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The Effect of Speed, Agility and Quickness (SAQ) Training on Developing the Effective Movement of Tennis Players

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Abstract--- Objectives: *The aims of the study were the preparation of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players, and identify the effect of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players.* ***Design:*** *an experimental design was used.* ***Setting:*** *the subjects were randomly divided into two groups; the control group and the experimental group received SAQ training for50-60 minutes. Participants: Twenty four participants were chosen from Iraqi Tennis Federation Players and their mean age 19.86 ± 1.81 years.* ***Main Measures:*** *Pre- and post-tests included: Planned Agility test.* ***Results:*** *there were significant differences between the experimental group Speed, Agility and Quickness (SAQ) training and control group in the agility planned test.* ***Conclusions:*** *showed that the Speed, Agility and Quickness (SAQ) training was more effective training on developing the effective movement for tennis players.*

Keywords--- *Speed, Agility, Quickness (SAQ), Training, Movement and Tennis.*

I. INTRODUCTION

As all good players know, it doesn't matter how good the player can hit the ball if he cannot get to it. Correct movement skills are vitally important for success on the tennis court. Tennis requires movement in all directions. The player may have to sprint forward to reach a drop shot, back up for an overhead, or move from side to side to reach wide forehands and backhands (Paul & Mark , 2011). The player doesn't overlook the importance of working on his movement on the court although it is essential to work on grooving the plaer's (Paul & Todd, 2007). Efficient movement doesn’t only depend on speed and agility, but also quickness. Speed or velocity defined by Aleš et al., (2017) as it describes the rate at which a player moves from one location to another. Tudor & Carlo (2019) state that it is the capability to cover a distance quickly. Agility is a complex set of interdependent skills that converge for the player to respond to an external stimulus with a rapid decelerate, change of direction, and reacceleration (ibid). Agility can be defined as "the capacity to control or maintain body position while quickly changing direction during a series of movements" (Twist & Benickly, 1996).Quickness is the capability to read, react, plus explode, which means: read and process cues as to what is happening, react with the appropriate response, and explode with quickness and power to maximize the time the player has to set up for his shot (Paul &Todd, 2007). Moreover, it is the capacity to react and change body position with maximum rate of force production in all planes of motion and from all body positions during functional activities. Furthermore, it includes the capability to react to visual,

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auditory, and kinesthetic feedback with minimal hesitation during functional activities (Michael A. Clark, 2004).

Amr et al., (2017) clarified that before the player begins SAQ training program, he needs to be evaluated to determine areas where improvement is needed. In addition, the player should take into account the type of sport in which he participate to determine the exercises type and the duration of them. In the current study, the SAQ exercises will be used to improve speed, agility, and quickness in order to develop the effective movement of tennis players.

Therefore, the Aims of the Study were

- The preparation of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players.
- Identify the effect of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players.

The Hypotheses of the Study were

- There are statistically significant differences between the pre-tests and post-tests of the study variable.
- There are statistically significant differences between the two groups in the post-tests of the study variable.

Subject

Twenty four participants were chosen from Iraqi Tennis Federation Players. Tennis players mean age was 19.86 ± 1.81 years, mean height 1.70 ± 07 m, and mean mass 60.36 ± 13.74 kg. Randomly, the Subject was classified into two groups; the control group and experimental group.

II. PROCEDURES

During the study, the subject agreed not to change their current exercise habits. As shown in table 1, the SAQ exercises group was trained five times per week for six weeks, performing a variety of SAQ exercises. The duration of each experimental session was 50-60 minutes. The load intensity was kept low to moderate in first week and increased progressively in proceeding week moderate too high and repetition and sets were increased respectively. The control group did not participate in any SAQ exercises.

Table 1: SAQ Training Program

weeks	**exercises (Sets and Repetitions)**				
1st week (60-70)	'A' march walk exercise (1x4)	Figure 8 exercise (1x4)	In place ankle jump Exercise (1x4)	Butt kickers exercise (1x4)	Z-pattern run exercise (1x4)
	High knee run exercise (1x4)	Carioca exercise (1x4)	Bunny jumps exercise (1x4)	Flying's 30 exercise (1x4)	15-yard turn drill exercise (1x4)
2ed week (70-80)	Bunny jumps exercise(2x3)	Plyo to sprint exercise (2x3)	Z-pattern run exercise (2x3)	Icky shuffle exercise (2x3)	Ladder speed run exercise (2x3)
	In place ankle jump exercise	Speed running exercise (2x3)	Ladder speed run exercise	Plyo to sprint exercise (2x3)	20-yard shuttle (pro agility)exercise (2x3)

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	(2x3)		(2x3)		
3rd week (70-80)	Icky shuffle exercise (2x4)	20-yard square (2x4) exercise	Hop-scotch drill exercise (2x4)	20-yard shuttle (pro agility)exercise (2x4)	Hop-scotch drill exercise (2x4)
	Squirm exercise (2x4)	Plyo to sprint exercise (2x4)	Z-pattern run exercise (2x4)	Squirm exercise (2x4)	Lateral skaters exercise (2x4)
4th week (80-100)	Vertical jump to sprint exercise (3x3)	T-drill exercise (3x3)	Hop-scotch drill exercise (3x3)	Partner assisted let go's exercise (3x3)	The triangle exercise (3x3)
	Ladder speed run exercise (3x3)	X-over zigzag exercise (3x3)	Plyo to sprint exercise (3x3)	Bounding exercise (3x3)	X-over zigzag exercise (3x3)
5th week (80-100)	5-dot drill exercise (3x3)	Side shuffle to sprint exercise (3x3)	Snake jump exercise (3x3)	5-dot drill exercise (3x3)	Hop-scotch drill exercise (3x3)
	Forward roll to lateral skaters exercise (3x3)	Lateral skaters to Sprint exercise (3x3)	In in Out out exercise (3x3)	Hexagon drill exercise (3x3)	8-point star drill exercise (3x3)
6th week (70-80)	Lateral skaters to sprint exercise (3x4)	Sprint and cut on command exercise (3x4)	Hop-scotch drill exercise (3x4)	T-drill exercise (3x4)	X-pattern multi skill exercise (3x4)
	In in Out out exercise (3x4)	Back roll to squirm exercise (3x4)	Side shuffle to speed run (3x4) exercise	Icky shuffle to sprint exercise (3x4)	5-dot drill exercise (3x4)

*Note: Recovery (between repetitions) – Partial; Recovery (between next exercise)– 03 minutes (1st to3rd weeks) and 05 minutes (4th to6th weeks).

Testing Procedures

To determine the study outcomes, agility test was conducted for both pre and post testing. The T-test (planned agility test) was used to measure the capacity of a player to be able to move effectively and quickly into a position of predetermined play. The test was chosen not only based upon established criteria data for males, but also because of its reproducibility and reported validity of the test (International Tennis Federation [ITF], 2019).

Planned Agility Test

The measure the capacity of a player to be able to move effectively and quickly into a position of predetermined play. For instance, Serve and run into the net.

The Directions of the test

1. The tennis player begins at the center mark on the baseline. He sprints to doubles sideline to touch a cone placed at the center of the line upon the "go" command of his coach. Then, he returns back to the starting position on the center mark. When the player touches each cone he runs to, he should simulate the correct foot positions that he use on the court for example; for backhand: side on and right foot in front.
2. Then, from the center mark, he runs to the singles sideline and again touches the cone before returning to the starting position.

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3. The short diagonal at the intersection of the singles sideline and service line on the right-hand side, again returning back to the starting position is the next sprint.
4. Then, the player sprints forwards to touch the net and return back to the baseline keeping an eye on his opponent and the ball down the other end.
5. The next direction is the long diagonal to the left (intersection of the net plus left singles sideline).
6. Then, it is along the baseline to the left singles sideline and back to the start. The player falling short of the 20m line twice in succession has his test terminated and his score recorded when near exhaustion. His score is his level and number of shuttles immediately previous to the bleep on which he was eliminated.
7. The last sprint is out to the doubles sideline as fast as possible. As the player crosses the doubles sideline, the stopwatch is stopped.

The Test note*:*

- One trial is performed typically.

Statistics

Descriptive statistics like mean, standard deviation, and t-test was used, and the level of significance was set at 0.05. To analyze the data, SPSS statistical software package was used.

III. RESULTS

Table 2: Descriptive Statistics and T-Test (Pre-Test) Results of Experimental Group and Control Group for Planned Agility

	Experimental Group		*Control Group*				
Variables	*Mean*	*SD*	*Mean*	*SD*	dr	T	Sig
Agility	31.7475	1.45355	30.3733	2.24007	22	1.783	.088

As shown in table 2, it is found that the results of agility t-test for the experimental group were (Mean ±SD= 31.7475± 1.45355) and control group were (Mean ±SD= 30.3733±. 2.24007), (t = 1.783, df = 22, sig = .088, p< 0.05). These results indicated that there are no statistically significant differences in pre-tests in the experimental group and control group scores of agility.

Table 3: Descriptive Statistics and T-Test Results of Experimental Group for Planned Agility

	Pre-test		*Post-test*		*Mean*	*df*		
Variables	*Mean*	*SD*	*Mean*	*SD*	*Difference*		*T*	*Sig*
Agility	31.7475	1.45355	27.7075	.81371	4.04000	11	12.187	.000

*p< 0.05

As shown in table 3, it is found that the results of agility pre-test for the experimental group were (Mean ±SD= 31.7475 ± 1.45355) and post-test were (Mean ±SD= 27.7075 ± .81371), (t = 12.187*, df = 11, sig = .000, p< 0.05). The mean difference of agility in pre-test and post-test was (4.04000). These results showed that there are statistically significant differences in pre-test to post-test scores of agility for the experimental group.

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Table 4: Descriptive Statistics and T-Test Results of Control Group for Planned Agility

	Pre-test		*Post-test*		*Mean*	*df*		
Variables	*Mean*	*SD*	*Mean*	*SD*	*Difference*		*T*	*Sig*
Agility	30.3733	2.24007	29.9717	2.43582	.40167	11	.676	.513

*p< 0.05

As shown in table 4, it is found that the results of agility pre-test for the control group were (Mean ±SD= 30.3733 ± 2.24007) and post-test were (Mean ±SD= 29.9717 ± 2.43582), (t = .676, df = 11, sig = .676, p< 0.05). The mean difference of agility in pre-test and post-test was (.40167). These results showed that there are statistically no significant differences in pre-test to post-test scores of agility of the control group.

Table 5: Descriptive Statistics and T-Test (Post-Test) Results of Experimental Group and Control Group for Planned Agility

	Experimental Group		*Control Group*				
Variables	*Mean*	*SD*	*Mean*	*SD*	*dr*	*T*	*Sig*
Agility	27.7075	.81371	29.9717	2.43582	22	3.054	.006

As shown in table 5, it is found that the results of agility t-test for the experimental group were (Mean ±SD= 27.7075 ± .81371) and control group were (Mean ±SD= 29.9717 ± 2.43582), (t = 3.054, df = 22, sig = .006, p< 0.05). These results showed that there are statistically significant differences in post-tests in favor of the experimental group scores of agility.

IV. DISCUSSION

SAQ training is a complex exercise that enables to improve the physical condition of players (Azmi1 and Kusnanik, 2081). Based on the study analysis, it aimed to find out the preparation of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players plus identify the effect of Speed, Agility and Quickness (SAQ) training on developing the effective movement of tennis players. The study findings revealed that there were significant differences between the experimental group SAQ training and control group in the agility planned test. This showed that the SAQ training were more effective training on developing the effective movement of tennis players.Azmi1 and Kusnanik(2018) stated that SAQ exercises is a system of progressive exercises and instruction aimed at developing fundamental motor skills and improving the capacity of the player to be more skilled at faster speeds and with greater precision. Moreover, it develops the capability to exert maximum force during movement activity at high speed. Velmurugan(2013)mentioned that SAQ training program helped to develop several systems of the player body that required to move quickly and to be more energetic. Furthermore, it is known that the motor capacities consist of the balance and coordination control the player body movement especially during activities or playing the sport.

The finding of the study is supported by Pearson (2006) "SAQ training program develop both general and activity specific physical fitness and it helps the player at all levels develop and improve his game to bring about real performance gains". This study also supported the theory of Milanovic and et al. (2013) which is "the agility and speed resulted from speed, agility, and quickness training as a whole can be considered as a useful instrument for agility and speed among young soccer players. Exercise of SAQ training methods can provide a very specific

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and detailed that will help players to support the best performance in sports. In addition, Azmi1 and Kusnanik (2018) stated that the variety of drills and SAQ training could help to prevent the player from bored to participate in training activities.

V. CONCLUSION

Finally, the findings indicated that Speed, Agility and Quickness (SAQ) training for six weeks were more effective training on developing the effective movement for the experimental group. Thus the results have to be taken into consideration by trainers in order to better understand and implicated of these concepts in training sessions and lessons.

Ethical Clearance: People identified as potential research participants because of their status as relatives or carers of patient's research participants by virtue of their professional role in the university and departments.

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