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Dr. Surendra Singh Agraiya
Assistant Professor,
Department of Physical
Education, Mandsaur
University, Mandsaur, Madhya
Pradesh, India

Dr. Himanshu Saxena
Assistant Professor,
Department of Physical
Education, Mandsaur
University, Mandsaur, Madhya
Pradesh, India

Corresponding Author:
Dr. Surendra Singh Agraiya
Assistant Professor,
Department of Physical
Education, Mandsaur
University, Mandsaur, Madhya
Pradesh, India

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Impact of speed endurance training and high intensity interval training on adult football players' agility

Dr. Surendra Singh Agraiya and Dr. Himanshu Saxena

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Abstract

The study's goal was to determine how adult football players' agility was affected by speed endurance and high-intensity interval training. 75 male district-level adult football players from Lucknow, Uttar Pradesh, who were between the ages of 18 and 25 were chosen at random for the study. Twenty-five were chosen at random to be in the speed endurance training (SET) group, twenty-five to be in the high intensity interval training (HIIT) group, and twenty-five to be in the control group for the research. One of the study's variables was agility. The experimental groups received both speed endurance training (SET) and high-intensity interval training (HIIT) for eight weeks. Descriptive statistics, ANCOVA, and LSD post-hoc testing were used to compute the data. The study's findings showed that the adult football players' agility was considerably increased by the HIIT and SET groups.

Keywords: HIIT training, SET training, agility, adulthood football players

Introduction

Sports and games have now spread around the world like a new religion. Every developed and emerging nation is vying to be the best in this field, and in order to do so, they are creating a wide range of tools, instruments, means, techniques, etc. The most popular sport in the world is football, which is played at varying skill levels by men, women, kids, and adults. Football performance is influenced by a number of variables, including tactical, mental, physiological, and technical/biomechanical aspects as well as physical conditioning. Agility is one of the most important physical fitness components for achieving game brilliance. Sports scientists are constantly introducing novel training techniques. Numerous studies are being conducted on two highly significant training techniques that are nearly directly related to the game of football: high-intensity interval training and speed endurance training.

Methodology

75 male district-level adult football players from Lucknow, Uttar Pradesh, who were between the ages of 18 and 25 were chosen at random for the study. Twenty-five of them were chosen at random to be the active control group for the study, twenty-five to be the high intensity interval training (HIIT) group, and twenty-five to be the speed endurance training (SET) group. One of the study's variables was agility. The experimental group received eight weeks of both speed endurance training (SET) and high-intensity interval training (HIIT). A paired t test and descriptive statistics were used to calculate the data. The study's findings showed that the control group, SET group, and HIIT group all had considerably higher levels of agility. For the purpose of the study, seventy-five male district-level adult football players, aged between 18 and 25 years, were randomly selected from Birbhum, W.B. Among them, twenty-five were randomly selected for each group, i.e., the high-intensity interval training (HIIT) group, the speed endurance training group (SET), and the active control group.

Agility was considered a variable for the study. Agility was measured by a 4x10-meter shuttle run test and recorded in 1/100th of a second. Pre-test and post-test randomized group designs were used for the study. Pre-test data was collected from both groups (the experimental and control groups) before administering the experiment. The experimental group was then given three alternating days a week of high-intensity interval training and speed endurance training for eight weeks. For those eight weeks, there was no treatment administered to the control group. Post-training data were gathered from both the experimental and control groups as soon as the training was finished.

The data was analyzed using descriptive statistics, ANCOVA, and LSD post-hoc tests to ascertain the impact

of the HIIT and SET exercise.

Result

Table 1: Descriptive analysis of different groups

Treatment Group	Groups	Min	Max	Mean	S.E.	SD
HIIT Group	Pre-Test	8.8	9.96	9.79	0.04	0.22
	Post-Test	8.5	9.98	9.45	0.05	0.25
SET Group	Pre-Test	8.8	10.1	9.81	0.05	0.24
	Post-Test	8.6	9.98	9.56	0.07	0.36
Control Group	Pre-Test	8.9	11.04	10.04	0.08	0.42
	Post-Test	8.7	11	9.95	0.09	0.43

Table-1 explains the participants' Agility scores, including the mean (M), standard deviation (SD), maximum value (Max.), and minimum value (Min.). The means for the HIIT, SET, and AC groups during the pre-test period were 9.79, 9.81, and 10.04 seconds, respectively. The HIIT group, SET group, and AC group had post-test averages of 9.45 seconds, 9.56 seconds, and 9.95 seconds, in that order. The HIIT group, SET group, and AC group had standard deviations of 0.22, 0.24, and 0.42 during the pre-test phase, respectively. The HIIT group, SET group, and AC group had post-test standard deviations of 0.25, 0.36, and 0.43, respectively. During the pre-test phase, the HIIT group's maximum value

was 9.96 seconds. In contrast, the lowest value was 8.8 seconds. The pre-test result for the SET group had a maximum of 10.1 seconds and a minimum of 8.8 seconds. The maximum value for the AC group in the pre-test phase was 11.04 seconds, while the minimum value was 8.9 seconds. In the post-test phase for the HIIT group, the maximum value was 9.98 seconds and the minimum value was 8.5 seconds; for the SET group, the maximum value was 9.98 seconds and the minimum value was 8.6 seconds; and for the AC group, the maximum value was 11 seconds and the minimum value was 8.7 seconds.

Table 2: Ancova for distinct groups on agility for pre-test and post-test data

Source	DF	Sum of Squares	Mean Square	F-value
Treatment Group	2	0.665	0.332	9.389*
Error	71	2.513	0.035	
Total	73	3.178		

Table value of F (2, 71) = 3.13 *. Significant at the .05 level

*Significance at 0.05 level of significance

Table-2 reveals significant improvement of agility (F=9.389) among the HIIT group, SET group and AC group. The obtained F value 9.389 was found greater than that of

tabulated F value 3.13 at 0.05 level of significance with 2, 71 degree of freedom.

Table 3: Pair wise comparisons of distinct groups of adjusted means on agility obtained in pre-test and post-test data (n = 25)

HIIT	SET	Control Group	Mean Difference	Critical Difference
9.55	9.63		0.08	0.106
9.55		9.79	0.25*	
	9.63	9.79	0.16*	

*Significant difference is significant at the .05 level

Table-3. The paired adjusted final mean differences in agility clearly indicate significant differences (MD-0.25) between the high intensity interval training group (HIIT) and the active control group (0.25) and also between the speed endurance training group (SET) and the active control group (0.16) of male adult football players, which were found to be greater than the critical value of 0.106. However, no significant difference was observed between the HIIT group and the SET group (MD = 0.08), where the critical difference was CD = 0.106.

Conclusion

The study's findings demonstrated that adult football players' agility was considerably increased after eight weeks of high-intensity interval training and speed endurance training. The outcome could be the consequence of participating in 45–60 minute high-intensity training sessions, such as HIIT and SET programs, for three days in a row over a period of eight weeks. The study by F. Fajrin,

NW. Kusnanik, and Wijono *et al.* (2018) [3], who investigated the impact of high-intensity interval training on enhancing explosive power, speed, and agility, corroborates the findings of the study. The purpose of this study is to examine how HIIT affects the development of explosive power, speed, and agility. This kind of study employs quasi-experimental techniques and is quantitative in nature. This study's design was matching-only, and the t-test (paired sample t-test) was employed to analyze the data. Following a six-week course of treatment, the subjects' explosive power, speed, and agility significantly increased.

In this study, HIIT employed jogging as a mild to moderate-intensity exercise and plyometrics as a high-intensity workout. The enhancement of neuromuscular traits, which influenced the growth in muscle power and performance, was the cause of the increase. Researchers found that high-intensity interval training workouts markedly improved power limbs, speed, and agility based on their study of the data. Based on the study's findings, one could logically

deduce that speed endurance training (SET) and high-intensity interval training (HIIT) enhance the agility of adult football players.

Reference

1. Sperlich B, Koehler K. Effects of 5 Weeks' High-Intensity Interval Training vs. Volume Training in 14-Year-Old Soccer Players [Internet]; c2018 [Cited 2018 Sep 10]. Available from: [Insert URL if available]
2. Bompa T. Periodization: Theory and Methodology of Training: 4th edition. Human Kinetic Publishers Dragijsky M, Maly T, Zahalka F. To see the impact of Seasonal Variation of Agility, Speed and Endurance Performance in Young Elite Soccer Players. Sports (Basel); c2017 Feb 4.
3. Fajrin F, Kusnanik NW, Wijono, *et al.* Effects of High-Intensity Interval Training on Increasing Explosive Power, Speed, and Agility. IOP Conf. Series: Journal of Physics: Conf. Series. 2018;947(1):012045. DOI:10.1088/1742-6596/947/1/012045.
4. Iaia FM, Rampinini E, *et al.* we wants to see the effect of the High-Intensity Training in Football [Internet]; c2018 [Cited 2018 Aug 03]. Available from: [insert URL if available].
5. Goral K, *et al.* Examination of agility performances according to soccer players' playing positions [Internet]; c2015 Mar [Cited YYYY Mon DD]. Available from: <http://thesportjournal.org/article/examination-of-agility-performances-of-soccer-players-according-to-their-playing-positions/>.
6. Arazi H, Keihaniyan A, Oftade A. The effects of two types of high-intensity interval training (HIIT) programs on aerobic and anaerobic capacity of female's soccer players. Sports (Basel); c2017 Sep;5(3):57. Published online 2017 Aug 4.
7. Sanchez-Sanchez J, Carretero M, Ramirez-Campillo R, Petisco C, *et al.* Effects of high-intensity training with one versus three changes of direction on youth female basketball players' performance. 117 kinesiology. 2018;50(1):117-125.
8. Kansal DK. Test Measurement and Evaluation. New Delhi: SSS Publication. Takhsha S, Asadi A, *et al.* we wants to compare the effects of two types of high-intensity interval training (HIIT) programs on aerobic and anaerobic capacity of female soccer players.
9. Verma JP. A Text Book on Sports Statics. Gwalior, India: Venus Publication; c2000.
10. Agashe R, Sanjay. Introduction to Physical Education Fitness and Sports. Khel Sahithya Kendra Publications; c2013.
11. Fox EL, Bowers R, Foss M. The physiological basis of Physical Education and Athletics. Brown Publications; c2020.
12. Krishnan RWG. Physical Fitness Exercises and Health. Sports Publications; c2022.