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The Effect of Reciprocal Teaching Strategies on the Acquisition of Some Basic Skills in Tennis among Female Students

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ABSTRACT

The research aims at identifying the effect of reciprocal teaching strategies on the acquisition of some fundamental skills in Tennis among female students. Did the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of serve? Did the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the forehand and the backhand ? The researcher used the experimental method in designing an experimental group, selecting 56 female Tennis students from the Faculty of Physical Education using purposive sampling. It is a teaching program aiming at teaching the reciprocal strategy in Tennis for female students. The use of the reciprocal strategy in teaching the serve skill has had a positive impact on learning outcome, and this is evident through the post measurement of the study. One of the most important conclusions is that the use of the reciprocal strategy in teaching the skill of the forehand has had a positive outcome on learning, and this is evident through the post measurement of the study. The use of the reciprocal strategy in teaching the skill of the backhand has had a positive outcome on learning, and this is evident through the post measurement of the study. One of the most important recommendations of the research is the need for applying the proposed educational program using the reciprocal strategy to teach the basic skills in Tennis and designing educational programs using the reciprocal strategy to teach other Tennis skills for female students as well as for different ages.

I. Research Overview

1.1 Introduction and Significance of the Research

The advancement in the sports science is indicative of the scientific progress that nations are making. All countries of the world are racing into scientific and technological aspects to advance in various fields. Education is viewed the mainstay of progress and keeping pace with civilized development, as educational institutions seek to achieve the goals and objectives of the educational process with a high degree of efficiency, proficiency and attention paid to the educated individuals and their needs. The path for these institutions towards achieving these goals and objectives is to strengthen their strategies so that they keep pace with the scientific progress and

help enrich the educational process. The significance of this research is apparent in the fact that many female students in the State of Iraq do not practice badminton, as it is not part of the curricula approved by the Ministry of Education, and there are no local championships for female students or school championships. Additionally, and from what the researcher knows, there has been no previous research dedicated to the reciprocal teaching strategy in sports. For the physical education in Iraq still relies on the development of team games with little consideration given to individual games, except for a few, due to the lack of the most rudimentary requirements for such a sport like stadiums, equipment and tools.

1.2. Research Problem

Based on the researcher's experience as both a teacher and Tennis player in Iraq, there turned out to be a poor level of female student absorption of the basic Tennis skills. The pedagogical approaches of explaining these skills are still old-fashioned in that the recitation method of teaching is the usual practice; the learner has no role to interact with the information, which leads to students' boredom and lack of focus on performing skills properly, thus making the level of skilled performance weak. There is no standardized skill proficiency compared to other relevant racquet sports. Due to the researcher's review of previous studies that dealt with different teaching strategies to explain the different skills, the researcher found that there are many teaching strategies applied in various scientific researches that emphasized the use of different teaching strategies in improving performance for many skills. To the knowledge of the researcher, no study highlights the reciprocal teaching strategy for providing female students with basic Tennis skills. Hence, the idea of this study emerged as an attempt to take account of new scientific developments and add them into Tennis game.

1.3 Research Objective

The research aims at identifying the effect of reciprocal teaching strategies on the acquisition of some fundamental skills in Tennis among female students.

1.4 Research Questions

1) Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the serve?
2) Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the forehand?
3) Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the backhand?

1.5 Research Scopes

1.5.1 Human Scope: Female students at College of Education, Thi-Qar University.

1.5.2 Spatial Scope: The College Sports Hall.

1.5.3 Time Scope: 10/02/2022 to 20/05/2022.

1.6 Definition of Key Terms

1.6.1. Teaching Strategies

They are the basic principles, procedures and processes required for individual learning to occur. They are multiple and are determined based on the nature and purpose of the educational situation and the circumstances and levels of learners. (1)

1.6.2 Reciprocal Teaching Strategy

It is one of the most important up-to-date strategies in the field of physical education recently appeared in the United States of America and according to which, the student plays a major role in the educational process. This method is based on the so-called reciprocal action whereby one student called the performer do the tasks, while the other called the observer observes the performer and provides him with some clarifications and feedback. The role of the teacher during this method is to supervise and give feedback to the student-observer only. (2)

II. Literature Review

Education plays a major role in the betterment of peoples. For it positively helps in nurturing future generations based on advanced and modern scientific foundations. Such a progress can be measured by the extent to which those peoples know the ways, means, strategies and theories of teaching. (3)

In recent years, teaching strategies have gained growing attention all over the world because of their direct impact on the capabilities and potentials of the human mind and capabilities. Organized efforts appeared in the context of employing educational strategies in designing programs that meet the needs of students and seek to harmonize between the nature of educational situations and the circumstances, needs, abilities and inclinations of each student. (4)

Tennis is usually played outdoors, but it may be played on closed indoor courts. In this game, two or four competitors compete and it is played simply by tossing a felt ball with a racket. The goal of playing is to score points by sending the ball to the opponent’s area such that he is unable to return it, or returns it after it touches the ground more than once, or by sending it to the net or fixed fixtures, or if it falls outside the boundaries of the court. Based on the laws of the game, the two players take turns hitting the ball, provided that the ball passes over the net in the middle of the field and does not exceed the permissible limits. The most important thing that

distinguishes tennis from other games is that it benefits many parts of the body, in addition to the compatibility that requires harmony between the mind and all the muscles of the body. In tennis matches, there is no specific time for playing, as the issue of time depends on the skill of any of the players in finishing the game in his favor. The matches are held in singles and doubles, whether for men, women, or mixed doubles, with one male and female player on each team. The match is held in a group system, and each group consists of six rounds and each half consists of four points. For women, winning the match is in two sets, while for men, winning the match includes three sets.. [5]

III. Research Methodology and procedures

3.1 Research Methodology

The researcher used the experimental method by designing one experimental group, due to its suitability to the subject matter of this research.

3.2 Research Sampling

The research used the purposive sampling of 56-second year female students at the College of Physical Education, Thi-Qar University. They were divided into (30) students as a primary sample, (20) students as a survey sample and (6) students were excluded because they did not enroll in the measurement under discussion.

3.3 Data-Collection Methods

3.3.1 Equipment

- Duct tape
- Restmeter for height measurement
- Tennis rackets
- (50) Tennis balls
- Stopwatches
- Weighing scale - ruler included
- Marked ruler

3.3.2 Tools

- Expert opinion form to determine and test the most important physical abilities related to Tennis basic skills.
- Expert opinion form to determine the Tennis basic skills and its tests.
- Expert opinion form to determine the number of units given to the Tennis basic skills per week, the number of classes and the time scale of each class in each unit.

- The proposed educational course allocated for the reciprocal teaching strategy in Tennis for female students.

3.4 Data Processing of Physical Abilities in Question

3.4.1 Validity of Physical Fitness Tests

The researcher calculated the validity of physical fitness tests under discussion and applied them to the survey sample by means of a peripheral comparison. This is done by finding T-value of the differences between the higher and lower quadrants of the physical abilities in question, as shown below in Table (3/4)

Table (3/4)
The upper and lower quartiles and T-value of the differences in physical fitness (N = 20)

Statistical Processing of Physical Fitness		Upper quartile		Lower quartile		T-Value
		- M	± Q	- M	± Q	
accuracy test	wide shot on overlapping circles	8.20	0.447	4.80	0.447	13.88
muscle power	Long jump from stability	1.96	0.124	1.57	0.044	9.067
agility test	Shuttle run	16.20	0.836	12.40	1.140	19.00
Flexibility test	Trunk bending standing position	9.60	1.516	4.80	0.447	8.232
speed test	30m run	7.40	0.547	5.00	0.012	9.798

T-tabulated at a significance level of (0.05) = 2.09< at the level of (0.01= 2.84

As indicated in Table (3/4) and by comparing the arithmetic average of the upper and lower quartile, T-value of the wide shot test on overlapping circles is (13.88), value of the wide jump test from stability is (9.067), value of jogging test is (19.00), value of the trunk bending test from standing is (8.232) and value of the 30m sprint test (9.798). All of them are statistically significant at the level of (0.01) between the upper and lower quartile in physical fitness, where T- values ranged between (8.232, 19.00), which means that Physical abilities distinguish between the different levels and therefore are valid to measure what they are designed for**.**

3.4.2 Reliability of Physical Fitness Tests

The researcher calculated the reliability of the tests for physical fitness in question through the application and re-application of physical abilities on the survey sampling, which consisted of (20) students in the period from 10/3/2020 to 20/3/2020 with a time lag of a week. The objective is to find the arithmetic average, standard

deviation, correlation coefficient between the first and second application, and reliability coefficient of the elements of fitness in question, as shown in Table (3/5).

Table (3/5)
Correlation coefficient and reliability coefficient of the fitness components in question

Statistical Processing of Physical Fitness		1st Application		2nd Application		Correlation Coefficient	Reliability Coefficient
		- M	± Q	- M	± Q		
accuracy test	wide shot on overlapping circles	6.50	1.317	7.10	1.071	0.575	0.785
muscle power	Long jump from stability	1.75	0.167	1.872	0.216	0.909	0.821
agility test	Shuttle run	14.25	1.585	12.35	1.308	0.869	0.836
Flexibility test	Trunk bending standing position	6.80	2.067	9.65	2.230	0.931	0.792
speed test	30m sprint	6.25	0.966	5.70	0.864	0.646	0.880

R-tabulated at a significance level of (0.05) = 0.444, at the level of (0.01= 0.561

As indicated in Table (3/5), the correlation coefficient between the first and second application of the wide shooting test on overlapping circles is (0.575), the wide jump test from stability (0.909), the shuttle run test (0.869), and the trunk bending test from standing (0.931) and the 30m sprint test (0.646). The values of the correlation coefficients ranged between (0.575, 0.931), all of which are significant at the level of (0.01).

The values of the reliability coefficients for the wide shooting test on overlapping circles (0.785), the wide jump test from stability (0.821), the shuttle run test (0.836), the trunk bending test from standing (0.792), and the 30m sprint test (0.880). The reliability ranged between (0.785, 0.880), all of which are highly reliable coefficients and are close to a round number which indicates the reliability of the physical abilities to measure what they were set for.

Thus, the physical abilities are at a high degree of validity and reliability, confirming the validity of the results obtained when applied to the primary sample.

3.5 Data Processing of Skills Tests in Question

3.5.1 Validity of Skills Tests

The researcher calculated the validity of basic skills tests under discussion and applied them to the survey sample (n=20) by means of a peripheral comparison. This is done by finding T-value of the differences between the higher and lower quadrants of the basic skills in question, as shown below in Table (3/7).

Table (3/7)
The upper and lower quartiles and T-value of the differences in Skills Tests

(N = 20)

Statistical Processing of Skills Tests	Upper quartile		Lower quartile		T-Value
	- M	± Q	- M	± Q	
serve test	19.00	1.00	13.20	0.447	15.501
Forehand Test	20.80	1.095	14.80	1.788	13.416
Backhand Test	20.40	0.894	17.00	1.00	13.880

As indicated in Table (3/7) and by comparing the arithmetic average of the upper and lower quartile, T-value of the serve test (15.501), the value of forehand test (13.416) and the value of backhand test (13.880). All of these valued are statistically significant at the level of (0.01) between the upper and lower quartile in the skill tests, where T-value ranged between (13.416, 15.501), which means that the skill tests distinguish between the different levels and therefore are valid to measure what they were set for**.**

3.5.2 Reliability of Skills Tests

The researcher calculated the reliability of the tests for basis skills in question through the application and re-application of skills tests on the survey sampling, which consisted of (20) students in the period from 10/3/2020 to 20/3/2020 with a time lag of a week. The objective is to find the arithmetic average, standard deviation, correlation coefficient between the first and second application, and reliability coefficient of skills tests in question, as shown in Table (3/8).

Table (3/8)
Correlation coefficient and reliability coefficient of skills tests in question

(N=20)

Statistical Processing of Skills Tests in Question	1st Application		2nd Application		Correlation Coefficient	Reliability Coefficient
	- M	± Q	- M	± Q		
serve test	15.65	2.345	17.20	2.092	0.883	0.935
Forehand test	17.90	2.425	19.70	2.473	0.960	0.979
Backhand test	19.20	1.641	21.10	1.889	0.808	0.889

As indicated in Table (3/7), the correlation coefficient between the first and second application of the serve test is (0.883), the forehand test (0.960), the backhand test (0.808). All of these values are statistically significant at the level of (0.01).

Additionally, the values of the reliability coefficients between the first and second application of the serve test is (0.935), the forehand test (0.979), the backhand test (0.889). The reliability ranged between (0.889, 0.979), all of which are highly reliable coefficients and are close to a round number which indicates the reliability of the skills tests to measure what they were set for.

Thus, the skills tests are at a high degree of validity and reliability, confirming the validity of the results obtained when applied to the primary sample.

3.7 Test of normality

To make sure that the distribution of sample is normal, the researcher found homogeneity across all participants of the research sample (50 beginners) by means of calculating the variables in terms of the arithmetic average, standard deviation, skewness coefficient, Kurtosis coefficient and the Kolmogorov-Smirnov test, as illustrated in Table (3/9).

Table (3/9)
Normality distribution of research variables in question
(N=50)

Research Variables			Arithmetic Average	Standard Deviation	Skewness Coefficient	Kurtosis coefficient
Physical measurements	age		20.19	0.895	-0.407	-1.678
	height		1.20	0.084	0.173	1.044-
	weight		54.76	6.707	-0.717	0.869
Physical fitness components	accuracy test	wide shot on overlapping circles	7.10	1.568	0.291	0.642
	muscle power	Long jump from stability	1.76	0.177	1.660	1.131
	agility test	Shuttle run	14.18	1.674	0.161	0.499
	Flexibility test	Trunk bending standing position	7.08	1.998	0.637	0.340
	speed test	30m sprint	7.08	1.306	0.361	0.467
Tennisbasic	Serve	serve test	19.13	31.16	0.505	-1.483

skills	Forehand	Forehand test	16.93	3.226	1.460	0.730
	Backhand	Backhand test	18.36	2.697	0.240	1.220

As shown in Table (3/9), the values of the skewness coefficients hovered at (±3), which means the normality of the sample distribution in the variables under study. These variables follow the normal distribution, where the ratio of the skewness coefficient of the age is (-0.407), the ratio of the skewness coefficient of height (0.173) and the ratio of the skewness coefficient of weight is (-0.717).

6.3 The Survey experience

The researcher conducted two survey studies from 10/3/20 to 20/3/2020 on an sample of (20) students from within the original research community and from outside the basic research sample.

3.7 The Basic experience

The researcher applied the basic experiment to the primary study group in the period from 10/4/2020 to 20/7/2020.

4. Presentation and discussion of the Findings

4.1 Presentation of the Findings

The findings will be presented and discussed by answering to the research questions.

4.1.1 The First Question

Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the serve ?

To answer the first question, the researcher found the T- value of differences and calculated the percentage of improvement on skilled performance of the Tennis serve among the study group before and after measurements. Table (4-1) and graph (4-1) show T-value and the percentage of improvement.

Table (4/1)

Differences and percentage of improvement between the pre and post measurements for the experimental group on learning the skilled performance of serve

(N=30)

Statistical Processing	Pre-Measurement		Post-Measurement		T-Value	Percentage of Improvement
	- M	± Q	- M	± Q		
Skilled	13.19	3.148	31.16	2.780	16.531	62.88%

Performance of Serve						

T-value tabulated at the significant level of (0.01) = 2.75

The differences between the average of the pre and post measurements for the experimental group in terms of learning the skilled performance of serve

As is shown in Table (4/1) and Chart (4/1), there are significant differences at the level of (0.01) between the pre and post measurements of the experimental group in terms of learning the skilled performance of the serve. These differences were in favor of the post measurement, and the percentage of improvement in the skilled performance of the serve was (62.88%).

4.1.2 Discussion of the First Question Findings

The researcher attributed this improvement to the use of the proposed teaching course using the reciprocal teaching strategy, which helped the learner to be more independent in making decisions while doing exercises inside class; she practices skills without orders from the teacher. Besides, the instructions and method of performance go smoothly within the course and the division of performance into successive and consecutive tasks according to the technical aspects and their arrangement. Additionally, there is a teaching technical points to be observed during the performance as well as the availability of drawings and illustrations of the sequences of skills performance, which makes it easier for the learner to visualize the performance easily. This helps to arouse the interest of the learners and push them to make more effort without getting bored. It also rids the learner of the fear factor of failure while practicing the skill, and this strategy is especially beneficial in the first stage of learning the skill, in which learners need to identify important points in their performance after each try to help them correct it. This strategy serves as turning each learner into a teacher.

In such a strategy, learners would learn as much as they bear responsibility and be self-reliant in receiving the information; they would work in pair groups. Each group tries to produce the information and then absorb and clarify it to their colleagues in a self-styled manner and so on until the class ends (6).

4.1.3 The Second Question

Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the forehand **?**

To answer the second question, the researcher found the T- value of differences and calculated the percentage of improvement on skilled performance of the forehand among the study group before and after measurements. Table (4-2) and graph (4-2) show T-value and the percentage of improvement.

Table (4/2)

Differences and percentage of improvement between the pre and post measurements for the experimental group on learning the skilled performance of forehand

(N=30)

Statistical Processing	Pre-Measurement		Post-Measurement		T-Value	% of Improvement
	- M	± Q	- M	± Q		
Skilled Performance forehand shot	16.93	3.226	30.03	3.079	18.081	77.37%

Figure (4/2)
The differences between the average of the pre and post measurements for the experimental group in terms of learning the skilled performance of forehand

As is shown in Table (4/2), there appeared significant differences at the level of (0.01) between the pre and post measurements of the experimental group in terms of learning the skilled performance of forehand .These differences were in favor of the post measurement, and the percentage of improvement in the skilled performance of forehand was (77.37%).

4.1.4 Discussion of the Second Question Findings

The researcher attributes this improvement to the use of the proposed teaching course using the reciprocal teaching strategy, whereby the general objectives of learning the skill were determined. This would help the learner to remember the skill he learned and how to perform it as well as analyzing each teaching behavior within the proposed course, identifying the performed tasks needed to acquire the required performance and achieving the specified goal. The application of this strategy provides sufficient time to apply the skill and compares performance with the standard skill sets by the teacher in order to help the learner compare his performance with the optimal performance. In so doing, the learner can improve and master the skill performance. The role of the peer observer is useful in helping the learner to benefit from the proposed teaching course and reducing the time of organization and explanation inside the class. Such a strategy provides opportunities for creating new relationships between the teacher and the learner, and between the learners and the tasks they perform, as well as between the learners themselves, that is, it contributes to the development of cooperative behavior among the learners.

The teaching aids used in the proposed teaching course will work to achieve communication and transfer teaching objectives from the teacher to the learner, which

increases the effectiveness, improves the learning process, motivates the learner to more participation in teaching situations and entice her to participate in further continuous learning. It also facilitates the process of remembering by recalling information, as well as following the steps of applying the exercises after explaining and displaying them, training the skill, and providing the learner with continuous feedback that increases motivation and leads to accurate skill performance. Additionally, such a strategy will strengthen the mutual relationship between the teacher and the learner, giving the learner an active role in the completion of the teaching process. (7)

4.1.5 The Third Question

Does the reciprocal teaching strategy achieve a positive outcome in learning the skilled performance of the backhand?

To answer the third question, the researcher found the T- value of differences and calculated the percentage of improvement on skilled performance of the backhand among the study group before and after measurements. Table (4-3) and graph (4-3) show T-value and the percentage of improvement**.**

Table (4/3)
Differences and percentage of improvement between the pre and post measurements for the experimental group on learning the skilled performance of backhand

(N=30)

Statistical Processing	Pre-Measurement		Post-Measurement		T-Value	% of Improvement
	- M	± Q	- M	± Q		
Skilled Performance backhand	18.36	2.697	30.53	3.520	17.676	66.28%

The differences between the average of the pre and post measurements for the experimental group in terms of learning the skilled performance of backhand

As is shown in Table (4/3), there appeared significant differences at the level of (0.01) between the pre and post measurements of the experimental group in terms of learning the skilled performance of backhand. These differences were in favor of the post measurement, and the percentage of improvement in the skilled performance of forehand was (66.28%).

4.1.6 Discussion of the Third Question Findings

The researcher concluded that the improvement in is due to the use of the proposed teaching course using the reciprocal teaching strategy, as this strategy leads the learner to play two roles, namely the learner's role and the teacher's role. The reciprocal teaching strategy is also useful in providing a teacher for each learner. It is useful in the social context too, especially the cooperative behavior among learners. It also worked to take into account the individual differences among learners as it contributed significantly to improving skilled performance, providing the learner with the opportunity to work independently in classroom, and benefiting from comparing performance with the skilled criterion that help the learner improve and master skilled performance. All of that confirm the positive sides of the reciprocal teaching strategy for skill improvement under study.

The teaching process needs to undergo constant reform and then to provide a teacher for each learner, especially when teaching such difficult and sophisticated skills as badminton. Due to the growing need for supplying a teacher for each learner and the drop in teachers' number, the reciprocal teaching strategy is playing increasing role in helping achieve the desired goals (7).

5. Conclusions and Recommendation

5.1 Research Conclusions

After the presentation and discussion of this research along with its objectives and questions, the researcher concluded the following:

- The reciprocal teaching strategy in learning serve skill had a positive impact on Tennis beginners, with an improvement rate of 62.88%.
- The reciprocal teaching strategy in learning forehand skill had a positive impact on Tennis beginners, with an improvement rate of 77.37%.
- The reciprocal teaching strategy in learning the backhand skill had a positive impact on Tennis beginners, with an improvement rate of 66.28%.

5.2 Research Recommendations

After the presentation and discussion of this research along with its objectives and questions, the researcher recommended the following:

- The proposed teaching course is needed using the reciprocal teaching strategy in learning the basic Tennis skills.
- Teaching courses shall be designed for female students using the reciprocal teaching strategy in learning other basic Tennis skills.

- Teaching courses shall be designed for different age groups using the reciprocal teaching strategy in learning other basic Tennis skills.
- Teaching courses shall be designed using the reciprocal learning strategy to teach various types of racquet sports.
- Teaching courses shall be designed using the reciprocal learning strategy to teach racquet sport skills.

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