IMPACTS OF SAQ TRAINING ON SELECTED PHYSIOLOGICAL VARIABLES AMONG FOOTBALLERS

V. Kumaravel[1], Dr.P. Sridar[2*]

[1]*Ph.D. Research Scholar, (Part Time) Department of Physical Education, Government Arts and Science College, (Affiliated to Bharathiar University, Coimbatore) Modakkurichi, Erode, Tamilnadu, India.*

[2*]*Director of Physical Education, Government Arts and Science College, Modakkurichi, Erode, (Affiliated to Bharathiar University, Coimbatore), Tamilnadu, India.*

ABSTRACT

Speed, agility, and quickness (S.A.Q.) training has become a popular way to train athletes. For the present study, ninety six players were selected as samples from the qualified teams for the pre-quarter final in the Anna University, Salem in the academic year 2017– 2018. Finally forty football players were randomly selected as subjects for the present study. They were divided into two equal groups. Each group consists of 20 subjects. The age of subjects were ranged from 18-25 years. The researcher had been selected the following variables for the present study: physiological variables namely heart rate, systolic blood pressure and diastolic blood pressure. The data was collected before and after twelve weeks of training. The collected data was analyzed by using t-test and applying Analysis of Covariance (ANCOVA) Technique. The level of significance was fixed at 0.05.The findings of the present study have strongly indicates that 12 weeks of S.A.Q. training have significant effect on selected physiological variables i.e., heart rate, systolic blood pressure and diastolic blood pressure of football players.
KEY WORDS: *Speed, Agility, Quickness, Heart rate, Blood Pressure, Football.*

1. INTRODUCTION

Soccer requires players to perform numerous actions that require strength, power, speed, agility, balance, stability, flexibility and endurance (Bloomfield et al., 2007; Gorostiaga et al., 2004; Helgerud et al., 2001) suggesting that the physical conditioning of players is a complex process. During a soccer match, players cover about 10 km in total, which includes a sprint every 90 seconds (11% of overall activity) with each action lasting on average of 2 to 4 seconds and covering a distance of 15 m (Stolen et al., 2005). Although speed represents a very important component of fitness for a soccer player, quickness (acceleration speed during the first steps) is probably more important. This is because sprints in soccer are mainly performed over short distances undertaken at maximal intensity although the longest distances tend to be about 40 m and usually involves several changes in direction (Jovanovic et al., 2011; Rienzi et al., 2000).

Yap &Brown, (2000) defined speed as "the rapidity of movement". Agility is the rapid whole body movement with change of velocity or direction in response to a stimulus (Sheppard & Young, 2006).

Lee et.al. (1980) defined quickness as "the ability to read and react to a situation; it is a multidirectional skill that combines explosiveness, creativeness, and acceleration" (Yap &Brown, 2000). SAQ aims to coach the necessary techniques to provide the basic skill to complete the movements.

2. METHODOLOGY

For the purpose of the present study, ninety six players were selected as samples from the qualified teams for the pre-quarter final in the Anna University, Salem in the academic year 2016 – 2017. Finally forty football players were randomly selected as subjects for the present study. They were divided into two equal groups. Each group consists of 20 subjects. Group - I was underwent to SAQ training (SAQT), Group – II acted as control group. They didn't undergo for any specific training programme. The age of subjects were ranged from 18-25 years. The researcher had been selected the following variables for the present study: physiological variables i.e., heart rate, systolic blood pressure and diastolic blood pressure of variables. The selected variables were assessed by using standardized test.

The data was collected before and after twelve weeks of training. The collected data was analyzed by using t-test and applying Analysis of Covariance (ANCOVA) Technique. The level of significance was fixed at 0.05.

3. EXPERIMENTAL DESIGN
For the present study pre test – post test randomized group design was used.

4. TRAINING PROCEDURE
The data will be taken for both the groups before and after the experimental period of twelve weeks. After the initial measurements the specially designed training programme was given to the subjects of the experimental group named as SAQ (speed, agility and quickness) training. The training for experimental groups was administrated at Knowledge Institute of Technology ground, Salem. The training sessions were conducted three days a week i.e. (Monday, Wednesday, and Friday) over a period of twelve weeks. Each experimental session was of 30-45 minutes duration with excluding warm-up and warm-down. The training commenced with one week of general physical conditioning for the experimental groups, so that the subjects were ready physically and mentally to take on specific load administrated to them for the purpose of the study. After one week of conditioning the training was administrated to the experimental groups, which include speed, agility, and quickness drills respectively for three days in a week i.e. (Monday, Wednesday, and Friday). A week schedule was repeated to the proceeding week and the load was adjusted progressively. A detail program is appended. The procedure adopted for the adjustment of load is as follows: The load intensity was kept low to moderate in first week and increased progressively in proceeding week moderate to high. The frequency of training was thrice in a week. The density was adjusted according to intensity because itis inversely related to intensity. The repetition and sets were increased progressively from first week to proceeding week. The duration of training was 30-45 min. for each experimental day. The duration of warm-up and warm-down were fixed at ten to fifteen minutes respectively. Control group was not allowed to take part in the specific experimental training programme expect they had daily general warming up and had their normal activities. The following drills were used for this study: Speed: Standing stationary arm swings, straight leg shuffle, weighted arm swings, "A" skips, contrast resisted arm swings, skipping for height. Agility: Forward roll, carioca, backward roll, side to side with cone reach, sprawl and stand up, side to side with volley. Quickness: Hip-twist ankle jumps, MB wall chest passes, in- place tuck jumps, tap drills, pike jumps, one- handed tap drills with partner.

5. RESULTS AND DISCUSSION
Table-1Significance of mean gains /losses between pre and post test of SAQT and CG on selected physiological variables

| Variables	Pre-test	Post-test	Diff.	SE	't'-ratio
SAQ Training Group					
Heart-rate	74.35	70.35	4.00	0.22	18.38*
SBP	122.55	118.10	4.45	0.45	9.89*
DBP	81.25	78.05	3.20	0.43	7.39*
Control Group					
Heart rate	74.50	73.75	0.75	0.38	1.99
SBP	121.85	121.75	0.10	0.67	0.15

Level of Significance 0.05 levels: 2.09

Table-1 indicates that the obtained 't' values of the control group (CG) on variables are: 18.38 (heart rate), 9.89 (systolic blood pressure) and 7.39 (diastolic blood pressure). The obtained t- values are significant at 0.05 levels for degree of freedom 1, 19 and the required critical value is 2.09. Hence the obtained t-values on the selected variables are higher than the required critical value, it is concluded that the combination of control group, has produced significant changes positively from its baseline to post treatment on physiological variables of heart rate(+4.00P<0.05),
systolic blood pressure(+4.45P<0.05) and diastolic blood pressure (+3.20P<0.05) from the performance of baseline. Table indicates the obtained values of the CG-II on variables are: 1.99 (heart rate), 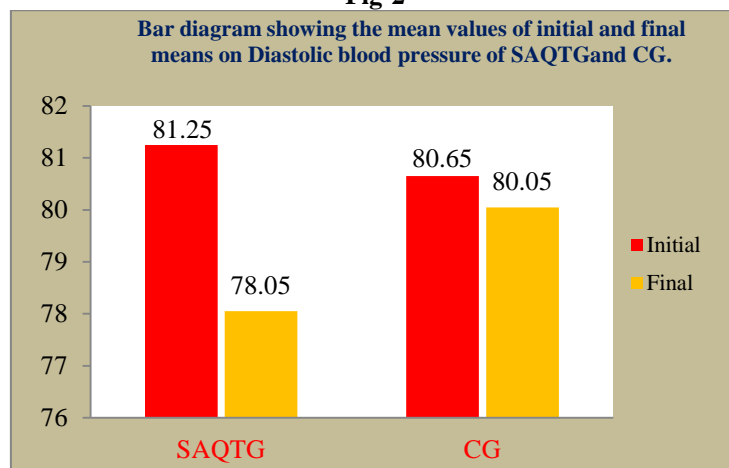0.15 (systolic blood pressure) and 1.34 (diastolic blood pressure). The obtained t- values are significant at 0.05 level for degree of freedom 1, 19 and the required critical value is 2.09. Hence the obtained t-values on the selected variables are lesser than the required critical values, it is concluded that the changes made from baseline to post treatment of traditional training only group on and physiological variables statistically not control group do not produce significant improvement in physiological variables namely heart rate (+0.75P<0.05), systolic blood pressure (+0.10P>0.05) and diastolic blood pressure (+0.60P<0.05) from the performance of baseline. The pre-test and post-test mean differences of SAQ training (SAQT) and Control Group (CG) on heart rat, systolic blood pressure and diastolic blood pressure are graphically represented in Fig 1 to Fig 3.
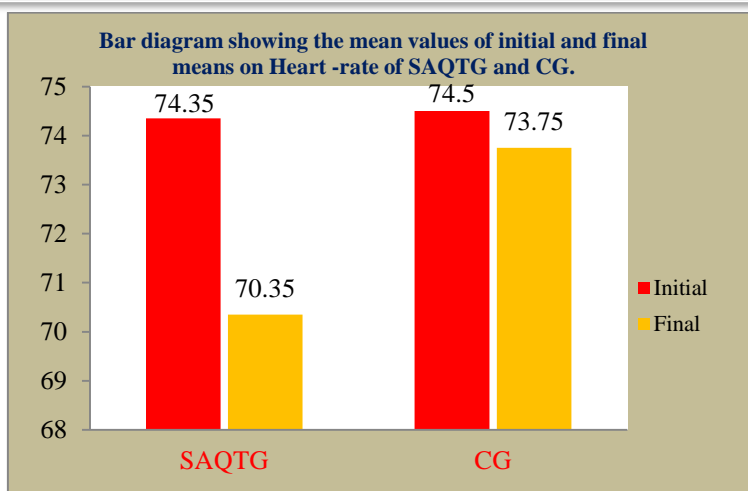
Fig-1
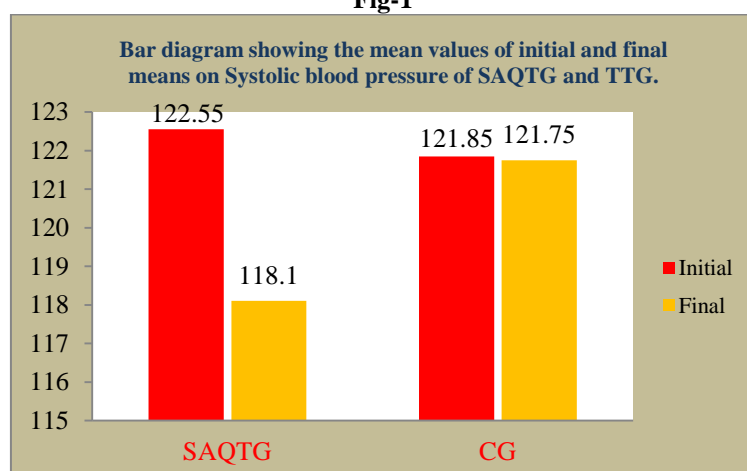
Fig-2

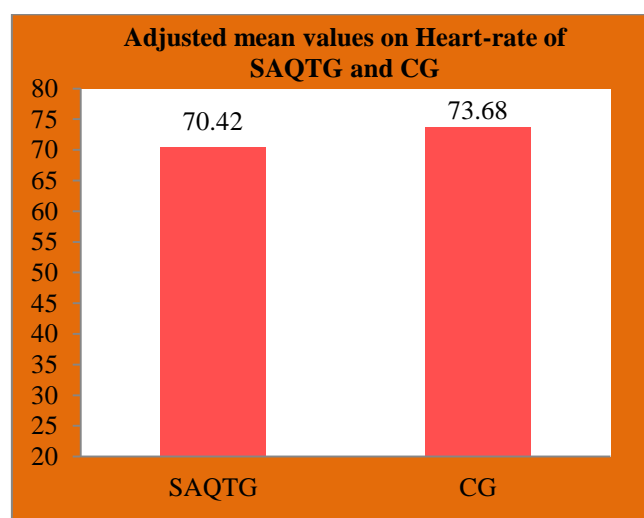Fig-3

Table -2
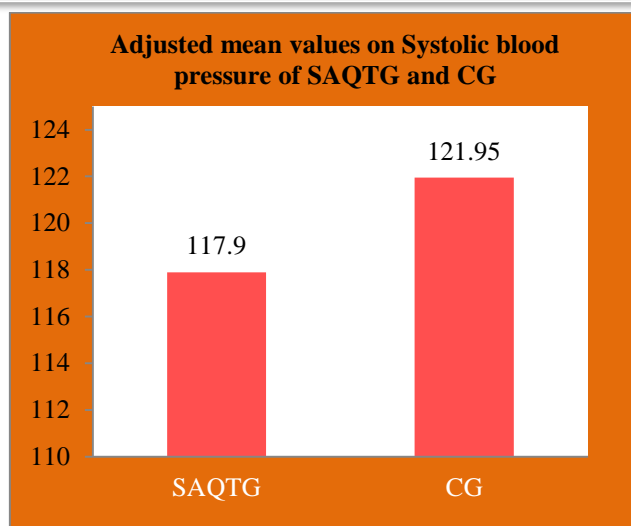**ANCOVA on skill performance variables of SAQ training and control group**

Variables	F – Value		
	Pre-Test	**Post-Test**	**Adjusted Post Test**
Heart Rate	0.03	12.12*	54.81*
Systolic Blood Pressure	0.66	18.11*	31.04*
Diastolic Blood Pressure	1.51	16.19*	17.72*

Table-2 reveals that the obtained 'F' value of pre-test on heart rate is 0.03, systolic blood pressure 0.66 and diastolic blood pressure is 0.71. Since the observed F values on pre test among the groups namely SAQ training and control group were insignificant as the value was lesser than the critical value 4.20 for df (1, 28) at 0.05 levels.The obtained 'F' value of post-test on heart rate is 12.12, systolic blood pressure 18.11 and diastolic blood pressure is 16.19. Since the observed F values on post test among the groups namely SAQ training and control group were highly significant 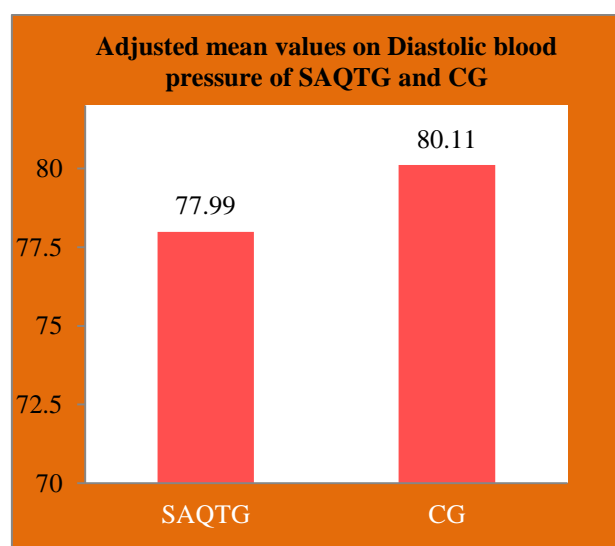as the value was higher than the critical value 4.20 for df (1, 28) at 0.05 levels.The obtained 'F' value of adjusted post-test on heart rate is 54.81, systolic blood pressure 31.04 and diastolic blood pressure is 17.72. Since the observed F values on adjusted post test among the groups namely SAQ training and control group were highly significant as the value was higher than the critical value 4.21 for df (1, 27) at 0.05 levels.The adjusted post-test means of SAQ training (SAQT) and Control Group (CG) on speed, agility, quickness, serving ability and passing ability are graphically represented in Fig 4 to Fig 6.

Fig-4

Adjusted mean values on Systolic blood pressure of SAQTG and CG

Fig-5

Adjusted mean values on Diastolic blood pressure of SAQTG and CG

Fig-6

6. CONCLUSIONS

Based on the findings and within the limitation of the study it is noticed that practice of selected S.A.Q drills helped to improve physiological variables of inter-collegiate football players. It was seen that there is progressive improvement in the selected criterion variables of experimental groups of football players after twelve weeks of training programme. Further practice of drills also helps to improve other fitness factors i.e. explosive strength, speed, agility and quickness that play major role in performance. There was significant improvement found in physiological variables and other variables of control groups, while comparing pre and post test mean score following conclusion were drawn. The rate of improvement physiological performance (heart rate, systolic blood pressure and diastolic blood pressure) was higher for the experimental groups in comparison to control groups due to S.A.Q training.

7. DISCUSSION ON FINDINGS

After collection of data, appropriate statistical analysis has been done. The results, in general, support the theory that S.A.Q. drills improve physiological variables of inter-collegiate football players. We found that experimental group improved significantly which is finding between pre to post test. From the findings it was evident that the treatment given to experimental group found to enhance the football players physiological parameter improvement of inter-collegiate players in comparison to control group for pre to post (12weeks) test because the tabulated value was found approximately more than required value to be significant. The results of this study support the use of football players have been exposed first time to S.A.Q. training programme which is highly scientific and systematic in nature because of which optimum adaptation and enhancement in physiological variables has been seen. It is proved even by the available literature by **Senthil Kumaran, Abdul**

Halik (2021) Tracking Instant Physiological Changes Pre-Post Basketball Play Whilst recent studies **Hanjabam and Kailashiya (2014)** have tended to show that SAQ training methods have a positive physiological performance. It was concluded the study are also in agreement with the findings of previous studies **Singh, and Deol (2018)** investigated the effect of SAQ training program on systolic and diastolic blood pressure of female soccer players. In this study the researcher found that twelve weeks SAQ training programme shows significant effect on systolic blood pressure variable among male football players.

8. REFERENCES

1. *Senthil Kumaran, Abdul Halik (2021) Tracking Instant Physiological Changes Pre-Post Basketball Play. IJARIIE, vol-7 issue-3, 436-439.*
2. *Bloomfield, J., Polman, R., O'Donoghue, P. and McNaughton, L. (2007) Effective speed and agility conditioning methodology for random intermittent dynamic type sports. The Journal of Strength and Conditioning Research, 21(4), 1093-1100.*
3. *Disch James G. et. al., "Analysis of Canonical Relationship between a Battery of Motor Performance Tests and a Battery of Volleyball Skill Tests". Abstracts of Research Papers, 1980.*
4. *Gorostiaga, E.M., Izquierdo, M., Ruesta, M., Iribarren, J., GonzálezBadillo, J.J. and Ibáñez, J. (2004) Strength training effects on physical performance and serum hormones in young soccer players. European Journal of Applied Physiology 91, 698-707.*
5. *Helgerud, J., Engen, L. C., Wisloff, U. and Hoff, J. (2001) Aerobic endurance training improves soccer performance. Medicine and Science in Sports and Exercise 33, 1925-1931.*
6. *Jaster Sally, "Developing Power Volleyball Power". Athletic Journal, 58, November, 1977.*
7. *Jovanovic, M., Sporis, G., Omrcen, D. and Fiorentini, F. (2011) Effects of speed, agility, quickness training method on power performance in elite soccer players. The Journal of Strength and Conditioning Research 25(5), 1285-1292.*
8. *Lee E. Brown, Vance A. Ferrigno, and Juan Carlos Santana, (1980) "Training for Speed, Agility and Quickness". p.80*
9. *Sheppard, J. & Young, W. (2006) 'Agility literature review: Classifications, training and testing', Journal of Sports Sciences, 24(9), pp. 919-932.*
10. *White Robert J., "Testing Volleyball Playing Ability in Competitive Game Situation". Research Quarterly, 18 December, 1947.*