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Combined effect of anaerobic and interval training on explosive power and muscular endurance 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 explosive power and muscular endurance 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 explosive power and muscular endurance selected as dependent variables for this study. Explosive power and muscular endurance measured by sergeant jump and sit-ups 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 explosive power and muscular endurance compared with control group.

Keywords: anaerobic training, interval training, explosive power, muscular endurance and volleyball

Introduction
Anaerobic training is any exercise difficult enough to produce lactic acid in the body. Bodybuilders utilise it to bulk up their muscles, while athletes competing in non-endurance sports use it to increase their strength, speed, and power. Anaerobic exercise improves performance during short-duration, high-intensity workouts that can last anywhere from a few seconds to up to two minutes because it causes the muscular energy systems to develop differently than aerobic exercise. Aerobic metabolism is largely involved in any action lasting more than two minutes. The focus of aerobic exercise is on endurance activities like marathon running or long distance cycling, whereas anaerobic training consists of short strength-based sessions like sprinting or bodybuilding. However, every action starts off anaerobically. Jogging, lifting weights, and leaping are examples of anaerobic exercises. Anaerobic exercises include rapid, high-intensity motions. Quick, intensive, and physically demanding activities are referred to as anaerobic activities. Such a system for exercising allows the body to do strenuous or difficult actions that are normally impossible, but they cannot be sustained for a long time.

A type of physical activity known as interval training alternates periods of high-intensity labour with periods of low-intensity exertion. The high intensity periods are frequently performed at or very close to maximal effort, whilst the recovery intervals may involve either complete rest or activities of lower intensity.

A prevalent practise in many sports training regimens is interval training, which is the structuring of any cardiovascular exercise (for instance, cycling, running, rowing, etc.). Although this type of training has been used by athletes of many backgrounds, runners are said to employ it the most frequently.

A high net is used in the game of volleyball, which is played by two teams with typically six players per team. The goal is to get the ball to touch the court inside your opponent's playing area before you can return it. Before the ball reaches the court, a player on the other team bats it up and toward a teammate to stop this from happening. That teammate can then volley the ball across the net or bat it to a third teammate who will do the same. Only three touches of the ball are permitted per team before the ball 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 explosive power and muscular endurance 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 explosive power and muscular endurance selected as dependent variables for this study. Explosive power and muscular endurance measured by sergeant jump and sit-ups 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 explosive power and muscular endurance were statistically analyzed by ANACOVA and the results are presented in table-I.

Variable Name	Group Name	Combined Training Group	Control Group	F ratio
Explosive power	Pre-test Mean ± S.D	56.12 ± 0.83	55.87 ± 0.95	0.638
	Post-test Mean ± S.D.	66.28 ± 0.95	56.17 ± 0.92	7.86*
	Adj.Post-test Mean ± S.D.	64.29	56.02	68.45*
Muscular endurance	Pre-test Mean ± S.D	34.21 ± 1.23	34.65 ± 1.36	0.454
	Post-test Mean ± S.D.	38.36 ± 1.35	34.52 ± 1.31	8.23*
	Adj.Post-test Mean ± S.D.	37.23	34.59	56.23*

* (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 7.86 of explosive power 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 explosive power of the subjects was significantly.

The obtained 'f' ratio value is 8.23 of muscular endurance 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 muscular endurance 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 explosive power and muscular endurance were significant difference between combined training group and control group of men volleyball players.

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