WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

The Role of Interval Training in Enhancing Fitness Variables among Male Football Players

Dr. N. Savitha[1], Dr. A. Telma Priya[2]

[1]Director of Physical Education, Chikkaiah Naicker College, Erode, Bharathair University, Coimbatore, Tamil Nadu, India
[2]Physical Director, Thiagarajar College of Preceptors, Teppakulam Madurai-625009, Tamil Nadu, India
Email ID: telma1006@gmail.com
DOI : https://doi.org/10.55248/gengpi.5.1024.3011

ABSTRACT

The purpose of this study was to examine the impact of interval training on selected fitness variables among football players. A total of thirty football players from schools in Erode district, aged 14 to 16 years, were randomly selected as subjects. The participants were divided into two groups: an interval training group and a control group. Group A, the interval training group, underwent an eight-week training program consisting of two sessions per week, while Group B, the control group, continued with their regular daily routine without any additional training.

The fitness variables assessed in the study were speed and power, measured using the 50-yard dash and vertical jump tests, respectively. Data were collected from each participant both before and after the training period. The results were analyzed using the dependent t-test to evaluate the significant improvements in the selected fitness variables within each group. Additionally, Analysis of Covariance (ANCOVA) was employed to determine the significant differences between the experimental and control groups for each variable. The level of confidence for testing the hypotheses was set at 0.05.

The findings revealed that the interval training group showed significant improvements in speed and power. Moreover, there was a significant difference between the interval training group and the control group in terms of the selected fitness variables.

Keywords: Interval, Speed, power and football players.

INTRODUCTION

Various training regimens are commonly employed to enhance an athlete's power and work output. In activities such as sprinting, jumping, or throwing, an athlete's ability to accelerate their own body, an opponent, or an object is critical to performance. Interval training is one such method, consisting of alternating periods of low- to high-intensity exercise, combined with rest or recovery intervals. The high-intensity segments typically push the athlete toward anaerobic exertion, while the recovery periods involve lower-intensity activities. This structured approach helps improve overall performance in sports..

METHODOLOGY

Thirty football players from schools in the Erode district, aged 14 to 16 years, were randomly selected as participants for this study. The subjects were divided into two equal groups: the experimental group (interval training group) and the control group.

The study employed a pre-test and post-test randomized group design. The experimental group (Group A) underwent an eight-week interval training program, with two training sessions per week. The control group, on the other hand, did not participate in any special training or additional activities outside of their regular daily routines.

The interval training for the experimental group consisted of alternating high-intensity exercise periods with lower-intensity recovery phases. The exercises were specifically designed to improve the selected fitness variables: speed and power. Speed was measured using the 50-yard dash, with the time recorded in seconds. Power was assessed using the vertical jump test, measuring the height of the jump in centimeters. Each subject's speed and power were tested before and after the eight-week training period. Statistical analysis was performed using the dependent t-test to evaluate significant improvements within each group. Additionally, Analysis of Covariance (ANCOVA) was used to determine any significant differences between the experimental and control groups on the measured variables. A significance level of 0.05 was set for hypothesis testing.

STATISTICAL TECHNIQUE

The data were collected from each subject before and after the training period and statistically analyzed by dependent‘t’ test which is used to find out the significant improvement on selected criterion variables and Analysis of Covariance (ANCOVA) was used to find out the significant difference between the experimental and control groups on each variables separately. All the cases 0.05 level of confidence was fixed as a level of confidence to test the hypotheses.

ANALYSIS OF THE DATA

The analysis of dependent‘t’ test on the data obtained for speed and power of the pre-test and post-test means of interval training and control groups have been analysed and presented in table I.

TABLE –I

THE SUMMARY OF MEAN AND DEPENDENT‘T’ TEST FOR THE PRE AND POST TESTS ON SPEED AND POWER OF INTERVAL TRAINING AND CONTROL GROUPS

S.N	Variable	Test	Interval Training group	Control group
1.	Speed	**Pre test mean**	7.55	7.621
		Post test mean	7.45	7.622
		‘t’ test	7.26*	0.07
2	Power	**Pre test mean**	42.93	41.8
		Post test mean	49.13	41.6
		‘t’ test	8.19*	0.31

** Significant at 0.05 level. (The table value required for .05 level of significance with df 14 is 2.145).*

Table I shows the pre-test mean values for the fitness variables, speed and power, in both the interval training group and the control group. For the interval training group, the pre-test means for speed and power were 7.55 seconds and 42.93 centimeters, respectively, while the control group had pre-test means of 7.621 seconds for speed and 41.8 centimeters for power. The post-test mean values for the interval training group were 7.45 seconds for speed and 49.13 centimeters for power, while the control group's post-test means were 7.622 seconds and 41.6 centimeters, respectively.

The dependent t-ratio values obtained for the interval training group between the pre- and post-test means were 7.26 for speed and 8.19 for power. For the control group, the t-ratio values between the pre- and post-test means were 0.07 for speed and 0.31 for power. The table value required for a significant difference at the 0.05 level with 14 degrees of freedom is 2.145.

Since the t-ratio values for the experimental (interval training) group exceeded the table value, it indicates a significant improvement in both speed and power in this group. However, the control group showed no significant improvement, as their t-ratio values were below the threshold, likely due to the absence of any specific training program.

The analysis of covariance (ANCOVA) for speed and power between the interval training and control groups is presented in Table II.

TABLE-II

ANCOVA OF INTERVAL TRAINING AND CONTROL GROUPS ON SPEED AND POWER

S.No	Variable	Adjusted post test mean		Source	SS	df	MS	F
		ITG	CON					
1.	Speed	7.48	7.58	SSB	0.08	1	0.08	35.35*
				SSW	0.06	27	0.0022	
2.	Power	48.64	42.09	SSB	319.85	1	319.85	49.34*
				SSW	175.04	27	6.48	

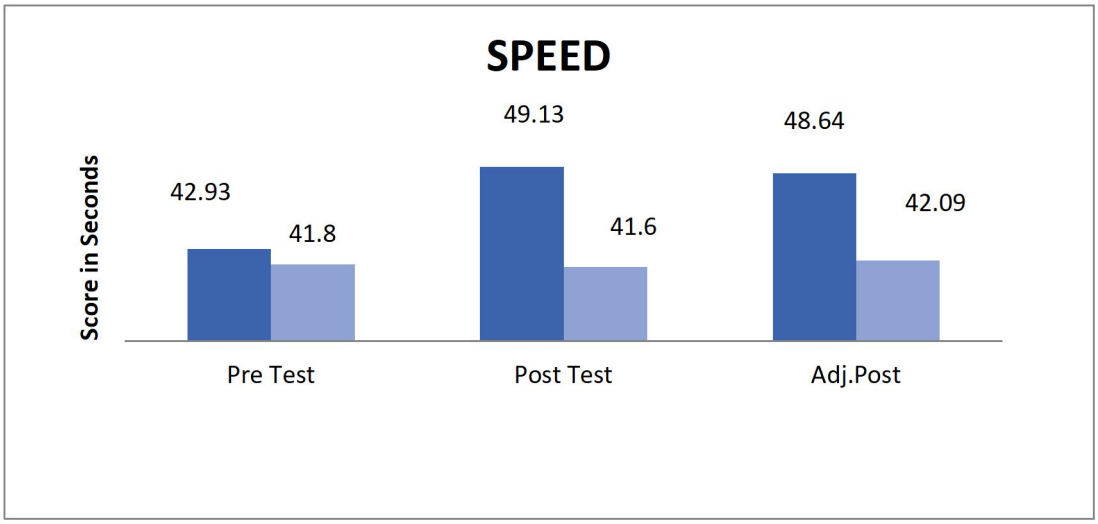
**Significant at .05 level of confidence (The table values required for significance at .05 level of confidence with df 1 and 27 is 4.21)*

Table II presents the adjusted post-test mean values for the fitness variables, speed and power, in the interval training and control groups. The adjusted post-test means for speed were 7.48 seconds for the interval training group and 7.58 seconds for the control group, while the adjusted post-test means for power were 48.64 centimeters for the interval training group and 42.09 centimeters for the control group.

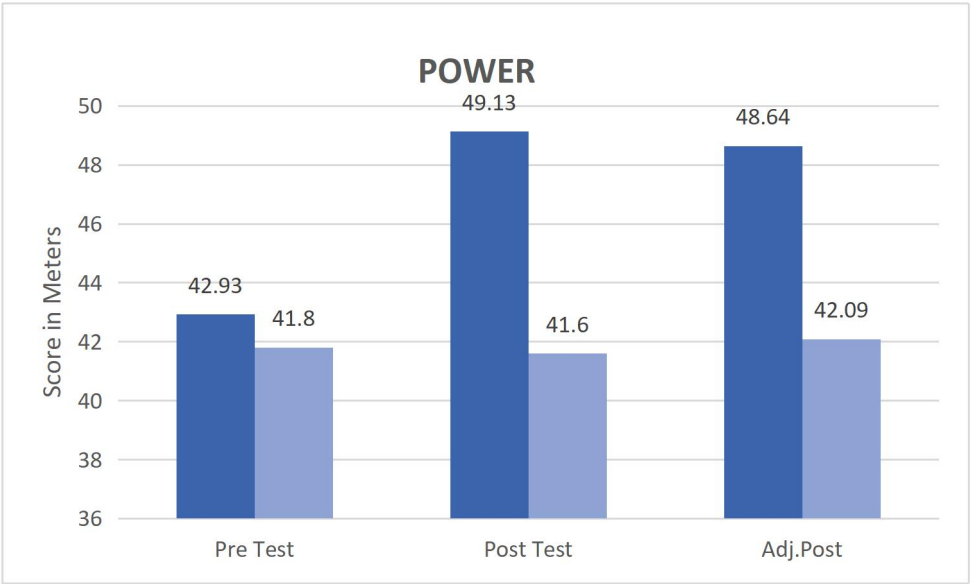
The obtained F-ratio values for speed and power were 35.35 and 25.08, respectively, both of which are higher than the required table value of 4.21 at the 0.05 level of significance with degrees of freedom 1 and 27. Since the F-ratio values exceed the table value, this indicates a significant difference between the adjusted post-test means of the interval training and control groups in both speed and power.

The results of the study confirm that there was a significant difference between the interval training group and the control group in terms of speed and power among football players. The pre-test, post-test, and adjusted post-test mean values for speed and power are graphically illustrated in Figures I and II.

Bar Diagram Mean Values of interval Training Group and Control Group on Speed



Bar Diagram Mean Values of interval Training Group and Control Group on Speed



CONCLUSION

The study demonstrated a significant improvement in both speed and power as a result of the interval training among football players. Additionally, a significant difference was observed between the interval training group and the control group in terms of these fitness variables.

Interval training had a positive impact on improving speed and power in football players. The experimental group, which underwent interval training, showed significant enhancements in both fitness variables compared to the control group, highlighting the effectiveness of interval training in boosting athletic performance in these key areas.

REFERENCE

1. **Buchheit, M., & Laursen, P. B. (2013).** High-intensity interval training, solutions to the programming puzzle. *Sports Medicine*, 43(5), 313-338.https://doi.org/10.1007/s40279-013-0029-x
2. **Dupont, G., McCall, A., Prieur, F., Millet, G. P., & Berthoin, S. (2010).** Faster oxygen uptake kinetics during recovery is related to better repeated sprinting ability. *European Journal of Applied Physiology*, 108(5), 919-927.https://doi.org/10.1007/s00421-009-1302-6
3. **Iaia, F. M., Rampinini, E., & Bangsbo, J. (2009).** High-intensity training in football. *International Journal of Sports Physiology and Performance*, 4(3), 291-306.https://doi.org/10.1123/ijspp.4.3.291
4. **Helgerud, J., Engen, L. C., Wisløff, U., & Hoff, J. (2001).** Aerobic endurance training improves soccer performance. *Medicine & Science in Sports & Exercise*, 33(11), 1925-1931.https://doi.org/10.1097/00005768-200111000-00019
5. **Mujika, I., Santisteban, J., & Castagna, C. (2009).** In-season effect of short-term sprint and power training programs on elite junior soccer players. *Journal of Strength and Conditioning Research*, 23(9), 2581-2587.https://doi.org/10.1519/JSC.0b013e3181bc1aac
6. **Reilly, T., & Thomas, V. (1979).** A motion analysis of work rate in different positional roles in professional football match-play. *Journal of Human Movement Studies*, 5(4), 220-227.
7. **Stone, M. H., Sands, W. A., Pierce, K. C., Carlock, J., Cardinale, M., & Newton, R. U. (2005).** Relationship of maximum strength to weightlifting performance. *Journal of Strength and Conditioning Research*, 19(4), 821-825.https://doi.org/10.1519/00124278-200511000-00031
8. **Kraemer, W. J., & Ratamess, N. A. (2004).** Fundamentals of resistance training: Progression and exercise prescription. *Medicine & Science in Sports & Exercise*, 36(4), 674-688.https://doi.org/10.1249/01.MSS.0000121945.36635.61
9. **Impellizzeri, F. M., Rampinini, E., Castagna, C., Martino, F., Fiorini, S., & Wisloff, U. (2008).** Effect of aerobic fitness on recovery in soccer. *Medicine & Science in Sports & Exercise*, 40(5), 842-849.https://doi.org/10.1249/MSS.0b013e3181666eb8
10. **Chamari, K., Hachana, Y., Ahmed, Y. B., Galy, O., Sghaier, F., Chatard, J. C., ... & Wisloff, U. (2004).** Field and laboratory testing in young elite soccer players. *British Journal of Sports Medicine*, 38(2), 191-196.https://doi.org/10.1136/bjsm.2002.004374
11. **Blackey JB, Southard D. (1987)** The combined effects of weight training and interval on dynamic leg strength and power. J Appl Sport Sci Res. 1:14-16.
12. **Bobbert M F. (1990).** Interval training as a training method for jumping ability. Sports Med, 97–22.22.
13. **Chimera N J, Swanik K A, Swanik C B. et al., (2004).** Effects of interval training on muscle-activation strategies and performance in female football players. J Athl Train., 2004. 3924–31.31.
14. **Gehri DJ, Richard MD, Kleiner DM and Kirkendall DT. (1998).** A comparison of interval training techniques for improving vertical jump ability and energy production. J strength Cond Res. 12:85-89.
15. **Kotzamanidis C. (2006).** Effect of interval training on running performance and vertical jumping in prepubertal boys. J Strength Cond Res., 20441–445.445.
16. **Little A D, Wilson G J, Ostrowski K J. (1996).** Enhancing performance: maximal power versus combined weights and interval training. J Strength Cond Res., 10173–179.179.
17. **Matavuji D, et al., (2001).**Effects of interval training on jumping performance in junior football players , Sports Medicine Physical Fitness. 41(2), 159-64