



TEACHING USING THE IMAGINATIVE PERFORMANCE METHOD IN TABLE TENNIS AND ITS EFFECT ON THE ACCURACY OF THE FOREHAND, BACKHAND, AND SERVE

Zaki Mirdan Omar

Al-Qalam University
IRAQ

Corresponding Author: zeki@alqalam.edu.iq

Recieved: August 17, 2026 **Accepted:** September 14, 2026

ABSTRACT

Background. Visualization training in table tennis is one of the methods and techniques used by teachers and coaches to teach the basic skills of the sport. It relies heavily on mental imagery, which feeds into kinesthetic imagery, fundamental to the learner's mastery of basic skills. **Objectives.** The research focuses on the effect of shadow training on developing forehand stroke, backhand blocking and serving skills. **Method.** The researcher used the experimental method with two groups, a control group and an experimental group, with pre-tests and post-tests. The research sample consisted of (10) students for each group, selected purposively. The data was treated statistically using the statistical package (SPSS) by computer. **Results.** Results show shadowing training for the experimental group and the regular program for the control group resulted in positive progress in the three research skills, and the differences between the pre-tests and post-tests were statistically significant in favor of the post-tests. **Conclusion.** Shadowing training for the experimental group resulted in significantly better progress than the regular program for the control group, and the differences between the post-tests and post-tests were statistically significant in favor of the experimental group.

Keywords; Teaching in imaginative, teaching methods, table tennis.



A. INTRODUCTION

Learning and practicing table tennis with traditional methods is a long, tedious process and may even lead to the internalization of incorrect techniques if not supervised by a coach. To overcome these issues, the presented study proposes an exergame with the aim of enhancing young female novice players' performance by boosting muscle memory, making practice more interesting, and decreasing the probability of faulty training. Specifically, we propose an exergame based on skeleton tracking and a virtual avatar to support correct shadow practice to learn forehand and back hand drive and serve technique without the presence of a coach (Forouzan et al.2023. 1152-1160).

Visualization training in table tennis is one of the methods and techniques used by teachers and coaches to teach the basic skills of the sport. It relies heavily on mental imagery, which feeds into kinesthetic imagery. This is fundamental to the learner's mastery of basic skills, as it is an effective mental tool for learning fundamental table tennis skills through kinesthetic visualization of the skill, including strokes, player movement, and planning before and during execution. Furthermore, focusing attention plays a crucial role in enhancing this learning process, solidifying movement patterns, promoting relaxation, reducing tension, and creating match scenarios, such as the proper way to serve or shadow play, to represent the movements the brain has visualized for application in teaching, training, and play.

One of the outcomes of learning through shadow play is the accurate mastery of basic table tennis skills, ball control, and the establishment of correct technique and skill execution, enabling the subconscious embodiment of movements such as forehand and backhand strokes. This training phase prepares the player for the match and equips them psychologically, providing mental readiness and motivation to compete. This mental process reduces stress and anxiety, boosting self-confidence, especially during crucial moments (such as a 10-10 tie).

The power of visualization or imaginative training lies in its ability to translate mentally acquired skills into real-life scenarios during training or matches. Practicing visualization in a calm environment reduces muscle tension in the shoulder girdle and arm muscles, leading to a focus on precise movement. Visualization training focuses on weaknesses in performance and helps the player visualize correcting technical errors, such as minimizing racket swing or improving footwork. Besides being an effective learning and performance development tool, visualization is also part of psychological and volitional preparation. Players can utilize it to enhance their off-table performance or as a mental warm-up before actual training.

Coaches have turned to imaginative training because it can be done anytime, even outside of training sessions. It doesn't require physical space or equipment, and it doesn't demand the same level of effort as actual play. It can be practiced mentally or through shadow play. The training focuses on accurately visualizing movements, strokes, and serves, which boosts self-confidence, associates encouraging and motivational phrases with positive emotions, accelerates the learning process, helps visualize tactical situations, and improves footwork.

Mental imagery in table tennis is a powerful mental tool designed to improve technical and physical performance by creating accurate mental images of movements and situations without actual physical action. It enhances technical skills and helps master and increase the accuracy of serves (forehand, backhand, and sideways). It also develops reaction speed and

contributes to reducing reaction time and speeding up decision-making during a match. Mental imagery helps manage psychological state, reducing stress and anxiety levels, increasing self-confidence, and improving focus. It also develops tactical thinking and helps players visualize different game situations and how to handle challenging spin shots.

The mental imagery training involves practical application steps, and an effective mental training program includes several key stages:

- a. Relaxation: Beginning with muscle and mental relaxation sessions to prepare the mind to receive the images.
- b. Mental visualization: Creating an accurate mental image of the skill (such as the topspin shot), focusing on the sensation of the shot and hand-eye coordination.
- c. Pattern Repetition: Mentally divide the table (e.g., 25% backhand and 75% front hand) and visualize the precise distribution of shots.
- d. Integration with Realistic Practice: Use "shadow practice," where the player performs imaginary movements without the ball to simulate what they have mentally envisioned.

Studies have shown that combining mental and physical training yields better results in developing players' offensive and functional skills compared to relying on physical training alone. Many researchers have studied the topic of imaginative play and mental visualization and its effectiveness in preparing table tennis players. Their results have shown a high degree of positivity in performance and mastery of basic and tactical skills in table tennis.

Studies that addressed mental, imaginative play and mental visualization, (Qutb .2006) he studies, The Effect of A Mental Training Program Using Some Psychological Skills on The Development of Emotional State and Reaction Time of Table Tennis Juniors also (Forouzan et al.2023) The Effect of an Exergame on the Shadow Play Skill Based on Muscle Memory for Young Female , (Fernando, and Bercades.2019) The effectiveness of shadow practice in learning the table tennis standard forehand drive , (Qadir.2021) The effect of the mental training program on some functional variables and the level of performance accuracy of serving in table tennis,(Forouzan et al.2023) The Effect of an Exergame on the Shadow Play Skill Based on Muscle Memory for Young Female (Larry.2024) Shadow Practice for Strokes and Footwork improvement Table tennis (Álvaro.2026) A Detailed Guide to Effective Shadow Play in Table Tennis. All these studies and other studies have addressed some of the aspects that our research touched upon.

The importance of the research is focused on the effect of shadow training on developing forehand stroke, backhand blocking and serving skills, due to the importance of this method in learning and training.

B. METHOD

Participant.

The research sample consisted of (10) students for each group, a control group and an experimental group

The research sample was selected purposively. For the scoring method of the stroke tests, the test involves counting the number of times the ball hits the facing half of the table and then returns to touch the half of the table on the floor within (30) seconds. Each student is given three consecutive attempts with a suitable rest period between them, and the student's score is recorded based on the best of the three attempts. For the serve skill test, the player receives one point for each successful attempt and zero points for each

unsuccessful attempt. A ball that touches the lines surrounding the square or touches the net and lands within the designated square is considered a successful attempt.

Research Design.

The researchers used the experimental method with two groups, a control group and an experimental group, with pre-tests and post-tests.

Table 1. Study design

Test 2	Programmed	Test 1	Group	Sample
Post test	Teaching in imaginative	Pre test	Experimental	10
Post test	Applying the imperative method	Pre test	Control	10

Instrument.

The researchers used the following skill tests:

- First Test (Mott-Lockhart Test 1): To measure the skill of the straight forward stroke with the racket.
- Second Test (Mott-Lockhart Test 2): To measure the skill of the backhand strike.
- The Third Test (Serve Skill Test): To measure serving accuracy. Equipment Used: Regulation table tennis balls, Racket, Stopwatch/Timer.

Procedures and if relevant, the time frame :

- Mott-Lockhart Test Performance: Place one half of the table perpendicular to the other, resting vertically against the wall. Draw a line parallel to the floor on the perpendicular half of the table at the same height as the net from the horizontal surface of the table. The student stands facing the perpendicular half of the table, holding the racket in one hand and the ball in the other. Upon the starting signal, the student drops the ball onto the table surface and then strikes it against the opposite half of the table as many times as possible. The ball must be struck after touching the opposite half of the table, then return and touch the half of the table resting on the floor.



Figure 1. Mott-Lockhart test for measuring the forehand stroke of the racket and Block stroke (with the back of the racket)

- Serve Skill Test Performance: The player stands at least 30 cm from the end of the table and does not step outside the table's edge. The serve begins correctly (a backspin forward serve) by lifting the ball upwards before it touches the racket. The serve begins with the numbers shown in the boxes sequentially: 1-2-3-4-5.

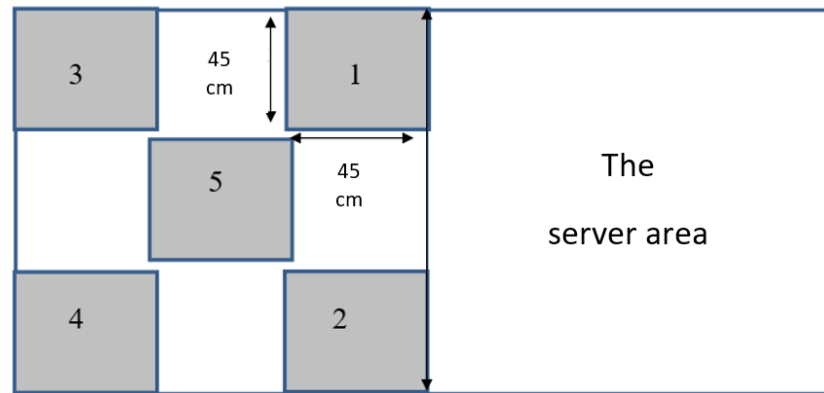


Figure 2. Test of Serving Skills

Analysis plan.

Statistical analyses: The data was treated statistically using the researchers used the statistical package (SPSS) by computer to extract the following: the arithmetic mean, standard deviation, t-test for related samples, t-test for unrelated (independent) samples, and the percentage (Al-tikrity and Al-obaydi.2012).

Scope and/or limitations of the methodology you used.

The study is focused on the effect of shadow training on developing forehand stroke, backhand blocking and serving skills.

C. RESULTS AND DISCUSSION

Results

Table 2. shows the arithmetic means, standard deviations, and calculated and tabulated t-values for the pre- and post-tests of basic table tennis skills for the experimental group.

variables	Unit of measurement	Pre-test		Post-test		t
		mean	±Stander division	mean	±Stander division	
Forehand stroke	Number of repetitions/ second	13.200	2.050	16.5000	2.374	8.5590*
Block stroke (with the back of the racket)	Number of repetitions/ second	15.400	2.567	19.000	2.626	11.1884*
Serve stroke (Facing the racket)	Score	1.425	0.587	3.760	0.534	19.1226*

* Significant differences with a probability of error of ≤ 0.05

Table 2. shows that the research results indicate statistically significant differences between the pre-tests and post-tests for the experimental group in all research skills, in favor of the post-tests, with a probability of error of ≤ 0.05 .

Table 3. shows the arithmetic means, standard deviations, and calculated and tabulated t-values for the pre- and post-tests of basic table tennis skills for the control group

variables	Unit of measurement	Pre-test		Post-test		t
		mean	$\pm$ Stander division	mean	$\pm$ Stander division	
Forehand stroke	Number of repetitions/second	11.650	2.750	14.150	1.251	3.4836*
Block stroke (with the back of the racket)	Number of repetitions/second	14.230	3.047	16.234	1.325	3.1551*
Serve stroke (Facing the racket)	Score	1.546	0.435	2.322	.8790	7.2579*

* Significant differences with a probability of error of ≤ 0.05 .

Table 3. shows that the research results indicate statistically significant differences between the pre-tests and post-tests for the control group in all research skills, in favor of the post-tests, with a probability of error of ≤ 0.05

Table 4. shows the diferentes between the experimental group and control group in the variables of research

variables	Unit of measurement	control group		experimental group		t
		mean	$\pm$ Stander division	mean	$\pm$ Stander division	
Forehand stroke	Number of repetitions/second	16.500	2.374	14.150	1.251	2.4883*
Block stroke (with the back of the racket)	Number of repetitions/second	19.000	2.626	16.234	1.325	4.7432*
Serve stroke	Score	3.760	0.534	2.322	.8790	4.1942*

(Facing
the
racket)

* Significant differences with a probability of error of ≤ 0.05

Table 4. shows that the research results indicate statistically significant differences between the experimental group and the control group in all research skills, in favor the experimental group, with a probability of error of ≤ 0.05 .

D. CONCLUSION

Shadowing training for the experimental group and the regular program for the control group resulted in positive progress in the three research skills, and the differences between the pre-tests and post-tests were statistically significant in favor of the post-tests. Shadowing training for the experimental group resulted in significantly better progress than the regular program for the control group, and the differences between the post-tests and post-tests were statistically significant in favor of the experimental group. Shadowing training for the experimental group and the regular program for the control group resulted in positive progress in the three research skills, and the differences between the pre-tests and post-tests were statistically significant in favor of the post-tests. Shadowing training for the experimental group resulted in significantly better progress than the regular program for the control group, and the differences between the post-tests and post-tests were statistically significant in favor of the experimental group.

E. ACKNOWLEDGMENT

The author extends sincere appreciation to all those who contributed to the success of this research.

F. AUTHOR CONTRIBUTION STATEMENT

Zaki Mirdan Omar responsible for the manuscript in this study.

G. REFERENCE

- Al-tikrity, Wadie Yassin and Al-Obeidi, Hassan Mohammed. 2012
- Álvaro , Munno :A Detailed Guide to Effective Shadow Play in Table Tennis ,2026
- Fernando, Florendo and Bercades Dave: The effectiveness of shadow practice in learning the table tennis standard forehand drive 2019
- Forouzan Farzinnejad, Javad Rasti, Navid Khezrian & Jens Grubert. The Effect of an Exergame on the Shadow Play Skill Based on Muscle Memory for Young Female (ISMAR 2023), pp. 1152-1160.
- Qadir, Nasik Baqir: The effect of the mental training program on some functional variables and the level of performance accuracy of serving in table tennis, , Journal of Studies and Research in Physical Education, University of Basra, Volume 31, Issue 1 (2021)

Qutb , Ahmed Mohamed Ali: The Effect of A Mental Training Program Using Some Psychological Skills on The Development of Emotional State and Reaction Time of Table Tennis Juniors , 2006

Larry ,Hodges: Shadow Practice for Strokes and Footwork improvement,Table tennis coaching, com,2024 [http://www.publications.zu.edu.eg/Pages/PubShow.aspx?ID=23372&&pubID=.](http://www.publications.zu.edu.eg/Pages/PubShow.aspx?ID=23372&&pubID=)

Year-9<https://www.ttnsw.org.au/activities/the-health-benefits-of-table-tennis#:~:text>