

Effect of SAQ Training and Circuit Resistance Training on Selected Physiological and Bio Motor Components of Football Players

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KEYWORDS

SAQ Training, Circuit Resistance Training, Vital Capacity, Vo2 Max, Resting Pulse Rate, Leg Explosive Power, Agility and Muscular Endurance,

ABSTRACT

Introduction: SAQ programmes break speed down into three main areas of skills, speed, agility and quickness. Speed, agility, and quickness (SAQ) training is a type of physical training that focuses on developing the speed, agility, and quickness of an athlete. While SAQ training can be used to improve the performance of any athlete, it is most commonly used by athletes who participate in sports that require these skills, such as football, basketball, soccer, and hockey. A circuit resistance training programme usually has 10 to 15 stations per circuit. The circuit is repeated two to three times so that the total time of continuous exercise is 20 to 30 min. Circuit resistance training is usually performed 3 days/wk for at least 6 week. This method of training is ideal for subjects with a limited amount of time for exercise.

Objectives: This study was designed to investigate the effect of saq training and circuit resistance training on selected physiological components of football players.

Methods: To achieve the purpose of the study (N=45) forty five men football players were selected from affiliated colleges of Periyar University, Salem, Tamilnadu, India as subjects. The age of the subjects ranged from 19 to 23 years. The selected subjects were divided into three equal groups (N=15). Group I underwent saq training. Group II underwent circuit resistance training. Group III acted as control group who did not undergo any specialized training program other than their daily routine. The physiological components such as vital capacity, vo2 max and resting pulse rate; and the bio motor components such as leg explosive power, agility and muscular endurance were selected as dependent variables. The physiological components were assessed by digital dry spiro meter, 12 minutes cooper test and digital heart rate monitor test; and the bio motor components were assessed by vertical jump, illinois agility test

and sit ups test respectively. The subjects were concerned with their particular training for a period of twelve weeks, alternatively three days per week. The collected data from three groups prior to and immediately after the training programme on selected criterion variables were statistically analyzed with analysis of covariance (ANCOVA).

Conclusions: The level of confidence was fixed at 0.05 for all the cases to test the hypothesis. The result of the study reveals that the saq training and circuit resistance training groups achieved significant improvement on selected physiological and bio motor components such as vital capacity, vo2 max and resting pulse rate; and the bio motor components such as leg explosive power, agility and muscular endurance of college men football players.

1. Introduction

Sports training need not be confused with physical exercise, which is more validly used in conjunction with health and fitness. It does not, however, mean that athletes do not engage in physical activity programmes. As a matter of fact, training for competitions requires much harder regimes of physical exercise to condition body than one does to achieve health objectives. . It is no simple proposal of what interaction takes place between an athlete and his/her coach; it goes far beyond it and takes into account a host of other factors such as medical assistance, scientific backup (biomechanical, physiological, psychological), nutrition, equipment, sports infrastructure, team management, and competition contact (**Kamlesh, 2009**).

Speed has long been considered as just one single entity how fast an object goes from point, A to point B. Only recently has speed been specified and broken down into stages such as acceleration, the planning out phase, deceleration, etc. Much of this research has been carried out by sports coaches involved in straight line running, so that the jumping training and zig-zagging speed necessary in Soccer has been somewhat neglected. Those involved with the development of SAQ programme have sought to fill this void so as to develop all types of speed. Particularly for team sports such as Soccer, SAQ programmes break speed down into three main areas of skills, speed, agility and quickness. Although these may appear to be quite similar they are in fact very different in terms of how they are trained, developed and integrated into a player's performance. When the skills are successfully combined and specialist SAQ equipment is utilized, they provide the coach with the tools to make a good player into an outstanding one. It is remarkable what players can achieve with an SAQ programme (**Polman 2007**).

Speed, agility, and quickness (SAQ) training is a type of physical training that focuses on developing the speed, agility, and quickness of an athlete. While SAQ training can be used to improve the performance of any athlete, it is most commonly used by athletes who participate in sports that require these skills, such as football, basketball, soccer, and hockey. That said, the

ordinary joe can also benefit from SAQ training. If you want to improve your explosiveness, acceleration, change of direction, and overall athleticism, then this type of training is a must try out. There are also some activities that can benefit from SAQ training, such as playing with your kids, chasing after a bus, or running to catch your flight. This guide will cover everything you need to know about SAQ training, including what it is, the benefits, how to do it, and some common mistakes to avoid. There is nothing more exhilarating than a player who explodes through a defensive gap, chests, turns and side steps to avoid desperate, defensive lunges and fires the ball home or when a centre-half defies gravity by jumping into the air, hanging there long enough to intercept a crossed ball with his head before redirecting into a supporting mid fielder's feet for a swift, defensive counter attack. Soccer is the greatest game in the world. These wonderful acts of speed, agility and quickness are what make the difference between winning and losing, often thought to be god given gifts and therefore neglected on the training field. They are admired and believed to be essential for success within the game by players, managers, coaches and trainers.

The SAQ programme for Soccer is the first ever Soccer specific programme designed to develop these key skills. The programme also has other significant benefits such as improving eye, hand and foot co-ordination, strength and explosive power, as well as being full of variety and great fun. The secret lies in the SAQ continuum and the use of progressive sequential learning techniques breaking down complex sports science and making it easy to understand its practical use. The end result is the development of multi-directional, explosive speed specifically for Soccer. The programme can be adopted to meet the needs of both squad training and of individual players with in the squad who requires position- specific development. It also provides an ideal opportunity for children as young as six, up to including the most senior professional players to learn and improve. The programmes has evolved from a foundation of years of practical experience out on the training field of world Soccer, taking to world cup coaches, premiership managers, elite and amature players through to the little league players and school kids. This is what makes it so unique and in demand throughout the world. Many of Europe's top clubs now include SAQ training as part of their everyday session, because it adds a new dimension to their preparation and also produces demonstrable results on the playing field **(Bloomfield, 2009)**.

A circuit resistance training programme usually has 10 to 15 stations per circuit. The circuit is repeated two to three times so that the total time of continuous exercise is 20 to 30 min. At each exercise station, a resistance that fatigues the muscle group in approximately 30 sec is selected (as many repetitions as possible at approximately 40% to 55% of 1-RM). A 15 to 20 sec rest period between exercise stations is included. Circuit resistance training is usually performed 3 days/wk for at least 6 week. This method of training is ideal for subjects with a limited amount of time for exercise. Subject can add aerobic exercise stations to the circuit between each weightlifting station (i.e., super circuit resistance training) **(Yilmaz, 2018)**.

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Football is referred as soccer in the world and it is a high energy athletic team sport in this modern age. The numbers of countries of FIFA members even outnumber the members of United Nations Organizations - another undeniable proof of the game's popularity. Since 1900, football is the integral part of the greatest sports show in the world Olympics. The game has been followed in a feverish fashion in Europe, especially in England, for centuries. In fact, the game attracted different sections of men and women throughout the world. The first recorded game took place as early as A.D. 217 in the town of Derby in England. This particular game was once part of a grand festival that was celebrated by the local folk after the victory over the invading Romans. The tradition bound English men also conducted annual football events ever since and it is the Shrove Tuesday football game being played since 1175 (**Kaka & Biru, 1986**).

Physical Education comprises two words, 'physical' and 'education'. The term physical refers to the activities related to the individual body of man, such as anatomical shape, physical ability, physical health, etc. The second word, 'education', means- that formal Education received by the teacher and the intellectual and spiritual development of human beings makes them self- sufficient citizens. Both the combined words 'Physical education' means is- such Education that is related to Human by which human beings have all over development in physical, mental, social, and religious forms. The physical fitness of individuals of each age group varies, and individuals of all ages need to remain physically healthy. (**Kamlesh, 2002**).

Training is a progressive and systematic learning process that adapts to daily exercise. The process of relieving the players stress and adapting to load is called sports training. The training period consists of different phases, and recovery between various stages is mandatory (**Frank W. Dick, 2014**).

2. Objectives

This study was designed to investigate the effect of saq training and circuit resistance training on selected physiological components of football players.

3. Methodology

To achieve the purpose of the study (N=45) forty five men football players were selected from affiliated colleges of Periyar University, Salem, Tamilnadu, India as subjects. The age of the subjects ranged from 19 to 23 years. The selected subjects were divided into three equal

groups (N=15). Group I underwent saq training. Group II underwent circuit resistance training. Group III acted as control group who did not undergo any specialized training program other than their daily routine. The physiological components such as vital capacity, vo2 max and resting pulse rate; and the bio motor components such as leg explosive power, agility and muscular endurance were selected as dependent variables. The physiological components were assessed by digital dry spiro meter, 12 minutes cooper test and digital heart rate monitor test; and the bio motor components were assessed by vertical jump, illinois agility test and sit ups test respectively. The subjects were concerned with their particular training for a period of twelve weeks, alternatively three days per week. The collected data from three groups prior to and immediately after the training programme on selected criterion variables were statistically analyzed with analysis of covariance (ANCOVA). The level of confidence was fixed at 0.05 for all the cases to test the hypothesis.

4. Results

Table 1: Computation of Analysis of Covariance of Means of SAQ Training and Circuit Resistance Training and Control Group on Vital Capacity, Vo2 Max and Resting Pulse Rate (In Counts and Meters)

Variables	Test	SAQ Training Group (STG)	Circuit Resistance Training Group (CRTG)	Control Group (CG)	Source of Variance	Sum of Square	df	Mean Squares	'F' Ratio
Vital Capacity	Pre Test	3.75	3.80	3.77	Between	0.02	2	0.009	0.02
					Within	26.73	57	0.47	
	Post Test	4.41	4.19	3.86	Between	2.97	2	1.49	3.71*
					Within	22.83	57	0.40	
	Adjusted Post Test	4.42	4.17	3.86	Between	3.15	2	1.57	90.37*
					Within	0.98	56	0.02	
VO2 Max	Pre Test	37.00	36.23	36.87	Between	6.78	2	3.39	0.17
					Within	1152.61	57	20.22	
	Post Test	40.50	40.01	37.01	Between	142.72	2	71.36	4.89*
					Within	831.73	57	14.59	
	Adjusted Post Test	40.32	40.30	36.91	Between	153.90	2	76.95	10.82*
					Within	398.31	56	7.11	
Resting Pulse Rate	Pre Test	71.75	71.95	71.90	Between	0.43	2	0.22	0.02
					Within	580.50	57	10.18	
	Post Test	66.30	68.00	70.05	Between	141.03	2	70.52	7.45*
					Within	539.15	57	9.45	
	Adjusted Post Test	66.34	67.97	70.04	Between	136.66	2	68.33	8.69*
					Within	440.26	56	7.87	

*Table value required for significant at 0.05 (Table with df 2 and 57 and 2 and 56 are 3.15 and 3.16 respectively).

The pre, post-test and adjusted post-test mean values of Vital Capacity on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 3.75, 4.41, 4.42; 3.80, 4.19, 4.17; and 3.77, 3.86, 3.86 respectively.

The pre, post-test and adjusted post-test mean values of Vo2 Max on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 37.00, 40.50, 40.32; 36.23, 40.01, 40.30; and 36.87, 37.01, 36.91 respectively.

The pre, post-test and adjusted post-test mean values of Resting Pulse Rate on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 71.75, 66.30, 66.34; 71.95, 68.00, 67.97; and 71.90, 70.05, 70.04 respectively.

The F value of adjusted post-test on vital capacity, cardio respiratory endurance and resting pulse rate were 90.37; 10.82; and 8.69 respectively. The obtained F values of adjusted post-test were greater than the table value of 3.16. Hence it was proved that there were significant improvements on vital capacity, vo2 max and resting pulse rate of college men football players.

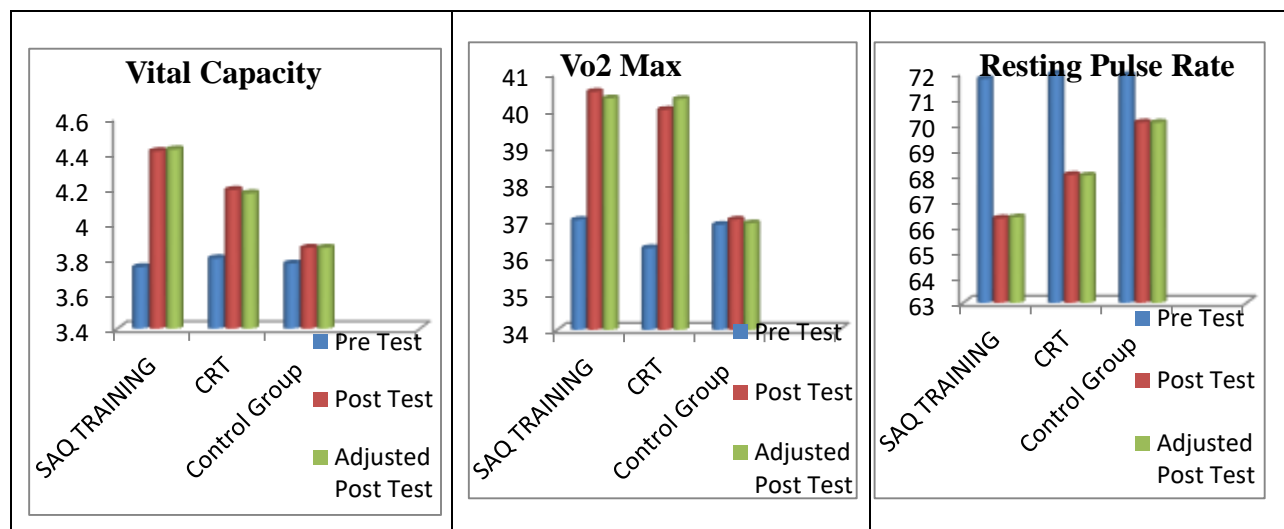


Figure-1: Pre, Post and Adjusted Post Test Means of SAQ Training and Circuit Resistance Training and Control Group on Vital Capacity, Vo2 Max and Resting Pulse Rate

Table 2: Computation of Analysis of Covariance of Means of SAQ Training and Circuit Resistance Training and Control Group on Leg Explosive Power, Agility and Muscular Endurance (In Counts and Meters)

Variables	Test	SAQ Training Group (STG)	Circuit Resistance Training Group (CRTG)	Control Group (CG)	Source of Variance	Sum of Square	df	Mean Squares	'F' Ratio
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Leg Explosive Power	Pre Test	2.32	2.32	2.32	Between	106.71	2	53.36	2.08
					Within	1085.87	57	19.05	
	Post Test	2.80	2.53	2.53	Between	196.84	2	98.42	3.91*
					Within	1433.47	57	25.14	
	Adjusted Post Test	2.80	2.53	2.53	Between	11.87	2	5.94	6.99*
					Within	47.37	56	0.85	
Agility	Pre Test	13.68	13.79	13.75	Between	0.28	2	0.14	0.43
					Within	18.78	57	0.32	
	Post Test	12.60	12.74	13.00	Between	1.28	2	0.64	4.26*
					Within	8.41	57	0.15	
	Adjusted Post Test	12.48	12.60	12.80	Between	5.38	2	2.69	15.82*
					Within	9.58	56	0.17	
Muscular Endurance	Pre Test	35.40	34.20	34.65	Between	14.70	2	7.35	2.08
					Within	566.55	57	9.94	
	Post Test	41.90	38.85	34.90	Between	492.70	2	246.35	35.09*
					Within	400.15	57	7.02	
	Adjusted Post Test	41.55	39.15	34.95	Between	443.24	2	221.62	52.29*
					Within	237.35	56	4.24	

*Table value required for significant at 0.05 (Table with df 2 & 57 and 2 & 56 are 3.16 respectively).

The pre, post-test and adjusted post-test mean values of Leg Explosive Power on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 2.32, 2.80, 2.80 ; 2.32, 2.53, 2.53; and 2.32, 2.53, 2.53 respectively.

The pre, post-test and adjusted post-test mean values of Agility on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 13.68, 12.60, 12.48; 13.79, 12.74, 12.60; and 13.75, 13.00, 12.80 respectively.

The pre, post-test and adjusted post-test mean values of Muscular Endurance on Saq Training Group (STG), Circuit Resistance Training Group (CRTG) and Control Group (CG) were 35.40, 41.90, 41.55; 34.20, 38.85, 39.15; and 34.65, 34.90, 34.95 respectively.

The F value of adjusted post-test on co-ordination, agility and muscular endurance were 6.99, 15.82; and 52.29 respectively. The obtained F values of adjusted post-test were greater than the table value of 3.16. Hence it was proved that there were significant improvements on leg explosive power, agility and muscular endurance of college men football players.

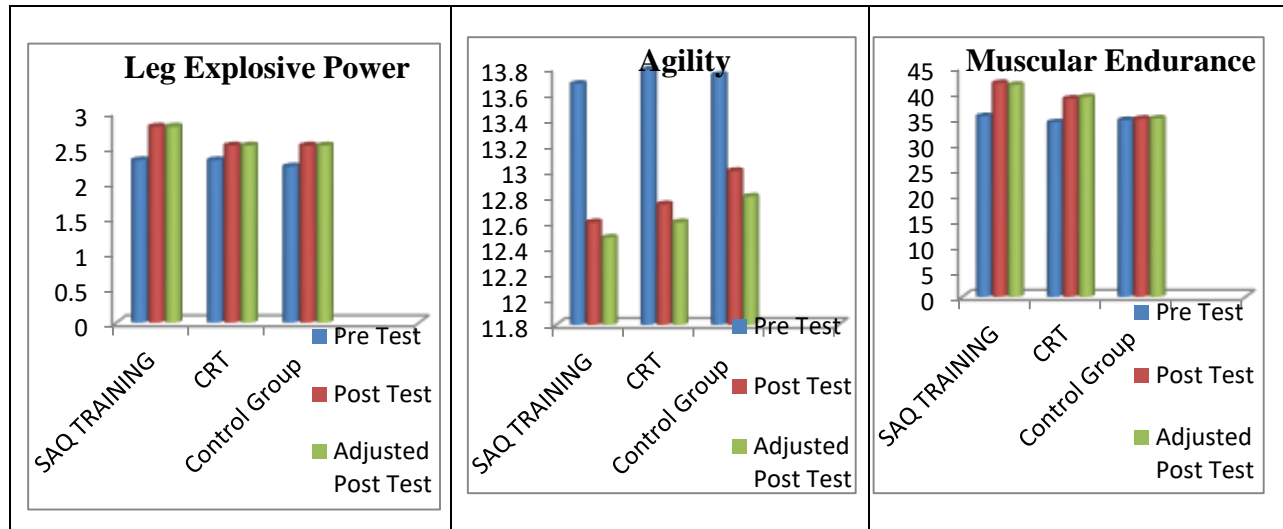


Figure-2: Pre, Post and Adjusted Post Test Means of SAQ Training and Circuit Resistance Training and Control Group on Leg Explosive Power, Agility and Muscular Endurance Discussion of Findings

5. Discussion of Findings

The result of the study indicates that the experimental group namely as SAQ training and circuit resistance training had significantly improved in the selected physiological variables namely vital capacity, vo2 max and resting pulse rate. It is also found that the improvement caused by SAQ training and circuit resistance training. The results of the studies are in corroboration with the studies of (Romero-Arenas S, 2013).

The result of the study also indicates that the experimental group namely as SAQ training and circuit resistance training had significantly improved in the selected bio motor variables namely leg explosive power, agility and muscular endurance. It is also found that the improvement caused by SAQ training and circuit resistance training. The results of the studies are in statement with the studies of (Raghavendra. K, et.al. 2016 and Kubendren, C. 2014).

6. Conclusions

The experimental groups namely as SAQ training and circuit resistance training had achieved significant improvement on selected physiological components such as vital capacity, vo2 max and resting pulse rate when compared to control group.

The experimental groups namely as SAQ training and circuit resistance training had also achieved significant improvement on selected bio motor variables such as leg explosive power, agility and muscular endurance when compared to control group.

It was concluded that SAQ training shown better improvement when comparing to the circuit training groups on selected the physiological and bio motor components.

It was concluded that college level player should practice both SAQ training and circuit resistance training for positive development of playing.

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