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Effect of aerobic and anaerobic interval training on selected physical and physiological variable among cricket players

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Abstract

The purpose of the study was to analyse the effect of aerobic and anaerobic interval training on selected physical and physiological variables among cricket players. Thirty men cricket players studying in schools in Deoria, U.P. were selected randomly as subjects. Their age ranged from 15 to 18. Thirty subjects were distributed into three equal groups. Group-I control, group-II aerobic interval training, Group-III anaerobic interval training group, who did not participate in any special training. The experimental groups with varied load and velocity (intensity) underwent their respective training programme for three days in a week for twelve weeks. The data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference. The Scheffé's test was applied as post hoc test to find out the paired mean difference, if any, between the aerobic interval training group; anaerobic interval training group and control group. The level of significance was set at 0.05 levels.

Keywords: Aerobic, anaerobic, speed and agility

Introduction

Any physical activity leads to anatomical, physiological, bio-chemical and psychological changes. The efficiency of a physical activity results from its duration, distance and repetitions (volume); load and velocity (intensity); and the frequency of performance (density). When planning the dynamics of training, consider these aspects, referred to as the variables of training. Model all these variables according to the functional and psychological characteristics of competition. Throughout the training phases preceding a competition, define which component to emphasize to achieve the planned performance objective. As a rule emphasizes intensity for sports of speed and power and volume for endurance sports.

The human body is a machine of wondrous complexity capable of strong and forceful movement. This machine is made up of slightly more than two hundred bones to which are attached better than six hundred muscles. There are numerous factors, which influence performance of sportsman. The physique including size, weight and height play a significant role in his regard. Aerobic capacity describes the functional capacity of the cardio respiratory system, (heart, lungs and blood vessels). Aerobic capacity is defined as the maximum amount of oxygen the body can use during a specified period, usually during intense exercise. It is a function both of cardio respiratory performance and the maximum ability to remove and utilize oxygen from circulating blood. Furlan *et al.*, (1993) [2] stated that the experimental group improved their cardio respiratory fitness, whereas the control group exhibited no such changes. Anaerobic exercise works on particular muscles and their size, endurance, and power. Weight lifting and resistance training are some of the examples of anaerobic exercise. This form of exercise offers many benefits and is a good complement to our aerobic exercise. It may also increase bone thickness. Anaerobic metabolism or anaerobic energy expenditure, is a natural part of whole-body metabolic energy expenditure. Scott, (2005) [7] Fast twitch skeletal muscle (as compared to slow twitch muscle) operates using anaerobic metabolic systems, such that any recruitment of fast twitch muscle fibers will lead to increased anaerobic energy expenditure. Intense exercise lasting upwards of about four minutes (e.g., a mile race) may still have a considerable anaerobic energy expenditure component.

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Anaerobic energy expenditure is difficult to accurately quantify, although several reasonable methods to estimate the anaerobic component to exercise are available.

Procedure and methodology

Selection of subjects

For the present study, sixty men cricket players studying in schools were selected randomly as subjects. Their age ranged from 15 to 18. Thirty subjects were distributed into three equally groups. Group-I control, group-II aerobic interval training, Group-II anaerobic Interval Training Group, who did not participate in any special Training. The experimental groups with varied load and velocity (intensity) underwent their respective training programme for three day in a week for twelve weeks.

Selection of variables

Keeping the feasibility criterion in mind, the following variables were selected for the study.

Dependent variables

Physical variables

- Speed
- Agility

Physiological variables

- Cardio respiratory endurance

Independent variables

- Group-I:** Control group.
- Group-II:** Aerobic interval training group.
- Group-III:** Anaerobic Interval Training Group.

Criterion measures

Speed-50 Mts dash
Speed-50 Mts dash.
Agility-Shuttle run.
Cardio respiratory endurance-12 mint run/walk.

Statistical analysis

The data were analyzed statistically through analysis of covariance (ANCOVA) to find out the significant difference, if any among the groups whenever the obtained 'F' ratio was found to be significant, the scheffe's was applied as post hoc test to find out the paired mean difference, if any, between the aerobic interval training group; anaerobic interval training group and control Group. The level of significance was set at 0.05 level.

Analysis of the data

The analysis of covariance on speed of the pre and posttest scored of aerobic interval training group; anaerobic interval training group and control Group have been analyzed and presented in Table I.

Table 1: Analysis of covariance on speed of aerobic interval training, anaerobic interval training and control groups

| | Group III | Group II | Group I | Source of variance | Sum of squares | Df | Mean squares | F ratio |
|--------------------|-----------|----------|---------|--------------------|----------------|----|--------------|---------|
| Pre test | 8.00 | 8.17 | 8.01 | B | 0.37 | 2 | 0.185 | |
| | | | | W | 23.06 | 57 | 0.404 | 0.45 |
| Post test | 7.60 | 7.57 | 8.28 | B | 6.00 | 2 | 3.00 | |
| | | | | W | 23.00 | 57 | 0.400 | 7.50 |
| Adjusted post test | 7.52 | 7.62 | 8.50 | B | 7.25 | 2 | 3.625 | |
| | | | | W | 16.98 | 56 | 0.303 | 11.96 |

*Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 57 and 2 and 56 are 3.26).

The table I shows that the adjusted post-test means of control, aerobic interval training group and anaerobic interval training group are 8.30, 7.62 and 7.52 respectively on speed. The obtained "F" ratio of 11.96 for adjusted post-test means is more than the table value of 3.26 for df 2 and 41 required for significance at 0.5 level of confidence on speed. The results of the study indicated that there was a significant difference

among the adjusted post-test means of control, aerobic interval training group and anaerobic interval training group on speed. Since, three groups were compared, whenever the obtained 'F' ratio for adjusted posttest was found to be significant, the Scheffe's test to find out the paired mean differences.

Table 2: Analysis of covariance on agility of aerobic interval training, anaerobic interval training and control groups

| | Group III | Group II | Group I | Source of variance | Sum of squares | Df | Means squares | F ratio |
|--------------------|-----------|----------|---------|--------------------|----------------|----|---------------|---------|
| Pre test | 10.41 | 10.47 | 10.40 | Between | 0.05 | 2 | 0.025 | |
| | | | | within | 32.60 | 57 | 0.572 | 0.044 |
| Post test | 9.75 | 9.56 | 10.46 | Between | 9.00 | 2 | 4.50 | |
| | | | | within | 25.00 | 57 | 0.440 | 10.26 |
| Adjusted post test | 9.75 | 9.54 | 10.47 | Between | 9.54 | 2 | 4.77 | |
| | | | | within | 14.53 | 56 | 0.25 | 18.39 |

*Significant at .05 level of confidence.

(The table values required for significance at .05 level of confidence for 2 and 57 and 2 and 56 are 3.26).

The table II shows that the adjusted post-test means of control, aerobic interval training group and anaerobic interval training Group are 10.47, 9.54 and 9.75 respectively on Agility. The obtained "F" ratio of 9.645 for adjusted post-test means is more than the table value of 3.26 for df 2 and 41 required for significance at .05 level of confidence on Agility. The results of the study indicated that there was a significant difference among the adjusted post-test means control,

aerobic interval training group and anaerobic interval training group on Agility.

Discussion and findings

The results of the study showed that there was a significant difference among the aerobic interval training group; anaerobic interval training group, control group on physical and physiological variables. It was showed that there was a

significant improvement on Speed, Agility and Cardio respiratory endurance due to anaerobic interval training group and aerobic Interval Training group.

Conclusions

1. There was a significant difference control, aerobic interval training group and anaerobic interval training group on selected physical variables namely Speed and Agility.
2. And also it was found that there was a significant improvement aerobic interval training group and anaerobic Interval Training group on selected physiological variable namely Cardio respiratory endurance.

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