



P-ISSN: 2394-1685
E-ISSN: 2394-1693
Impact Factor (RJIIF): 5.38
IJPESH 2022; 9(4): 208-209
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www.kheljournal.com
Received: 15-05-2022
Accepted: 18-06-2022

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Combined effect of anaerobic and interval training on maximal voluntary ventilation and vital capacity among volleyball players

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Abstract

The purpose of the study was to assess the combined effect of anaerobic and interval training on maximal voluntary ventilation and vital capacity among volleyball players. To achieve the purpose of the study, thirty college volleyball players from Aditanar Educational Institutions, Tiruchendur, Tuticorin, Tamil Nadu, India were selected as subjects. They have participated in the intercollegiate tournaments for their respective, affiliated university of Manonmaniam Sundaranar University intercollegiate volleyball tournaments and Tamil Nadu Physical Education and Sports University intercollegiate volleyball tournaments. Their age ranged from 18 to 25 years. The thirty subjects were divided into two groups of fifteen (15) subjects each. Group I underwent combined training (anaerobic and interval training), group II acted as control they did not participating any activities. Experimental group have training programmes for 12 weeks in alternative days. For that purpose, the maximal voluntary ventilation and vital capacity selected as dependent variables for this study. Maximal voluntary ventilation and vital capacity measured by spirometry test. Analysis of Covariance (ANCOVA) was applied as statistical tool for the present study. Significant at 0.05 level of significance. The data were examined by applying SPSS measurable package in the computer. The results of the study shows that combined training group have improved their maximal voluntary ventilation and vital capacity compared with control group.

Keywords: anaerobic training, interval training, maximal voluntary ventilation, vital capacity and volleyball

Introduction

Any activity that is strenuous enough to cause lactic acid to develop is considered anaerobic training. It is used by bodybuilders to add muscular bulk and by competitors in non-endurance sports to enhance strength, speed, and power. Anaerobic exercise causes the muscle energy systems to develop differently from aerobic exercise, resulting in improved performance during short-duration, high-intensity exercises that can last anywhere from a few seconds to up to two minutes.

While aerobic exercise is focused on endurance exercises like marathon running or long distance cycling, anaerobic training consists of short strength-based activities like sprinting or bodybuilding. However, all exercises start off anaerobically. Weightlifting, running, and leaping are a few examples of anaerobic exercises. Anaerobic exercises include ones that involve quick, high-intensity action.

Anaerobic exercises mean intense and pushing to the maximum exertion, in a limited or short duration of time. Such an exercise mechanism allows the body to make normally impossible heavy or tasking movements but they cannot be kept up for a long time.

High-intensity work bursts and low-intensity work periods alternate during interval training, a type of physical activity. While the recovery periods could involve either complete rest or low-intensity activities, the high-intensity phases are frequently at or very close to maximal exertion. The structuring of any cardiovascular exercise is referred to as "interval training," which is prevalent in many sports training regimens (for instance, cycling, running, rowing, etc.). Runners are said to employ this type of training the most commonly, however competitors from many sports and backgrounds have been known to do it.

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In the sport of volleyball, which is played by two teams with normally six players per team, a high net is utilised. Before you can return the ball, you want to get it to touch the court inside your opponent's playing area. To prevent this from happening, a member of the opposing team hits the ball up and toward a teammate before it touches the court. Once across the net, that teammate can either volley the ball or bat it to a third teammate who will follow suit. Each team is only allowed three touches of the ball before it must be returned over the net.

Statement of the Problem

The purpose of the study was to assess the combined effect of anaerobic and interval training on maximal voluntary ventilation and vital capacity among volleyball players.

Methodology

To achieve the purpose of the study, thirty college volleyball players from Aditanar Educational Institutions, Tiruchendur, Tuticorin, Tamil Nadu, India were selected as subjects. They have participated in the intercollegiate tournaments for their respective, affiliated university of Manonmaniam Sundaranar University intercollegiate volleyball tournaments and Tamil

Nadu Physical Education and Sports University intercollegiate volleyball tournaments. Their age ranged from 18 to 25 years. The thirty subjects were divided into two groups of fifteen (15) subjects each. Group I underwent combined training (anaerobic and interval training), group II acted as control they did not participating any activities. Experimental group have training programmes for 12 weeks in alternative days. For that purpose, the maximal voluntary ventilation and vital capacity selected as dependent variables for this study. Maximal voluntary ventilation and vital capacity measured by spirometry test.

Analysis of Data

Analysis of Covariance (ANCOVA) was applied as statistical tool for the present study. Significant at 0.05 level of significance. The data were examined by applying SPSS measurable package in the computer. The pre and post test data collected from the experimental and control groups on maximal voluntary ventilation and vital capacity were statistically analyzed by ANACOVA and the results are presented in table-I.

Variable Name	Group Name	Combined Training Group	Control Group	F ratio
Maximal voluntary ventilation	Pre-test Mean \pm S.D	125.12 \pm 2.43	124.98 \pm 2.54	0.323
	Post-test Mean \pm S.D.	131.14 \pm 2.54	125.14 \pm 2.58	5.24*
	Adj. Post-test Mean \pm S.D.	9.02	10.02	85.23*
Vital capacity	Pre-test Mean \pm S.D	4.13 \pm 1.56	4.13 \pm 1.63	0.365
	Post-test Mean \pm S.D.	4.15 \pm 1.48	4.61 \pm 1.83	6.84*
	Adj. Post-test Mean \pm S.D.	4.13	4.56	95.14*

* (The required table value for significance at 0.05 level of confidence with degrees of freedom 1 and 27 is 4.21 and degree of freedom 1 and 28 is 4.20.)

*Significant at .05 level of confidence

The obtained 'f' ratio value is 5.24 of maximal voluntary ventilation was greater than the required table value of 4.21 for the degrees of freedom 1 and 27 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of combined anaerobic and interval training improved maximal voluntary ventilation of the subjects was significantly.

The obtained 'f' ratio value is 6.84 of vital capacity was greater than the required table value of 4.21 for the degrees of freedom 1 and 27 at 0.05 level of confidence. Hence it was concluded that due to the effect of twelve weeks of combined anaerobic and interval training improved vital capacity of the subjects was significantly.

Conclusions

Based on the results of this study the following conclusions were drawn by the investigator It was concluded that the selected criterion variables such as maximal voluntary ventilation and vital capacity were significant difference between combined training group and control group of men volleyball players.

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