance is greater than the required table value of 4.107 for significance at 0.05 level of confidence with degree of freedom 1 and 37. The adjusted post-test means on cardio-respiratory endurance of control group and aerobic exercise group are 1884.09 and 2019.92 respectively. The obtained 'F' ratio value of 304.30 of adjusted post-test data on cardio-respiratory endurance is greater than the required table value of 4.107 for significance at 0.05 level of confidence with degree of freedom 1 and 37. The adjusted post-test means on resting pulse rate of control group and aerobic exercise group are 60.65 and 55.98 respectively. The obtained 'F' ratio value of 20.92 of adjusted post-test data on resting pulse rate is greater than the required table value of 4.107 for significance at 0.05 level of confidence with degree of freedom 1 and 37. The results of the study showed that there was significant difference among the adjusted post-test means of control group and aerobic exercise group.

Results

The findings of the study shows that significant difference

exists between aerobic training and control group on muscular endurance, cardio respiratory endurance and resting pulse rate since the obtained 'F' ratio of 864.84, 304.30, and 20.92 respectively for adjusted post-test means were greater than the required table value 4.107 for significance at 0.5 level of confidence with DF 1 and 37. The result of the study shows that aerobic exercise has its influence in the selected physical and physiological variables among College women badminton players.

Conclusions

Based on the results of the study, it is concluded that there was a significant difference between aerobic training group and control group on muscular endurance, cardio-respiratory endurance and resting pulse rate. There was a significant improvement on selected criterion variables namely muscular endurance and cardio-respiratory endurance. There was a significant decrease on resting pulse rate between aerobic training group and control group.

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