

Effect of HIIT and SET Training Programmes on Selected Physiological Variable of Football players

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Abstract: The objective of the study was to find out the effect of HIIT and SET Training Programmes on Selected Physiological Variable of Football players. For the purpose of study Seventy Five male district level football players, aged between 18-23 years, were randomly selected from Birbhum, WB. Twenty five were randomly selected for high intensity interval training (HIIT) group, Twenty five were randomly selected for Speed endurance training (SET) group and twenty five were selected as the control group for the study. Blood lactate level was considered as the variable for the study. Eight weeks high intensity interval training (HIIT) and Speed endurance training (SET) were administered to the experimental groups. The data was computed by descriptive statistics, ANCOVA and LSD post-hoc test. The result of the study revealed that the HIIT group, SET & Active Control Group no significantly improved the Lactate level ($F=0.494$) of the football players. Here the level of significance at 0.05 level.

Key Words: HIIT training SET training, Blood Lactate level, Football players.

1. INTRODUCTION:

“Soccer” redirects here. For other uses, see Soccer (disambiguation). A player (wearing he red kit) has penetrated the defense (in the white kit) and is taking a shot at goal. The goalkeeper will attempt to stop the ball from crossing the goal line. Association football, commonly known as football or soccer, is a team sport played between two teams of 11 players. It is the most popular sport in the world. Football is a ball game played on a rectangular grass or artificial turf field, with a goal at each of the short ends. The object of the game is to score by man covering the ball into the opposing goal. In general play, the goalkeeper is the only player allowed to use their hands or arms to propel the ball; the rest of the team usually use their feet to kick the ball into position, occasionally using their torso or head to intercept a ball in mid air. The team that scores the most goals by the end of the match wins. If the score is tied at the end of the game, either a draw is declared or the game goes into extra time and/ or a penalty shootout, depending on the format of the competition. The modern game was codified in England following the formation of The Football Association, whose 1863 Laws of the Game created the foundations for the way the sport is played today. Football is governed internationally by the Federation International de Football Association (International Federation of Association Football), commonly known by the acronym FIFA. The most prestigious international football competition is the World Cup, held every four years. This event, the most widely viewed in the world, boasts an audience twice that of the Summer Olympics.

Football is played in accordance with a set of rules known as the Laws of the Game. The game is played using a single round ball (the football). Two teams of eleven players each complete to get the ball into the other team's goal (between the posts and under the bar), thereby scoring a goal. The team that has scored more goals at the end of the game is the winner; if both teams have scored an equal number of goals then the game is a draw. In a typical game play, Players attempt to create goal scoring opportunities through individual control of the ball, such as by dribbling, passing the ball to a team-mate, and by taking shots at the goal, which is guarded by the opposing goalkeeper. Opposing players may try to regain control of the ball by intercepting a pass or through tackling the opponent in possession of the ball; however, physical contact between opponents is restricted. Football is generally a free-flowing game, with play stopping only when the ball has left the field of play or when play is stopped by the ref goal keeper. After a stoppage, play recommences with a specified restart. At a professional level, most matches produce only a few goals. For example, the 2005-06 season of the English Premier League produced an average of 2.48 goals pr match. The Laws of the Game do not specify any player positions other than goalkeeper, but a number of specialized roles have evolved. Broadly, these include three main categories: strikers, or forwards, whose main task is to score goals; defenders, who specialize in preventing their opponents from scoring; and midfielders, who dispossess the opposition and keep possession of the ball in order to pass it to the forwards. Players in these positions are referred to as outfield players, in order to discern them

from the single goalkeeper. These positions are further subdivided according to the area of the field in which the player spends most time. For example, there are central defenders, and left and right midfielders. The ten outfield players may be arranged in any combination. The number of players in each position determines the style of the team's play; more forwards and fewer defenders creates a more aggressive and offensive-minded game, while the reverse creates a slower, more defensive style of play. While players typically spend most of the game in a specific position, there are few restrictions on player movement, and players can switch positions at any time. The layout of a team's players is known as a formation. Defining the team's formation and tactics is usually the prerogative of the team's manager.

Football is the most popular sport in the world and is performed by men and women, children and adults with different levels of expertise. Football performance depends upon a variety of factors such as technical/biomechanical, tactical, mental and physiological areas. As the game is played for long time (ninety minutes or more) the aerobic capacity plays a major role in giving best performance throughout the game time. Leg strength is one of the key factor for the aerobic capacity of the players. Therefore the researcher showed interest to do the research on the effect of hiit & set training on leg explosive strength of football players. It is one of the most fashionable sports in the world and is played by men and women, children and adults with different levels of capability. Football performance depends upon a variety of important factors such as technical/biomechanical, tactical, mental and physiological areas. A football players run fast to get the ball or score, dodge defenders to score or pass, jump for heading or receiving the ball etc they do throughout the game for 90 minutes or even more. As the game is played for long time (ninety minutes or more) the aerobic capacity plays a major role in giving best performance throughout the game time. Beside the aerobic capacity a football player needs other important physical fitness components like speed, agility, explosive strength, coordination, and kinaesthetic ability etc to exhibit the best performance. Various training means and methods have developed to enhance sports performance. Continuous method, Repetition method, Interval method, Circuit training method etc have has been invented for the development of sports performance. High Intensity trainings like high intensity interval training (HIIT), speed endurance training (SET) etc are now a day's very burning training methods for enhancing the performance in sports field. These are the training methods which are performed in high intensity that ultimately enhance the performance of the sports person.

At present India is also trying to achieve the best performance in the SAF games, Asian Championship etc tournaments by developing their performance. Currently Indian Football team got 101 position (14th June 2019) from 173 position (March 2015) in FIFA World ranking. Indian football team got excellent achievement in all the areas which directly or indirectly help to enhance the sports performance. Area like physical fitness, psychological fitness, technical and tactical aspects etc were developed now a days in Indian football team but to achieve the highest level of performance in the world best football teams like Brazil, Argentina, France, Spain, Germany, England, Uruguay etc Indian team management including the government of India has to think about the development of football performance by developing various sports schemes, preventing corruption in the sports field etc.

2. AIM OF THE STUDY:

The aim of the study was to find out the Effect of HIIT and SET Training Programmes on Selected Physiological Variable of Football players.

3. METHODS:

Selection of the Subject: For the purpose of study seventy five male district level football players, aged ranged between 18-23 years, were randomly selected from Birbhum, WB. Among them twenty five were randomly selected for high intensity interval training (HIIT) group, twenty five selected as speed endurance training (SET) group and twenty five were selected as active control group(AC) for the study. Blood lactate level was considered as the variable for the study. Eight weeks high intensity interval training (HIIT) and SET training were administered to the experimental group. The data was computed by descriptive statistics, ANCOVA and LSD post-hoc test.

Subjects: For the purpose of study seventy five male district level football players, aged between 18-23 years, were randomly selected from Birbhum, WB. Among them twenty five were randomly selected for high intensity interval training (HIIT) group, twenty five selected as SET group and twenty five were selected as active control group for the study.

Variables-Test and Criterion Measure: Blood Lactate level was considered as the variable for the study. It was tested by Lab test and the score was recorded in mg per decilitre. The data was recorded in mg/dl.

Design of the Study: Pre test- post test randomized group design was used for the study. Pre test data was collected from both the groups (experimental and control group) before administering the experiment to the experimental group. Then the high intensity interval training (HIIT) programme and speed endurance training (SET) programme was applied to the experimental group in three alternate days per week for 8 weeks. The control group was not given any treatment

during these 8 weeks. Immediately after completion of the experiment the post test data were collected from both the experimental and control group.

Statistical Analyses: For determining the effect of the HIIT training and SET training, descriptive statistics, ANCOVA and LSD post-hoc test were used for the analysis of the data.

4. RESULT:

The findings pertaining to the study are presented in table-1, 2 and Graph-1.

The statistical analysis of data of the three groups i.e. High intensity interval training group (HIIT), Speed Endurance Training group (SET), and the active control group (AC) on speed of football players for pre and post test have been presented in table No 1 & 2 . The illustrations are also graphically represented in Graph 1.

Treatment Group	Groups	Minimum Value (mg/dl)	Maximum Value (mg/dl)	Mean (mg/dl)	Std. Error	Std. Deviation
HIIT	Pre-Test	15.34	19.24	17.29	0.18	0.90
	Post-Test	13.4	17.64	15.49	0.22	1.09
SET	Pre-Test	16.42	19.24	17.95	0.22	1.09
	Post-Test	14.2	17.64	15.70	0.26	1.30
AC	Pre-Test	15.48	19.42	16.64	0.29	1.46
	Post-Test	14.16	17.46	15.65	0.27	1.36

Table 1 describes the mean (M), standard deviation (SD), Maximum value (Max.) and Minimum Value (Min.) scores of subjects in Lactate level. In the pre test phase, the mean of HIIT group, SET group and AC group were 17.29 mg/dl, 17.95 mg/dl and 16.64 mg/dl respectively. The post test mean of HIIT group, SET group and AC group were 15.49 mg/dl, 15.70 mg/dl and 15.65 mg/dl respectively. The standard deviation for pre-test phase of HIIT group, SET group and AC group were 0.90, 1.09 and 1.46 respectively. The post test standard deviation for HIIT group, SET group and AC group were 1.09, 1.30 and 1.36. The maximum value for HIIT group in pre test phase was 19.24 mg/dl. Whereas the minimum value was 15.34 mg/dl. For the SET group the maximum value in pre test was 19.2 mg/dl where as the minimum value was 16.42 mg/dl. The maximum value for AC group in pre test phase was 19.42 mg/dl where as the minimum value was 15.48 mg/dl. In the post test phase for HIIT group the maximum value was 17.64 mg/dl and the minimum value was 13.4 mg/dl, for SET group the maximum value was 17.64 mg/dl and the minimum value was 14.2 mg/dl, and for the AC group the maximum value was 17.46 mg/dl and the minimum value was 14.16 mg/dl.

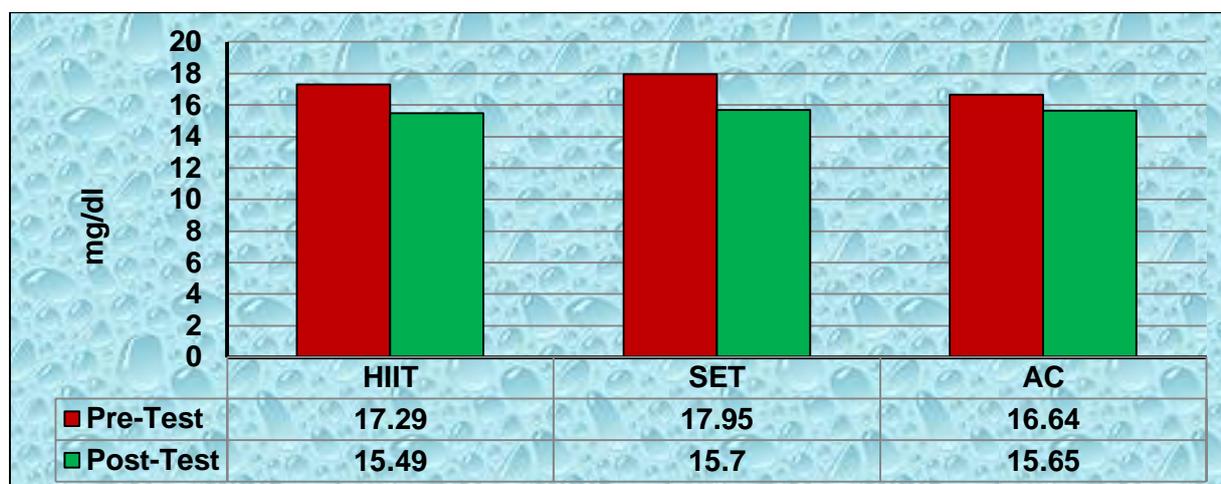


Figure- 1: Graphical representation of pre-test and post-test mean for distinct groups on blood lactated level.

Graph-1 describes the pre-test and post-test mean for HIIT, SET and AC group. Here the pre-test and post-test mean of HIIT, SET and AC group were 17.29mg/dl and 15.49mg/dl, 17.95mg/dl and 15.7mg/dl, & 16.64mg/dl and 15.65mg/dl respectively.

Table 2: ANCOVA for Distinct Groups on Blood Lactate level for Pre-Test and Post-Test Data				
Source	df	Sum of Squares	Mean Square	F-value
Treatment Group	2	0.704	0.352	0.494
Error	71	50.607	0.713	
Total	73	51.312		
Table value of F (2,71) = 3.13 *. Significant at the .05 level				

Table 2 reveals that there is no significant improvement in Lactate level ($F=0.494$) among the selected three groups i.e. HIIT Group, SET group & Active Control Group.

5. DISCUSSION:

The result of the study revealed that the eight weeks High Intensity Interval Training (HIIT) and Speed Endurance Training (SET) significantly not improved the blood lactate level of Football players. The result may be due to the effect of high intensity training programmes both HIIT and SET training programmes for 45-60 minutes per unit for three alternate days for eight weeks. The result of the study is supported by the study of The decrement of repeated sprint ability and lactate concentration was supported by the study of **F. Marcello Iaia et al (2017)** who studied on Short- or long-rest intervals during repeated-sprint training in soccer where they found Both RST interventions led to similar beneficial ($p<0.05$) reductions in the percentage decrement score (~30%) of the repeated-sprint ability test as well as in blood lactate concentration during sub maximal exercise (17–18%).

The result of the study is also supported by the study of Junior **PB Junior et al (2018)** who worked on Effect of Endurance Training on The Lactate and Glucose Minimum Intensities and concluded that No differences were found between GMI and LMI in pre (218.2 ± 22.1 vs 215.0 ± 18.6 W) and post (240.6 ± 22.9 vs 237.5 ± 18.8 W) training situations. LMI and GMI were sensitive to 12-week aerobic training in cyclist; thus, both protocols can be used to assess aerobic adaptation, athletes diagnostic and prescribe training.

6. CONCLUSION:

On the basis of the result it is concluded that the both the high intensity interval training (HIIT) and speed endurance training (SET) programmes not improved blood lactate level of the football players.

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