

EFFECT OF HIGH-INTENSITY TRAINING ON PHYSIOLOGICAL VARIABLES AMONG UNIVERSITY LEVEL FOOTBALL PLAYERS

Ganesh.R , Dr R. Mohana Krishnan

Research Scholar, Director of Sports

Department of Physical Education and Sports Sciences, College of Science and Humanities
SRM Institute of Science and Technology, Kattankulathur

Abstract

Researchers persevered in their quest to find the effects of high-intensity training on physiological variables among university-level football players. We randomly selected thirty university-level football players from Chennai, Tamil Nadu, India, ranging from 17 to 23 years of age, in order to accomplish the purpose of this study. Each group consisted of 15 participants. As a control-group, bunch-2 did not participate in any special training after participating in their regular routine. Bunch-1 underwent high-intensity training for eight weeks and bunch-2 did not participate in any special training after their regular routine. The dependent variables were VO₂ max and resting heart rate. The Harvard step test was used to assess Vo₂ Max, and a digital pulse monitor was used to assess resting heart rate. Randomization was used both the pre- and post-tests. In this study, data were collected before and after a training period of eight weeks, and statistics were applied to the data collected to determine whether significant improvements in selected variables occurred from baseline to post-training. Researchers found that high-intensity training significantly improved physiological variables among university-level football players, including V₂ max and resting heart rate.

Keywords: High-Intensity Training, Vo₂ Max, Resting Heart Rate, Football Players

Introduction

The use of high-intensity interval training for continuous running execution in soccer players has been shown to be an effective and time-saving strategy. Workouts that are high-intensity and maximal should be part of the HIT program. It is validated by distance covered, work efficiency, and number of runs during a match that increases in maximal oxygen lead to superior soccer performance. Since it permits exercisers to perform exercises at focused energies for longer periods of time, HIIT is excellent for improving physiological factors. The greatness of the preparation reaction seems to be determined by the duration force and recurrence of the span sessions. This is in addition to the length of the recuperation time frame between the activities.

During both endurance and run/power events, HIT is a commonly utilized and enticing preparation technique. In order to achieve high activity power, ATP-phosphocreatine metabolism and glycolysis metabolism are essential, as well as a metabolic pathway that keeps up with high

activity power to an extent. Through perseverance practice or power/speed training, even indistinguishable muscle activity can be performed in a more vigorous and less anaerobic manner. HIIT results in intense and post-practice reactions. As a result of persistence, athletes were able to perform short-duration HIIT exercises with lower intensity cardiorespiratory and metabolic reactions while still exhibiting high pinnacle responsibility, primarily due to their quicker oxygen consumption.

It is profoundly critical for players to have the capability to rehearse extreme focus work in today's football. As soon as a ball is possessed during a game, the best teams perform the most intense focus exercises. In order to adapt to the demands of the game, footballers need a high level of wellness. Developing procedures, strategies, psychological and physical fitness are some of the goals of a football player's planning. For the preseason, preparation emphasizes actual health enhancements, whereas during the in-season, the focus is primarily on strategic and specialized upgrades while maintaining actual health. Running,

kicking, bouncing, and handling are some of the activities that players perform. The repetition of runs in soccer is alternated with short or long periods of recuperation, which may be dynamic or passive.

Materials & Methods

Subjects in this study came from the Chennai region, Tamil Nadu, India. This study includes 30 university-level football players, ranging in age from 17 to 23 years of age. The two groups consist of bunch - 1 as a high-

intensity training bunch and bunch -2 as a control bunch. Batch-1 is a randomized experiment of 8 weeks duration. During the 8 weeks of training, the training protocol was given alternate days in the morning. For the purpose of analyzing the performance of subjects before and after the 8-week training protocol, data was collected on them before and after the training.

Results

TABLE 1 ANOVA OF VO2 MAX AND RESTING HEART RATE OF THE HIT BUNCH AND CONTROL BUNCH

VO2 MAX						
Tests	HIT BUNCH-1	BUNCH -2	S.O.S	D.F	MS	F-Ratio
Pre-Test	75.92	75.98	0.031	1	0.031	0.022
			40.55	28	1.448	
Post-Test	77.70	75.94	15.63	1	15.63	11.99*
			36.50	28	1.30	
Resting Heart Rate						
Tests	HIT BUNCH-1	BUNCH -2	S.O.S	D.F	MS	F-Ratio
Pre-Test	77.86	76.86	7.50	1	7.50	0.571
			367.46	28	13.14	
Post-Test	73.60	76.60	73.63	1	73.63	7.56*
			272.53	28	9.73	

*Significant at 0.05 level table value 4.17 df 1,28

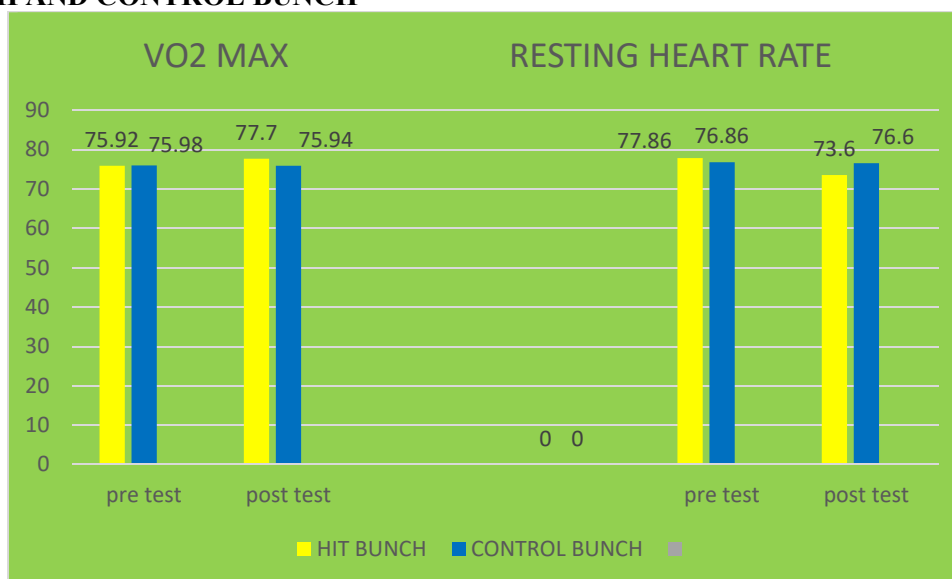
Both the high-intensity training group and control group had pre-test mean and pre-test values of VO2 max of 75.92 and 75.98 respectively. With a confidence level of 0.05, the obtained F-ratios are 0.022 lower than those required for insignificance in the table of 4.17 for df 1 and 28.

As a result, the mean post-test values of VO2 max for the high-intensity training group and the control group were 77.70 and 75.94 respectively. F-ratios of **11.99*** show statistical significance at a 0.05 level of confidence, which is higher than the calculated value of 4.17 for df 1 and 28.

77.86 is the mean and 76.86 is the value of resting heart rate for the control group and high-intensity training group, respectively. With a level of confidence of 0.05, F-ratios obtained at 0.696 are lower than the required table value of 4.17 for df 1 and 28.

Following the training, the post-test mean heart rates of the high intensity training group were 21.00, while the control group was 23.86. As a result of this analysis, the F-ratios are **20.12***, which is greater than the table value of 4.17 for df 1 and 28 that is required for significance at 0.05 level of confidence.

GRAF DIAGRAM OF VO2 MAX AND RESTING HEART RATE OF THE HIT BUNCH AND CONTROL BUNCH



CONCLUSION

A conclusion was reached based on the results. After eight weeks of high-intensity training, there was a significant difference between the experimental and control groups when it comes to VO2 max and resting heart rate. Football players at university levels perform better in vo2 max and resting heart rate following high-intensity training.

ACKNOWLEDGEMENT

Conflict of Interest: Nil

Ethical Clearance: Nil

Source of Funding: Self

Reference

Iaia, F. Marcello, RampininiErmanno, and Jens Bangsbo. "High-intensity training in football." *International journal of sports physiology and performance* 4.3 (2009): 291-306.

Faude, Oliver, et al. "High-intensity interval training vs. high-volume running training during pre-season conditioning in high-level youth football: a cross-over trial." *Journal of Sports Sciences* 31.13 (2013): 1441-1450.

Dupont, Grégory, KoffiAkakpo, and Serge Berthoin. "The effect of in-season, high-intensity interval training in soccer players." *The Journal of Strength & Conditioning Research* 18.3 (2004): 584-589.

Rabbani, Alireza, et al. "Combined small-sided game and high-intensity interval training in soccer players: The effect of

exercise order." *Journal of Human Kinetics* 69.1 (2019): 249-257.

Oliveira, Bruno RR, et al. "Continuous and high-intensity interval training: which promotes higher pleasure." *PloS one* 8.11 (2013): e79965.

Cipryan, Lukas, Gerhard Tschakert, and Peter Hofmann. "Acute and post-exercise physiological responses to high-intensity interval training in endurance and sprint athletes." *Journal of sports science & medicine* 16.2 (2017): 219.

Manoranjith, R., and S. Nagarajan. "Collusion of Different Ground Surface of Plyometric with Aerobic Training on Selected Agility and Explosive Power among School Boys Volleyball Players." *International journal of advance science and technology* (2019).

Pounraj, Dr, Consequence Of Jump Rope Training And Kettle Bell Training On Selected Agility And Muscular Strength Of College Men Badminton Players." *Journal-Xidian University* 14: 664-669.

Dr. R. SenthilKumarann, Collision of Ballistic and Plyometric Training on Selected Explosive Power and Vital Capacity of College Men Volleyball Players." *Journal-High Technology Letters* 26: 593-601.

Prasanna, T. Arun. "Persuade of mobility exercise and circuit resistance training on selected speed endurance and explosive power among college men students." *Strad Research*, 7(8), 2020

Saran, K. S (2019). Isolated and Combined Effect of Plyometric and Weight Training on

Selected Physical Fitness and Hematological Variables of Football Players. *Indian Journal of Public Health Research & Development*, 10(7), 362-364.

Jaskar, K. M. M. (2019). Isolated and Combined Effect of Continuous Run Alternate Pace Run on Selected Motor Fitness Physiological Hematological Variables among Male Athletes. *Indian Journal of Public Health Research & Development*, 10(11).

Dr. S. Nagarajan, Coalesce Cause of Plyometric and Tabata Training on Explosive Power And Endurance Among Men Volleyball Players." *Journal-Proteus Journal* 11: 130-139.

Deeva, E., Et Al. "Effect of Varied Intensities and Frequencies of Aerobic Exercises on Selected Motor Ability and Physiological Variables among Inter-School Handball Players." *Aegaeum Journal*, 8, (3) 2020

Manoranjith, R , S. Nagarajan Impact of Plyometric and Tabata Training on Speed Endurance and Vital Capacity among Men Volleyball Players, *Turkish Journal of Physiotherapy and Rehabilitation*. 32(3) 2021

Uma Devi, Consequence of Various Yogic Practices with Sattvic Diet on Selected Vital Capacity and Hemoglobin Among Underweight School Boys, *Europe's Journal of Psychology*, 17(3), 16-20, 2021

Anand, (2019). Effect of Game Specific Circuit Training and Plyometrics on Selected Physiological and Hematological Variables of Handball Players. *Indian Journal of Public Health Research & Development*, 10(7).

Vaithianathan, K. (2019). The Combined Effect of Continuous Run, Alternate Pace Run and Fartlek Training on Selected Physiological Variable among Male Athletes. *Indian Journal of Public Health Research & Development*, 10(3), 238-241.