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Impact of endurance training on cardio-vascular efficiency among kabaddi players

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Abstract

The purpose of the present investigation was to determine the impact of endurance training on cardiovascular efficiency among Kabaddi players. To achieve this thirty physically active and interested students (N = 30) were selected as subjects and their age group ranged between 16 and 18 years. The subjects were categorized into two groups randomly. Group I endurance training group (EG), group II control group (CG) and both group had fifteen (N = 15) subjects. Both experimental groups underwent their respective experimental treatment for eight weeks, 3 days a week and a session on each day. Control group was not exposed to any specific training programme apart from their curriculum. Cardiovascular efficiency was selected as dependent variable for this study. The collected data was analysed using t-test, to test significant difference between mean. The result of the study revealed that endurance training produced significant improvement on cardiovascular efficiency ($p \leq 0.05$) as compared to control group (CG).

Keywords: Endurance, cardiovascular efficiency, kabaddi players

1. Introduction

Youth sports have become more popular and in many ways, more competitive. Many young players and their parents are seeking way to achieve a high performance. The physical education and sports scientists have been trying to develop new methods of training and techniques to attain higher level of performance in sports. Physical fitness is one of the most important factors that determine the performance level of an individual. Endurance training is an anaerobic form of exercise. It is caused to enhance the ability of the body to perform at very high force or power outputs for a very short period of time (Baechle, 1994) [1]. Endurance training is a muscle training programme in which the amount of endurance is systematically increased as the muscles gain in strength (Jensen & Fisher, 1979) [6]. The adaptation changes and health implications of endurance exercise are very dynamic and variable to each individual. It is nothing but weight training. In strength training load refers to the mass or amount of weights utilized for specific exercises. It is an anaerobic form of exercises (Teng *et al.*, 2008). Endurance training can be performing with and without equipments. It will help to improve the working capacity of muscle and muscular system. The percentage of one repetition maximum method was used in this training programme. In endurance training, gradually increasing the work volume is known as the progressive method. In the present investigation for the progressive endurance training group, progression was achieved by increasing the intensity by 5% every week. In the alternate low and high intensity endurance, the intensity is first decreased and then increased during alternative weeks for recovery and overload respectively. In this study, for the alternate low and high intensity endurance training group, the intensity was first decreased during the first week and then increased in the second week. This progression was maintained throughout the experimental period Cardio-vascular efficiency is a common term used in physical fitness and conditioning and is often considered an essential element of many sports and activities. A boxer dodging a number of punch, a ballet dancer completing a long period of dance, or a wrestler finishing a take-down could all be considered examples of Cardio-vascular efficiency. However, individuals involved in the development and improvement of sports performance often regard Cardio-vascular efficiency as a locomotors skill whereby an athlete perform in sport for long time.

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This type of movement is frequently observed in most field and court sports such as soccer, basketball, football, and lacrosse. In this light Cardio-vascular efficiency is commonly defined as the ability of heart and lungs to take in and to transport adequate amounts of oxygen to the working muscles for activities that involve large muscles massed, to be performed over long periods of time. (Clarke and Clarke 1987).

Materials and method

The purpose of the study was to analyze the effects of endurance training on Cardio-vascular efficiency of Kabaddi players. To achieve this, Thirty (N = 30) interested students of schools and colleges from Hisar District, Haryana, were randomly selected as subjects and their age ranged between 16 to 18 years. The subjects are categorized into two groups

randomly: Group I endurance training group (EG), group II control group (CG) and each group had fifteen (N = 15) players as subjects. Cardio-vascular efficiency was selected as variable for this study. The Cardio-vascular efficiency was measured by using Harvard step test (Lucien Brauwa, 1943). Control group was not exposed to any special training apart from their regular activities. In training, the intensity was decreased and increased in alternative weeks. The training groups underwent their respective training for eight weeks, 3 days per week and a session on each day. Before the commencement of the experimentation, the investigator recorded 1RM for the group taking each subject separately. The endurance training involved long running, circuit training and sand running. These exercises were performed for 90 minutes in a day with a medium intensity. Data were collected one day before and after the experiment.

Table 1: Percentage of Intensity, Repetitions and Sets of Training for Experimental Group

Groups	Components	Weeks							
		I	II	III	IV	V	VI	VII	VIII
Endurance training	Intensity in percentage	55	50	65	60	75	70	85	80
	Repetitions	8 - 10	10 - 12	8 - 10	8 - 10	8 - 10	6 - 8	6 - 8	6 - 8
	Sets	2	2	2	2	2	2	2	2

Data Analysis

Mean and standard deviation were calculated for Cardio-vascular efficiency of training group, and the data were analyzed by using t-test and find out the significant difference between the means. All analysis was carried out using graph pad on line statistics software and statistical significance was set to priority at p<0.05.

Results

Cardio-vascular Efficiency

Table 1: To find out significant difference between Experimental Group and Control Group at pre-test level

	Pre-test			SED	t
	N	Mean	S.D.		
Training Group	15	70.18	5.40	2.15	1.02
CG	15	70.29	5.55		

*Significant, p 0.05. (df = 28)

The mean, SD and t-test were applied on cardio-vascular efficiency of the pre mean scores of endurance training and control groups have been analysed and presented in Table - I. The above table indicates that the pre test mean of Endurance Training group and control group is 70.18 and 70.29 respectively. The pre test SD of Endurance Training group and control group is 5.40 and 5.55 respectively. The obtained 't' value for pre-test mean on cardio-vascular efficiency was 1.02, which was less than table value of 1.96 at 0.05 level of confidence; hence there was no significance difference in cardio-vascular efficiency between experimental and control groups at initial level and it was presented in Table-I.

Table 2: To find out significant difference between Experimental Group and Control Group at pre-test level

	Post-test			SED	t
	N	Mean	S.D.		
Training Group	15	78.14	6.62	.94	7.32
CG	15	72.58	5.43		

*Significant, p 0.05. (df=28)

The mean, SD and t-test were applied on cardio-vascular efficiency of the post mean scores of endurance training and

control groups have been analysed and presented in Table - II. The above table indicates that the post test mean of Endurance Training group and control group is 78.14 and 72.58 respectively. The post test SD of Endurance Training group and control group is 6.62 and 5.83 respectively. The obtained 't' value for post test mean on cardio-vascular efficiency was 7.32, which was more than table value of 1.96 at 0.05 level of confidence; hence there exist difference in cardio-vascular efficiency between experimental and control groups. Since, two groups were compared, whenever obtained 't' ratio for post test was found to be significant and it was presented in Table II.

Conclusion

Aerobic exercise helps to develop or maintain physical fitness and overall health. It is evident from a number of the adaptations that occur with endurance training that there are several health-related benefits. Endurance training has been shown to increase factors associated with cardiovascular endurance. From the results, the different modes of endurance training can be improved cardiovascular endurance during the age between 15 and 18 years of student, any physical exercise application requires careful implementation and individual experimentation. The result of the study showed that there was significant improvement on cardiovascular endurance due to eight weeks of high and low endurance training. From the results, we recommend that endurance training is the best methods to improve cardiovascular endurance.

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