

The Effect Of Simultaneous Training On Speed, Motor Response, And Shooting Accuracy For Indoor Soccer Players

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Abstract

The development of sports science, resulting from the diversification of modern training methods in various sports, particularly futsal, and the focus on shooting, which is considered one of the most important skills in futsal, necessitates that a player possess the physical and technical requirements to perform this skill to the fullest extent. The importance of this research lies in preparing specific exercises to develop the speed of motor response to achieve shooting accuracy similar to the various and diverse playing conditions. This exposes motor programs to challenging demands, which in turn affects the development of skills and, consequently, performance this, in turn, positively impacts the match result. The research problem lies in the weakness of simultaneous training for speed-based techniques, despite the training and efforts of the coaches. Therefore, the researcher decided to find new methods to develop these variables by preparing special exercises to enhance specific physical abilities and certain skills in futsal. The aim is to facilitate the training process and improve performance skills in accuracy of performance and with the least possible time and effort. The objectives of the research were to prepare simultaneous exercises to develop the types of motor speed and kinesthetic perception and some requirements for futsal football players, and to identify the effect of exercises in developing the types of motor speed and kinesthetic perception and some of the physical requirements and aiming accuracy for futsal football players, and to identify the results of the experimental group and the control group in the pre- and post-tests in motor response speed, kinesthetic perception and some requirements the physical fitness of futsal players was studied, and the experimental method was used because it was more suitable for the nature of the research. The research population consisted of (20) players from the Uruk futsal club, and (4) players were excluded, including (2) goalkeepers, an injured player, and the researcher. The researcher also used (4) players for the pilot study, and thus the number of sample members became (12) players, who were divided into two groups, control and experimental, by random method (drawing the lots). One of the most important conclusions is that the exercises created a state of safety for the sample and helped in carrying out the difficult exercises that the player could not perform except by the method of synchronous training.

Keywords: (Concurrent Training - Sprint Speed -Shooting Accuracy)

1- Introduction to the research:

1-1 Introduction and importance of the research:

The progress achieved in sports events was not accidental, but rather the result of hard work and dedication by coaches, utilizing modern scientific methods and diverse equipment and tools to help players reach their highest possible level in matches. Among the sports and events that have garnered attention from professionals in various fields, despite their relative newness, is futsal. It has received considerable attention and encouragement, as it is a popular and exciting sport for spectators and is widespread in various countries around the world, where it can be played in both indoor and outdoor venues futsal has received considerable attention from researchers, which has led to the development of playing styles, tactics, and rules that have contributed to enhancing the aesthetic appeal of the players' performances and increasing the enthusiasm of the fans this game, with its many diverse and varied situations, demands speed in both attack and defense from all team members to gain an advantage over the opposing team. This advantage is only achieved by scoring the largest possible number of goals to secure victory, similar to other team sports, while respecting the specific characteristics of each game. This, in turn, is only possible when combined with speed of movement, accuracy in passing and shooting from varying distances, and the participation of all team members to reach the desired goal, in addition to providing enjoyment for the players the fans, and from here came the importance of research in preparing exercises for synchronous training, speed of motor response and shooting accuracy for futsal players, similar to the different and varied playing conditions, which exposes the motor programs to difficult requirements, and then this is reflected on the development of skills and then on the performance in general, and this in turn is reflected on the result of the match in a positive way.

1-2 Research Problem

The best way to increase the effectiveness and accuracy of motor programs is to subject them to more demanding requirements, thus generating high-level adaptation in the motor programs. To meet these demands, certain exercises using the synchronized training method must be performed from varying distances in the shortest possible time. This generates good adaptation in the player's motor programs, resulting in highly accurate performance. As the researcher is a futsal player who has played for several clubs in the Iraqi Premier League for many seasons, and through watching numerous futsal matches specifically regarding the halls, and through the researcher's field experience, he found that most of the players within those teams have a weakness in movement speed despite the training, the efforts of their coaches and their personal experience, as well as the lack of finding suitable solutions for it, which directly affects the results of the matches, making the matter difficult from a technical point of view.

Therefore, the researcher decided to prepare training programs using the method of concurrent training to develop these variables by preparing special exercises that help in developing the speed of motor response and shooting accuracy among futsal players. The purpose of these exercises is to facilitate the training process and develop skills in performance accuracy with the least possible time and effort, and to use different exercises from different distances using the devices and tools that I have adopted in order to activate the motor programs.

1-3 Research Objectives:

1. To develop synchronized training exercises to improve reaction speed and shooting accuracy in futsal players.
2. To identify the effect of synchronized training exercises on improving reaction speed and shooting accuracy in futsal players.
3. To analyze the results of the experimental and control groups in pre- and post-tests of using synchronized training to improve reaction speed and shooting accuracy in futsal players.

1-4 Research hypotheses:

- 1- There are statistically significant differences between the pre- and post-tests in the method of simultaneous training to develop motor response speed and shooting accuracy for indoor soccer players.
- 2- There are statistically significant differences for the post-tests between the experimental and control research groups and in favor of the experimental group in the method of simultaneous training to develop motor response speed and aiming accuracy for indoor soccer players.

1-5 Research Areas:

- 1- Human Area: Players of the Uruk Futsal Club.
- 2- Spatial Area: The National Center for Talent Development Hall.
- 3- Temporal Area: September 20, 2024 to March 2, 2026

2- Research Methodology and Field Procedures

2-1 Research Methodology: The researcher used the experimental method as it was suitable for the nature of the problem to be solved and for achieving the research objectives and hypotheses.

2-2 Research Population and Sample:

The research population was defined by selecting players from clubs in the southern region. The research sample consisted of (20) players from the Uruk Futsal Club in Al-Muthanna Governorate. (4) players were selected for the pilot sample from outside the research population. The research sample consisted of (12) players, divided into two groups: an experimental group and a control group, each with (6) players. The division was random, and (4) players were excluded due to injury. To ensure the homogeneity of the research sample, which consisted of two groups, as shown in Table (1).

on	Variables	unit of measurement	arithmetic mean	standard deviation	Torsion coefficient
1	height	poison	176	2.35	0.17
2	The block	kg	26.08	2.87	0.64
3	the age	month	74.75	3.22	0.03
4	Training age	month	6.25	1.35	0.54

The researcher then performed equivalence tests on the research variables under study, and these results were considered as pre-tests, as shown in the following table.

on	processors Variables	unit of measure ment	Pre -test The officer		Pre -test empiricism		T	Sig.	Significance
			S	A	S	A			
1	height	poison	176.3	2.25	176.6	2.65	0.23	0.81	immaterial
2	the age	year	26.5	3.27	25.6	2.65	0.48	0.63	immaterial
3	mass	kg	74.5	2.81	75	3.84	0.25	0.80	immaterial
4	Training age	year	6.6	1.50	5.83	1.16	1.07	0.30	immaterial
5	Motor response speed	time	1.688	0.027	1.658	0.066	1.188	0.25	immaterial
6	Accuracy of scoring	degree	11.50	1.37	10.83	0.75	0.90	0.32	immaterial
7	Speed tolerance	time	35.5	1.56	34.33	1.63	0.466	0.48	immaterial

Table (2) shows the equivalence of the two research groups in the research variables under study Significant at a significance level of (0.05)

From Table (2), we note that the differences between the two groups are not significant, which indicates their equivalence.

2-3 Research Tools:

2-3-1 Methods of Information Collection and Equipment Used:

- 1- Arabic and foreign sources and references.
- 2- Personal interviews .
- 3- Previous studies and research.
- 4- The internet.
- 5- Skills tests.
- 6- Medical scale.
- 7- Measuring tape.
- 8- 23 footballs.
- 9- Indoor football field.
- 10- Various markers.
- 11- Transparent and colored tape.
- 12- Whistle.
- 13- Stopwatch.

2-4 Field Research Procedures:

2-4-1 Identifying the Skills Tests to be Used

2-4-1-1: Response Speed

Test name: Nelson's Motor Response Test (Risan Khribat: 1998)

Test Objective: To measure motor response.

Equipment: An unobstructed area 20 meters long and 2 meters wide, a measuring tape, and a stopwatch.

Performance Specifications: The subject stands at one end of the center line facing the timer, which stands at the other end of the line. The subject holds the stopwatch in one hand, raises it, and quickly moves their arm either left or right while simultaneously starting the stopwatch. At this time, the subject runs at maximum speed to the side line indicated by the timer. When the subject reaches the line, which is 6.4 meters away, the timer stops.

Recording: The subject is given three attempts to the right and three attempts to the left, with a 20-second rest between each attempt. The time is calculated as follows: (Total number of attempts ÷ 6 = 0.0 seconds).

2-4-1-2 Scoring Test:

- Test Name: Rolling the Ball Between Cones and Shooting at the Goal (Thamer Mohsen: 1991)

- **Test Purpose:** To determine the accuracy of shooting the ball towards the goal.
 - **Equipment Used:**
 - Goal marking tape, measuring tape.
 - Five footballs, six cones.
 - **Performance Description:**
 - The player starts by rolling the ball between the cones from the starting line to the penalty arc and shoots at the goal five times consecutively.
 - **Test Instructions:** To mark out the test area, six cones are placed with a distance of 2 meters between each cone. The total distance to the penalty arc is 14 meters. The goal is divided into three sections: the first is 1 meter from the cone, the third is 1 meter from the cone, and the distance between the first and third sections represents the second section.
 - **Scoring Method:**
 - A player receives one point in the second half.
 - A player receives two points in the first and third half.
 - A player receives zero points if the ball goes out of bounds.
 - If the ball hits the crossbar or post and does not enter the goal, the player is awarded a point for the specific area where the ball hit.
- Ball rolling test between cones and shooting towards the goal

2-4-1-2 Speed Endurance Test:

Test Name: Running with the ball for a distance of (5.2 x 30) meters without stopping (Ali Ghaleb: 2000)

Purpose of the test: To measure speed endurance.

Equipment used: - Stopwatch - Two markers - Football - Measuring tape - Whistle.

Performance description: From a high starting position, the player stands behind the starting line with the ball on the starting line. Upon the starting signal, the player runs with the ball at maximum speed for a distance of 30 meters to the finish line, turns around the finish line marker, and returns with the ball. The test is repeated 5.2 times continuously.

Test instructions: A distance of 30 meters is marked, with the starting line and finish line indicated by two markers as shown in Figure 2. The player performs only one attempt.

Recording Method: The time taken for a round trip is calculated five times and recorded to the nearest second.

"The importance of tactical behavior as a crucial aspect in preparing futsal players and a key element in determining their level, given that futsal is a competitive sport where achieving positive results depends on tactical and skillful behavior. These skills play a vital role in futsal players' performance, which is based on their mental abilities that contribute to quick and effective tactical thinking" (Mohammed Jaafar, 2023).

2-5 Exploratory Experiment:

The researcher conducted the first exploratory experiment on Wednesday, December 1, 2024, at 3:00 PM in the sports hall (National Center for Talent Care Hall) on the exploratory sample, which consisted of (4) players from the research community and from outside the sample, to apply the skill and physical tests. After 7 days, the test was repeated on Wednesday, December 8, 2024, with the same procedures in terms of time and place.

2-6 Pre-tests:

The researcher conducted the pre-test for both the experimental and control groups before commencing the training program on Saturday, December 25, 2024, at 3:00 PM (in the hall of the National Center for Talent Development). All (12) players in the research sample were present. The researcher, along with the supervisor and the assisting team, tested the sample for physical and skill abilities.

2-7 Main Experiment:

The researcher prepared a set of exercises using specific drills to be implemented during the special preparation phase and before competitions for the experimental group. This was based on the foundations and principles of modern sports training science in futsal, and for the purpose of developing physical and technical abilities. The training loads were standardized according to sources and references in sports training science and according to the mathematical equations for determining these intensities, based on extracting the maximum intensity for the experimental group. The training load was consistent with the coaches' curriculum, and this was taken into account in the intensity progression. The following are some clarifications regarding the exercises that were implemented:

1. The training program began on Saturday, January 1, 2024, and continued until Wednesday, February 23, 2025.
2. The training period was two months, totaling eight weeks.

3. The main trial included fifteen (15) exercises.
 4. The total number of training units was twenty-four (24).
 5. The training units were performed on Saturdays, Mondays, and Wednesdays of each week.
 6. The training was conducted within the units assigned to the group in the training program prepared by their coaches at the beginning of the main phase.
 7. Training volumes were determined based on the players' physical capabilities and abilities through a second pilot trial with the experimental group.
 8. The principle of progressive overload was adopted to prevent overload, which negatively impacts players, while adhering to the principle of gradual training in accordance with their physical capabilities.
 9. Repetitive training was employed. 10- The researcher used maximum and submaximal intensity.
 - 11- The researcher used intensity fluctuations.
 - 12- The researcher used 1-1 wave training.
 - 13- The researcher used rest relative to the work in 1-5.
- The researcher considered the scientific principles in the relationship between the components of the training load (intensity, volume, and rest) throughout the duration of the exercises.

2-8 Post-Tests:

The post-tests for the research sample were conducted on Saturday, February 26, 2025, in the hall of the National Center for Giftedness, after the completion of the 8-week program. The researcher ensured the availability of pre-test components and procedures for physical abilities and achievement tests.

2-9 Statistical Methods

The Statistical Package for the Social Sciences (SPSS) was used to analyze the research data.

3- Presentation, Analysis, and Discussion of Results:

3-1 Presentation and Analysis of Pre- and Post-Test Results for the Control Group:

Table (3) The results show the differences in physical and motor abilities between the pre-test and post-test for the control group.

on	Variables	unit of measurement	Pre-test Control group		Post-test for the control group		T Calculate d	Sig.	Statistical significance
			S	A	S	A			
1	speed of response	second	1.688	0.027	1.618	0.052	4.864	0.002	moral
2	scoring	degree	11.50	1.37	13.33	0.81	2.20	0.001	moral
3	Speed tolerance	second	35.5	1.56	32.5	3.01	2.18	0.000	moral

3-1-1 Discussion of Results:

By observing the results of the pre- and post-tests of physical and motor skills, we find that the significance level (sig) is less than 0.05 for all tests in the research variables. This indicates a significant difference between the pre- and post-tests for the experimental group, favoring the post-tests.

The researcher believes that the scientifically standardized preparation of specific exercises using the device has a positive impact on physical and motor abilities due to its characteristics and advantages, and its adherence to scientific principles. These principles state that progress in physical and motor abilities results from the correct alternation between work and rest, according to a scientific method and sound planning. Risan Khuraibat (1995) mentions that organized and programmed training, the use of standardized training intensity, and the application of optimal rest periods between repetitions lead to improved athletic performance (Risan Khuraibat, 1998). These differences in statistical indicators were influenced by the designed device and the specific exercises in the main part of the training unit, which had a positive impact on the development and improvement of physical and motor abilities. This is attributed to the use of the manufactured device in training, which helped add an element of excitement and enthusiasm for the athletes, leading to rapid development. The researcher's exercises were

prepared meticulously and thoughtfully. The researcher agrees with what Amr Allah Al-Basati emphasized: that the variety and structure of exercises, and the avoidance of a monotonous approach in form and content, leads to greater engagement. The development of organs and systems demonstrates its importance in the preparation stages the researcher attributes this to the extent of the impact of using special exercises for the purpose of developing motor skills and shooting accuracy through performing and repeating special exercises in a manner that is close to the conditions of play, taking into account the change in the exercise and its multiplicity. Also, the player's rush towards performing with the device, which has not been used previously as a device for shooting accuracy, arouses the player's curiosity to try something new, which makes the player perform the repetitions with confidence and desire and work towards the best. Thus, this indicates that the direction of the indicator is towards the experimental group at the expense of the control. Allowing the player to perform exercises at a slow pace during the initial repetitions provides a clear view, enabling them to correct their trajectory and thus increase accuracy. Using the device in skills training is beneficial for precision, as it allows the coach to consistently position the ball in the desired position. This enables the player to repeatedly practice the exercise with the same ball position and in the exact manner required to master the skill accurately. Continued training, following scientific methods and techniques, and a proper progression through the exercises outlined in the main section of the training unit, leads to achieving the desired goal. Furthermore, conducting exercises using assistive training devices reduces the effort required of the coach, who bears a significant burden, by providing individualized assistance to each player during traditional skill training.

3-2 Presentation of pre- and post-test results for the experimental group:

Table (4) shows the results of the differences in physical and motor abilities in the pre- and post-tests for the experimental group.

on	Physical abilities	Unit of measurement	Pretest for the experimental group		Post-test for the experimental group		t calculated	Sig	Statistical significance
			س	ع	س	ع			
1	Reaction speed	Second	1.658	0.066	1.451	0.055	Significant	Significant	Significant
2	Scoring	Degree	10.83	0.75	15	1.26	Significant	Significant	Significant
3	Speed endurance	Second	34.33	1.63	27.66	1.03	Significant	Significant	Significant

3_2_2 Discussion of Results

By observing the results of the pre- and post-physical and motor tests, we find that the value of (sig) is less than the significance level (0.05) for all tests in the research variables. This indicates the significance of the differences between the pre- and post-tests for the experimental group, and in favor of the post-tests.

The researcher believes that the scientifically designed, standardized training program has a positive impact on physical and motor abilities due to its characteristics and advantages, and its adherence to scientific principles. These principles state that progress in physical and motor abilities results from the correct alternation between work and rest, following a scientific approach and sound planning. Risan Khuraibat (1995) notes that organized and programmed training, the use of standardized training intensity, and the application of optimal rest periods between repetitions lead to improved athletic performance. These differences in statistical indicators were influenced by the designed equipment and the specific exercises in the main part of the training session, which had a positive effect on developing and improving physical and motor abilities. This is attributed to the use of specialized training equipment, which added an element of excitement and engagement for the athletes, leading to faster progress. The researcher's meticulously and thoughtfully prepared exercises confirm this. The researcher agrees with Amr Allah Al-Basati's assertion that the variety and structure of exercises, and the avoidance of monotony in form and content, lead to excitement and the development of systems and organs. The importance of this is evident in the preparation phases.

"Training by following modern and developed strategies meets the requirements of achievement and its growing requirements. Training develops and multiplies in an amazing way, and in order for the trainee to be successful in reaching the desired goal, he

must reduce the learning time by making the training process an element that leads to competence in learning and thus the impact of this on the level of performance."

It has a benefit for accuracy in performance, as through it the coach is able to constantly put the ball in the position he wants, which makes the player able to repeat the exercise repeatedly with the same ball positions, and in the same way that is required to be learned in order to be proficient in performing the skill accurately. Continuing training by following scientific methods and training methods and properly grading the exercises that were placed in the main section of the training unit leads to achieving the desired goal, and when performing the exercises using auxiliary training methods, which contribute to reducing the effort expended by the coach, who bears the great burden through the assistance he provides to each player individually every time he performs during training on these skills in the traditional method.

3-3 Presentation and discussion of the post-test results for the control and experimental groups for the research variables:

Table (5) Shows the results of the physical and motor abilities for the post-test for the control and experimental groups:

on	Physical abilities	unit of measurement	Post-test for the control group		Post-test for the experimental group		T	Sig	Significance
			S	A	S	A			
1	speed of response	second	1.618	0.052	1.451	0.055	5.89	0.000	moral
2	.Scoring	degree	13.33	0.81	15	1.26	2.91	0.000	moral
3	Speed tolerance	second	32.5	3.01	27.66	1.03	12.23	0.000	moral

3-3-1 Discussion of Results:

Table (5) shows that there are significant differences between the results of the tests for motor response speed, shooting accuracy, and post-test speed endurance for the control and experimental groups. While the transitional speed and speed-strength tests did not reach statistical significance, there are differences in the means, favoring the experimental group.

The researcher attributes this to the effectiveness of the specialized exercises he developed, which led to the development of the players' motor and physical abilities. This, in turn, played a significant role in raising the players' performance level. The researcher employed both submaximal and maximal training loads, which significantly contributed to this development. Submaximal loads allow for maintaining a stable performance level without placing excessive physical and neurological strain on the athlete, while maximal loads are used to develop specific types of physical performance related to speed. Furthermore, the use of repetitive training methods also had an impact on developing physical and motor abilities related to speed, as repetitive training is used to enhance anaerobic processes associated with speed development.

Mastering futsal skills is one of the most important topics for those involved in the game. It has become an accepted fact that raising the training level of any player—whether physical, technical, tactical, or psychological—is impossible without learning the technical performance of all the basic skills. There is no such thing as more or less important skills, as the player desperately needs all of them throughout the match. Therefore, it is essential to overcome the difficulties faced by players in developing training programs that enhance their abilities on the field.

The researcher attributes these differences to the fact that the variables used in the research were affected by the application of the exercises using the specific exercises used in the main part of the training units. These exercises had a positive impact on developing and improving some physical and technical abilities of the futsal players in the experimental group. In addition, the element of excitement and thrill for the players due to the use of an unfamiliar training method gave them an incentive and motivation to train enthusiastically. These exercises using the device were prepared precisely to affect physical and technical abilities. These results are consistent with what sports training experts in the field of futsal believe: "The diversity in the use of training methods and subjecting them to the scientific aspect contributes to the development of the training process and allows the principle of adaptation to work clearly on the physical and technical levels of athletes." Mastering skills is one of the most important topics that concerns those involved in the game, and it has become an accepted fact that raising the training level of any player cannot be achieved without learning the technical, skill-based, and tactical performance of all the skills of the game. These skills include both with and without the ball, which gives the player the opportunity to perform them appropriately and effectively at all times of the match.

4- Conclusions and Recommendations:

4-1 Conclusions:

Based on the research findings, along with the accompanying statistical analyses, discussions, and extrapolations within the scope and nature of the research sample, the researcher was able to reach the following conclusions:

1. Simultaneous training exercises created a sense of security for the sample and facilitated the execution of challenging exercises that the player would otherwise be unable to perform.
2. Using multiple stimuli in a single exercise using specialized equipment exposes the player's motor skills to demanding requirements that closely resemble real-world playing conditions, with regular repetitions. This allows the player to adapt to these stimuli, increase experience, and consequently reduce their motor response time.
3. Training according to a standardized scientific system is the foundation of sports training.

4.2 Recommendations:

1. Utilize modern equipment specifically designed to develop motor response speed and shooting accuracy.
2. Emphasize training motor response speed by ensuring that the performance is dynamic (i.e., a moving player and a moving ball).
3. Expose the player to complex or multiple stimuli to make the exercises resemble real-world playing conditions, especially in team sports.

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