

Effect of Selected Drill Practice and Aerobic Exercises on Vo2 Max and Hemoglobin among College Men Football Players

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Abstract

The purpose of the study was to find out the effect of selected drill practice and aerobic exercises on VO2 Max and hemoglobin among college men football players. To achieve the purpose of this study, forty five college level men football players, who participated in inter college tournaments were selected from different college in Chennai. The selected subject's age groups were ranging from eighteen to twenty one years. The subjects were randomly divided into three groups and each group consists of fifteen subjects. Group one acted as experimental group I and Group two acted as experimental group II and group III acted as control group. Group three underwent their routine, experimental group I underwent selected drill practices and experimental group II underwent aerobic exercises for a period of six weeks. The dependent variables were VO2 max and hemoglobin. The obtained data were statistically analyzed using ANCOVA. In all cases the level of significance fixed was 0.05. The results proved that there was a significant improvements due to six weeks selected drill practices and aerobic exercises on VO2 max and hemoglobin.

Key words: Drill practices, Aerobic exercises, VO2 max and Hemoglobin.

Introduction

Soccer (football) is unarguably the world's most popular sport. The game of football is full of challenges and counter challenges between the contesting teams many unforeseen situations evolve during the game. Preplanned moves do, of course, occur, but each situation calls for a new approach. As a consequence, players, the most important factor of football are influenced by the stress of competitiveness in each conflicting situation. Performance of a team depends on the talents of the individual players and the understanding between the teammates and above all the attitude of players towards the interest of the team. Opinions on coaching and methods of play may differ, but there should be not much difference about the qualities of successful players. Good football mainly depends on the quality of players. The importance should be given or the following qualities of the players.

Since soccer is a physical contact sport and lots of movements and skills are involved in playing the game, a high level of physical demand is required for match play (Hoff, 2005 & Reilly, 2005). As the players have to cover a big area in the ground during attack and defence, the game demands high aerobic fitness (Reilly, 2005& Popadic Gacesa, Barak, and Grujic, 2009). A high number of

accelerations and decelerations, associated with a large number of changes in the direction of play create an additional load to the muscles of soccer players, which indicates a high need for both the aerobic and anaerobic energy delivery pathways (Reilly, 2005 & Popadic Gacesa, Barak, and Grujic, 2009 & Miller, et al., 2007).

Oxygen is transported to muscles primarily by hemoglobin (Nielsen and Weber, 2007). During aerobic exercise the demand for oxygen increases at the working muscle, so an optimum level of haemoglobin is required to perform at the highest level with high intensity. As soccer performance depends very much on the aerobic component of an athlete, the players need to maintain a normal haemoglobin level to optimize performance.

Drill Practices

Drills are pretty general, like passing, shooting dribbling with ball and without ball drills etcetera. Football drills are one of the vehicles that develop great football players, whether the drills are done alone in a team setting. Proper performance of a drill is a key to the overall success of that particular football drill. It's not the drill alone that delivers successful footballers and teams. Every drill must be approached with a multi faceted effort. Football drills comes in all sizes and shape. They are done with the ball and without ball. It is important to note that some drills must be done as a team and other drills can be done as an individual. The advantages of conditioning with the ball at feet include boredom, increased technical work, improved teamwork and more. Using small and large sided games is an effective strategy (Owen, 2011).

Aerobic Exercise

Aerobic exercise refers to exercise that involves or improver oxygen consumption by the body. Aerobic means "with oxygen" and refers to the use of oxygen in the body's metabolic or energy - generating process.

Many types of exercise are aerobic, and by definition are performed at moderate level of intensity for extended periods of time. To obtain the best results, an aerobic exercise session involves a warming up period, followed by at least 20 minutes of moderate to intense exercise involving large muscle groups, and a cooling down period at the end. Both the term and the specific exercise method were developed by Kennath H. Cooper, exercise physiologist.

Statement of the Problem

The purpose of the study was find out the effect of drill practices and aerobic exercises on VO2 max and hemoglobin among college men football players.

Hypothesis

It was hypothesized that there would be a significant improvement on VO2 max and hemoglobin among college men football players due to the drill practices and aerobic exercises.

Methodology

To achieve the purpose of this study, forty five college level men football players, who participated in inter college tournaments were selected from different college in Chennai. The selected subject's age group was ranging from eighteen to twenty one years. The subjects were randomly divided into three groups and each group consists of fifteen subjects. Group I acted as experimental group I and group II acted as experimental group II and group III acted as control group. Experimental group I underwent drill practices, experimental group II underwent aerobic exercises and control group underwent not exposed any training for the period of six weeks. VO2 Max was assessed Queens's college step test. Blood samples were drawn pre-exercise and immediately post-exercise in order to analyze the Hemoglobin. Approximately 5 ml blood was obtained from a forearm antecubital vein using Vacutainer tubes. Hemoglobin and estimated by Sahli's haemometer, using cyanomethaemoglobin method. The obtained data were statistically analyzed using ANCOVA. In all cases the level of significance fixed was 0.05.

Results on VO2 Max

The statistical analysis comparing the initial and final means of VO2 max due to selected drill practices and aerobic exercises on college men football players is presented in Table I.

Table-I
Computation of Analysis of Covariance of VO2 Max
(Scores in ml/kg/min)

Means	Drill Practice group	Aerobic exercise group	Control Group	SV	SS	df	MS	obtained 'F'
Pre Test Mean	45.51	47.51	45.91	B	33.75	2	16.88	1.35
				W	525.49	42	12.51	
Post Test Mean	50.80	50.83	45.10	B	326.43	2	163.21	11.90*
				W	575.84	42	13.71	
Adjusted Post Test Mean	51.44	49.86	45.42	B	291.80	2	145.90	25.61*
				W	233.54	41	5.70	

*significant, Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.35, 2 and 41(df) =3.37

Table-II

**Scheffe s post hoc test for ordered adjusted final mean
Difference on vo2 max
(Scores in ml/kg/min)**

Drill Practice Group	Aerobic Exercise Group	Control Group	Mean Difference	Confidence Interval
51.44	49.86	-	1.58	2.03
51.44	-	45.42	6.02*	2.03
-	49.86	45.42	4.43*	2.03

*Significant at 0.05 level.

Discussion on VO2 Max

Table I shows the result of pre test mean and post test mean adjusted post test mean values and the obtained F value of 1.35, 11.90, and 25.61 respectively. The obtained value was post test mean and adjusted post test mean was grater than the required table value of 3.37 and hence it showed that there were significant differences among the groups. The table II shows the result of the Scheffe's Post Hoc test Paired mean different between groups the comparison between drill practice group and aerobic exercise group mean difference 1.58 which was lesser than the confidence interval of 2.03. The comparison between drill practice group and control group the mean difference was 6.02; it was grater then the confidence interval of 2.03. The comparison between aerobic exercise group and control group the mean difference 4.43 which was greater than the confidence interval of 2.03. The finding of this present study was showed greater improvement in VO2 max after the both drill practice and aerobic exercise. A similar observation has been made by many researchers. Indranil Manna et al., (2011) found that training significant increase ($P < 0.05$) in VO2max of soccer players. An increase ($P < 0.05$) in relative VO2max value was noted among the players in the preparatory phase and the competitive phases when compared with that of the baseline data. The increase in VO2max after training may be due to an increase in the systemic a-v O2 difference and stroke volume, when compared to senior players (Mc Ardle, Katch and Katch, 2006 & Wilmore and Costill, 2005).

Results on Hemoglobin

The statistical analysis comparing the initial and final means of hemoglobin due to selected drill practices and aerobic exercises on college men football players is presented in Table III.

Table-III

**Computation of Analysis of Covariance of Hemoglobin
(Scores g/dl)**

	Drill Practices group	Aerobic exercises group	Control group	SV	SS	df	MS	Obtained 'F'
Pre Test Mean	14.03	13.53	13.47	B	2.85	2	1.42	1.27
				W	46.99	42	1.19	
Post Test Mean	14.65	14.60	13.73	B	7.89	2	3.94	3.79*
				W	43.70	42	1.04	
Adjusted Post Test Mean	14.34	14.73	13.91	B	4.94	2	2.47	11.45*
				W	8.85	41	0.21	

Table F-ratio at 0.05 level of confidence for 2 and 42 (df) =3.35, 2 and 41 (df) =3.37.

*Significant

Table-IV

**Scheffe s post hoc test for ordered adjusted final mean
Difference on Hemoglobin
(Scores g/dl)**

Aerobic Exercise Group	Drill Practice Group	Control Group	Mean Difference	Confidence Interval
14.72	14.34	-	0.38	0.40
14.72	-	13.91	0.81*	0.40
-	14.34	13.91	0.43*	0.40

*Significant at 0.05 level.

Discussion on Hemoglobin

The pre test means and post test means adjusted post test means were determined and analysis of covariance was done and the obtained F value 19.04 was greater than the required value of 3.37 and hence it was accepted that there was significant differences among the treated groups. Unal (1998), indicated that after 8 weeks of aerobic exercises hemoglobin values of subjects increased significantly. Patlar and Keskin(2007) indicated that sub maximal exercise has a significant effect (Increase) on WBC, RBC, HGB and HCT levels. In agreement

with other investigators, drill practice and aerobic exercise caused an increase in hemoglobin counts in men football players, in our study.

Conclusion

It was concluded that there was significant improvement on VO₂ max and hemoglobin due to six weeks selected drill practices and aerobic exercises among college men football players compared to control group.

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