

# Effect of Exercise Program Speed, Agility and Guickness (SAQ) in Improving Speed, Agility and Acceleration

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## Effect of Exercise Program Speed, Agility, and Quickness (SAQ) in Improving Speed, Agility, and Acceleration

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**Abstrak.** This study aimed to analyze the effect of speed, agility and quickness training program to increase in speed, agility and acceleration. This study was conducted at 26 soccer players and divided into 2 groups with 13 players each group. Group 1 was given SAQ training program, and Group 2 conventional training program for 8 weeks. This study used a quantitative approach with quasi-experimental method. The design of this study used a matching-only design. Data was collected by testing 30-meter sprint (speed), agility t-test (agility), and run 10 meters (acceleration) during the pretest and posttest. Furthermore, the data was analyzed using paired sample t-test and independent t-test. The results showed: that there was a significant effect of speed, agility and quickness training program in improving in speed, agility and acceleration. In summary, it can be concluded that the speed, agility and quickness training program can improve the speed, agility and acceleration of the soccer players.

### 1. Introduction

An effort, to improve high achievement in every sport that occupied by an athlete, is important. One element or factor which is important to reach an achievement in sport is the physical condition. In some studies also said that to achieve is determined by four factors of the exercise of physical preparation, technical preparation, preparation tactics and mental preparation. The main purpose of physical preparation in training is to improve the functional potential of athletes and develop the bio motoric ability to the highest standards. Speed is one of the basic components necessary bio motor in some sports. Every sports activities both games, competitions, and games always require speed bio motor components. speed is the ability of the complex, because in general, speed is an ability that allows a basketball player to move as quickly as possible at the level of specific resistance [8]. Agility is an important quality in a lot of sports that are played on the field. In badminton, agility demonstrated the ability to move with quick footwork and precise [2]. Linear action such as acceleration and velocity can be influenced by changing the movement mechanism of the arms or legs. Thus, the ability to develop speed in a short time (acceleration) is an important component to support the performance in a wide range of sporting activities [4]. Exercise of speed, agility, and quickness cover the complete spectrum of training intensity, from low intensity to high intensity. Every athlete has a different level. Therefore, the intensity of exercise should coincide with the individual's ability [16].

Exercise involving speed, agility, and quickness is a training method aimed at developing motor skills and body motion control through the development of the neuromuscular system. It aims to improve the athlete's ability to perform multi directional explosive power movements by reprogramming the



neuromuscular system, so it can work more efficiently [18]. Exercise of speed, agility, and quickness (SAQ) has become a popular way to train athletes. Speed, agility, and quickness to cover the complete spectrum intensity of exercise, from low intensity to high intensity. SAQ drills can also be used to teach movements, such as heating, or to improve the physical condition of athletes [16]. Exercise of speed, agility, and quickness is a system of progressive exercises and instruction aimed at developing fundamental motor skills to improve the ability of the athlete to be more skilled at faster speeds and with greater precision. This exercise has become a popular way to train athletes in improving the speed, strength, or the ability into maximum potency.

## 2. Research Methods

This type of research is quantitative study using a quasi-experimental method (quasi-experimental). The research design used is Matching Only Design. The research instrument used in this study are; (1) using a speed test run 30 meters, (2) Test agility using T-Test agility, and (3) Acceleration Tests using the test run 10 meters.

## 3. Results

Based on the research that has been done, data on speed, agility, and acceleration of each group are obtained. The data is presented as shown in Table 1.

**Table 1.** Acquisition Data Initial test and Final test Experiment Group I.

Average	Speed		Agility		Acceleration	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
	6.63	7.01	11.15	10.56	4.11	4.36
Standard Deviation	0.48236		0.18566		0.25753	
Increase	5.9%		5.6%		6.0%	

Based on Table 1 in the average pace seen before given exercise and after exercise, the percentage of improvement is happened in increased speed by 5.9%, agility increased 5.6% and acceleration increased 6.0%.

**Table 2.** Different Test Results Variables Dependent in the Experiment Group

Variable	Pair	t-count	Sig.(2-tailed)	Status
Speed	posttest – pretest	4,577	0,001	Different
Agility	posttest – pretest	-4416	0,001	Different
Acceleration	posttest-pretest	5,199	0,000	Different

Based on Table 2 as a whole there is a difference between before and after the treatment of each of the variables dependent (speed, agility, and acceleration) in the experimental group. This indicates that the level of significance of each variable speed, agility, acceleration is smaller than sig 0:05 or in other words,  $P < 0.05$ . It can be concluded that there is a difference after being given a workout program speed agility and quickness (SAQ).

In the control group there are also differences, although the difference is relatively small when compared with the experimental group. In details, can be seen in Table 3. Based on Table 3 in the visits average speed before the given exercise and after exercise increased speed by 1.7%, agility increased 1.8%, and increased by 1.6% acceleration

**Table 3.** Data Acquisition Initial test and Final test control group.

Average	Speed		Agility		Acceleration	
	Pretest	Posttest	Pretest	Posttest	Pretest	Posttest
	6.63	6.74	11.20	11.00	4.10	4.16
Standard Deviation	0.22696		0.06870		0.06349	
Increase	1.7%		1.8%		1.6%	

**Table 4.** Different Test Results Variables Dependent in Control Group

Variable	Pair	t-count	Sig.(2-tailed)	Status
Speed	Posttest-Pretest	2,752	0,018	Different
Agility	Pretest-Posttest	-3 238	0,007	Different
Acceleration	Posttest-Pretest	2,221	0,046	Different

From the data results Table 4, different test variable dependent in the control group, a whole trend occurred is generated from a significant difference with a variable speed, agility and acceleration under  $P < 0.05$ .

Based on these two t-test table experimental group and the control group, the t value for speed, agility, and acceleration of the experimental group are respectively 4577, -4416 and 5,199 (see Table 2). While the t value for speed, agility, and acceleration of the experimental group are respectively 2,752, -3238, and 2,221 (see Table 4). When viewed from t each group, it can be concluded that the experimental group were given exercise speed, agility, and quickness significantly improve the speed, agility and acceleration compared with the control group.

**Table 5.** Results of Analysis Independent Samples Test

	Component Test	T	Sig. (2-tailed)
pretest speed	Equal variances assumed	-.008	.994
	Equal variances not assumed	-.008	.994
pretest agility	Equal variances assumed	.872	.163
	Equal variances not assumed	.872	.163
pretest Acceleration	Equal variances assumed	-.311.	.759
	Equal variances not assumed	-.311	.759
Posttest speed	Equal variances assumed	2,117	.045
	Equal variances not assumed	2,117	.046
posttest agility	Equal variances assumed	2,186	.039
	Equal variances not assumed	2,186	.041
posttest Acceleration	Equal variances assumed	-2236	.035
	Equal variances not assumed	-2236	.035

The data from Table 5 shows a different test results between the experimental group and control group. Based on the table, it can be explained that there are differences the results of the pretest speed, agility and acceleration in both groups. Based on sig. (2 tailed) pre-test bio motor the data of three components such that sig.  $> 0.05$ , there is no difference results from all groups. Later in the post-test speed, agility and acceleration both groups there are differences in the results of the third test bio motor components. Furthermore, based on sig. (2 tailed) post-test bio motor of three components such that sig.  $< 0.05$ , there are significant differences between the experimental group and control group.

#### 4. Discussion

Exercise of speed, agility, and quickness is a complex exercise that enable to improve the physical condition of athletes. Based on the analysis in this study, it suggests that the practice of speed, agility, and quickness can improve the physical condition of the components of speed, agility and acceleration. Exercise of *speed, agility, and quickness* (SAQ) has become a popular way to train athletes to cover a complete spectrum intensity of exercise, from low intensity to high intensity. SAQ drills can also be used to teach movements such as heating or to improve the physical condition of athletes [16]. Exercise of *speed, agility, and quickness* is a system of progressive exercises and instruction aimed at developing fundamental motor skills and improving the ability of the athlete to be more skilled at faster speeds and with greater precision. *Speed, agility, and quickness* has become a popular way to train athletes. The exercise also develops the ability to exert maximum force during movement activity at high speed.

The results of this study consistent with the previous studies conducted by Jovanovic and Sporis [7]. Furthermore, this study finds that, as a whole that the training methods, Speed, Agility, and Quickness (SAQ) significantly improve the performance of football players. In addition, research conducted by Rahul Kumar and Dhapola [14] suggests that exercise SAQ has a significant influence on the variables of physical fitness of speed, agility, reaction time, power, and flexibility cricketers. Therefore the hypothesis proposed in research Rahul Kumar & Dhapola stipulated that the SAQ exercise significant influence on the physical fitness variables. In conclusion Securities SAQ exercise significantly increase reaction time, speed, agility, and flexibility.

Speed is one of the basic capabilities necessary biomotoric in every sport Sukadiyanto and Muluk [17] The speed is very dependent on power because without power, speed cannot be developed. Agility or agility related to gestures that involve footwork and quick changes of position of the body [12]. To be able to provide quality results and quality, one athlete requires agility is good in itself that will affect the performance during exercise so as to improve the performance of athletes. According Kusnanik and Ben [10] speed and agility can be regarded as the most dominant element in a football game. Some way or method of exercise that can be used to improve the speed and agility of athletes among which the speed ladder run and repeated sprints. Overall running technique can be broken down into several phases, the early phase of the block, the acceleration phase, and the velocity step phase. During the acceleration phase, an athlete increase stride length and step frequency. When an athlete reaches the stage of the maximum constant speed, running speed increased through increased stride length and more importantly through the stride frequency. The speed and acceleration are essentials for football athletes because they need to achieve high speed when chasing a ball in a game of football [3]. The same thing was said Johnston, et al. [6] that the acceleration, defined as the rate of change in the speed and with the demands of high intensity movement, is indispensable when important moments in sports field games such as the ability to defeat an opponent in order to get the ball in a football game. Then Kusnanik, [9] also added that the speed, agility, and acceleration as a component of physical condition is very important for a sprinter. This is because, to be able to sprint quickly, athlete must have a good physical condition.

This study also supports the theory of Milanovic [11] that the speed and agility resulted from speed, agility, and quickness (SAQ) exercise as a whole can be considered as a useful tool for speed and agility among young soccer players. Exercise of speed, agility, and quickness training methods can provide a very specific and detailed that will help athletes to support the best performance in sports. In addition, the variety form of drills, speed, agility, and quickness exercises could help to prevent the athlete from bored to participate in training activities.

#### 5. Conclusion

The results of this study suggest that: (1) there is a significant effect of exercise program speed, agility, and quickness (SAQ) to increase speed, (2) there is a significant effect of exercise programs speed, agility, and quickness (SAQ) to increase agility, and (3) there is a significant effect of exercise program speed, agility, and quickness (SAQ) to increase acceleration.

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