International Journal of Physical Education and Sports
www.phyedusports.in
Volume: 3, Issue: 02, Pages: 04-07, Year: 2018
Impact Factor: 3.125 (RIF)

Comparative study of preparatory and competitive season football training on the selected physiological variables

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Received Jan 13, 2018; Accepted Jan 30, 2018; Published Feb 02, 2018

Abstract

A planned and systematic training is required for sportsperson to confer his best performance at the time of need. To win a competition, is the aim of any sportsman and for this he has to undergo a vigorous and tough training scheduled in stages. Viewing this, the present study was undertaken to study the effects of preparatory season and competitive season training loads on selected physiological variables of football players. The subjects were 20 male students comprising college football team of LNIPE, Gwalior. The data obtained for Cardio-vascular endurance, Resting heart rate and Vital capacity were analyzed by one-way analysis of variance and LSD was used to assess the significant difference between the means of different stages. Significant difference at 0.05 level was seen between the variables of preparatory and competitive season training over pre-season, whereas there was insignificant difference between the variables of preparatory and competitive season training.

Key Words: Preparatory Season; Competitive Season; Physiological Variables; Football Team; Cardio-Vascular Endurance; Vital Capacity.

1. Introduction:

An enormous amount of research has been done for the development of physical education in general and sports performance in particular. Creation of new records is the evidence of continuous research in the field of physical education and sports. Since, the sports have become prestigious aspects to prove one's superiority; the philosophy of participation in games and sports has undergone a great change (Renwes, 1972). In present time, "Soccer" has gain enormous popularity in the world and is a vigorous and fast game which requires accelerating sprint, rough tackling, power in kicking and endurance to sustain skillful play for ninety minutes. To win a competition, it is essential that sportsman must give his best performance in the competition. Sports training is a pedagogical process which makes possible the achievement of high standard performances without any physical or mental damage through planned, systematic development of certain special skills, physical capabilities and spiritual qualities, and the adaptation of the organism (Csanadi, 1978; Young et al., 1993).

For the purpose of training, whole season is breakdown into smaller training or periods, viz, preparatory period, competition period and transitional period known as periodisation. The preparatory season is normally the longest period in the training cycle and aims to create a base for better performance in the competitive season. In the beginning, abilities which are not directly related to performance in the game are developed and later, those factors are improved on which the performance directly depends. The competitive season aims at achieving top form and to maintain it for a sufficiently long period and is characterized by high to maximum training intensity, lower in volumes and predominant use of competitive and special exercises.

During training, various physical and physiological components developed with varied rate in a training cycle. The training periods differs from one another in contents, qualities and quantities of training load (Singh, 1984; Bangsbo, 1994). The training provides room for the players to ensure the capability to cope-up with the loads that competitive match play involve. Studies on the physical and physiological properties of a successful football player show that due to the improvements in the speed and skills of the football players, football has become more dynamic (Mangine et al., 1990). Modern coaching and traning methods have focused on the development of basic components of soccer. The sportsman are able to give outstanding performance because of involvement of new scientifically substantiated training

methods and means of execution of techniques and tactics, improvement of sports gear and equipment as well as other components. As in preparatory season emphasis is on the development of basic components of physical and physiological fitness variables with improvement of skills and techniques and in competitive season stress is given on achieving top form and to maintain it for a sufficient long duration, the research scholar developed an interest to find out proportionate changes taking place on the selected physiological variables of football players in a training cycle at its different stages of training.

This study was conducted on football match practice group of LNIPE, Gwalior. Subjects belonged to different parts of India and their age ranged from 17 to 25 years. Initially, all the students of football match practice group were involved in the training; later students representing the college football team for competitions were selected for this study limiting the number of subjects to 20.

2. Materials & Methods:

2.1 Criterion Measures:

Following criterion measures were adopted for data collection at three different stages of training for the selected physiological variables (Barrow et al., 1979):

1. Cardio-vascular endurance was measured by Cooper's 12 min. run/walk test and recorded to nearest 50m.
2. Resting heart rate was measured as number of beat per minute in resting condition using manual method.
3. Vital capacity was measured by Wet Spirometer and recorded in liters.

The data for stage-I was collected before the commencement of the preparatory season, for stage-II at the end of preparatory season and before the commencement of competitive season, and data for the stage-III was collected at the end of competition period.

2.2 Statistical Analysis:

To determine the difference between the results obtained at three different stages of training, one way analysis of variance (ANOVA) was computed for each variables. LSD test of post-hoc was used to assess the significant difference between paired means. The F-ratio was tested for significance at .05 level of confidence.

3. Results of the Study:

3.1 Cardio-vascular Endurance

It was found that there was significant difference in distance covered by the football players in specific time between paired means of I and II stage, I and III stage where as there was insignificant difference between II and III stage (Figure 1) at 0.05 level with F value 314.014 against computed LSD 30.22 (Table 1).

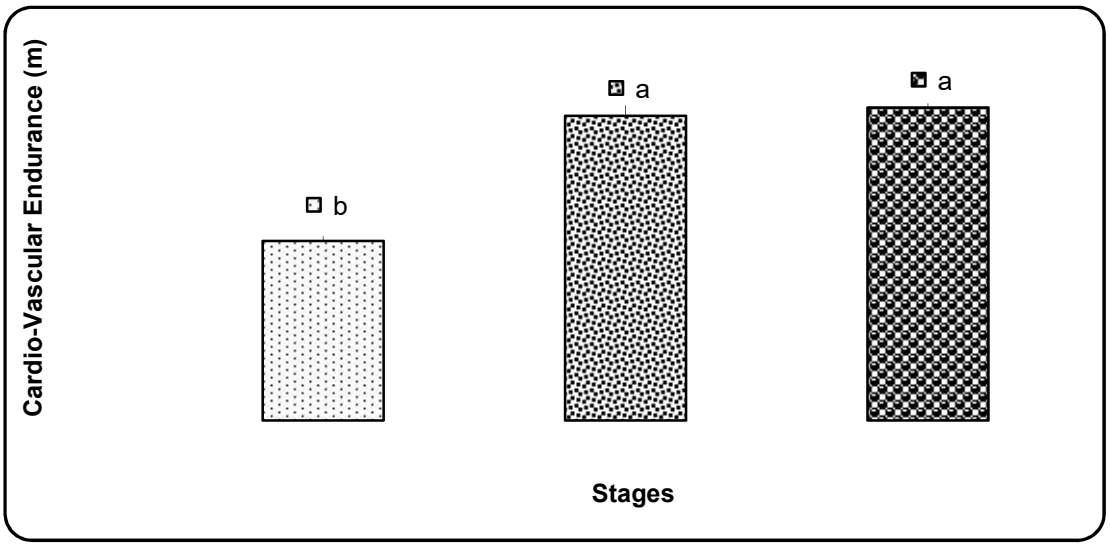

Figure: 2
Cardio-vascular endurance of football players during different stages of training

The mean values recorded for pre-season, preparatory and competitive season were 2487.5M, 2827.50M and 2850M respectively

Table 1. Analysis of variance of the Mean Difference of physiological variables:

Variables	F values	LSD (0.05)
Cardio-vascular Endurance(M)	341.014**	30.22
Resting heart rate(Number)	6.08*	3.82
Vital Capacity(l)	8.09*	0.26

*Significant at p<0.05, **Significant at p<0.01

3.2 Resting Heart Rate:

Figure 2 shows that there was significant difference in count of heart beat per minute between the means of I (66.7) and II (61) stage I (66.7) and (60.55) III stage at 0.05 level with F values 6.08 against computed LSD 3.82 (Table1). Also, there was insignificant difference between the paired means of II (61) and III (60.5) stage.

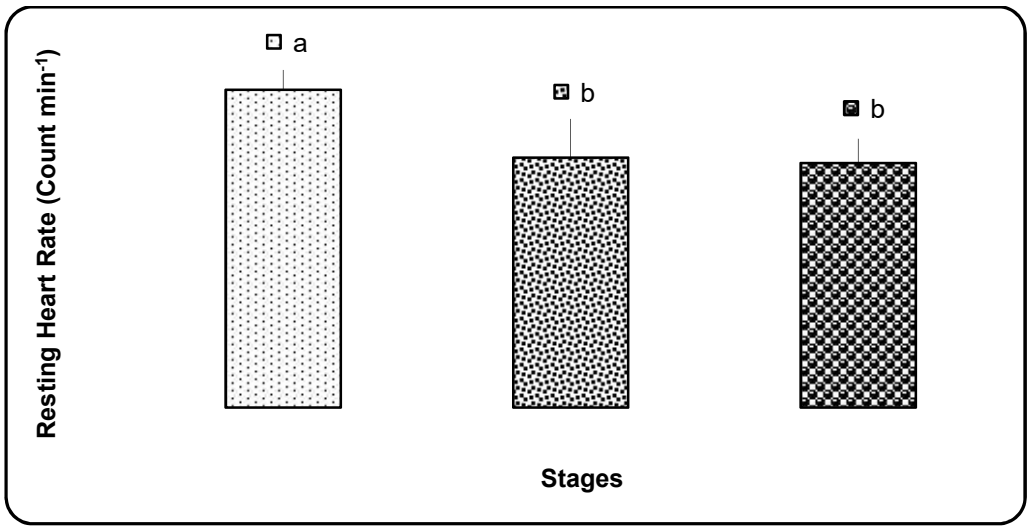

Figure: 1

Resting Heart Rate of football players during different stages of training

3.3 Vital Capacity

There was significant difference between the paired means of I (2.86L) and II (3.32L) stage, I (2.86L) and (3.35L) III stage in amount of air expelled by the football players from lungs after a maximal inspiration at .05 level with F values 8.09 against computed LSD 0.26 (Table1). It was also seen that there was insignificant difference between the paired means of II (3.32L) and III (3.35L) stage (Figure 3).

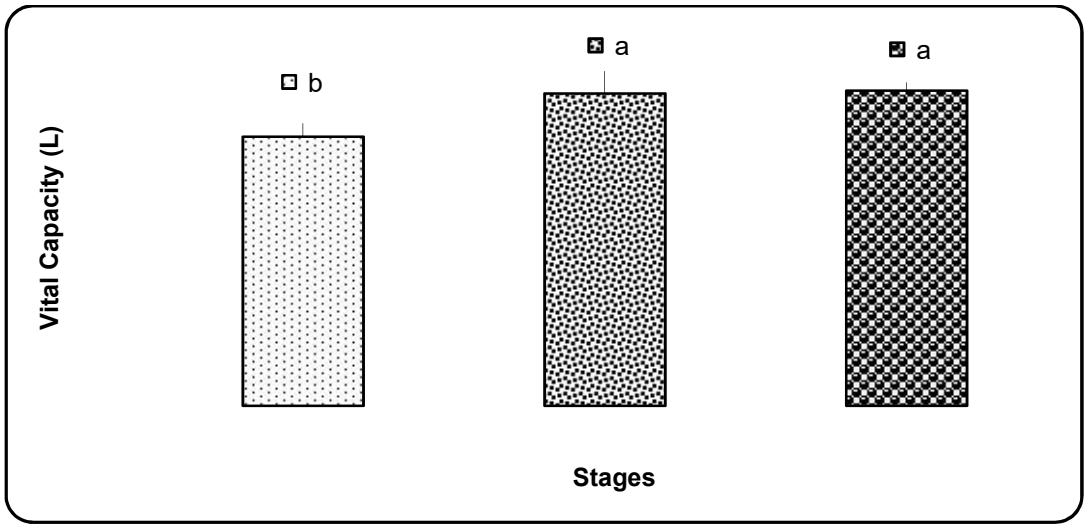

Figure3: Vital Capacity of football players during different stages of training

4. Discussion:

The analysis of data and results revealed that the selected physiological variables were improved significantly in preparatory and competitive season over pre-season but was insignificant in competitive season over preparatory season training may be due to the reason that in the initial phase of training the adaptation process is faster in comparison to later phase of training. This may be attributed to the fact that when a stimulus is able to penetrate any organic system repeatedly, the system develops optimum proficiency of the stimulus and it brings aerobic adaptation in terms of increase in myoglobin content, improved oxidation of carbohydrate and more rapid oxidation of fat which ultimately improves cardio-vascular endurance and other related functions. The results of present study are in consonance with the findings of McIntyre, Adams and others who also found similar results.

5. Conclusions:

The physiological variables viz cardio-vascular endurance, resting heart rate and vital capacity can be improved through endurance and strength dominated training designed for general fitness program. 4 week of competitive season does not seem to be sufficient for significant improvement in cardio-vascular endurance, resting heart rate and vital capacity. Training scheduled of preparatory season for 8 week was brought more change in the selected physiological variables than the training schedule of competitive season for 4 week. This may also be viewed from another angle as any improvement or change in performance is much faster in the early stage of training and the rate of improvement slows down with time. To develop physical components of soccer performance, the teachers of physical education and coaches should use proportionate combined loads of speed, strength and endurance.

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