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Effect of aerobic training on selected skill related performance variables among soccer players

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Abstract
The purpose of the study was to find out effect of aerobic training on selected skill related performance variables among soccer players. To achieve the purpose of the study forty subjects (N=40) were randomly selected as a subjects from Chennai, Tamil Nadu. The subjects were aged between 17 to 25 years. The selected subjects were randomly assigned into two equal groups of 20 each, such as investigational and control groups. The investigational group participated in the aerobic training for thrice a week for six weeks of training, each section lasted 45minutes. The control group did not participate in any kind of special training programme apart from the daily physical activities. The dribbling and passing was measured by Mor-Christian General Soccer Skill Test Batter. The subjects of two groups were tested on selected variables prior and immediately after the training period. The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference. The 0.05 level of confidence was fixed to test the level of significance difference, the result of the study showed that systematic practice of aerobic training improved the selected variables such as dribbling and passing of soccer players.

Keywords: Aerobic training, dribbling and passing

Introduction
Soccer is one of the most widely played and complex sports in the world, where players need technical, tactical, and physical skills to succeed. However, studies to improve soccer performance have often focused on technique and tactics at the expense of physical resources such as endurance, strength, and speed. The average work intensity, measured as percent of maximal heart rate, during a 90-min soccer match is close to the lactate threshold, However, expressing intensity as an average over 90 min. Indeed, soccer matches have periods and situations of high intensity activity where accumulation of lactate takes place. Therefore, the players need periods of low-intensity activity to remove lactate from the working muscles. Physical training can be described in terms of its outcome and its process. The outcomes of training are anatomical, physiological, biochemical and functional changes specific to the sport discipline, while the training process is characterized by the systematic repetition of physical exercises (Viru & Viru, 2000) [1].
The influence of aerobic training on skill performance of football players has received little attention and not completely understood. Few studies have only assessed the longevity of changes after aerobic training on selected variables considered in this study. Consequently, the aim of the present study is to examine the effectiveness of aerobic training on skill performance of soccer players.

Methodology
To achieve the purpose of the study forty subjects (N=40) were randomly selected as a subjects from Chennai, Tamil Nadu. The subjects were aged between 17 to 25 years. The selected subjects were randomly assigned into two equal groups of 20 each, such as investigational and control groups. The investigational group participated in the aerobic training for thrice a week for six weeks of training, each section lasted 45minutes. The control group did not participate in any kind of special training programme apart from the daily physical activities. The dribbling and passing was measured by Mor-Christian General Soccer Skill Test Batter. The subjects of two groups were tested on selected variables prior and immediately after the training period.

Training Programme

During the training period the experimental group (aerobic training) underwent six weeks of aerobic training programmes on Tuesdays, Thursdays and Saturdays, in addition to their daily routine activities as per the schedule. The duration of training were planned for 45 minutes that is from 7.00am to 7.45am. All the subjects involved in this study were carefully monitored throughout the training programmes. The following exercise was followed in the training session, the schedule consist of 10min warm up then 3-Hurdle Drill, Box Blast, Lateral Bound. 90/90 Stretch. Base Rotations. Squat Jump, Ankle Jump, Single-Leg Hurdle Hop.igh knee, mountain climbers, burpees, plank hops, jump and jack, tuck jump and jump rope etc. at the end of session the subjects involved cool down for 10min.

Statistical Technique

The collected data were analysed statistically through analyze of covariance (ANCOVA) to find the significance difference. The 0.05 level of confidence was fixed to test the level of significance difference.

Analysis of Data

The data collected prior and after the experimental periods on speed endurance and vital capacity of investigational group (aerobic training) and control group (CG) were analysed and presented in table – I and II.

Table I: Analysis of Covariance for Pre and Post Data on Dribbling

Test	EX- G	CG	Source of variance	Sum of Squares	df	Mean square	F
Pre-test mean	45.98	45.53	Between	13.50	1	4.50	0.82
			Within	308.75	48	5.51	
Post-test mean	44.25	42.69	Between	153.90	1	51.30	9.96*
			Within	288.46	48	5.15	
Adjusted mean	44.37	43.23	Between	79.97	1	26.66	56.74*
			Within	25.84	47	0.47	

*significant.at 0.05 level.

The obtained F value on pre test scores 0.82 was lesser than the required F value of 4.04 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 9.96 was greater than the required F value at 4.04. This proved that the differences between the post test mean at the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 56.74 was greater than the required F value at 4.04 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post test means on dribbling due to the aerobic training. The pre, post and adjusted means on dribbling were presented through bar diagram for better understanding of the results of this study in Figure-I.

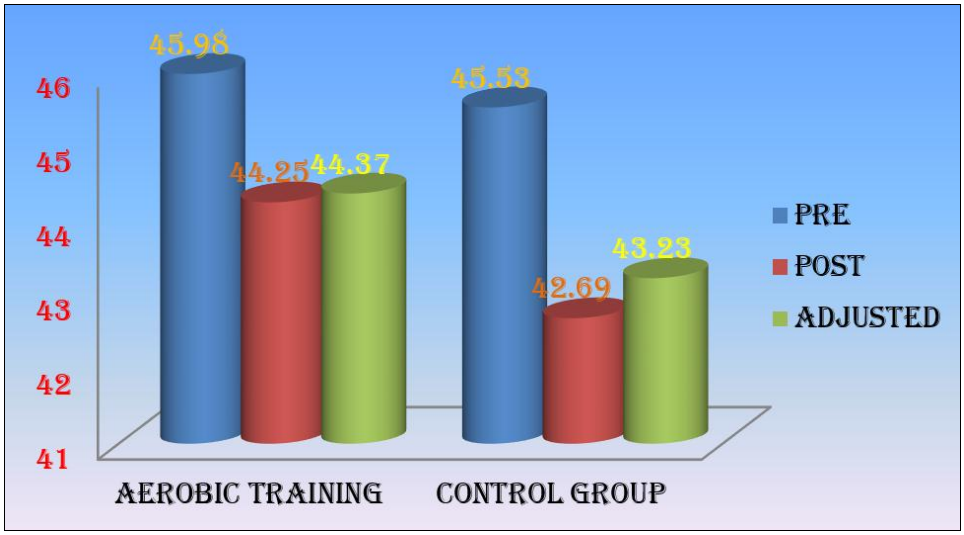

Fig I: Pre, Post and Adjusted Post Test Differences of the aerobic training and control groups on dribbling

Table II: Analysis of covariance for Pre and Post Data on passing

Test	EX- G	CG	Source of variance	Sum of Squares	df	Mean Square	F
Pre-test mean	4.87	4.73	Between	0.67	1	0.22	0.12
			Within	100.93	48	1.80	
Post-test mean	7.53	8.93	Between	149.40	1	49.80	24.90*
			Within	112.00	48	2.00	
Adjusted mean	7.48	8.99	Between	145.82	1	48.61	57.54*
			Within	46.46	47	0.84	

*significant.at 0.05 level.

The obtained F value on pre test scores 0.12 was lesser than the required F value of 4.04 to be significant at 0.05 level. This proved that there was no significant difference between the groups at initial stage and the randomization at the initial stage was equal. The post test scores analysis proved that there was significant difference between the groups as the obtained F value at 24.90 was greater than the required F value at 4.04. This proved that the differences between the post test mean at the subjects were significant. Taking into consideration the pre and post test scores among the groups, adjusted mean scores were calculated and subjected to statistical treatment. The obtained F value at 57.54 was greater than the required F value at 4.04 to be significant at 0.05 level and hence it was accepted that there was significant difference among the adjusted post test means on passing due to aerobic training.

The pre, post and adjusted means on passing were presented through bar diagram for better understanding of the results of this study in Figure-2.

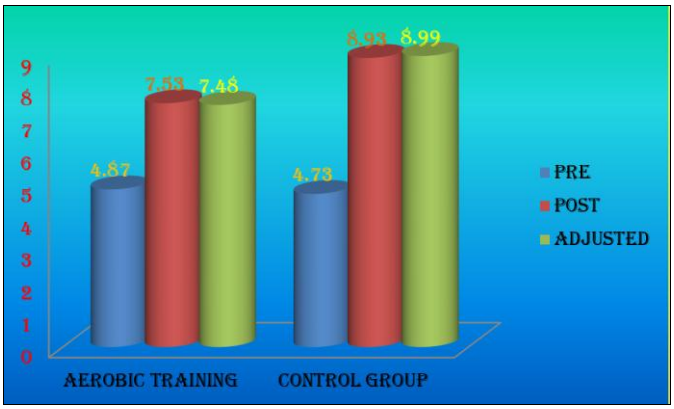

Fig 2: Pre, Post and Adjusted Post Test differences of the aerobic training and control groups on passing

Discussion of Findings

The present study examined six weeks aerobic training on selected skill related variables among soccer players. The results showed a statistically significant (p<0.05) due to aerobic training in the value of the dribbling and passing among soccer players. Yuvaraj (2018) [2] found that specific exercise with aerobics training is significantly improve the skill performance variables of football players. Kumaravelu, P. (2022) [3] indicated that sand training improves the skill performance variables among soccer players. Wang, M., & Zhang, J. (2022) [4] revealed that football players performance was increased due to high intensity interval training Parasuraman, (2022) proved due to six weeks of circuit training with kettlebell training significantly improve the volleyball performance variables. These findings suggested that aerobic training over 6 weeks were able to promote improvement in dribbling and passing among soccer players.

Conclusion

1. The dribbling was significantly increased due to six weeks of aerobic training of soccer players while comparing to the control group.
2. The passing was significantly increased due to six weeks of aerobic training of soccer players while comparing to the control group.

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