Effect of Learning Program and Computer Technology on Learning Slice Approach Stroke in Tennis

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ABSTRACT

This study reports the effect of learning program and computer technology on learning slice approach stroke in tennis. From a cohort of 16 players, 10 players completed the study. Players were chosen randomly and were allocated to one group. The study group then trained over four weeks. After four weeks, study group was re-testing using the same pre-test. Data were analyzed using SPSS. The study group improved their slice approach stroke performance by 34%. The difference between pre and post-tests was in a median of 4.9 whereas in Wilcoxon was of 3.80, it means the difference is significant. Therefore, there is almost chance that the true effect in the slice approach is good. The results of this study suggest that using computer provides huge benefit for players.

Keywords: Learning program, Computer technology, Slice approach stroke, and tennis.

1. Introduction

Tennis is a sport people generally play individually against a single opponent (singles) or between two teams of two players each (doubles). Each player uses a racquet that is strung with cord to strike a hollow rubber ball covered with felt over or around a net and into the opponent's court. The object of the game is to play the ball in such a way that the opponent is not able to play a good return (Mazin., 2012).

Slice approach shot is one of importance serves that is an aggressive shot usually done on a ball that is coming over the net weakly and dropping shallow in the court. Strategically, it is best when hit down the line, but down the center might be a good second option. These are ideal for a serve and volley or net player; you should feel like you're being invited to the net (Gran., 2009).

The computer technology has arrived accompanied by major changes in both education and technology. Computer technological innovations and applications are becoming apparent

in many sides of the physical education professions and as Gross (1995) suggested then, computer technology was set to continue to change rapidly in the following 10-15yrs. Computer technology became a big business in an attempt to provide the necessary information and using to show movies in sport fields. A cording to scientist's opinion, computers technology and learning platforms have a positive impact on the quality of sport teaching and research (Lehmann et al, 1999). Players indicate that the availability of electronic information has been helpful in their learning (Goggin et al, 1997). Thus, there is agreement among coaches and players that computer technology can be a useful tool for a successful teaching and learning environment.

Investigation into the cost of instruction transported by computer software indicates that savings (i.e. in money, resources or time) are often achieved with no loss of effectiveness and may even increase the learning (Ammar, 2010). Future learning and training need proper tools that are able to overcome time, space and technical performance. The need for a continuous updating in computer technology related information and the learning usefulness delivered by the integrated use of numerous forms of information. Such tools can be developed by the use of multimedia communication systems for physical education and training dedications (Mahmood, 2011).

Computer-assisted teaching is likely to rise in the next few years, as an outcome of the utilization of technology in physical education. Some studies suggest that computer-assisted teaching is a useful tool for disciplinary knowledge (e.g. Physics of Sports), sport activity (e.g. Tennis) and fitness (e.g. MacHeart Monitor), while there are also instructional uses of virtual reality (e.g. Virtual Racquetball Game) for teaching tennis serves (e.g. Slice approach) (Haidar, 2010).

Even though the use of computer-assisted teaching is increasing, the research on the topic in the area of physical education (e.g. tennis) is very limited (Kadim., 2009). Computer-assisted teaching can provide personalized teaching to an unlimited number of players on an individual basis. Given the move by many coaches towards larger training units with computer software technology provide a convenient means to enhance tennis serve learning (Haidar., 2010). Our study is given a movie depend on analysis of slice approach serve of final championship matches for the tennis professionals in London (2013) in order to increase players performance in slice approach.

The professional literature provides proof of the advantage of computer based teaching over traditional education methods in terms of development higher order learning such as

critical thinking and problem solving (Bowman, 1995). For example, a training computer-based teaching simulation was discovered to develop the problem solving skills in players at the Baghdad University (Jassim, 2008). Other recent studies indicate that computer-based teaching is a viable and effective supplement to tennis skills instruction. These studies exposed that computer-assisted teaching were effective in teaching motor skills of tennis (Maithem, 2012; Najlla, 2011). Since the majority of computer-based teaching research studies in a diversity of academic fields reported significant improvements in cognitive learning of tennis skills, we considered it important to investigate whether computer technology could facilitate learning in the slice approach skill domain. A multimedia program was designed to help players learn the skill of slice approach in tennis as well as cognitive aspects of this specific sport activity.

Slice approach is one of difficult skills which needs to high attention and perfect basic skills. However, most of coaches in the Iraq feel afraid of giving special skills and strokes (e.g. slice approach) to players unless mastering basic skills. Researchers believed that learning vies watching and training provides a good instruction. Computer-based teaching is known to address nervous system especially the kinetic region. The purpose of this study was to know the effect of learning program and computer technology on learning slice approach stroke in tennis. The tests assessed the learning of the slice approach stroke skill in tennis.

2. Theoretical studies

2.1 Slice serve

The tennis slice serve is a very important shot that can effectively pull your opponent off the court and open up the court for you to start an offensive attack. The tennis slice serve is hit with sidespin. The sidespin is accomplished by the brushing effect of the racket face into the ball. For right-handed servers, the racket face should strike the center part of the ball and brush the ball to the imaginary 3:00 o'clock position. For a left-handed server, the direction of the brushing motion is leftward. The lack of topspin in this type of tennis serve gives a disadvantage to the server since the net clearance is very limited. This type of tennis serve is also a bit tricky and has a lower margin of error. The tennis slice serve must be perfectly executed to do it right. Because of these limitations, this tennis serve is only ideal for the first serve. In addition, the tennis slice serve is best to use if your opponent has a weak forehand or when your opponent is standing far towards his backhand side. In both situations, you can use the slice serve to either hit an ace or force a weak return figure (1) shows slice serve (http://www.optimumtennis.net/tennis-slice-serve.htm).
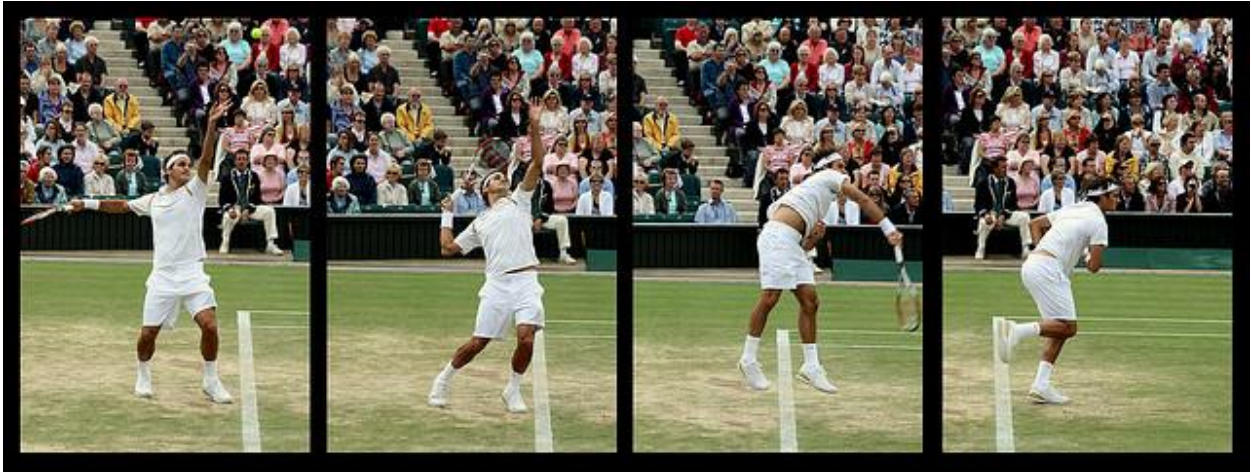
Figure (1) shows slice serve.

3. Methods

The design for the current study is one group design (experimental group) to solve the problem of the study and achieve an aimed of the study because it is suitable to nature of the study to achieve accurate results. Researchers recorded championship matche which was held in London 2013 and then cut off part of film which related slice serve and show the film by computer to players in order to learning the serve.

3.1 Subjects

A total of 10 player mature athletes with a high skill level in tennis, ages 20 to 35 in Iraq were selected as subjects for the study. One club is participated in intervention group included (Tennis Club Karbala). The tennis study was carried out between November 2013 and December 2013. Participants were received learning program and watched film about technical slice approach. For the purpose of verification of the homogeneity of the sample in (weight, height, and training age) researchers used skewness coefficient, as shown in the table below:

Table (1) shows sample homogeneity in study variations (weight, height, and training age)

Variation	Measure Unit	Mean	Standard Deviation	Median	Skewness Coefficient ± 1	Number Sample
length	cm	169.5	0.023	170	0,652-	
weight	kg	62.9	6.838	61.5	0.61	10
Training	year	4,767	1,14	4,5	0,703	

age						

Can be seen from Table (1) that the values of the skewness coefficient of the three variables ranging between ± 1 and this shows that the skewness acceptable and sample moderation dispersed.

3.2 Measurements

3.2.1 Slice serve test performance

The slice serve test was used to evaluate performance of serve in tennis. The test was appropriated for advanced players the characteristics of test show bellow.

- Test Performance: A slice serve is normally used for first serve, it is therefore necessary to add power to it. To do this, proper knee bending and body coiling during the wind-up movement should be accomplished. To do this, turn your shoulders at around 45 degrees towards your back or towards the back fence while your hips remain with their original position. A perfectly coiled body is when your shoulders and your hips are not aligned. At the same time, you also have to bend your knees. Then slide your right foot (for right-handed players) to the right to facilitate your body alignment. As a result, you should hit a wide serve or your serve should hit the sideline of the service box.

- Tools: court, net, ball, and racket.

- Scoring: The degree of evaluation of technical performance is (10 degrees), calculated by the mean score of each reviewers (3) attempt to each player and then the final score was calculated by extracting the mean of reviewers.

3.3 Pre-Test

Participants were instructed to perform 3 slice serves from the baseline into the service court, following a 10min warm-up protocol on November 12, 2013.

3.4 Learning curriculum

Our curriculum included (12) learning units, (3) units a week, time of each learning unit (60m) assigned into three sections:

- Preparatory section of (12) minutes.

- The main section of (45) minutes.

- Concluding section of (3) minutes.

Players need to use squash rackets and routine tennis ball through learning. Following explain to slice serve learning.

1- Toss Location

When hitting a slice serve you need to toss the ball further to your side so you can swing across the ball later in the motion. This will allow you to create the sidespin that defines the slice serve.

2- Swing Direction and Pronation

Because you've tossed the ball further to your side than you do on a flat serve, you'll have to swing differently to get to contact.

3- Follow Through

The follow through on the slice serve is more to your side than on a flat serve. Not a ton but still a noticeable amount.

3.5 Post-Test

Participants were instructed to perform 3 slice serves from the baseline into the service court, following a 10min warm-up protocol on December 12, 2013.

3.6 Statistical analysis

A Wilcoxon test for one group was used to compare the effects of the applied learning instruction. Significance level was set to ≤ 0.05. Tests were conduct by SPSS Statistics version 21 (IBM Corporation, Somers, NY).

4. Results and discussion

The effect of the 4-week learning on measure of slice serve performance is presented in Table 1. While the learning program of slice serve induced a great significant increase in median slice serve of 4.9, improvements of slice serve were significantly greater in study group when compared to pre-test value. Participants who trained with learning instruction made significantly greater gains in slice serve as compared to the pre-test. Furthermore, Wilcoxon test indicated significant improvements for slice serve value. Median slice serve was significantly greater than pre-test of 2.45.

Table (1) shows pre and post-tests of slice serve.

Changes	Pre-tests		Post-tests		Wilcoxon Test	Significant
	Median	quartile deviation	Median	quartile deviation		

| Slice serve | 2,45 | 0,46 | 4,9 | 1,20 | 3,80+ | S |

Tabulate degree (8) at significant level 0.05 and free degree 10.

The results of the present study indicate that computer teaching and learning program are a functional methods in teaching the skill of slice serve to players aged 20-35yrs old and that it might be as effective as learning. The main finding is that group learned the rudimental elements of the slice serve in tennis in performance in the environment of the specific instruction methods. These results are in agreement with the findings of other studies (Ammar., 2010; Haidar, 2010), that is, that computer teaching was designed to teach tennis skills to players. However, the studies above focused on junior players and didn't use learning program about slice serve whereas the present study focused on advanced players, that is the computer teaching method and learning program might also be effective in players of an adult age.

The significant improvement of the study group's slice serve test results highlights the contribution of information presented using a computer and learning program to knowledge gain. This is in agreement with Schmidt (2008) who claimed that tennis skills can be presented to students via computer programs. Additionally, the significant improvement of the above group's skill test results indicates that computer instructions might also be effective in teaching slice serve skill execution. Certainly, these results are limited to a difficult skill, that is the slice serve skill which is examined in the present study. However, there are other relevant studies which support the claim that players can learn specific skills with the aid of a computer (Maithem, 2012; Najlla, 2011). Anyway, the outline of computer systems into physical education has benefits over conventional instruction in terms of the instruction procedure and information transmission. Some of the benefits involve the fact that information is offered in its most complete form; this information is reproduced in computer teaching by various means; training is geared towards the individual and there is quick access to a great volume of information.

Since computer technology is as successful and as effective an educational tool, it can therefore handle the teaching of practical issues of physical education. Thus it offers a substitute solution releasing more time for exercise (Adams et al, 1989). Nevertheless, to make such a form of instruction efficient, there are some other factors which must be determined, such as the quality of the programs, the reproduction systems and the learners' motives. The positive effect of the computer teaching method found in the present study

might in part be due to the fact that the instruction program for the skill of slice serve in tennis fulfills the conditions necessary for the effective transmission of the relevant information.

5. Conclusion

According to results of the present study, computer teaching and learning program are just effective for learning of the slice serve skill in tennis. However, these conclusions are limited to players aged 20-35yrs old. More research should be conducted to investigate the effect of computer teaching and learning program in different ages and for various specific strokes. The development of more multimedia programs and the evaluation of their effectiveness should provide information about the application of the computer teaching method in clubs and the academic curricula of physical education.

Acknowledgements

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