

The Effect Of Synchronized Training On Transitional Speed, Speed-Strength, And Shooting Accuracy In Futsal Players

Mujtaba Naeem Mutashar¹, Prof. Dr. Hikmat Abdul Sattar Alwan²

College of Physical Education and Sports Sciences - University of Dhi Qar^{1,2}
Mojtaba.Naeem@utq.edu.iq¹
hakmet.hm@utq.edu.iq²

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 motor response speed and achieve shooting accuracy similar to the various and diverse playing conditions. This exposes motor programs to challenging demands, which in turn affects skill development and overall performance, positively impacting match results. The research problem lies in the weakness of simultaneous training for speed drills, despite the training and efforts of coaches therefore, the researcher decided to find new ways to develop these variables by preparing special exercises to develop specific physical abilities and some futsal skills. The aim was to facilitate the training process and develop skills in terms of performance accuracy with the least possible time and effort. The research objectives were to prepare concurrent exercises to develop types of motor speed, kinesthetic perception, and some requirements for futsal players; to identify the effect of the exercises on developing types of motor speed, kinesthetic perception, some physical requirements, and shooting accuracy for futsal players; and to identify the results of the experimental and control groups in pre- and post-tests of motor response speed, kinesthetic perception, and some physical requirements for futsal players. The experimental method was used because it was the most suitable for the nature of the research the research community 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 exploratory experiment, and thus the number of sample members became (12) players, who were divided into two groups, control and experimental, by random method (drawing a lot). One of the most important conclusions is that the exercises created a state of security 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 - Reaction Time -Soccer Players)

1- Introduction to the research:

1-1 Introduction and importance of the research:

The progress achieved in sports events was not a coincidence, but rather the result of hard work and dedication by coaches, and through the use of modern scientific methods and various equipment and tools to bring players to the highest possible level in matches. Among the sports and events that have gained the attention of those working in several fields, despite their relative newness, is futsal, which has received a great deal of attention and encouragement, as it is considered one of the popular events that provides enjoyment and excitement for spectators is widespread in various countries around the world, where it can be played in both outdoor and indoor arenas. 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 players' performance and increasing the excitement of the fans. This game is characterized by numerous and varied situations and scenarios, requiring speed in both attack and defense from all team members to achieve superiority over the opposing team. This superiority can only be achieved if those attacks are completed or concluded by scoring the largest number of goals to achieve victory, just like other team games, taking into account the specifics of each game. This, in turn, is only achieved when combined with speed of movement and accuracy in passing and shooting from different distances and for all members of the team to reach the desired goal, as well as achieving enjoyment for the players and fans. Hence came the importance of research in preparing special exercises for training synchronously, transitional speed, speed-strength, and shooting accuracy for futsal players, similar to the different and varied playing conditions, which exposes the movement programs to difficult requirements, and then this is reflected in the development of skills and then in the performance in general, and this in turn is reflected in 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 expose them to more difficult demands, which generates a high level of adaptation in the motor programs. In order to keep up with these demands, it is necessary to perform some exercises of the synchronous training method from different distances in the shortest possible time. This generates good adaptation in the player's motor programs, where the performance is highly accurate. As the researcher is a futsal player, like many clubs in the Iraqi Premier League for several seasons, and through the researcher's observation of many futsal matches in particular, and through the researcher's field experience, he found that most of the players in those teams have a weakness in motor speed, despite the training, the efforts of their coaches, and their personal experience, in addition to 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 develop training programs using the simultaneous training method to improve these variables. This was achieved by creating simultaneous training sessions focusing on transitional speed, speed-strength, and shooting accuracy for futsal players. The aim was to facilitate the training process and develop skills in terms of performance accuracy with minimal time and effort, utilizing various exercises from different distances and employing the equipment and tools adopted to activate the motor programs.

1-3 Research Objectives:

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

1-4 Research hypotheses:

1. There are statistically significant differences between the pre-test and post-test scores in the synchronous training method for developing transitional speed, speed-strength, and shooting accuracy in futsal players.
2. There are statistically significant differences in the post-test scores between the experimental and control groups, favoring the experimental group, in the synchronous training method for developing transitional speed, speed-strength, and shooting accuracy in futsal 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	processors Variables	unit of measu remen t	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	Transitional speed	time	4.18	0.06	4.17	0.08	0.16	0.87	immaterial
6	Power characterized by speed	meter	44.83	1.47	43.66	2.50	0.98	0.34	immaterial
7	Accuracy of scoring	degree	11.50	1.37	10.83	0.75	0.90	0.32	immaterial

Table (1) shows the distribution of the research population and the percentage

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.

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 observe that the differences between the two groups are not statistically significant, indicating their equivalence.

2-3 Research Tools:

2-3-1 Methods of Data 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 Khuraibat Majid, 1991)

Test Objective: To measure motor response.

Equipment: An obstacle-free 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. Holding a stopwatch in one hand, the subject 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. Upon reaching 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, (6) markers are placed, with a distance of (2) meters between each marker. The total distance is (14) meters to the penalty arc. The goal is divided into three sections. The first section is (1) meters from the marker, as is the third section. The distance between the first and third sections represents the second section.

- Scoring Method:

- The player receives one point for the second section.

- The player receives two points for the first and third sections.

- The player receives zero points if the ball goes out of bounds.

- If the ball hits the crossbar or the marker and does not enter the goal, the player receives a point for the specific area where the ball hit.

Test: Rolling the ball between markers 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 and finishing lines indicated by two markers.

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 positive results are achieved through tactical and skillful behavior. These skills play a vital role in the performance of futsal players and are based on their mental abilities, which contribute to quick and effective tactical thinking." (Mohammed Jaafar2023)

2-5 Pilot Test:

The researcher conducted the first pilot test on Wednesday, December 1, 2024, at 3:00 PM in the sports hall (National Center for Talent Development Hall) with a sample of (4) players from the research population and from outside the sample. The skill and physical tests were administered. After 7 days, the test was repeated on Wednesday, December 8, 2024, using the same procedures in terms of time and location.

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 training exercises using specific drills implemented during the pre-competition preparation phase for the experimental group. This was based on the foundations and principles of modern sports training science in futsal, and aimed at developing physical and technical abilities. The training loads were standardized according to sources and references in sports training science and according to mathematical equations for determining these intensity levels, based on calculating 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 details regarding the implemented training exercises:

- 1- The exercises were implemented from Saturday, January 1, 2024, until Wednesday, February 23, 2025.
- 1. The training period was two months, totaling eight weeks.
- 2. The main experiment consisted of fifteen (15) exercises.
- 3. The total number of training units was twenty-four (24).
- 4. The training units were performed on Saturdays, Mondays, and Wednesdays of each week.
- 5. The exercises were performed within the training units allocated to the sample group in the training program prepared by their coaches at the beginning of the main phase.
- 6. The training volumes were determined based on the players' physical capabilities and potential by conducting a second pilot study on the experimental group.

The researcher considered the scientific principles governing 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, following the completion of the eight-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) shows the differences in physical and motor abilities between the pre- and post-tests for the control group.

on	Variables	unit of measurement	Pre-test Control group		Post-test for the control group		T Calculated	Sig.	Statistical significance
			S	A	S	A			
1	Transitional speed	time	4.18	0.06	4.02	0.14	2.51	0.03	moral
2	Power characterized by speed	meter	44.8	1.47	46.6	1.03	2.49	0.03	moral
3	scoring	degree	11.50	1.37	13.33	0.81	2.20	0.001	moral

3-1-1 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 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 stating 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) states that organized and programmed training, the use of standardized

training intensity, and the use of optimal rest periods between repetitions lead to improved athletic performance (1). 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 single approach in form and content, leads to excitement and the development of systems and organs. The importance of this becomes apparent in the various stages. The preparation (Amr Allah Ahmed Al-Basati, 1998) indicates that the development of physical and motor abilities is due to the gradual increase in the intensity of the load used in training units. This achieves the required adaptation to the intensity and volume, and the progression of training units leads to the development of physical and motor abilities. Kamal Al-Rabdhi (2004) confirms that "there is an importance in gradually increasing the intensity of the load from low to medium From pre-maximal to maximal, depending on the nature and conditions of the competition or training, and related to the type of activity or sport in which the athletes specialize." (Kamal Jamil Al-Rabdhi2002)

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 between the pre- and post-tests for the

on	Physical abilities	Unit of Measur ement	Pretest for the experimental group		Post-test for the experimental group		t calculat ed	Sig	Statistical significance
			S	A	S	A			
1	Transitional speed	Time	4.17	0.08	4.03	0.11	2.39	0.03	Moral
2	Pace-strength	Meter	43.6	2.50	45.6	1.9	1.5	0.15	Insignificant
3	Scoring	Degree	10.83	0.75	15	1.26	13.55	0.000	Moral

experimental group.

3.2.2 Discussion of Results

By observing the results of the pre- and post-tests of physical and motor skills, we find that the p-value (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, favoring the post-tests.

The researcher believes that the standardized scientific preparation of specific exercises has a positive effect on physical and motor abilities due to its among its characteristics and advantages is its adherence to scientific principles, which state that progress in physical and motor abilities results from a proper alternation between work and rest, following a scientific approach 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 Khribat,1995).

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 impact on the development of physical and motor abilities. This is attributed to the equipment's use of specific exercises, which added an element of excitement and engagement for the athletes, leading to rapid development. The researcher meticulously and thoughtfully prepared the exercises. The researcher agrees with Amrallah Al-Basati's assertion that the variety and composition 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 stages (Amrallah Ahmed Al-Basati, 1998). The development of physical and motor abilities is attributed to the gradual increase in training intensity. Used in training units, this achieved the required adaptation to the intensity, volume, and progression of the training units, leading to the development of physical and motor skills.

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

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

on	Physical abilities	Unit of Measur	Post-test for the control group	Post-test for the experimental group	T	Sig	Significan
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		ement	S	A	S	A			ce
1	Transitional speed	Time	4.2	0.14	4.03	0.11	0.2	0.8	immaterial
2	Peak strength	Meter	46.6	1.03	45.6	1.96	1.10	0.2	immaterial
3	Scoring.	Degree	13.33	0.81	15	1.26	2.91	0.000	moral

3-3-1 Discussion of the results:

Table (5) shows significant differences between the results of the transitional speed, speed-strength, and post-fire accuracy tests for the control and experimental groups. While the transitional speed and speed-strength tests did not reach statistical significance, there were differences in the mean scores, favoring the experimental group. The researcher attributes this to the effectiveness of the specialized exercises he developed, which led to the development of the motor and physical abilities under investigation. This played a significant role in raising the players' performance level. The researcher used both submaximal and maximal training loads, which had a prominent role in the 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 types of physical performance related to skill performance (Mufti Ibrahim Hammad, 1988). Furthermore, the use of repetitive training methods also had an impact on developing physical and motor abilities related to speed. Repetitive training methods are used to develop anaerobic processes associated with speed development (Kadhim Al-Rubaie and Muwaffaq Al-Mawla, 1988). "Mastering the skills in futsal is one of the most important topics that concerns those involved in the game. It has become an accepted fact that raising the training level of any player cannot be achieved, whether physically, technically, tactically, or psychologically, without learning the technical performance of all the basic skills. There is nothing that is more important and something that is less important because the player is in dire need of all those skills throughout the match. Therefore, it is necessary to overcome the difficulties for the players in setting up training to develop their capabilities on the field (Mohammed Rihan Rakan 2023)."

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. The use of multiple stimuli in a single exercise, through the use of 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 their experience, and consequently reduce their transitional speed.
3. Training according to a standardized scientific system is the foundation of athletic training.

4.2 Recommendations:

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

Sources:

Abdul Qadir Zainal: Youth Football, Amman, Abboud Press, 1994.

- Alfred Kunz: Football (translated by Maher Al-Bayati and Salman Ali Hassan), Mosul, Dar Al-Kutub for Printing and Publishing.
- Majid Hamid Majid. The Effect of a Proposed Training Method on Developing Some Specific Physical Attributes of Futsal Players. Master's Thesis, College of Physical Education, University of Baghdad, 2007.
- Hussam Saeed Al-Mu'min. A Proposed Method for Developing Some Physical Abilities and Basic Skills of Futsal Players. Master's Thesis, College of Physical Education, University of Baghdad, 2001.
- Naji Kadhim Ali. The Effect of Specific Exercises for Fast-Paced Playing Style on Developing the Speed and Accuracy of Tactical Performance in Football. PhD dissertation, College of Physical Education, University of Baghdad, 2010.

- Saif Mohammed Kadhim: Special exercises using two assistive devices and their effect on specific strength, some biomechanical variables, electrical activity of muscles, and performance in the triple jump, Baghdad, Master's thesis, 2016, p. 28.
- Munir Abdullah Al-Sahib: Special exercises using assistive devices to develop some less preferred physical abilities of the leg and their effect on the goalkeeping skill of youth football goalkeepers, PhD dissertation, University of Baghdad, 2013.
- Mustafa Ali Abdullah: The effect of special exercises using an innovative device to control the angle of body tilt during the acceleration phase on some physical and biomechanical variables and performance in the 100-meter sprint, Master's thesis, College of Physical Education and Sports Sciences, Al-Qadisiyah University, 2018.
- Kamal Jamil Al-Rabdh: New developments in athletics, 3rd ed., Jordan, University of Jordan, 2005. • Ali Sadiq Dhiab: The Effect of Training Using Assistive Devices on Performance in Some Physical and Biomechanical Variables and Long Jump Achievement, Master's Thesis, University of Baghdad, College of Physical Education, 2010.
- Abu Al-Ala Abdel Fattah and Ahmed Nasr El-Din Radwan. Physiology of Physical Fitness. Cairo: Dar Al-Fikr Al-Arabi, 1993.
- Muhammad Abdo Al-Wahsh and Mufti Ibrahim. Fundamentals of Football. 1st ed. Cairo: Dar Alam Al-Ma'rifah, 1994.
- Qasim Hassan Hussein and Mansour Jamil Al-Anbaki. Physical Fitness and Methods of Achieving It. Baghdad: Higher Education Press, 1998.
- Mohammed Jaafar and Saad Jassim Hammoud: Tactical Behavior and its Relationship to the Skill Performance of Young Futsal Players, Thi-Qar University Journal of Physical Education Sciences, Volume 1, Issue 1, 2023, p. 223.
- Ezz El-Din Turki et al.: The Contribution of Some Physical Abilities to Long-Range and Close-Range Shooting Skills in Young Futsal Players, Thi-Qar University Journal of Physical Education Sciences, Volume 1, Issue 3, 2024, p. 129.
- Mohammed Rehan Rakan: The Effect of Mental and Psychological Practice on the Performance of Complex Offensive Skills of Junior Futsal Players, Thi-Qar University Journal of Physical Education Sciences, Volume 1, Issue 2, Part 2, 2023, p. 99. • Ahmed Hussein and Ahmed Zuhair: The effectiveness of an educational program for the (BAYER) strategy in improving the tactical intelligence and accuracy in football for students, University of Thi Qar Journal of Physical Education Sciences, Volume (1), Issue (4), Part (1). 2025, p. 19.