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Research Article

An Intervention On Six Weeks Saq Training On Selected Physical And Physiological Parameters Among Football Players

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Abstract: The purpose of the study was to find out the interventional effect of a six-week SAQ training program on selected physical and physiological parameters among football players at Rajiv Gandhi University.
Methods: In this present study, there were a total of 20 subjects (n = 20) that were categorized into two groups: the Group A (n = 10) and the Group B (n = 10). Group A was given an intervention of six (6) weeks of SAQ training, and Group B engage on regular schedule. The training regimen ran for five days a week, with two days off in between. Each training session lasted for sixty minutes.
Results: The result of the study showed a significantly differences found between the two groups in each parameter (physical and physiological).
Conclusion: The study concluded with the finding that the selected variables viz., speed, agility, quickness, flexibility, resting heart rate, blood pressure, and VO_2max, had a significant improvement after the intervention of a six-week SAQ training program.

Keywords: SAQ Training, Speed, Agility, Quickness, Flexibility, Muscle Hypertrophy, Neuromuscular Efficiency, Aerobic Exercise, Anaerobic Exercise, and VO_2 Max

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INTRODUCTION

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, football, 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. (Jeremy Mukhwana. 2022).

Speed, Agility, and Quickness (SAQ) training is a specialized form of athletic conditioning designed to enhance an individual's ability to move rapidly and efficiently in various directions. This multifaceted training approach has gained significant attention in sports science and athletic development due to its potential to improve athletic performance and reduce the risk of injuries. SAQ training encompasses a combination of drills, exercises, and methodologies targeting speed, agility, and quickness, thereby enhancing an athlete's overall athleticism and competitive edge. Pauole, K. et al. (2000)

SAQ training uses anaerobic intervals to improve your speed, agility, and quickness. SAQ training generally consists of short, high-intensity bursts of activity followed by periods of rest or active recovery. These activities can be done with or without equipment and can be customized to your fitness level. The goal of SAQ training is to help you become a better runner by improving your neuromuscular efficiency (NME) and your ability to produce force quickly. NME is the ability of your nervous system to fire muscle fibres quickly and efficiently. The better NME, the better running economy (the amount of energy you use to run at a given pace). Improving your NME will make you a more efficient runner and help you run faster with less effort. SAQ training is based on the principle of "specificity" which means that you need to train specifically for the demands of your sport. For example, if you want to improve your running speed, you need to do exercises that mimic the specific movements of running such as sprinting, bounding, and plyometrics.

This type of training better addresses the demands of most sports and activities of daily living. Contrary to traditional strength training, SAQ training is all about finding moments that combines these key elements because each is powerful on its own, but together they support spatial and body awareness. Having this type of awareness not only helps you get stronger and move better, but it also protects from injuries. When we are speed, agile and quick our bodies make improvements to our moments in a way that makes them feel innate and instantaneous.SAQ is an excellent way to improve your performance in any sport, regardless of the type of sport you play. It can help you become a better athlete across the board, and it's also great for improving general health and fitness. If you're looking to get stronger, faster or more agile, then SAQ is definitely worth a try.

The main objective of the study is to carry out the findings of effect of SAQ training (speed, agility and quickness training). On the subjected football players and to find out whether is it truly worthwhile to train and exercise this particular training to improve their desired variables or should we study further for other options to improve desired ability. These by knowing these objectives will be a great contribution for the upcoming youngster athletes.

Methodology: For the purpose of the study 20 (Group A = 10 experiment and Group B = 10 control) football players with age ranging from 18-25 years were randomly selected and distributed as the subject. Group A or experimental group was given six (6) weeks of SAQ training and Group B kept as control where they enjoy their daily physical activities. The following physical (Speed, Agility, Quickness and Flexibility) and physiological variables (VO2max, Resting heart rate and Blood pressure) were selected as dependent variables.

Selection of Test and Criterion Measure:

The following tests and criterion measure were taken to evaluate the fitness and ability measurement of the subject they are as followed: -

Variables	**Tests**	**Measure Units**
Speed	40-Yard Sprint Test	Sec.
Agility	Shuttle Run	Sec.
Quickness	T-Test	Sec.
Flexibility	Sit and reach test	cm.
Resting Heart Rate	Palpitation	BPM
VO_2Max	Queen College Step Test	Ml/kg/min
Systolic	Sphygmomanometer	MmHg
Diastolic	Sphygmomanometer	MmHg

Training Program:

The following training protocol was given to the experimental group for duration of six weeks.

Table1: **Representing the training protocol performed during six weeks SAQ training program**

EXCERCISE	1-2 WEEK	3-4 WEEK	5-6 WEEK
Wall drill	1-2 sets	1-4 sets	1-6 sets
Arm action kneeling	1-2 sets	1-4 sets	1-6 sets
Lean, fall, jog-20 yard	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest
L.E.F.T. Drill	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest
Figure 8	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest
M-Drill	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest
Foot work-2 legs	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest
Speed Ladder-2 legs	1-2 sets,90sec rest	1-4 sets,60sec rest	1-6 sets,30sec rest

Statistical Technique:

In the study, descriptive statistics like mean and standard deviation were used, and analysis of covariance (ANCOVA) was used to compare the experimental and control groups. The significance threshold of the study was set at 0.05. Additionally, IBM SPSS statistics 26 was used in the study for the statistical interpretation.

RESULTS

Various descriptive statisticsfor the selected variable were collected and presented in the below:

Table 2**: Mean and Standard Deviation of Post-test data on Speed, Agility, Quickness, Flexibility, Heart Rate, Systolic, Diastolic, and VO_2 max**

Variables	Group	Mean	Std. Deviation	N
Speed	Control	6.19	0.3	10
	Experimental	5.63	0.24	10
	Total	5.91	0.39	20
Agility	Control	10.29	0.36	10
	Experimental	9.78	0.26	10
	Total	10.03	0.4	20
Quickness	Control	11.64	0.43	10
	Experimental	10.8	0.55	10
	Total	11.22	0.64	20
Flexibility	Control	34.4	3.69	10
	Experimental	39.2	3.82	10
	Total	36.8	4.41	20
Heart Rate	Control	65	4	10
	Experimental	58.7	3.09	10
	Total	61.85	4.75	20
Systolic	Control	120.7	6.07	10
	Experimental	115.5	5.56	10
	Total	118.1	6.27	20
Diastolic	Control	78.7	4.62	10
	Experimental	74.6	5.04	10
	Total	76.65	5.15	20
VO2max	Control	40.5	5.7	10
	Experimental	52.1	4.77	10
	Total	46.3	7.85	20

The descriptive statistical mean and standard deviation value of speed, agility, quickness, flexibility, heart rate, systolic, diastolic and VO_2 max of control group was 6.19±.30, 10.29±0.36, 11.64±0.43, 34.4±3.69, 65±4, 120.7±6.07, 78.7±4.62, 40.5±5.7 and experimental group was 5.63±.24, 9.78±0.26, 10.8±0.55, 39.2±3.82, 58.7±3.09, 115.5±5.56, 74.6±5.04, 52.1±4.77, respectively.

***Figure 1*: Graphical representation of mean value ofSpeed, Agility, Quickness, Flexibility, Heart Rate, Systolic, Diastolic, and VO_2 max in experimental and control group**

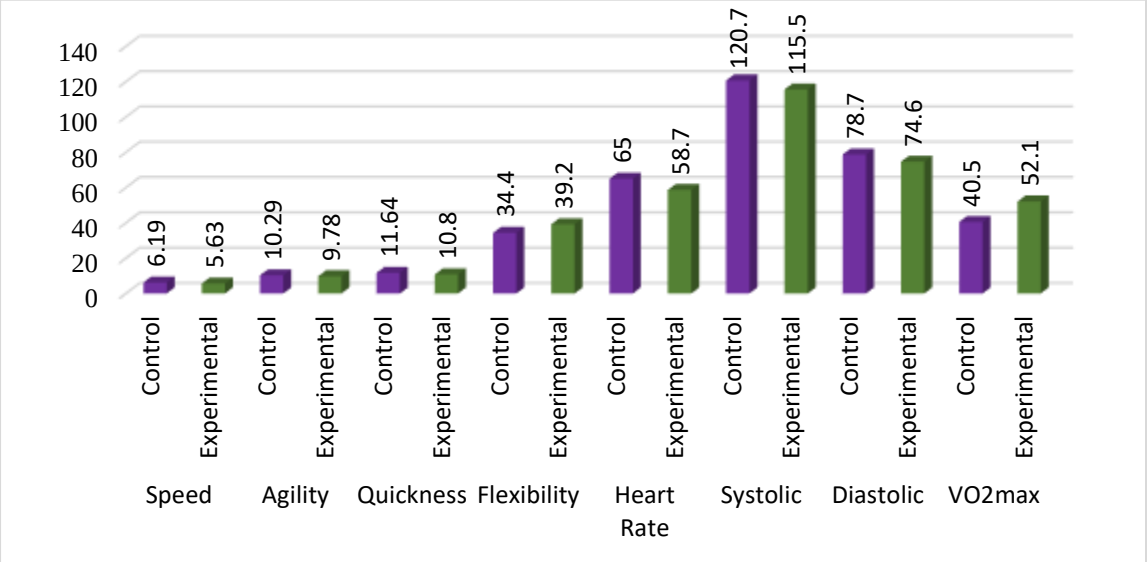

***Table 3*: ANCOVA Table for the Post-test data on Speed, Agility, Quickness, Flexibility, Heart Rate, Systolic, Diastolic, and VO_2 max**

Variables	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Speed	Speed_Pre	0.16	1	0.16	2.38	0.14
	Group	1.57	1	1.57	23.22	0
	Error	1.15	17	0.07		
	Corrected Total	2.85	19			
Agility	Agility_Pre	1	1	1	21.71	0
	Group	2.17	1	2.17	47.24	0
	Error	0.78	17	0.046		
	Corrected Total	3.096	19			
Quickness	Quickness_Pre	2.73	1	2.73	29.03	0
	Group	4.76	1	4.76	50.69	0
	Error	1.6	17	0.09		
	Corrected Total	7.87	19			
Flexibility	Felxibility_Pre	202.36	1	202.36	66.62	0
	Group	59.35	1	59.35	19.54	0
	Error	51.64	17	3.04		
	Corrected Total	369.2	19			
Heart Rate	Heartrate_Pre	173.86	1	173.86	52.56	0
	Group	15.67	1	15.67	4.74	0.04
	Error	56.24	17	3.31		
	Corrected Total	428.55	19			
Systolic	Systolic_Pre	584.12	1	584.12	375.05	0
	Group	130.32	1	130.32	83.68	0
	Error	26.48	17	1.56		

	Corrected Total	745.8	19			
Diastolic	Diastolic_Pre	356.67	1	356.67	95	0
	Group	148.92	1	148.92	39.66	0
	Error	63.83	17	3.76		
	Corrected Total	504.55	19			
VO_2 max	Vo_2max_Pre	462.43	1	462.43	224.79	0
	Group	110.47	1	110.47	53.7	0
	Error	34.97	17	2.06		
	Corrected Total	1170.2	19			

In the above ANCOVA Table (Table 3), it shows the calculated F value (23.22)for the speed is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. For the agility, it shows the calculated F value (47.24) is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. For the quickness, it shows the calculated F value (50.69) is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. For flexibility, it shows the calculated F value (19.54) is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. For the heart rate, it shows the calculated F value (4.74) is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05.In the above ANCOVA table, it shows the calculated F value (83.68) for the systolic blood pressure is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. Itshows the calculated F value (39.66) for the diastolic blood pressure is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05. For VO_2max it shows the calculated F value (53.70) is greater than the tabulated value (4.45) at 1, 17 df. Since p value associated with calculated F is 0.000 which is less than 0.05; hence, F is significant. Thus, the research hypothesis may be accepted at p value of 0.05.

Discussion:

The present study shows a significant result after the six-week intervention of SAQ training on football players. The data of the current study suggests that there is a positive impact on selected physical and physiological parameters among football players. The present study shows that the descriptive mean value of speed (post-test) of experimental group was (5.63) which is less than the control group (6.19). This furthermore signifies that an improvement in the speed variable within the experimental group was due to the intervention of the SAQ training. A similar study conducted by Milanovic, Z. et al., (2014), revealed that a 12-week SAQ training program on speed and flexibility in young football players showed significant improvement in sprint performance among football players. Therefore, this present study also shows that there is a positive improvement in speed level in experimental group after SAQ training program. The descriptive mean value of agility (post-test) of experimental group was (9.78) which is less than the control group (10.29). This furthermore signifies that an improvement in the agility variable within the experimental group was due to the intervention of the SAQ training (Chikro, et al., 2024). Therefore, this study also shows the improvement in agility level in experimental group after SAQ training program. The descriptive mean value of agility (post-test) of experimental group was (10.80) which is less than the control group (11.64). This furthermore signifies that an improvement in the Quickness variable within the experimental group was due to the intervention of the SAQ training. A similar study conducted by Azmi, K. & Kusnanik, N.W. (2018) which reviles SAQ training program cam significantly improve the quickness or acceleration football players, Walankar, P. and Shetty, J. (2020) and Singh, et al., (2022) conducted a study and the main motive of the study was to find out the Speed, agility and quickness training (SAQ). The present study shows significant improvement in quickness of an experimental group because of the impact of SAQ training program and the same training program can be given to different athletes of different sports events. The descriptive mean value of Flexibility (post-test) of experimental group was (39.20) which is more than the control group (34.40). This furthermore signifies that an improvement in the flexibility variable within the experimental group was due to the intervention of the SAQ training. A similar study conducted by Cherappurathand, N. & Elayaraja, M. (2017) which reveals that the SAQ training program can improves anaerobic endurance and flexibility more than other training methods. The present study also shows the significant improvement in flexibility in experimental group. So, it can be said that SAQ training program is an effective method to improve individual's flexibility level.

The descriptive mean value of heart rate (post-test) of experimental group was (58.70) which is less than the control group (65.00). This furthermore signifies that an improvement in the resting heart rate variable within the experimental group was due to the intervention of the SAQ training. The study of Khan, DJ A.A. & Sevi, R. (2016) also states that SAQ training can affect the physiological parameters. And also, it was found that there was a significant change on resting heart rate and breath holding time due to SAQ training. Therefore, this study suggests that the SAQ training program can significantly improve the resting heart rate. The descriptive mean value of systolic blood pressure (post-test) of experimental group was (115.50) which is less than the control group (120.70). And a descriptive mean value of diastolic blood pressure (post-test) of experimental group was (74.60) which is less than the control group (78.70). This furthermore signifies that an improvement in the blood pressure (systolic and diastolic) variable within the experimental group was due to the intervention of the SAQ training. Similar study was conducted by Singh, C. (2019) to discover the impact of twelve weeks S.A.Q training protocol on systolic and diastolic blood pressure of Footballers. The study strongly confirms that SAQ training program may significantly impact on systolic and diastolic blood pressure of footballers. So, in this study we can see significant improvement in systolic and diastolic blood pressure in experimental group due to SAQ training program. The present study shows that the descriptive mean value of VO2max (post-test) of the experimental group was (52.10), which is more than the control group's (40.50). This further signifies that an improvement in the VO_2max variable within the experimental group was due to the intervention of the SAQ training. A similar study was conducted by Anitha, J. (2017), which reveals that there was a significant improvement in the resting pulse rate and Vo2 max of the male players after the intervention of the SAQ training program. Therefore, in this study, there is a significant improvement in VO2max among football players after performing the SAQ training program.

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