EFFECTS OF INTERVAL TRAINING ON SELECTED CARDIOVASCULAR ENDURANCE AND KICKING AMONG MALE FOOTBALL PLAYERS

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ABSTRACT

The present study was designed to analyze the influence of interval training on selected cardio respiratory endurance and kicking college level male football players. Interval training selected as independent variables for this study. To achieve the purpose of the study, 30 football players studying in the NSS College of Engineering, Palakkad and Kerala. The age of the subjects ranged from 18 to 23 years. The selected subjects were randomly assigned to one experimental groups and one control group of fifteen (n=15) each for experimental group I (Group I) and control group (Group II). Group I underwent interval training, Group I underwent circuit training for duration of 12 weeks. The control group (Group II) was asked to refrain from any special training except their regular practice and playing schedule. All the subjects of two groups were tested on selected cardio respiratory endurance and kicking before and after the treatment. The analyses were carried out through various statistical techniques such as the dependent t-test, the analysis of covariance (one-way ANCOVA). Whenever the 'F' ratio for adjusted test was found to be significant, the Scheffe's test was applied as post-hoc test to find out paired mean difference. In all the cases 0.05 level was fixed as significant level. The results were drawn accordingly.

KEYWORDS: cardio respiratory endurance and kicking, Training and Football

INTRODUCTION

Soccer requires peak physical conditioning of its players to be played at the highest level. The only way to achieve this level of conditioning is training, specifically for soccer and the amount of running done in a match. The benefits of this training vary from better performance on the pitch (soccer field) for longer amounts of time to a decreased chance of injury or cramping before, during and after a match. Also, the better conditioned a player is, the more likely he is to perform with the same amount of skill necessary when passing, dribbling and shooting at the end of the game as the beginning. At any level above a school level, soccer limits the amount of substitutions a team can make. Therefore, any player who tires easily becomes a liability. Two types of running should be done to improve and maintain a player's fitness. The first is "offseason" training. It should be done two weeks after the previous season ends and should finish 10 days before the next season begins. The focus should be on maxing out potential and increasing gains in speed, recovery and endurance. The second type is "in-season" training, which should be done before and after games. It needs to focus on maintaining endurance and muscle recovery. Training should not be done more than 12 to 15 minutes after a game, unless its stretching and loosening the muscles through light jogging (Scott, 2012).

Interval Training

Interval training is a type of physical training that involves bursts of high-intensity work interspersed with periods of low-intensity work. The high-intensity periods are typically at or close to near-maximum exertion, while the recovery periods may involve either complete rest or activity of lower intensity. Interval training provides benefits to any healthy person such as improving fitness, health, speed and stamina; it's a very demanding type of activity and certainly not one you would want to fly into without adequate preparation. Interval training can refer to organization of any cardiovascular workout (e.g. cycling, running, rowing, etc.), and is prominent in many sports' training. It is a technique particularly employed by runners, but athletes from several backgrounds have been known to use this type of training. It is of two types: slow and fast interval training method. High Intensity Interval Training (HIIT) is about mixing high intensity bursts of exercise with moderate intensity recovery periods. It's brutal but has incredible advantages. It's the quickest way to get in fit, lose fat and supercharge for sports performance. It all about increasing one's anaerobic threshold and this may be more important than your VO_2 max.

Statement of the Problem

The purpose of the present study was to analyze the effects of interval training on selected cardio-respiratory endurance and kicking among college level male football players.

Hypotheses

It has been significantly accepted that any systematic training over a period of time would lead to produce changes on cardio-respiratory endurance and kicking qualities. Based on this concept the following research hypotheses were formulated.

1. There would be significant improvement on selected cardio-respiratory endurance and kicking due to the effect of interval training in experimental groups.
2. There would be significant improvement difference on selected dependent variables among the experimental groups.

Delimitations

The study was delimited to the following factors.

1. To achieve the purpose of the study, We have to select 30 male football players who were Studying NSS College of Engineering, Palakkad, Kerala. The selected subjects were divided into one experimental groups and one control group with fifteen subjects (n=15) in each group. Experimental Group I (HIITG=15) underwent interval training, and Group II served as control group (CG=15).
2. The following dependent variables were selected for this study, cardio- respiratory endurance and kicking. The duration of the training period was restricted to 12 weeks and the number of sessions per week was confined to four.
3. The level of significance fixed at 0.05 level was considered to be appropriate.
4. The data should be collected prior to and immediately after the training period.

Limitations

The following factors are the limitations of the study since the researcher could not control them.

1. No effort was put in to find out the effect of environmental changes during pre-tests and post-tests and the training period.
2. The subjects need to be motivated verbally; no attempt was made to differentiate their motivation level during testing and training period.
3. Social status, food habits and the way of life style, which could influence on the results, could not be controlled by the researcher personally though orientation was given about these aspects to the subjects.
4. Previous experience in training was not considered.

Selection of Subjects

For the present study, we have to select 30 male football players studying in NSS College of Engineering, Palakkad, Kerala. The age of the subjects ranged between 18 and 23 years. The selected subjects may divided into one experimental groups and one control group with fifteen subjects (n = 15) in each group. Experimental Group I (HIITG = 15) underwent interval training and control group (CG = 15). All subjects are informed about the nature of the study and their consent was obtained to co- operate till the end of the experiment and testing period. Pilot study groups and experimental groups (namely HIITG) are trained-up in which three modes of training were given independently with separate subjects in each group. A qualified physician examined the subjects medically and declared them fit for the study.

Selection of Variables

Dependent Variables

1. Cardio-respiratory endurance
2. Kicking

Independent Variables

1. Interval training

Selection of Tests

Variables	Test	Unit of Measurement
Cardio-respiratory endurance	9minutes run/walk	in meters
Kicking	Mor. Christian Skill Test	in meters

Collection of Data

The data on selected dependent variables should be collected by conducting pre-tests and post-tests, two days before and after the training programme respectively. On the first day were tested where as cardio- respiratory endurance and kicking.

Experimental Design

The experimental design used for this study was random group design involving 30 subjects, who were divided at random into two groups of fifteen each. This study consisted of one experimental group. Group I underwent interval training and Group II acted as control group. All the subjects should be tested prior to and after the experimentation on cardio- respiratory endurance and kicking

Training Programme

During the training period, the experimental groups underwent their respective training programmes four days per week on alternate days for 12 weeks in addition to their regular physical activities. Experimental Group I (HIITG) underwent interval training. Before the commencement of the experimentation and at the middle of the training period (after 6 week), the investigator recorded the target heart rate for interval training. The details are cited in training schedule. The experimental Groups I performed their training at different velocities. Training volume and intensity should increase progressively on different phases. The training schedule for experimental groups every day the workout lasted for 40 to 50 minutes approximately. Group II served as the control group. However, they are involved in regular activities as per the daily routine. The subjects underwent their respective training programme under strict supervision of the investigators, and experts in the field of Physical Education. Prior to every training session, subjects underwent 5 -10 minutes warm-up exercises, which included jogging, stretching and striding. All the subjects involved in the training programmes were questioned about their stature throughout the training period.

Statistical Techniques Used

The data should collect from the two groups before and after the experimental period were statistically examined for significant improvement by using analysis of covariance. Whenever the 'F' ratio for adjusted post-test was found to be significant. In all cases the criterion for statistical significance was set at 0.05 level of confidence ($P < 0.05$).

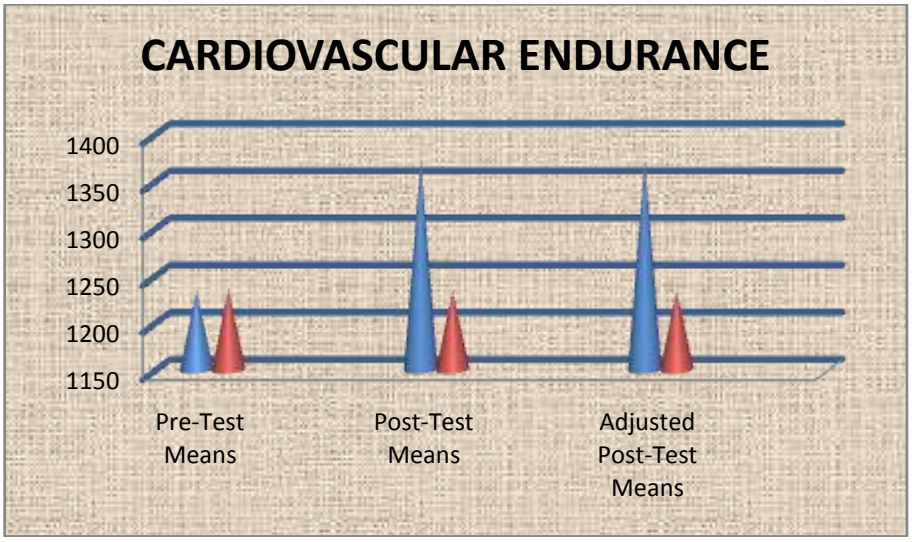
Results and discussion Table - 1

COMPUTATION OF ANALYSIS OF COVARIANCE OF MEAN OF HIGH INTENSITY INTERVAL TRAINING AND CONTROL GROUP ON CARDIOVASCULAR ENDURANCE

	HIITG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	1233.66	1236.06	BG	805.91	2	402.95	1.08
			WG	15619.86	43	371.90	
Post-Test Means	1371.93	1233.73	BG	301416.84	2	150708.42	932.01*
			WG	6791.46	43	161.70	
Adjusted Post-Test Means	1372.50	1233.96	BG	294809.17	2	147404.59	930.56*
			WG	6494.55	42	158.40	

An examination of table - 1 indicated that the pre test means of high intensity interval training and control group were 1233.66 and 1236.06 respectively. The obtained F-ratio for the pre-test was 1.08 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 43. This proved that there were no significant difference between the experimental and control group indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the high intensity interval training and control group were 1371.93 and 1233.73 respectively. The obtained F-ratio for the post-test was 932.01 and the table F-ratio was 3.22. Hence post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 43. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the high intensity interval training and control group were 1372.50 and 1233.96 respectively. The obtained F-ratio for the adjusted post-test means was 930.56 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there was a significant difference among the means due to the experimental trainings on Cardio-respiratory endurance.

Figure I Pre Post and Adjusted Post Test Differences of The High Intensity Interval Training and Control Group on Cardio-Respiratory Endurance



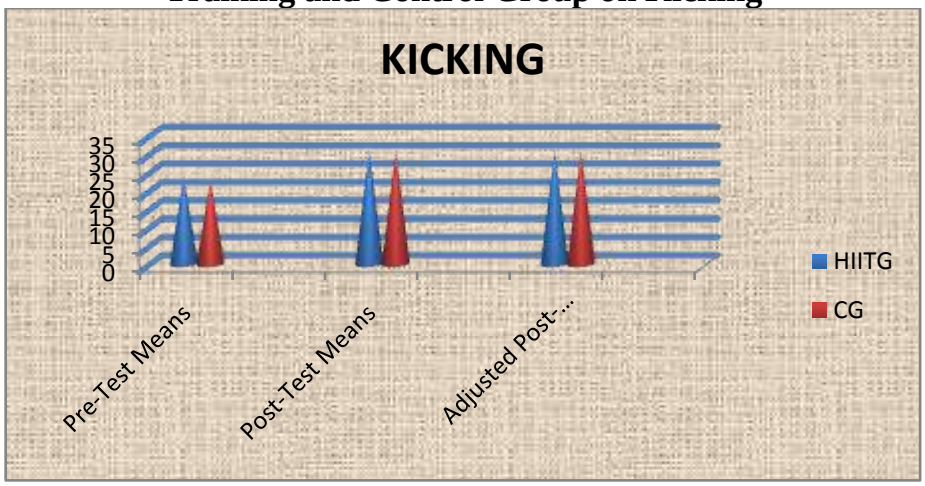
Results and discussion Table - 1I

COMPUTATION OF ANALYSIS OF COVARIANCE OF MEAN OF HIGH INTENSITY INTERVAL TRAINING AND CONTROL GROUP ON KICKING

	HIITG	CG	Source of Variance	Sum of Squares	df	Means Squares	F-ratio
Pre-Test Means	24.00	22.93	BG	8.57	2	4.28	0.48
			WG	374.53	43	8.91	
Post-Test Means	31.06	30.93	BG	92.84	2	46.42	5.75*
			WG	338.80	43	8.06	
Adjusted Post-Test Means	31.02	30.73	BG	94.78	2	47.39	5.76*
			WG	336.77	42	8.21	

An examination of table - II indicated that the pre test means of interval training and control group were 24.00 and 22.93 respectively. The obtained F-ratio for the pre-test was 0.48 and the table F-ratio was 3.22. Hence the pre-test mean F-ratio was insignificant at 0.05 level of confidence for the degree of freedom 2 and 43. This proved that there were no significant differences between the experimental groups indicating that the process of randomization of the groups was perfect while assigning the subjects to groups. The post-test means of the interval training and control group were 31.06 and 30.93 respectively. The obtained F-ratio for the post-test was 5.75 and the table F-ratio was 3.22. Hence post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 43. This proved that the differences between the post test means of the subjects were significant. The adjusted post-test means of the interval training and control group were 31.02 and 30.73 respectively. The obtained F-ratio for the adjusted post-test means was 5.76 and the table F-ratio was 3.23. Hence the adjusted post-test mean F-ratio was significant at 0.05 level of confidence for the degree of freedom 2 and 42. This proved that there was a significant difference among the means due to the experimental trainings on kicking.

Figure II Pre Post and Adjusted Post Test Differences of The High Intensity Interval Training and Control Group on Kicking



Conclusions

From the analysis of the data, the following conclusions were drawn:

1. The high intensity interval training improved the cardiovascular endurance variables among the college level football players.

2. The high intensity interval training improved the kicking variables among the college level football players.

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