INTERNATIONAL RESEARCH JOURNAL OF PHYSICAL EDUCATION AND SPORTS SCIENCES
ISSN: 2394 –7985 PEER REVIEWED ONLINE
VOLUME: II ISSUE: II AUGUST 2015

EFFECT OF CONTINUOUS RUNNING AND FARTLEK TRAINING ON CARDIO RESPIRATORY ENDURANCE AND MUSCULAR ENDURANCE OF FOOTBALL PLAYERS

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Abstract:

The purpose of this study was to find out the effect of continuous running and fartlek training on cardio respiratory endurance and muscular endurance of football players. For this study, forty five subjects were selected randomly from Cheyyar Town, Tamil Nadu state and their age ranged from eighteen to twenty three years. The subjects were divided into three group's two experimental groups and one control group. The two experimental groups were subjected to a training programme for twelve weeks. Continuous running was administered to group I consist of fifteen players; fartlek training was administered to group II consist of fifteen players and group III consist of fifteen players served as a control group. Test was conducted for cardio respiratory endurance and muscular endurance before and after twelve weeks training programme and data was collected and analyzed statistically by Analysis of covariance to find out the significant level. The finding of the study revealed that there was a beneficial effect on cardio respiratory endurance and muscular endurance for both the experimental groups when compare to the control group. There was no significant difference between the continuous running and fartlek training on cardio respiratory endurance and muscular endurance.

Keywords: Continuous Running, Fartlek Training, Cardio Respiratory Endurance, Muscular Endurance and Football Players.

Introduction:

The sports performance depends largely on physical fitness. Sports activity is a physical activity which is not possible without these motor abilities. Therefore the improvement of physical fitness or motor abilities is a principal aim of sports training. The process of improvement of physical fitness also includes the improvement of general health and organic functions as well as the increasing the strength and stability of the musculoskeletal system. The physical fitness can be differentiated into general land of specific fitness. Each sports activity demands different types and different levels of motor abilities and the specific physical fitness. Continuous training is a type of sports training that involves activity without rest. This type of training may be of high intensity, of moderate intensity with an extended duration, or fartlek training. Continuous training means the person training uses 60-80% of their energy for a period of at least 60 minutes at least four or five times a week. This method suits long distance runners

as well as tennis and football players etc., because it means that their endurance levels will be increase, and it is the way which they would normally compete. Continuous training is a good way for an athlete to build up their cardio-vascular endurance levels. Fartlek is a swedish term which means 'speed play' and has been used by distance runners. Fartlek is a form of road running or cross-country running in which the runner, usually changes the pace significantly during the run. Fartlek is similar to interval training in that short fast runs alternate with slow running or jogging recovery intervals. There is no predetermined schedule to follow, but instead the athlete will set her/his own interval length and pace in response to their own feeling of the workload.

Objectives of the Study:

- The main objective of the study was to find out the effect of continuous running and fartlek training on cardio respiratory endurance and muscular endurance of football players.

Hypotheses of the Study:

- It is hypothesis that the effect of continuous running and fartlek training on cardio respiratory endurance and muscular endurance variables would be significantly increase when compared with the control group.
- It is hypothesis that the fartlek training on cardio respiratory endurance and muscular endurance variables would be significant changes when compare with the continuous running group.

Methodology:

To achieve these purpose forty five football players were selected randomly, from Cheyyar, Thiruvannamalai District of Tamilnadu, India. The age of the subjects were ranged between eighteen to twenty three years. They were simplified into three groups. Each group consist of fifteen subjects, which were assumed to be appropriate for the purpose of the study. The experimental treatment assigned as continuous running and fartlek training to the two experimental groups, which was stipulated for twelve weeks (three alternate days per week) they participated in the research voluntarily and cheerfully without any compulsion. The experimental design used for this study was formulated as simple random group design involving forty five subjects, who were divided at random into three groups of fifteen each. They were simplified into three group's namely experimental group I, experimental group II and control group. Each group consist of fifteen students each, which were assumed to be appropriate for the purpose of the study. Control group did not go for any training. All the subjects tested prior and after the experimental treatment periods on selected criterion variables of physical variables namely Cardio- respiratory Endurance was measured by Cooper's 12 minute run / walk test and Muscular Endurance was measured by Bent knee Sit up Test. The data were collected from the three groups on cardio- respiratory endurance and muscular endurance. The data were statistically examined to find out whether there is any significant difference by applying the analysis of co-variance (ANCOVA). Hence to make adjustment for difference in this initial means and test the adjusted post test means of significant difference, the analysis of covariance

was used. Since three groups were involved, whenever the 'f' ratio was found to be significant for adjusted post test means, Scheffe's test was followed as a post hoc test to determine which of the paired means difference was significant. In all the cases to test the significance, 0.05 level of confidence was utilized.

Table-I

Analysis of Covariance for Cardio-Respiratory Endurance on Pre-test and Post Test Data of Experimental and Control Groups (in Meters)

Tests	Continuous Running Group	Fartlek Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre Test Mean SD	2740.7 232.92	2812.7 93.84	2811.3 133.46	B W	50897.78 1132160.0	2 42	25448.89 26956.19	.944
Post Test Mean SD	2886.7 112.55	2941.3 47.938	2766.0 100.06	B W	241453.33 349666.67	2 42	120726.67 8325.40	14.50*
Adjusted Post Test Mean	2909	2930	2755	B W	271097.39 103369.89	2 41	135548.70 2521.22	53.76*

** Significant at 0.05 level, The Required table for df (2&42) at 0.05 level of confidence = 3.22 (2&41) at 0.05 level of confidence = 3.21*

It is derived from table - I that the pre test means on cardio respiratory endurance of the experimental and control groups are 2740.7, 2812.7 and 2811.3 respectively. The obtained 'F' ratio value 0.944 for the pre test mean is lesser than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 level of confidence. There is no significant difference between the experimental and the control groups on cardio respiratory endurance for the pre test data. The post test means on cardio respiratory endurance of the experimental and the control groups are 2886.7, 2941.3 and 2766.0 respectively. The obtained 'F' ratio value 14.50 for the post test data is greater than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 levels of confidence.

Table No-II

Scheffes Post-Hoc Test for Mean Difference between Groups on Cardio Respiratory Endurance (in Meters)

Mean Value			Mean Difference	'F' Value	C.I
Continuous Running	Fartlek Training	Control Group			
2909	2930		21	1.35	6.42
2909		2755	154	72.36*	6.42
	2930	2755	175	93.44*	6.42

Table II shows the paired mean difference among the three groups' namely continuous running and fartlek training and control group. The mean difference between continuous running

and fartlek training is 21, were the f value of mean gains between the continuous running and fartlek training is 1.35, which is lower than the C.I value. Therefore is no significant difference between continuous running and fartlek training. The mean difference between the continuous running and control group is 154, were the f value of mean gain between the continuous running and control group is 72.36, which is higher than the C.I value. Therefore is significant difference between fartlek training and control group. The mean difference between the fartlek training and control group is 175, were the f value of mean gain between the fartlek training and control group is 93.44, which is higher than the C.I value.

Figure – I Graphical Illustration of Pre - Test, Post -Test And Adjusted Post -Test Means of Experimental and Control Groups on Cardio Respiratory Endurance(in Meters)

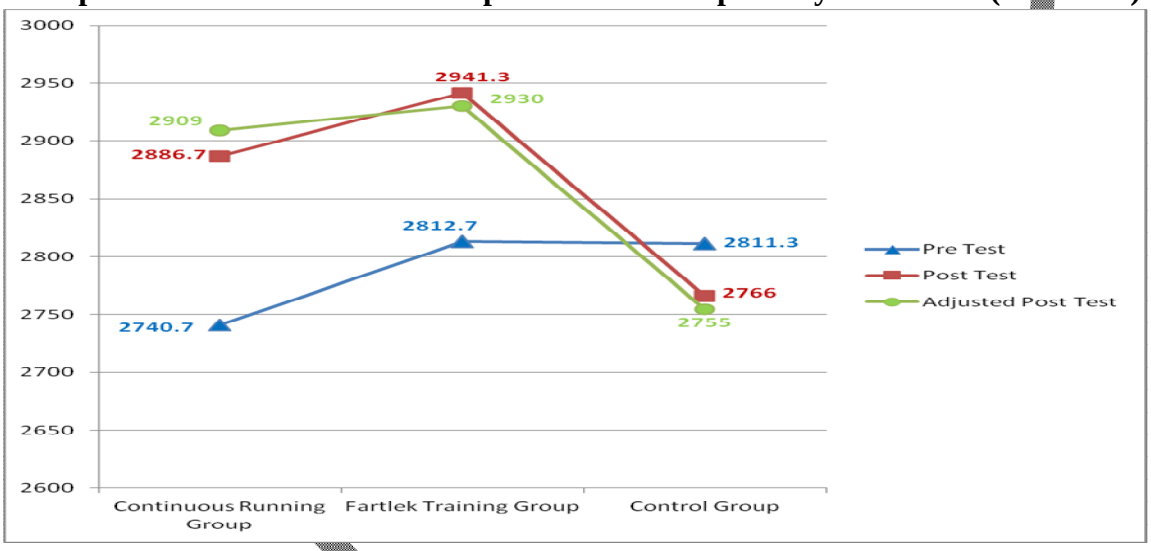


Table No-III

Analysis of Covariance for Muscular Endurance on Pre Test and Post Test Data of Experimental and Control Groups (in Counts)

Tests	Continuous Running Group	Fartlek Training Group	Control Group	Source of Variance	Sum of Squares	df	Mean Squares	'F' Ratio
Pre Test Mean	26.20	31.27	28.80	B	192.58	2	96.29	.650
SD	9.586	16.104	9.645	W	6219.73	42	148.09	
Post Test Mean	30.07	35.47	26.73	B	582.71	2	291.36	2.64
SD	7.7687	14.569	7.620	W	4629.60	42	110.23	
Adjusted Post Test Mean	32.21	33.36	26.70	B	380.55	2	190.28	29.42*
				W	265.19	41	6.47	

** Significant at 0.05 level.*

The Required table for df (2&42) at 0.05 level of confidence = 3.22

(2&41) at 0.05 level of confidence = 3.21

It is derived from table - III that the pre test means on muscular endurance of the experimental and control groups are 26.20, 31.27 and 28.80 respectively. The obtained 'F' ratio value 0.650 for the pre test mean is lesser than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 level of confidence. There is no significant difference between the experimental and the control groups on muscular endurance for the pre test data.

The post test means on muscular endurance of the experimental and the control groups are 30.07, 35.47 and 26.73 respectively. The obtained 'F' ratio value 2.64 for the post test data is lesser than the required table value 3.22 for 2 & 42 degrees of freedom at 0.05 levels of confidence. It shows that there is no statistically significant difference between the experimental and the control groups on muscular endurance after the experimental training.

Table No - IV

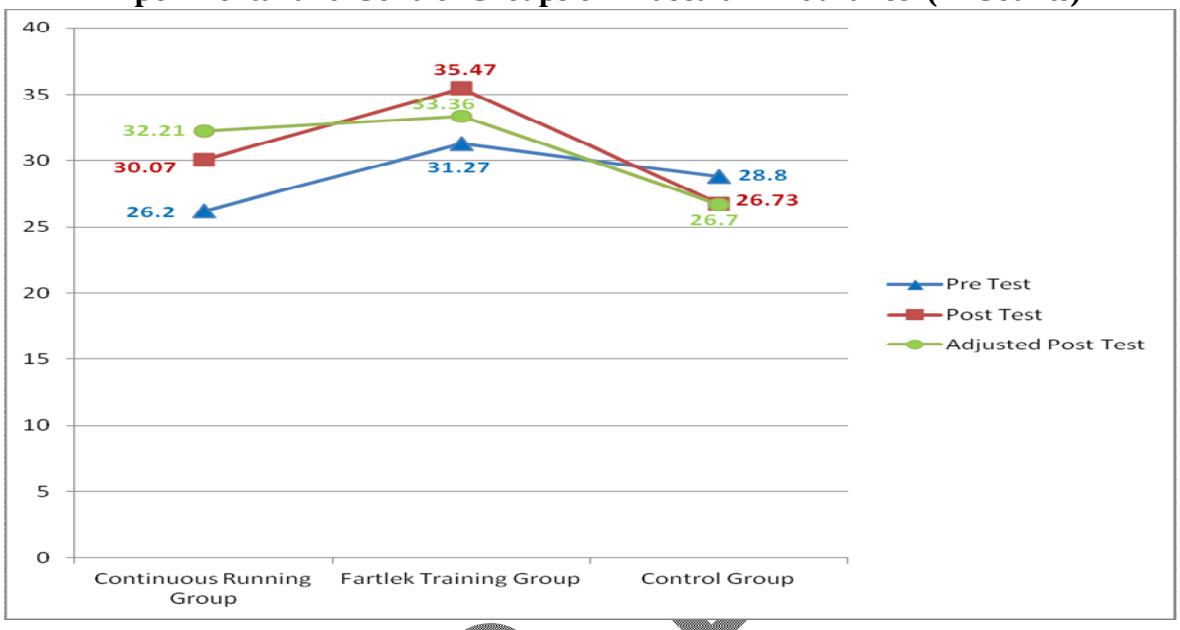
Scheffe's Post-Hoc Test for Mean Difference between Groups on Muscular Endurance (in Counts)

Mean Value			Mean Difference	'F' value	C.I
Continuous Running	Fartlek Training	Control Group			
32.21	33.36		1.15	1.57	6.42
32.21		26.70	5.51	36.096*	6.42
	33.36	26.70	6.67	52.74*	6.42

Table IV shows the paired mean difference among the three groups' namely continuous running and fartlek training and control group. The mean difference between continuous running and fartlek training is 1.15, where the f value of mean gains between the continuous running and fartlek training is 1.57, which is lower than the C.I value. Therefore there is no significant difference between continuous running and fartlek training. The mean difference between the continuous running and control group is 5.51, where the f value of mean gain between the continuous running and control group is 36.096, which is higher than the C.I value. Therefore is significant difference between fartlek training and control group. The mean difference between the fartlek training and control group is 6.67, where the f value of mean gain between the fartlek training and control group is 52.74, which is higher than the C.I value. So there is significant difference between fartlek training group and control group.

Figure - II

Graphical Illustration of Pre - Test, Post -Test and Adjusted Post -Test Means of Experimental and Control Groups on Muscular Endurance (in Counts)



Discussion on Findings:

Cardio Respiratory Endurance:

The result of the study reveals that there was no significant difference between pre test experimental and control groups. But the twelve weeks of continuous running and fartlek training results in significantly improved Cardio respiratory endurance for post test experimental groups than the control group. From the findings of sakthignanavel (1995), stated that continuous running had significantly improved cardio respiratory endurance than the control group. It is also similar findings from vaithianathan (1998), subramanian tamizhappan (2010), johnson (1992), gopinath (2011), karthikeyan (2011), senthilvelan (2011), wise blessed singh (2011) jayasivarajan (2011) and laura lorson (2011).

Muscular Endurance:

The result of this study reveals that there was no significant difference in muscular endurance in the pre test and the post tests of the experimental and the control groups. But there is significant difference in the adjusted post test mean due to the twelve weeks of the training programme. From the findings of vinod kumar (2009), stated that fartlek training had significantly improved muscular endurance than the control group. It is also similar findings from chidambara raja (1992), vaithianathan (1998), gopinath (2011), shunmuganathan (2011) and selthilvelan (2011).

Justification of Hypothesis:

- The first hypothesis, says that the effect of continuous running and fartlek training on cardio respiratory endurance and muscular endurance variables would be significantly differ when compared to the control group. The result reveals that there were significant changes on cardio respiratory endurance and muscular endurance variables due to the experimental treatments when compared to the control group. Therefore the first the research hypothesis was accepted at 0.05 level of confidence.
- The second hypothesis, says that the fartlek training on cardio respiratory endurance and muscular endurance variables would be significant changes when compare with the continuous running group.
- But the cardio respiratory endurance and muscular endurance were found to be insignificant for fartlek training group when compare to continuous running group. Therefore the research hypothesis was rejected at 0.05 level of confidence. There was no evidence to reject the null hypothesis at 0.05 level of confidence.

Conclusion:

On the bases of research findings the following conclusions were drawn:

- The physical variables namely cardio respiratory endurance and muscular endurance were found to have significantly improved for the two experimental groups when compared to the control group due to the twelve weeks of training programme.
- There was no significant difference existed between the two experimental groups.

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