

# AN EDUCATIONAL TRAINING CURRICULUM IN A WAY THAT CHANGES THE PLAYING ENVIRONMENT IN DEVELOPING SOME OF THE SKILLS AND MENTAL ABILITIES OF JUNIOR TABLE TENNIS PLAYERS WITH SPECIAL NEEDS

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## ABSTRACT

*The current research aims to prepare a training curriculum in a way that changes the playing environment to develop the skill of receiving a ball in to play table tennis for young players, to identify the effect of the training curriculum prepared according to the method of changing the environment to play in developing the skill of reception and reaction speed in playing table tennis for young players who are deaf and dumb by default. There are statistically significant differences between the pre and post-tests of table tennis juniors in the front and back block test and in favor of the post -test. Statistic between the post-tests for table tennis juniors. The researchers identified 12 players from the Specialized School in Al-Qadisiyah, divided into two groups, an experimental and a control group. After that, a playing table was prepared with legal measurements, with the introduction of some changes in the level of the table surface, which creates a different environment for the players during training. The researchers concluded that there was a clear improvement in the experimental group that used the contrast environment during training with the skill of the front and back chest, as well as the contrast environment in training led to an improvement in the reaction speed of the players of the experimental group, and there was also a significant relationship between the speed of response and the skill of the front and back chest with tennis ball In the players of the two groups, the results also showed that there was a significant improvement in the skill of the front and back blocking among the players of the control group, but it did not rise to the level of the control group.*

**Keywords:** *Table Tennis, Reaction Speed, Playing Environment Change.*

## INTRODUCTION AND SIGNIFICANCE OF THE STUDY

Scientific progress in many fields has helped in overcoming the problems facing specialists and researchers in these fields, and among those fields is the field of physical education and sports sciences, which are witnessing rapid scientific development along with the related sciences. This was clearly reflected in the sporting achievements that appeared in the international and Olympic championships and competitions in the high level of sports for the players, whether it was team or

individual games. The table tennis game is one of the sports that witnessed a remarkable development using the correct scientific application, especially in the process of continuous training in different environments to develop the most basic skills, including receiving the ball. This skill is considered to block the ball front and back very important in the game of table tennis, where he can put the opponent player under pressure and give the result of the rapid change in the direction of the ball and the small area of the table requires skill, concentration and a great reaction speed so that the motor duty is ideal for the skill of receiving the ball and therefore this requires Developing appropriate mental processes for this situation, which contributes to the development of skill and increasing the players' self-confidence. Therefore, the importance of the current research lies in the preparation of a training method based on changing the measurements and angles of the table and its impact on the development of reaction speed and some basic skills by playing table tennis. Therefore, changing play environments during training and its complexity is one of the most important modern trends in training to improve the performance of club and team players in table tennis.

## **RESEARCH PROBLEM**

Through direct observation by the two researchers, as they are specialists in the field of table tennis, educationally and academically, and in the field of people with special needs, it was found that the training methods used had limited effectiveness in developing some of the skill or mental qualities of table tennis players, especially in the deaf and dumb category. And the fact that a small playing space generates high pressure on the players to keep up with the speed of throwing the ball among themselves during the match, which leads to a large expenditure of energy and a great nervous and muscular effort. The weakness may contribute to the player losing a match point or losing the whole match, so by looking at training methods and modern methods It was found that the method of changing the training environments did not work in the field of table tennis as far as the researchers are aware. Therefore, the researchers decided to prepare a training curriculum using different playing environments to develop the skill of blocking the ball and the speed of reaction of the emerging tennis players.

## **RESEARCH OBJECTIVES**

1. The current research aims to prepare a training curriculum in a way that changes the playing environment to develop the skill of receiving a ball in playing table tennis for young deaf and dumb players.
2. Identifying the impact of the training curriculum prepared according to the method of changing the playing environment in developing reception skill and reaction speed in playing table tennis for young deaf and dumb players.

## RESEARCH HYPOTHESES

- 1- There are statistically significant differences between the pre and post-test-of deaf and mute table tennis players in the front and back test, in favor of the post-test.
- 2- There are statistically significant differences between the pre and post-tests of deaf and mute table tennis players with the reaction speed test and in favor of the post-test.
- 3- There is a statistically significant relationship between the posttests of deaf and mute table tennis players, in favor of the experimental group.

## RESEARCH FIELDS

- 1- **The human field:** Al-Rafidain Sports Club junior deaf and dumb players for the year 2018, who numbered 12 players.
- 2- **The spatial field:** tennis courts and halls in Al-Rafidain Sports Club in Al-Qadisiyah Governorate.
- 3- **The time frame for the period from 3/22/2018 to 4/22/2018.**

## TERMS DEFINING

1. **Training (change environment):** According to the researchers, it refers to the change in the normal playing environment, for example, a change in the playing area, playing time, or playing tools by changing sizes, lengths, or weights to serve a goal.
2. **Table Tennis:** It is the second popular game after football, and everyone enjoys it, as it entails playing it in different weather and spatial conditions, and it is inexpensive and played from the ages of 8-80 years<sup>1</sup>.

## RESEARCH METHODOLOGY

The researchers used the training method in the style of the two groups (the control and the experimental) to suit the nature of the research problem.

### Sample and Community of the Study

The researchers identified a research community, namely the players of Al-Rafidain Sports Club in Al-Qadisiyah Governorate, who numbered 12 deaf and dumb youth players studying at the Al-Amal Institute for the Deaf and Dumb for the year 2018. Due to the small size of the community, the researchers chose a research sample using a comprehensive enumeration method and divided the sample randomly into two groups, control and experimental, with 6 players for each group,

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<sup>1</sup> Zaid Issa, Ibrahim Salama (2007): Educational Strategies in Table Tennis, 1st Edition, Dar Al-Majdalawi, Amman, p. 16

after homogenization and equivalence for them in the variables (height, weight, front and back blocking skill, reaction test) and as shown in Table (1).

*Table (1) Shows the Homogeneity of The Research Sample*

Variables	Scale Unit	Mean	Dev. Std.	Coefficient Of Difference
Height	Cm.	158	8.34	5.27
The Weight	Kg.	43	6.6	15.32
Front And Rear Bumper	Degree	5.6	1.543	27.54
Reaction Test	Sec.	4.9	1.04	21.22

### Equipment and Tools Used in The Research

- 1- Skill and mental tests.
- 2- A game table of different sizes
- 3- Balls and rackets, number 20.
- 4- Stopwatch.
- 5- A computer.
- 6- Length measuring tape.
- 7- Medical scale.

## FIELD RESEARCH PROCEDURES

### Determining the Appropriate Tests

**Skill test (Front and Back Block in Table Tennis):** The two researchers determined the skill of receiving the ball, so they resorted to choosing the test (front and back blocking) and presented it to a group of specialists in the field of table tennis and tennis to see its suitability for the sample of the researchers. He prepared and prepared the test for the sample, as shown in the following explanation and figure.

**Reaction speed test:** One of the requirements of the current research is to find a reaction speed test that fits with the research sample, so the researchers found a test to choose the (simultaneous) test that depends on the speed of the hand in turning off the lights, and is presented to a group of specialists in motor learning and training for racket games to know the extent of its suitability for the sample of the two researchers after taking their opinions and analyzing them.

**Scale stability indicators:** Reliability is one of the basic elements of the test, and it is one of the most important characteristics of a good test. In order to extract stability, the researchers relied on the following methods:

**Re-testing:** The research applied the two tests (front and back blocking) and (reaction speed) on a group of 5 young players from outside the research sample, and after a week

from the date of the first application, the researchers resorted to re-application of the same two tests on the same sample with the same physical conditions. After extracting and tabulating the results, the researchers used the simple correlation coefficient (Pearson) to extract the relationship between the degrees of the two applications, and the value of the stability test (front and back repel) appeared to be (0.863), and the value of the stability test (reaction speed) was (0.827), which are very good values as an indicator of the stability of the two tests.

**Preparing a different training environment:** For the purpose of reaching a training curriculum prepared for different environments, the researchers resorted to designing a different ping-pong table in terms of the angle of its inclination from the outer sides. But the manipulation of heights, if the surface of the table becomes wavy, the height of the side is 76 cm and for both sides, but the height differs after moving away from the side edge by about 37 cm from the right side, so it is 72 cm and from the left side 80 cm, i.e., the researchers increased and decreased 4 cm for both sides, as shown in Figure (1).



*Figure (1) Researchers proposed table shape for training*

The researchers relied on these measurements by relying on the physics of surfaces, so (Ghazi Salem 2002)<sup>2</sup> shows that the direction of the body falling on a surface changes the direction of its supposed path whenever there is a difference in the height or depression of the surface in the form

<sup>2</sup> Ghazi Salem Amouri (2002): Physics of Solid Surfaces, 1st Edition. Dar al-Ma'rifah, Lebanon, pg. 128.

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of concavity or convexity, which distracts the official direction of the ball falling on it. From this point of view, the researchers resorted to preparing a training environment different from the normal environment through studied manipulation on the surface of the playing table, as experts\* believe that a height of 1 cm from the surface leads to a dispersion of the starting angle of the falling body by 0.97 cm, and this angle increases with the increase or decrease of the surface.

**The main experiment:** After preparing the tests, tools, and a different environment for playing, the researchers applied the educational curriculum with 4 instructional units for a period of two weeks using descriptive sign language, and then the prepared training curriculum was applied with 6 training units for a period of 3 weeks, the time of the training unit was 60 minutes (Appendix and 1, 2). For all players, the time for training and performing exercises is 10 minutes on the modified table and 10 minutes on the regular tournament. With varying intensity from 80% to 100% of the actual player level (i.e., the researchers test the player with the maximum intensity so that it is the test of the training laboratory). Diversity is taken into consideration. The exercises and their differences during the learning units create an atmosphere of competition. As for the control group, they learn and train with the same exercises, training stresses, and volumes for the curriculum, with the difference that this group does not use the modified table and table (2).

*Table (2) shows the distribution of the training units and their emphasis on the two research samples*

Weeks	Units	Groups	Exercise Intensity	Table Type	Unit Duration
<b>Fist</b>	<i>First</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.
	<i>Second</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.
<b>Second</b>	<i>Third</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.
	<i>Fourth</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.
<b>Third</b>	<i>Fifth</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.

	<i>Sixth</i>	Experimental	80%	Normal + Modified	60 Sec.
		control	80%	Normal + Modified	60 Sec.

After completing the application of the training curriculum, the two researchers conducted the post-tests with the same physical conditions in which the pre-tests were conducted, and after tabulating and analyzing the results, the researchers resorted to their interpretation, as indicated in the following procedure.

**Presenting Research Results:** After the end of the period of applying the training curriculum and conducting the tests, the researchers resorted to analyzing and interpreting the results of their research according to the hypotheses set as follows:

**In order to answer the hypothesis**, which states that "there are statistically significant differences between the pre and post-tests of deaf and dumb table tennis youths in the front and back block test and in favor of the post test for the two groups, the researchers analyzed the results of the skill test (front and back ball blocking) as shown in the table (3).

*Table (3) The Results of The Pre and Post-Tests in The Skill (Blocking the Ball Front and Back) for the Experimental Group*

Variable	Test	No. of Individuals	Mean	Std. Dev.	Z- Value	Sig.
Skill test (front and back ball blocking)	Pre-test	6	5.6	1.543	3.055	0.024
	Post- test	6	7.3	1.871		

It is clear from the above table that the arithmetic mean for the pre-test was (5.6) with a standard deviation of (1.543) and for the post-test it was (7.3) with a standard deviation of (1.871). Significance (0.024). This indicates that there are differences between the pre and post-test and in favor of the post-test. The researchers attribute this to the remarkable and statistically significant development of the front and back blocking skill with tennis ball due to the experimental group's use of exercises in a different environment that was prepared to suit the form of motor performance that is performed during the competition. A positive and significant impact on skill development, giving equal repetitions to all trainees, and the variety of exercises makes the training process more exciting and productive than the traditional training process. The organization of the exercises, their diversity, and increasing the number of attempts to perform them with the use of auxiliary tools contribute to creating a lively atmosphere and spreading the spirit of actual participation

among the trainees coupled with a rush towards the performance of the participants, which leads to removing the boredom factor from them<sup>3</sup>.

*Table (4) The results of the pre and post-tests in the skill (blocking the ball front and back) for the control group*

Variable	Test	No. of Individuals	Mean	Std. Dev.	Z- Value	Sig.
Skill test (front and back ball blocking)	Pre-test	6	4.9	1.041	2.781	0.037
	Post- test	6	6.2	2.962		

It is obvious from the above table that the arithmetic mean for the pre-test was (4.9) with a standard deviation of (2.141) and for the post-test it was (6.2) with a standard deviation of (2.962). Significance (0.037) This shows that there are differences between the pre and post-test and in favor of the post-test. The researchers attribute this to the training curriculum prepared according to scientific foundations that contributed to the development of the front and back blocking skill of the control group. This remarkable development came as a result of building the training curriculum in a manner that is consistent with the type of skill, the stresses used and the volumes of rest, which was reflected On the performance of the control group, which appeared in the post-test, even it is noticeable that this development is less than the experimental group because it used and introduced a different environment during training, which formed a difference in performance on the front and back blocking skill.

In order to answer the second hypothesis, which states that "there are statistically significant differences between the pre and post-tests of young adults, table tennis for the deaf and dumb in the reaction speed test, and in favor of the post test for the two groups. The researchers analyzed the results of the skill test (reaction speed) as well. Shown in table (5).

*Table (5) The results of the pre and post-tests in the test (reaction speed) for the experimental group*

Variable	Test	No. of Individuals	Mean	Std. Dev.	Z- Value	Sig.
Speed Reaction Test	Pre-test	6	17 sec.	0.896	3.138	0.030
	Post- test	6	75 sec.	1.043		

<sup>3</sup>Basma Naim Mohsen Al-Kaabi; The impact of education according to the strategy of metacognitive knowledge for those who take risks versus caution in learning and retaining some basic skills in volleyball: (unpublished doctoral thesis, University of Baghdad, College of Education for Girls, 2010 AD) p. 174.



It is clear from the above table that the arithmetic mean for the pre-test was (5.17/sec) with a standard deviation of (0.896) and in the post-test it was (3.75/sec) with a standard deviation of (1.043). It is a function at the level of significance (0.030). This shows that there are differences between the pre and posttest and in favor of the posttest. The researchers attribute this to the fact that the obvious improvement in the reaction speed was also due to the experimental group's use of exercises in a different environment that was prepared to suit the form of motor performance that is performed during the competition. So, the difference in the heights and lows of the playing table surfaces created an atmosphere of high concentration towards the path of the ball, which was reflected by the passage of the curriculum and the repetition of exercises on the performance of the skill and the reaction speed of the hitting player. This is consistent with the study (Al-Shammari 2007), if it was shown that one of the conditions for training for developing reaction speed is to perform the skill in a more complex way in terms of distance or time, which contributes to the development of its motor program<sup>4</sup>.

*Table (6) The Results of The Pre and Post-Tests in The Test (Reaction Speed) For the Control Group*

Variable	Test	No. of Individuals	Mean	Std. Dev.	Z- Value	Sig.
Speed Reaction Test	Pre-test	6	6.03 sec.	1.232	1.459	0.167
	Post- test	6	5.001 sec.	1.653		

It is clear from the above table that the arithmetic mean for the pre-test was (6.03/sec) with a standard deviation of (1.232) and in the post-test it was (5.001/sec) with a standard deviation of (1.653). It is a function at the level of significance (0.030). This shows that there are no differences between the pre and post-test, and the researchers attribute this to the fact that the clear improvement in the performance of the skill, blocking the ball front and back, did not contribute to the development of reaction speed, because the exercises were devoted to the form of motor performance more than to the speed of reaction and the worn. We note that the prepared training curriculum Although it contributed to the development of performance, but not using a different environment during training led to the stability of the ability of the reaction speed of the control group.

In order to answer the third hypothesis, which states that "there is a positive statistically significant relationship between the post-tests for young adults, table tennis for the deaf and dumb, The two researchers analyzed the results of the results of the correlation coefficient between the two

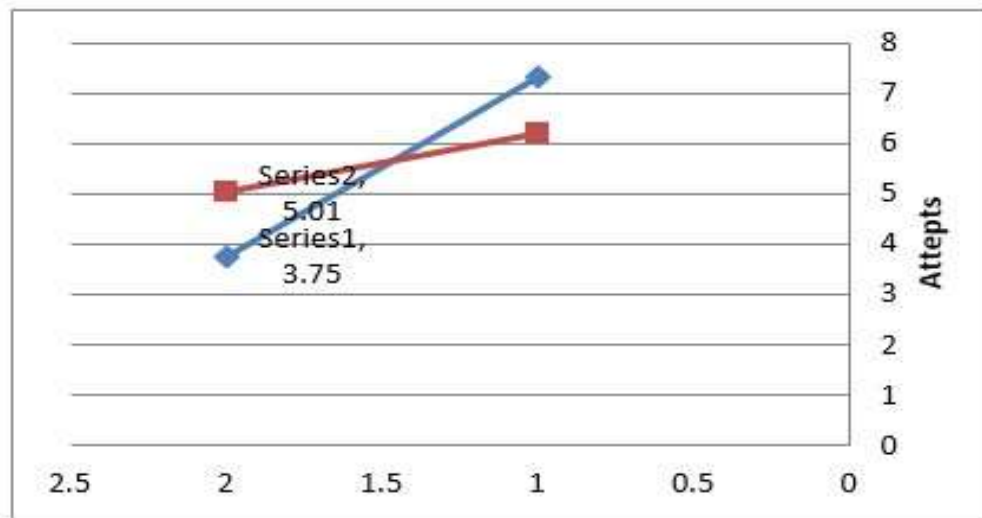
<sup>4</sup> Basma Naim Mohsen Al-Kaabi; The impact of education according to the strategy of metacognitive knowledge for those who take risks versus caution in learning and retaining some basic skills in volleyball: (unpublished doctoral thesis, University of Baghdad, College of Education for Girls, 2010 AD) p. 174.

research groups, the control and the experimental, in the test (the front and back block skill) with tennis ball, as shown in Table (7).

*Table (7) shows the results of the relationship between the two research groups in the selected variables.*

Variable	Arithmetic Means		Correlation Coefficient	Sig.
	No.1	No.2		
experimental group	7.3	3.75 sec.	0.457	0.000
the control group	6.2	5.001 sec.	0596	0.000

No. 1 front and back block skill test. No. 2 test (reaction speed)<sup>5</sup>



*Figure (2) shows the correlation between the tests*

It can be seen from the above table that the arithmetic mean of the training group for the post test of the front and back blocking skill was (7.3), and the arithmetic mean of the reaction speed test in the post test was (3.75 / sec). In order to extract the relationship between the two tests, the value of the simple Pearson correlation coefficient (0.457) appeared, which is a function at the level of significance (0.00) for the control group. In order to extract the relationship between the two tests, the value of the simple Pearson correlation coefficient (0596) appeared, which is a function at the level of significance (0.00). The researchers attribute that the relationship was less for the experimental group between the two variables than the control group because the time taken to perform the reaction test for the control group was large and thus this was reflected on the degree of the correlation coefficient because the correlation is affected by the convergence of degrees

<sup>5</sup> Abdul Aziz Al-Shammari (2007): Foundations and Principles of Motor Capacity Training, 1st edition, applied by the Scientific Secretariat, Riyadh, 2007, p. 109.

between the two variables to be measured<sup>6</sup>. And because the time of the reaction speed of the experimental group has improved, and thus the time taken to perform the reaction speed test has decreased, and the degree of the front and back repulsion skill test has increased, which contributed to the decrease in the correlation coefficient between them.

## CONCLUSIONS

- 1- There is a clear improvement in the experimental group that used the contrast environment during training with the skill of the front and back chest
- 2- The different environment in training led to an improvement in the reaction speed of the experimental group players
- 3- There was a significant relationship between the response speed and the skill of the front and back chest with tennis ball for the players of the two groups.
- 4- There is a noticeable improvement in the skill of the front and back blocking players in the control group, but it did not rise to the level of the control group.

## RECOMMENDATIONS

- 1- Applying the prepared educational curriculum to different groups of people with special needs.
- 2- Benefiting from the results of the research in evaluating the effectiveness of educational programs for the deaf and dumb
- 3- Using descriptive sign language in teaching the deaf and dumb to play table tennis.
- 4- Using the test of other mental skills and knowing their impact on learning the table tennis game.

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3. Ghazi Salem Amouri (2002); *Physics of Solid Surfaces*, 1st Edition. *Dar al-Ma'rifah*, Lebanon, pg. 128
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<sup>6</sup> Hamdi Shaheen (2007): *Statistics in the Social Sciences*, 1st Edition, *Dar Al-Fikr*, Cairo, p. 65.

5. Zaid Issa, Ibrahim Salama (2007); Educational Strategies in Table Tennis, 1st Edition, *Dar Al-Majdalawi*, Amman, p. 16

**Appendix (1) Teaching unit model for the experimental and control group**

Time	Exercise	Exercise Explanation	Exercise Duration	Intensity	Rest Between Sets	Total Time
<b>Introductory section</b>	Miscellaneous exercises	(using descriptive sign language) Jogging + stretching the arms + wrist exercises + trunk exercises	5 minutes	Average 60-70%	N/A	5 min.
<b>main section 40 minutes</b>	Exercise 1	Block the ball sent by the opposite player on the concave side of the table	Not specified in time	10 reps x 3 sets	1 minute	5 min.
	Exercise 2	Block the ball sent by the opposite player on the convex side of the table	Not specified in time	10 reps x 3 sets	1 minute	5 min.
	Exercise 1	Repeat the same exercise with an increase in the speed of performance	Not specified in time	15 reps x 3 sets	2 minutes	5 min.
	Exercise 2	Repeat the same exercise with an increase in the speed of performance	Not specified in time	15 reps x 3 sets	2 min.	5 min.
	Exercises 3	Exercise with a colleague with the same skillful performance	10 minute	for one time	N/A	10 min.
<b>Concluding section</b>	10 min.	open play	open time	Relaxation exercise	N/A	10 min.

**Appendix (2) A sample training unit for the experimental and control groups**

Time	Exercise	Exercise Explanation	Exercise Duration	Intensity	Rest Between Sets	Total Time
<b>Introductory section</b>	Miscellaneous exercises	(using descriptive sign language) Jogging + stretching the arms + wrist	5 minutes	Average 60-70%	N/A	5 min.

		exercises + trunk exercises				
<b>main section</b> <b>40 minutes</b>	Exercise 1	Block the ball sent by the opposite player on the concave side of the table.	1 minute (30 second rest)	3 sets 80%	1 min.	4 min.
	Exercise 2	Block the ball sent by the opposite player on the convex side of the table	1 minute (30 second rest)	3 sets 80%	1 min	4 min.
	Exercise 1	Repeat the same exercise with an increase in the speed of performance	1 minute (30 second rest)	3 sets 100%	1 min.	4 min.
	Exercise 2	Repeat the same exercise with an increase in the speed of performance.	1 minute (30 second rest)	3 sets 80%	1 min.	4 min.
	Exercises 1,2	Equivalent to the same exercises on a regular table.	Same Time distribution	Same group distribution	1 min.	Total 20 min.
<b>Concluding section</b>	10 min.	Open Play	Open Time	intensity 80-100	1 min.	10 min.