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The Effect of RONDO Training for the Development of Neuromuscular Compatibility and Scoring in Junior Football

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ABSTRACT

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The research aims to prepare exercises (in the style of rondo training to develop neuromuscular compatibility and scoring in junior football, and to find out the effect of the rondo training method on the development of neuromuscular compatibility and scoring in juniors for the research sample.

To achieve the goal, the researcher used the experimental method with the pre- and post-test to fit it with the research problem, that the research population was Baghdad clubs for the junior category, which are (16) clubs, while the research sample was selected by the deliberate method, which is the electricity sports club in the junior category, which is (24) players, and (4) were excluded. Random players in order to conduct exploratory experiments on them, so that the number of members of the research sample on whom the main experiment will be carried out will be (20) players, representing (6.25%) of the research population.

The researcher conducted the pre- and post-test of the research sample members, and the appropriate statistical treatments were performed, and the researcher concluded that the effectiveness of rondo training contributes to the development of motor speed and accuracy through the development of neuromuscular compatibility in juniors, and that rondo training improved the ability to finish attacks accurately under pressure, as well as the development of neuromuscular compatibility through rondo training directly contributes to raising the efficiency of complex offensive skills such as scoring.

The researcher recommends the need to integrate rondo training exercises into training programs during the units of 3-4 weeks to achieve an ideal improvement in compatibility and scoring, and to design rondo drills that focus on quick passes inside the box with the implementation of scoring immediately after receiving (offensive rondo), as well as standardizing rondo training as an essential part in the development of the junior category, and conducting additional studies to measure the impact of rondo training on other variables such as tactical decision making or special endurance, as well as conducting similar studies on age groups different and compare results.

1- Introduction to the Research:

1-1 Research Introduction and Importance:

Modern football is witnessing a remarkable development in methodological training methods and methods through which we can link the requirements of physical, skillful, physiological, psychological and neurocognitive competence, and this fundamental transformation that occurred in football as a result of scientific reliance in the training of age groups, where rondo training is one of the modern training methods that integrate technical skills and cognitive competencies, despite its wide spread in international academies, scientific studies that measure its impact on neuromuscular mechanisms remain (Neuromuscular mechanisms) are limited – especially in young people (12-16 years old).

Recent data show that 63% of scoring errors in this age group are attributable to poor integration between neural signals and motor performance **(Sarmento et al., 2023).**

The scoring process is the goal to reach satisfactory results of the training curriculum during the sports season and to obtain positive results and championships, "Successful shooting depends on visual-motor processing in a time window ≤ 0.3 seconds", **(Williams & Davids, 2022: p838).**

The importance of the research lies in the development of junior training according to scientific foundations, and this research aims to bridge the gap by achieving a main goal of measuring the impact of the training curriculum in the Rondo method, which is scientifically designed to improve neuromuscular compatibility indicators and scoring accuracy under conditions of competitive pressure.

1-2 Research Problem:

Football has witnessed a significant development in training concepts and methodologies, as the reliance on diverse and variable training has become the dominant feature of modern training programs, which has contributed to a remarkable development in digital levels of performance.

Modern rondo training is one of the important factors that contribute to the development of motor and skill abilities of football players, and through the observation of the researcher specialized in the field of training, it was observed that there is a weakness in neuromuscular compatibility and its impact on the accuracy of scoring in juniors aged (12-16) years.

From this point of view, the problem of the study on the use of rondo training to measure its impact on the development of neuromuscular compatibility and the improvement of scoring accuracy in this age group crystallized, crystallized as a practical contribution that can be put in the hands of coaches and sports workers.

1-3 Research Objectives:

- ❖ Preparing exercises in the style of rondo training to develop neuromuscular compatibility and scoring for juniors.
- ❖ Knowing the effect of the Rondo training method on the development of neuromuscular compatibility and scoring in juniors.

1-4 Research Mandate:

- ❖ There are statistically significant differences between the pre- and post-tests in the development of neuromuscular compatibility and scoring in adolescents.

1-5 Research Areas:

1.5.1 Human Field: Electricity Sports Club players for the 2024-2025 sports season.
1-5-2 Temporal Domain: From (16/11/2024) to (08/05/2025).
1.5.3 Spatial Field: The Football Stadium of the Electricity Sports Club in Baghdad.

2- Research methodology and field procedures:

2-1 Research Methodology:

The researcher used the experimental method, consisting of two control groups and experimental groups with pre- and post-test to fit it to the research problem.

2-2 Research Population and Sample:

The research population was Baghdad clubs for the junior category, which is (16) clubs, while the research sample was selected by the deliberate method, which is the Electricity Sports Club (24) junior category, and (4) players were randomly excluded in order to conduct exploratory experiments on them, so that the number of members of the research sample on whom the main experiment will be carried out becomes (20) players, representing their percentage (6.25% of the research community.

2.3 Means of collecting information, devices and tools used in the research:

2.3.1 Means of collecting information:

- Arab and foreign references and sources.
- Personal interviews.
- Information Dumping Form.
- World Wide Web.
- Tests and measurement.
- Exploratory experiment.

2.3.2 Devices and tools used in the research:

- Canon Camera.
- Lenovo laptop.
- Indicators.
- Cones.
- Tape measure.
- Whistle.
- A football field.
- Stopwatch.

2.4 Field Research Procedures:

2.4.1 Tests used in the research:

The test variables were selected in the light of the review of the literature and sources of the research field.

First: Neuromuscular compatibility test **(Raysan Khraibat Majid, 1988, 183).**

- **Test Name:** Neuromuscular Compatibility Test between the Eye and Legs Numbered Circuits
- **Purpose of the test:** To measure the compatibility between the eyes and the legs.
- **Instruments used:** Football, whistle, tape measure, stopwatch.
- **Performance Description:** (8) circles are drawn on the ground, each of which is (60) cm, the circles are numbered as shown in Figure (1), the tester stands inside circle number (1) and upon hearing the start signal, the player jumps with both feet to circle number (2), then to circle number (3), then to circle number (4) until circle number (8), and this is done at maximum speed.
- **Registration:** The laboratory records the time it takes to move through the eight circuits.

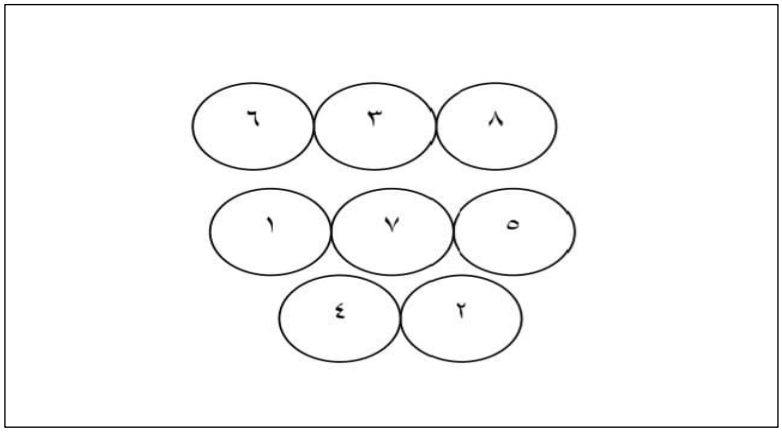


Figure (1)

Second: The scoring test **(Mufti Ibrahim Hammad, 2005, 260).**

- **Test Name:** Scoring towards a goal divided on numbered squares and from both sides (scoring)
- **Purpose of the test:** Measure the speed and accuracy of aiming at the target.
- **Tools used:** **(10)** football balls, a bar to set the scoring area for the test, a football goal of international measurements divided into squares the size of the square (120 x 120 cm) except for square number one representing the middle area of the goal remaining after dividing the squares, a football field.
- **Performance Description:** (6) balls are placed in places at a distance of (16.5) meters, as shown in Figure (2), where the player scores in the areas indicated in the test, according to their importance and difficulty, and sequentially one after the other and for a period of (6) seconds, provided that the test is done from the running position, and the test starts from ball number (1) and ends with ball number (6), and the attempt is not considered correct in case any of the three goals are not scored from each side as well as the goal medium and give the lab one try.
- **Scoring:** The number of injuries that enter or touch the sides of the six goals specified from both sides and the midfield goal is calculated, as the scores of each of the six balls are calculated during the (6) seconds as follows:
- (4) Scores when scoring in field No. (4)
- (3) Scores when scoring in field No. (3)
- (2) Scores when scoring in field No. (2)
- (1) Scores when scoring in field No. (1).
- (zero) outside the target limits, and the total score of the test is (24) marks.

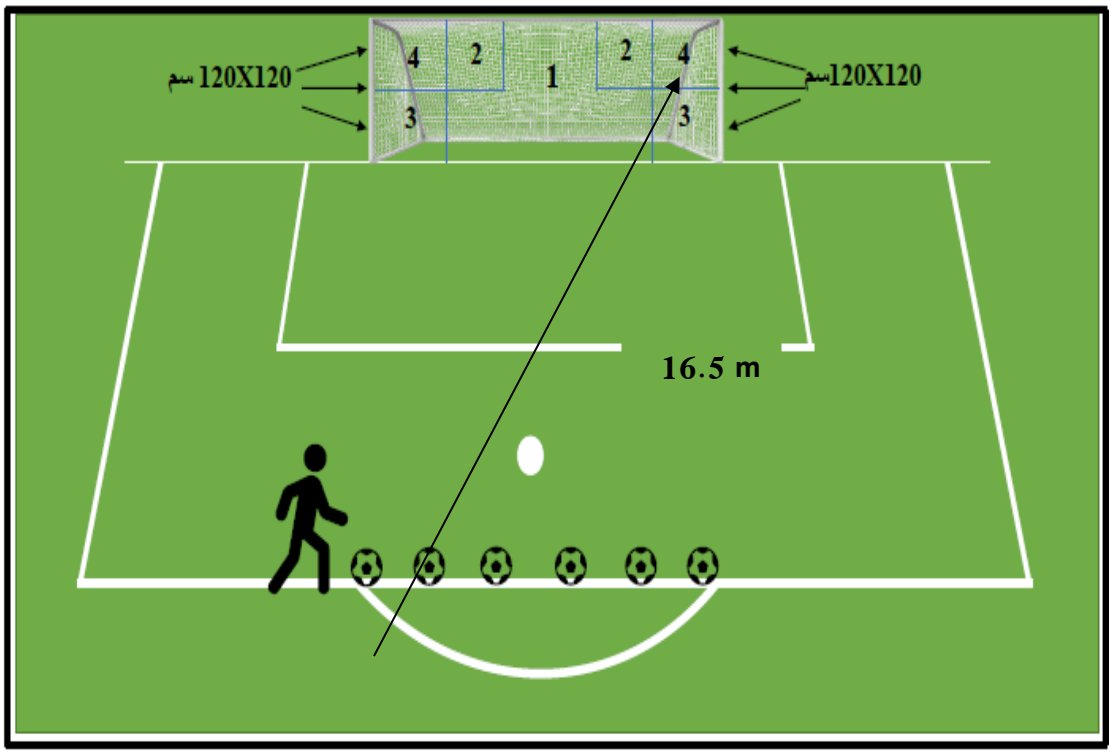


Figure 2

2.4.2 Exploratory Experiment:

The researcher conducted the exploratory experiment on a number of (4) players from the same research community on Monday, 02/12/2024 at three o'clock in the evening, and the purpose of this experiment was as follows:

- Ensure the safety and validity of the tools used in the implementation of the tests.
- Know how long each test takes.
- Know your team understands the details of the exams and how , as well as how to record the results of the tests.
- Ensure the of the tests to the level of the sample and the extent to which they understand and respond to it.
- Knowing the obstacles and disadvantages faced by the researcher and the work team during the implementation of the tests.
- Work on overcoming and avoiding errors before executing the main experiment.

2.4.3 Pre-Tests:

The researcher conducted the pre-test on the research sample on (Saturday) 28/12/2024, and on the electricity sports club football stadium, as well as preparing all the requirements and requirements for the tests.

2-4-4 Main Experience:

The application of the Rondo training on the research sample was started on 04/01/2025 until 29/03/2025, which was characterized by a continuous change in the training distances with the intensity of the training during the same training unit as is applied in the variable intensity method, as the researcher took into account.

- ❖ These exercises were carried out in the special preparation and pre-competition phases..
- ❖ These trainings were carried out over a period of (12) weeks and with (3) training units per week for Saturdays, Sundays, and Wednesdays, i.e. a total of (36) training units.
- ❖ The researcher used a specific time of the total time of the training module from 40-60 minutes, the researcher aimed to develop neuromuscular compatibility and improve the ability to score to reach the highest possible scores in the research sample.
- ❖ The researcher took into account the principle of ripple and gradual in increasing the training load according to the training days, where Saturday is a high intensity because the players are comfortable on Thursday and Wednesday, while Sunday is moderate because it is preceded by a high intensity day, and Wednesday is a higher intensity than average because it is preceded by rest days.
- ❖ The training intensity used ranged between (70 - 90%).
- ❖ The pulse intensity used corresponding to the training intensity ranged between (120%-160%).

2.4.5 Post-tests:

The researcher, with the help of the assistant team, conducted the post-tests, on Wednesday (09/04/2025) and on the field of the Electricity Sports Club in the football field, and the test was conducted under the supervision of the researcher and the assistant team and under the same conditions as the pre-tests**.**

2.5 Statistical Methods

The researcher used the following statistical systems:

- ❖ Ready-made statistical bag (IBM. SPSS. Ver20) to get the following:
- ✓ Arithmetic mean.
- ✓ Standard deviation.
- ✓ Torsion coefficient.
- ✓ (v) Test for correlated samples.

3. Presentation, analysis and discussion of the results:

3.1 Presentation, analysis and discussion of the results of research tests:

3.1.1 Presentation, analysis and discussion of the results of the research tests for the control group in the research variables:

Table (1)

It shows the arithmetic medians, standard deviations, calculated (v) value, error percentage, and significance of the differences for the pre- and post-tests of the control group in the research variables.

Significance	Sig	T value	Post		Tribal		audition
			on	Going to	on	Going to	
Moral	0.001	4.78-	0.73	8.992	1.27	10.169	**Muscular Neurocompatibility between the Eyes and Legs**
Moral	0.009	3.28	1.62	12.2	2.42	10.5	**Scoring**
* Significant at the significance level of (0.05) and the degree of freedom (9)							

Through Table (1), it is clear that there were significant differences between the results of the pre- and post-tests and in favor of the post-tests of the control group.

The researcher attributes the reasons for these differences to many reasons, the most important of which is that the team's training was continuous and there was no interruption due to the preparation for the junior league, and the second reason is due to the coach's style he is used to and undergoing different training from the experimental group training, as well as the coach's focus on individual skill training, and the other reason is due to the commitment to attend training units and the competition between the players to get a basic place in the squad, and these things are beneficial to the team but did not rise to the level of development In the experimental group, this is what the test results proved.

3.1.2 Presentation, analysis and discussion of the results of the research tests for the experimental group in the research variables:

Table (2)

It shows the arithmetic medians, standard deviations, calculated (v) value, error percentage, and significance of the differences for the pre- and post-tests of the experimental group in the research variables

Significance	Sig	T value	Post		Tribal		audition
			on	Going to	on	Going to	
Moral	0.001	3.49	1.42	8.32	2.20	9.79	**Muscular Neurocompatibility between the Eyes and Legs**
Moral	0.006	-4.74	2.54	14.3	2.27	12.4	**Scoring**
* Significant at the significance level of (0.05) and the degree of freedom (9)							

Table (2) shows the statistical indicators of the results of the pre and post tests of the research variables that the members of the research sample underwent, as the results showed that the values of the arithmetic median for all variables were better in the post-test than the pre-test, and there was a significant change between the two tests and in favor of the dimensional one, as the lower the arithmetic mean, the better the level for the neuromuscular compatibility test, and the higher the arithmetic mean in the scoring test, the better the level.

The researcher attributes the reason for the development that occurred in the post-test from the pre-test through the use of the rondo exercises used in the research, which were applied to the experimental research sample, which in turn improved the time **of neuromuscular compatibility** due to the nature of the rondo exercises that enhance sensory-motor integration .

A study on junior soccer players **(University of Biskra, 2023)** confirmed that neuromuscular warm-up improves dynamic balance and reduces reaction time by 25% after 8 weeks, due to the repetition of visual-motor stimuli under stress, and a study on junior gymnastics **(An-Najah University, 2018)** showed that training programs directed to neuromuscular compatibility improved skill performance by 30% in dynamic balance tests.

The researcher attributes the development in **the scoring skill** to the quality of the rondo training and its effect on the development of the scoring skill in the experimental group of the post-test, and this is due to the positive effect because scoring did not come with easy performance, but rather with play exercises similar to what happens in the match, and the playing exercises make the responses strong, to the fact that mastering the scoring skill is a main solution to win because without scoring, victory does not happen, and he pointed out that **(Zafer Ahmed Mansour, 2007, 36)** "Speed and accuracy in scoring have an important and decisive role for the success of any team"

When developing the exercises used, the researcher took into account the use of the correct scientific gradient in the training process, from easy to difficult, and from simple to complex, which led to an increase in confidence in the players, and generated a desire to train and pushed them to perform exercises seriously and quickly, which was reflected in the speed of their mastery of abilities and skills.

Rondo training is an intensive simulation of pressure, decision-making and accurate technical execution that the player faces in the match, by improving the neuromuscular coordination (perceptual speed, motor precision, reaction, decision-making) it indirectly but very effectively prepares the player for difficult scoring situations, the rookie who masters the rondo becomes a calmer player under pressure with a better touch, and is able to make smarter and faster decisions in the attacking third and in front of goal – all of which are elements Critical to turning

opportunities into goals, incorporating Rondo into junior training programs is an essential investment in their technical and intellectual development.

4. Conclusions and Recommendations:

4.1 Conclusions:

From the results, analysis and discussion of them, the researcher reached the following conclusions:

- The Effectiveness of Rondo Training in Developing Motor Speed and Accuracy through the Development of Neuromuscular Compatibility in Juniors.
- The Rondo training improved the ability to score accurately under pressure.

4.2 Recommendations:

- The need to integrate rondo training into training programs during 3-4 weekly modules to achieve optimal improvement in coordination and scoring.
- Designing Rondo drills that focus on quick passes inside the box with scoring execution immediately after receiving (Rondo Offensive).
- Standardize rondo training as an essential part of the development of the junior class.
- Conducting additional studies to measure the impact of rondo training on other variables such as tactical decision-making or special endurance.
- Conduct similar studies on different age groups and compare the results.

Arab and foreign sources

- Raysan Khraibet Majeed: **Encyclopedia of Tests and Measurements in Physical Education and Sports**, Basra, Higher Education Press, 1988.
- Shada Ziad Zakaria Nayrokh, **The Effect of a Proposed Training Program on Improving Muscular Neural Compatibility in Gymnastics Beginners in Beit Hanina Community Center**, Published Master's Thesis, (An-Najah National University, Nablus-Palestine, 2018).
- Zafer Ahmed Mansour, **Analysis of the Skilled Technical Performance of Football**, 1st Edition, (Amman, Dar Ghaida, 2007).
- Kassouri Osama: The **immediate and long-term effect of neuromuscular warm-up on some indicators of physical performance in football players**, PhD thesis, published (University of Biskra, Algeria, 2023).
- Mufti Ibrahim Hammad, **The New in the Physical, Skillful, and Planning Preparation of the Football Player**, (Cairo, Dar Al-Fikr Al-Arabi, 2005).
- Sarmento, H. et al. (2023). Neuromuscular Integration in Youth Football: Impact of Technical Training on Performance Errors. Journal of Sports Science & Medicine, 22(3), pp. 45-62.
- Williams, A. M. & Davids, K. (2022). Visual perception and decision making in football. Journal of Sports Sciences, 40(8), 831–845.

Supplements

Attachment (1)
Training module model

- **Objective of the Independent Variable**
  Training Module : Passing Speed, Decision-Making, and Scoring Under Pressure
- **Total Module Time: 90 minutes**
- **Month: First**
- **Week: Second**
- **Day: Saturday**
- **Date: 11/1/2025**
- **Time: 3:00 PM**

Applied Objective	Hardship	Duration	Activity	Part
Neuromuscular conditioning and concentration	Low	15 min	Public + Private Warm-up	Warm
Speed of passing and decision making	high	15 min	RONDO 5v2	Main
Surround vision and line breakage	high	20 min	RONDO 4v2 + 2 jokers	
Connecting Rondo to scoring under pressure	high	25 minutes	RONDO 4v4 + Goal	
Recovery, Improved Resilience and Learning	Low	15 min	Relaxation exercises + feedback	Final

Attachment (2)
Sample of exercises used

Exercise No. 1

Workout: Rondo 5v2

Goal: Improve your thinking speed and scrolling

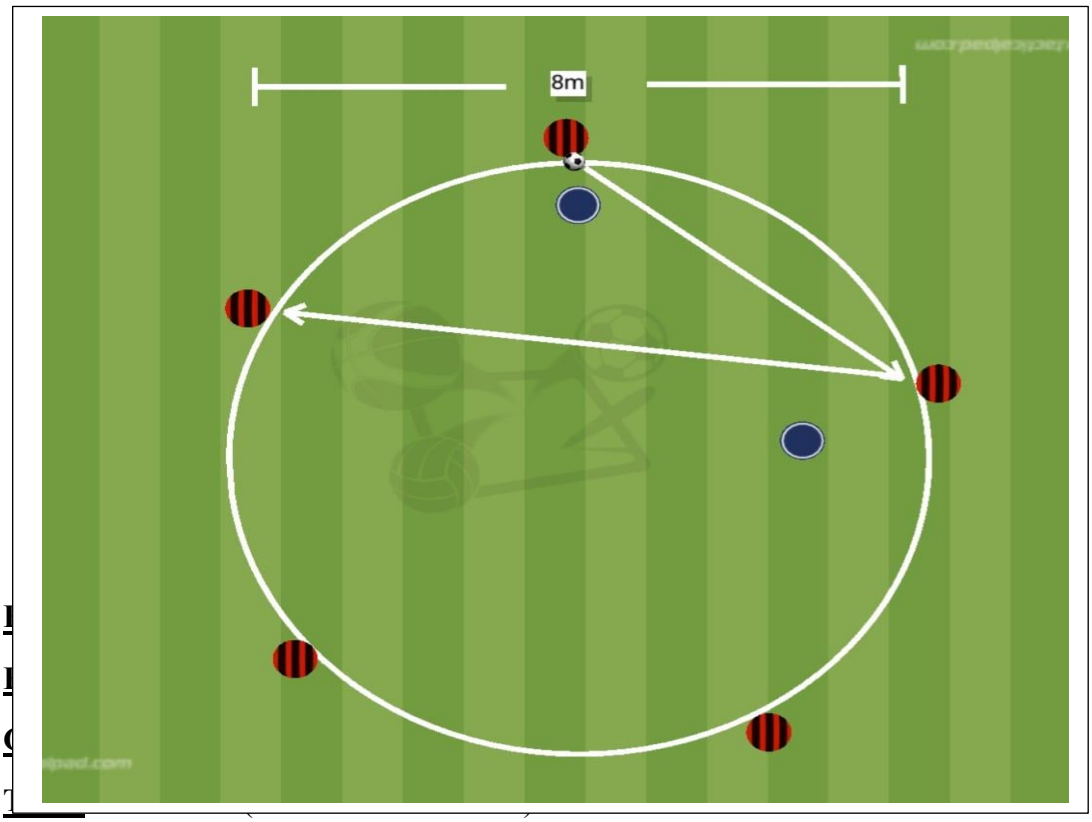
Time: 15 minutes (3 rounds × 4 minutes)

Rest: 1 minute between tours

Area: 8 meters diameter circle

Exercise Explanation:

5 players are distributed outside the circle (possessors), and 2 in the middle (pressers), and a maximum of two touches of the ball, and a point is obtained after 8 successful consecutive passes, and the player who loses the ball becomes a compressor and in turn, focusing on raising the head and passing quickly, and moving to create a passing angle and receiving the ball.

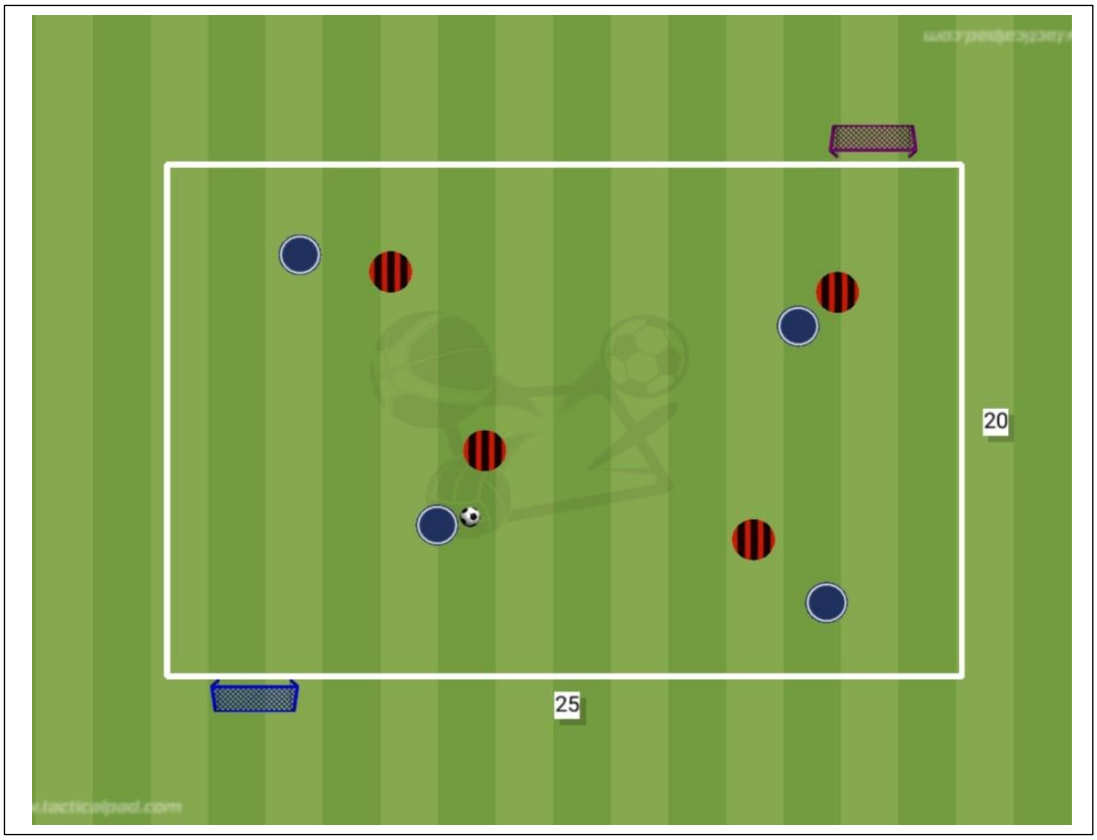


Rest: 1 minute between tours

Area: 20×25 meters pitch with two small goals

Exercise Explanation:

The players are divided into two teams of 4 vs. 4 and the team in possession of the ball must make at least 4 consecutive passes before scoring on goal, and if the team loses the ball, the count starts from zero, and focus on passing and moving towards the goal and scoring accurately and not strongly.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