INVESTIGATION OF AEROBIC TRAINING WITH AND WITHOUT SPECIFIC DRILL PRACTICES INDUCED ADAPTATIONS ON ANAEROBIC POWER OF FOOTBALL PLAYERS

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ABSTRACT

The purpose of this investigation was to inspect the aerobic training with and without specific drills induced adaptation on anaerobic power among football players. To attain the goal of the study 45 male football players from various colleges affiliated to SV University, Tirupathi, Andrapradesh, India, were selected as subjects. The subjects were selected in the age group of 18 to 23 years. The study population was randomly divided into three equal groups of 15 each. Experimental group-I was given the packages of aerobic training without specific drills, experimental group-II was given the packages of aerobic training with specific drills and group III was acted as control. Control group was restricted to participate in any specific training programme. They did these 2 trainings for 12 weeks. All 3 groups were measured before and immediately after 12weeks of training period on anaerobic power by conducting RAST. The data obtained were analyzed by paired 't' test to know the differences if any between the two testing periods. Additionally, magnitude of variation was also calculated. In addition, ANCOVA was also applied. When the adjusted 'F' was greater, Scheffe's test was applied. To test the obtained results the significance level 0.05 was chosen. Aerobic training with specific drills was much better than aerobic training without specific drills for the improvement of anaerobic power.

Keywords: *Aerobic training, Specific drills, Anaerobic power, Football players*

INTRODUCTION

Football is one of those sports that require the athlete to be fit in all areas. Strength, speed, agility and stamina and skill abilities are qualities that a football player must possess. As such, football training drills are designed to get the football player in optimal shape. It is a tremendously challenging sport and football players are required to execute at their limits of physical capacities. In order to meet up the tactical demands of deals with their opponents' players must keep up a high state of attention. Hence, everyone involved in the modern football game have to be familiar with the requirements of various physical and skills abilities of football game.

Football has a complex structure that requires combined training for technical, tactical and physical skills. Studies have shown that during a match, football players actively use about 90% of their aerobic capacity at an intensity of 75% of their VO_{2max} while the match total distance is between values. The analysis of the ways in which aerobic training weeks

combined with specific drill practices influence the optimization of the football players' sporting capacity will allow the expansion of knowledge regarding specialized training. Hardly few explorations have been made in India, the area of aerobic training with and without specific drills on specific fitness, and skill abilities among football players. Aerobic trainings are the most competent ways to enhance various specific fitness and skill abilities.

Aerobic training has numerous fitness benefits that result in improved performance in any sport. Regardless of the sport, aerobic training increases the body's ability to supply oxygen and nutrients to the working muscles and tissues. This results in using oxygen and energy more efficiently during exercise. With the improved heart function, resting and exercise heart rate is lowered. The focus of aerobic training is to progressively overload the cardio respiratory system and not the musculoskeletal system. Aerobic training consists of performing low to medium intensity exercise for long periods of time. In this investigation continuous running was given to football players as aerobic training. Though many training strategies prevail to develop performance related physical fitness, and skill abilities of football players the role of aerobic training is an undisputed one. Lot of researches had been carried out on the effects of aerobic training, but still the bone of contention is about the duration and frequency of training to get the maximum benefits.

Football refers to sports that involve, to varying degrees of kicking a ball with the foot to score a goal. Sports science and modern technology has had a major effect on soccer training over the past 10 years. Many teams have become much more analytical about their players' work rate in games, and also in training, by introducing tools such as game analysis and heart rate monitors, in order to gain an accurate understanding of the physical demands of players in games. Soccer incorporates periods of high-intensity efforts interspersed with periods of lower-intensity exercise. The physiological demands of soccer require players to be competent in several aspects of fitness, which include aerobic and anaerobic power, muscle strength, flexibility and agility. The benefit of game specific training for soccer players is well supported by research.

METHODOLOGY

To attain the goal of the study 45 male football players from various colleges affiliated to SV University, Tirupathi, Andrapradesh, India, were selected as subjects. The subjects

were selected in the age group of 18 to 23 years. The study population was randomly divided into three equal groups of 15 each. Experimental group-I was given the packages of aerobic training without specific drills, experimental group-II was given the packages of aerobic training with specific drills and group III was acted as control. The subjects were tested on anaerobic power by conducting bent RAST.

Training Protocol

The experimental group-I performed aerobic training without specific drills six days in a week for twelve weeks. In this present investigation continuous running was given to the subjects as aerobic training. To fix the training load for the aerobic training without specific drill group the subjects were examined for their exercise heart rate in response to different work bouts, by performing continuous running of five minutes duration for proposed repetitions and sets, alternating with active recovery based on work-rest ratio. The subject's training zone was computed using Karvonen formula and it was fixed at 65%HRmax to 90%HRmax. The work rest ratio of 1:1 between repetition and 1:3 between sets was given.

The experimental group-II performed the same aerobic training workout combined with specific drills six days in a week for twelve weeks. After the initial measurements the specially designed training programme was given to the subjects of the experimental group-II named as combined aerobic training with specific drills. The training sessions were conducted 6 days in a week i.e. (Monday to Saturday) over a period of twelve weeks. Each experimental session was of 30-45 minutes duration excluding warm-up and warm-down. Every sessions they performed aerobic training followed by specific drills. A week schedule was repeated to the proceeding week and the load was adjusted progressively. The work rest ratio of 1:1 between exercises and 1:3 between sets was given.

Statistical Technique

The data collected from the experimental and control groups on anaerobic power was statistically analyzed by paired 't' test to find out the significant differences if any between the pre and post test. Further, percentage of changes was calculated to find out the alterations in anaerobic power due to the impact of experimental treatment. In order to nullify the initial mean differences the data collected from the three groups prior to and post experimentation on anaerobic power were statistically analyzed to find out the significant difference if any, by applying the analysis of covariance (ANCOVA). Since three groups were involved, whenever

the obtained 'F' ratio value was found to be significant for adjusted post test means, the Scheffe's test was applied as post hoc test to determine the paired mean differences, if any. In all the cases the level of confidence was fixed at 0.05 level for significance.

RESULTS

The collected pre and post test Anaerobic Power (AP) data of aerobic training with and without specific drills & control groups are analyzed statistically as in Table-1.

Table – 1: Paird't' Test Results and % of Improvement on Anaerobic Power (AP) for Aerobic Training with and without Specific Drills & Control group's Football Players

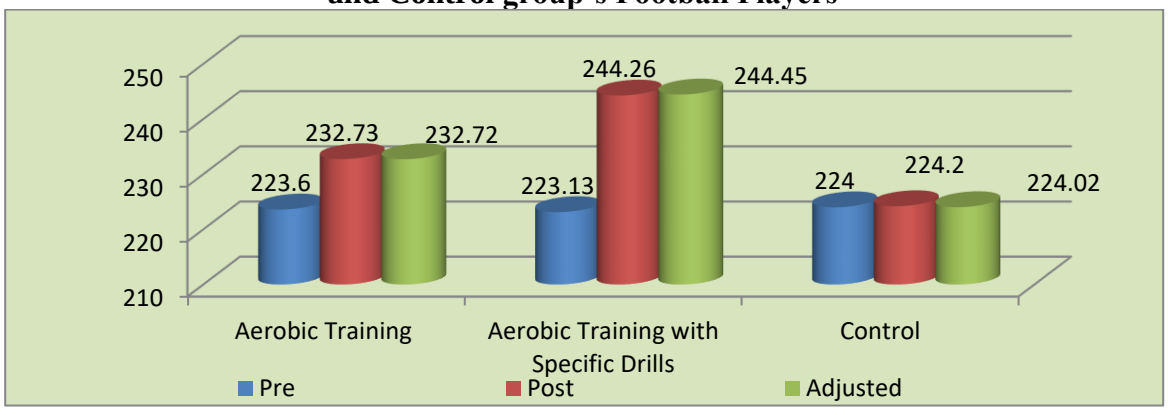
Group	Test	N	Mean	SD	DM	't' - ratio	%
Aerobic Training without Specific Drills	Pre	15	223.60	5.56	9.13	7.47*	4.08
	Post	15	232.73	5.77			
Aerobic Training with Specific Drills	Pre	15	223.13	4.58	21.13	10.49*	9.47
	Post	15	244.26	8.48			
Control	Pre	15	224.00	5.55	0.20	0.10	0.08
	Post	15	224.20	4.90			

*Table value for df 14 is 2.15(*significant)*

The collected pre and post test anaeropbic power (AP) values of two treatment (aerobic training with and without specific drills) groups vary obviously as the found 't' values of aerobic training without specific drills (7.47) as well as aerobic training with specific drills (10.49) groups were more than table value (df14=2.15).

Performing aerobic training without specific drills leads to 4.08% of improvement in anaerobic power (AP) whereas performing aerobic training with specific drills leads to 9.47% of improvement in aerobic power (AP) of football players.

Figure-I: **Data on Anaerobic power of Aerobic Training with and without Specific Drills and Control group's Football Players**



The chosen football player's anaerobic power (AP) performance of aerobic training with and without specific drills & Control groups were analyzed by ANCOVA statistics, and exhibited in Table – 2.

Table – 2: ANCOVA Results on Anaerobic Power (AP) for Aerobic Training with and without Specific Drills & Control group's Football Players

	Aerobic Training without Specific Drills	**Aerobic Training with Specific Drills**	**Control**	***SoV***	***SS***	***df***	***MS***	**'F' ratio**
Adjusted Mean	232.72	244.45	224.02	B	3138.47	2	1569.23	41.06*
				W	1604.96	42	38.21	

*(Table value for df 2 & 41 is 3.23)*Significant (.05 level)*

The applied ANCOVA calculation established that the adjusted (post test) means (aerobic training without specific drills group=232.72, aerobic training with specific drills group = 244.45 & CG=224.02) of football player's anaerobic power of all three chosen groups differs from each other, because the resultant adjusted (post test) mean 'F' value (41.06) is better than 3.23 (Table value for *df 2 & 41* =3.23).

As the aerobic training with and without specific drills & Control group's adjusted (post test) means 'F' value (F= 41.06) is significant, Scheffe's statistics was also used as in Table - 3.

Table – 3:Scheffe's Test Conclusion on Anaerobic Power (AP) for Aerobic Training with and without Specific Drills & Control group's Football Players

Variable	**Aerobic Training without Specific Drills**	**Aerobic Training with Specific Drills**	**Control**	**MD**	**CI**
Anaerobic Power	232.72	244.45		11.73*	5.80
	232.72		224.02	8.70*	5.80
		244.45	224.02	20.43*	5.80

**Significant (.05)*

The applied Scheffe's statistics confirmed that due to aerobic training without specific drills (8.70), as well as aerobic training with specific drills (20.43) the football player's anaerobic power was improved to a great extent. Though, aerobic training with specific drills was much better than aerobic training without specific drills since the mean difference (11.73) is more than 5.80 (CI value).

DISCUSSION

The present study findings reported that the aerobic training with specific drills had better positive impact than aerobic training without specific drills in improving the anaerobic power of football players. And also, Ates (2017) found that the high-intensity aerobic interval training practiced twice a week positive effects on anaerobic power (repeated sprint total time decreased) and fatigue index of young players. Besides, Clemente *et al.,* (2021) meta-analyses revealed that significant benefits after the high-intensity interval training (HIIT) in repeated sprint ability ($p = 0.049$) of men soccer players. Furthermore, Iaia, Rampinini & Bangsbo (2009) studies on football players have shown the speed-endurance training improved the ability to perform repeated sprints (approximately 2%). Regular aerobic exercise (Short-term) induces substantial improvement in both aerobic capacity and anaerobic performance (Sartorio *et al*., 2003). Similarly, Dawson *et al.,* (1998) found that significant enhancement in endurance, speed and repeated sprinting performance among fit male subjects, after six weeks of short sprint training. They also suggested that increases in the proportion of type-II muscle fibers are also possible with this type of training.

CONCLUSION

Aerobic training without specific drills leads to 4.08% of improvement in anaerobic power whereas performing aerobic training with specific drills leads to 9.47% of improvement in anaerobic power of football players. Though, aerobic training with specific drills was much better than aerobic training without specific drills for the development of anaerobic power. Aerobic training with and without specific drills used in the present study enable the sportsmen to better resist the fatigue to tackle higher training volumes with higher intensity in training sessions. Higher training load leads to advanced level of improvement in performance.

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