The effect of a proposed training method using play exercises to develop specific agility and skill performance in football

El efecto de un método de entrenamiento propuesto que utiliza ejercicios de juego para desarrollar la agilidad específica y el rendimiento de habilidades en el fútbol

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Abstract

Introduction: The importance of research lies in preparing a proposed training curriculum that seeks to reach results believed to positively impact the development of football players' special agility and skill performance. Objective: The research aims to prepare a proposed training curriculum using play exercises and identify their impact on developing special agility and skill performance in football. Methodology: The researchers used the experimental method due to its suitability and the nature of the research. After the pre-tests were conducted, the proposed training curriculum was applied to the participants, and post-tests were conducted. Statistical means, including mean, standard deviation, and t-testing, were used to identify the effect of variables on participants' performance. Results: The results showed that there were statistically significant differences between the results of the pre-test and the post-test, as the value of the difference of the means was (5.75,3.81) and the difference of deviations of the averages (1.72,1.62), while the calculated t-value was (9.36,4.81), which are greater than the tabular T value of (2.04) with a level of significance (0.05) and a degree of freedom (15). Discussion: The researchers explain the development that occurred to the experimental group as a result of the use of play exercises in the training units and prepared scientifically, which affected the development of the level of performance, which helped to bring the players to the degree of mastery through its diversity and repetition during training. Conclusions: The researchers concluded that using play exercises within the training curriculum positively impacts the development of extraordinary agility and skill performance in football.

Keywords

Special agility; skill performance; play exercises; football.

Resumen

Introducción: La importancia de la investigación radica en la elaboración de una propuesta de currículo formativo que busque alcanzar resultados que se cree impactan positivamente en el desarrollo de la agilidad especial y el rendimiento de habilidades de los jugadores de fútbol. Objetivo: La investigación tiene como objetivo elaborar una propuesta de currículo de entrenamiento utilizando ejercicios de juego e identificar su impacto en el desarrollo de agilidad especial y rendimiento de habilidades en el fútbol. Metodología: Los investigadores utilizaron el método experimental. Una vez realizadas las pruebas preliminares, se aplicó a los participantes el plan de estudios de formación propuesto y se realizaron pruebas posteriores. Se utilizaron medias estadísticas, incluyendo media, desviación estándar y pruebas t, para identificar el efecto de las variables en el rendimiento de los participantes. Resultados: Los resultados mostraron que hubo diferencias estadísticamente significativas entre los resultados del pretest y del postest, ya que el valor de la diferencia de las medias fue de (5.75,3.81) y la diferencia de desviaciones de los promedios (1.72,1.62), mientras que el valor t calculado fue de (9.36,4.81), los cuales son mayores que el valor T tabular de (2.04) con un nivel de significancia (0.05) y un grado de libertad (15). Discusión: Los investigadores explican el desarrollo que se le ocurrió al grupo experimental como resultado del uso de ejercicios de juego en las unidades de entrenamiento y preparados científicamente, lo que afectó el desarrollo del nivel de rendimiento, lo que ayudó a llevar a los jugadores al grado de dominio a través de su diversidad y repetición durante el entrenamiento. Conclusiones: Los investigadores concluyeron que el uso de ejercicios de juego dentro del currículo de entrenamiento impacta positivamente en el desarrollo de agilidad especial y rendimiento de habilidades en el fútbol.

Palabras clave

Agilidad especial; desempeño de habilidad; ejercicios de juego; fútbol.

Introduction

Opinions varied about the most effective methods and approaches for developing physical qualities and football skills. Many training methods have been used and are still being used, as the success rates in technical performance varied. Therefore, experts and researchers sought to find methods that serve this game in a way that suits the individual differences and age group of players, and their capabilities to be consistent with being achieved, as (Muwaffaq Al-Hiti, 2011) sees "To bring the player to the highest sports levels, he must be prepared comprehensively and from all aspects, according to his qualifications, specifications, abilities, and readiness in a way that suits his specialization. For the training process to achieve its goals, attention must be paid to the components or contents of training related to effectiveness, physical preparation, skill preparation, planning preparation, and educational and psychological preparation"(Muwaffaq et al., 2011).

The skill preparation of players aims to teach, develop, master, and consolidate the sports motor skills that can be used in sports competitions to achieve the highest sports achievements. Undoubtedly, reaching the top of global sports can only be achieved through mastering and consolidating motor skills(Chaouachi et al., 2014). No matter how high the level of physical fitness of the athlete is and no matter how many moral and voluntary traits he has, he will not achieve the desired results unless all of this is linked to the complete mastery of the sports motor skills in the type of specialized activity, he practices (Muhannad et al., 2005). Skill preparation is one of the important aspects of preparing a football player. It aims primarily to master the basic skills, without which it is difficult for them to implement plans well, affecting their performance in the match(Muhammad et al., 1984). Agility is one of the most important physical and motor qualities and is an indicator of the player's high level of technical performance. It is considered the only quality that results from the development of other qualities. A football player's attempt to move and succeed in integrating several movements to appear in a single framework that contributes to serving the ideal motor performance during the competition cannot be achieved unless he has the quality of agility(Lupo et al., 2019). Therefore, coaches and specialists in sports affairs must develop this quality by finding and using all that is new in terms of methods, styles, means, and tools that contribute to raising the level of players' performance to reach the optimal performance, as this game consists of several basic skills that require its practitioners to master these skills in different playing situations. Mastering these skills is an important basic factor in achieving victory for the team. Therefore, skill performance is considered "one of the most prominent requirements of the game in football, in addition to the fact that a complex nature distinguishes this game due to its association with other qualities on the one hand and skill performance on the other hand" (Muwaffaq et al., 2011). Hence, the importance of the research in preparing a proposed training method through which researchers seek to reach results that are believed to positively impact the development of football players' special agility and skill performance. Thus, the results will be an important reference for coaches in developing the game of football(Zago et al., 2016).

Bank credit is an extremely important banking activity, as the revenue generated from it represents the main focus of any bank's revenues, no matter how varied the other sources of revenue are. Without it, the bank loses its main function as a financial intermediary in the economy between the surplus and deficit sides. At the same time, it is an investment surrounded by risks due to the failure of loans and facilities. Indicators for analyzing borrowers' activity have become an important topic for banking activity (Jovanovic et al., 2011).

Researchers summarise the Research problem following several matches of the specialized football school affiliated with the Iraqi Ministry of Youth and Sports in Fallujah. Some weaknesses were identified among the team players, including the presence of a decline in the level of physical performance in general, which was negatively reflected in their skill performance on the field due to the players lacking the required level of agility and the decrease in the effectiveness of performance throughout the match, as well as the lack of adoption of the scientific, academic method in training, which ensures the development of various physical and skill capabilities, which was reflected in the level of technical performance of the players. This is what the researchers considered a problem that requires study by designing a training curriculum using playing exercises in an organized scientific manner that seeks to develop the special agility and skill performance of football players, hoping that these exercises

will add to the game and to the encyclopedia of training possessed by coaches a method or type of training that contributes to developing the level of the game to a better extent.

The research aims to Prepare exercises in a playing style that suits the level of the research sample. Identifying the effect of playing exercises in developing the special agility and skill performance in football. Identifying the differences between the control and experimental groups in developing specific agility and skill performance in football.

Research hypothesis: There are statistically significant differences in specific agility and skill per performance in football between the pre-and post-test results for the control and experimental groups, which favor the post-test. There are statistically significant differences in specific agility and skill performance in football in the results of the two research groups in favor of the experimental.

Method

Participants

One of the basic steps in collecting information and data is choosing the sample, as the research sample is "the means through which the results can be generalized to the research community, which must be carefully selected as it is the model on which the researchers conduct the entirety and focus of their work"(Wajih Mahjoub, 2002). The research sample was chosen intentionally, represented by the players of the specialized football school in Fallujah in Anbar governorate, affiliated with the Ministry of Youth and Sports, aged (15-17) years, and their number was (40) players. The injured players were excluded, numbering (4) players, and (4) others were also excluded due to circumstances that prevented their attendance, as the number of players to whom the curriculum was applied was (32) players and (8) players were chosen randomly. Exploratory experiments were conducted on them, and then they were returned to the main experiment sample. After that, they were randomly divided into two groups of equal numbers, an experimental group and a control group, as each group included (16) players to represent a percentage of (80%) of the research sample. 2-3 Homogeneity and equivalence of the research sample

Procedure

Study Design

The researchers used the experimental method with a pre-and post-test for two equal groups in number due to its suitability and the nature of the research problem) (Ali et al., 2024)

Ethical Consideration.

The College of Physical Education and Sports Sciences approved the study. The study followed the principles of the Declaration of Helsinki. All participants could withdraw from the study without repercussions and were not forced to participate. Before the study, a written informed consent form was issued to the participants, and they were briefed about the confidentiality of the study, its purpose, risks, and benefits involved in the study.

Homogeneity of the sample

The researchers conducted homogeneity in the variables of height - mass - and chronological age - as shown in Table (1)

Table 1. Shows the homogeneity of the two research groups.

Variables	Unit of measurement	s-	a-	Coefficient of skewness	Significance
Age	Year	15.43	0.49	0.03	Not Significant
Height	Cm	168.18	6.86	0.04	Not Significant
Weight	Kg	58.62	8.06	0.29	Not Significant

It is clear from Table (1) that the research sample is homogeneous in the indicators (height, weight, age), as the values of the skewness coefficient were respectively (0.03 / 0.04 / 0.29), and this is a good indicator that the distribution is moderate.

Equivalence of the two research groups

The equivalence of the control and experimental groups was confirmed by processing the pre-tests in the research variables. The purpose was to start with one starting line for both groups. It was found that the differences were insignificant between the two groups, confirming their equivalence. As shown in table (2)

Table 2. Shows the equivalence of the two research groups

	Test	Unit of measure	Group	Arithmetic mean	Standard deviation	T-value		Significance of differences
						calculated	Tabular	
1	Special Agility	Second	Experimental Control	22 22.25	1.71 1.73	0.29	2.04	Random
2	Skill Performance	Second	Experimental Control	19.20 19.52	0.62 1.08	0.22	2.04	Random

The table above shows that the differences were not significant between the individuals of the two research groups in the variables under study, as the calculated (t) value was less than the tabular (t) value, which indicates the equivalence of the two groups in terms of specific agility and skill performance in football

Exploratory experiments

1- The first exploratory experiment

Before starting to implement the main experiment (playing exercises), the researchers, with the help of the auxiliary work team, conducted their first exploratory experiment on (Monday) corresponding to (11/13/2023) at the Fallujah stadium. The experiment consisted of (8) players. The aim of this experiment was to:

•Identify the suitability of the football field and its suitability for the conditions and requirements of conducting the research.

•Identify the factors and problems that may face the implementation of pre-and post-tests and the implementation of the educational curriculum and its needs.

•Ensure the validity of the tools used in the research and their suitability for the nature of the research procedures and the organization and planning of the stadium.

•Ensure the sufficiency of the work of the auxiliary team and its ability to conduct the tests specific to the research.

•Identify the suitability of using the repetition system or method in implementing the research to set an appropriate time limit for the number of repetitions.

2- The second exploratory experiment:

Under the direct supervision of the researchers, the maximum performance test was conducted for the selected playing exercises on the Fallujah football field on (Tuesday and Wednesday) corresponding to (14-15/11/2023) at exactly (three o'clock in the afternoon), and their number is (12) exercises, Appendix No. (2) to determine the intensity of the exercises and training units as well as the total intensity of the curriculum, the maximum performance was extracted in terms of time from

During = exercise time in seconds × 100/ Intensity *(Basem et al., 2013).*

Scientific foundations of tests

1-Test validity

The researchers used the self-validity coefficient, which is measured by calculating the square root of the stability coefficient (Muwaffaq et al., 2013). it was found that the tests enjoy a high degree of validity, as (the self-validity coefficient = the root of the stability coefficient) and as shown in table No. (3)

2- Test validity

This was done using the retest method *(Saeed, Khalaf, et al., 2024)*, where the tests were conducted on Tuesday, 11/21/2023, and were repeated on Monday, 11/27/2023. After finding the correlation coefficient between the two tests, it became clear that they have a high degree of stability, as shown in Table (3).

3- Test objectivity

The objectivity coefficient is greatly affected by the stability coefficient. The high stability coefficient in all tests is clear evidence of the objectivity of these tests *(Al-Alwani & Ali, 2023)*. As shown in table (3).

Table 3. shows the scientific foundations of the tests.

Variables	Test Validity	Test Reliability	Test Objectivity
Special Agility	0.95	0.91	0.94
Skill Performance	0.99	0.92	0.90

Pre-tests:

The pre-tests were conducted with the assistant team on (Wednesday) corresponding to 11/29/2023, at (three) o'clock in the afternoon. The tests included measuring special agility and skill performance after preparing all spatial conditions and tools, and the test procedures were fixed.

Proposed training method:

In order to achieve the research objectives, the researchers prepared a set of (12) play exercises in the play style, Appendix (1), which were organized into a training method Appendix (2). The method began on (Saturday) corresponding to 12/2/2023, until (Saturday) corresponding to 2/2/2024, and the following are some of the points that the researchers took into account as follows:

1- The experimental group applied the play exercises under the supervision of the team coach.

2- The control group applied the coach's method, which was followed under the supervision of the assistant coach.

3- The duration of the training curriculum application is (8) weeks, with (3) training units per week from (Saturday - Monday - Wednesday)

4- The experimental curriculum consists of (2) medium courses, and each course includes (4) small courses.

5- Using the high-intensity interval training methods (80%) and high-intensity repetitive training methods (90%) by controlling the load size (exercise period), and this method includes rest periods between the work performance items

Post-tests:

After completing the application of the training curriculum, the researchers, along with the assistant work team, conducted the post-tests on (Tuesday) corresponding to 6/2/2024, with the same procedures, temporal and spatial conditions, and steps as the pre-tests.

Instrument

Methods, tools, and devices used in data collection:

1-Methods of data collection: (Scientific sources and references. Internet. Measurements and tests. Scientific experimental observation. Personal interview with experts. Assistant work team (Adham Ali et al., 2022)..

2- Devices and tools used in the research: (Football field. Scale to measure mass. Tape to measure length. Stopwatches to measure time (number 2). Colored adhesive tape. Tape measuring length 50 meters. Indicators number (20). Legal football number (16). Whistle number (2). Swedish benches number (2).

Physical Activity Quiz

1- Specific agility test:

Test name: (Agility test)(Hashem Darwish, 2016).

- The test aims to measure (football agility).
- Necessary tools: an area of (40 x 40) m on the football field, a whistle, a stopwatch, (5) human markers of (1.50) m in height, (2) rings or hoops of (50) cm in diameter, (3) obstacles of (30) cm in height, (4) posts or columns of (1.50) m in height, (1) football, and a measuring tape.
- Performance method: The player stands at the starting point that Burke indicated with a ball (3) m away from the first human marker. When the whistle is heard, the timekeeper begins timing, and the player begins rolling and zigzagging between the five markers. The distance between one marker and the next is (1.5 m). Then he rolls the ball to the left (5) m to find in front of him (two hoops), each with a radius of (50 cm) and the distance between them is (2) m. He turns the ball from the right around the hoop, a full circle, heads to the second hoop, and turns around it from the right side (a full circle). Then he rolls the ball (5) m to find a (30) cm high obstacle in front of him. He puts the ball between the obstacles, jumps over the obstacles, and heads to the left to find two obstacles with the exact

specifications in front of him, and the distance between the obstacles is (5) m. He puts the ball between the obstacles and jumps over them. Then he heads to the left to find four columns with a height of (1.5) m in front of him. The distance between the columns is also (1.5) m, then he zigzags to the end point indicated by Burke, which is the starting point, and then the timekeeper stops the clock.
The player is given two attempts, with (1) minute of rest between them, and the best attempt is recorded.

2- The second test:

The first is the skill performance test(Basem et al., 2013).
- The aim of the test: To measure skill performance in football.
- The tools used: Half a football field, an electronic stopwatch, a whistle, (4) obstacles, (6) signs, (3) flags, a measuring tape, one football, and one bench.
-Performance method: The player starts running from the starting area designated at the corner of the penalty area located with the goal line where there is a ball (10m) from the starting point, and he must roll the ball between four obstacles with a distance between each pair (4m longitudinally and 2m wide) then he continues rolling the ball until the midfield line to meet a post that he passes on both sides of and (5m) from this post there are four markers at different distances respectively (1,5m, 1m, 2m, 1m) then he heads after passing by the last post to the goal and at a distance of (10m) there is a post to pass by and pass the ball to the Swedish seat inclined with the running line so that the ball bounces back to him and he kicks it towards the goal. -Scoring: The time is calculated from the moment of the start to the moment of scoring, and (1/10) of a second is added if the player collides with one of the markers and falls to the ground

Data analysis

Arithmetic mean, standard deviation, skewness coefficient(Salah Al-Shanwani, 1983), (T) law for two related samples of equal number, (T) law for unrelated samples(Saeed, Sabti, et al., 2024).

Results

Presentation and analysis of the results of the pre-and post-tests of the control group.

Table 4. Shows the results of the pre-and post-tests of the control group

Test	Unit of measure	Pre-test		Post-test		The difference in arithmetic means	Standard deviation difference	Calculated T value	Significance
		M	SD	M	SD				
Special Agility	second	22.25	1.71	19.12	1.16	3.13	Significant	5.77	Significant
Skill Performance	second	19.52	1.08	17.59	0.72	1.93	Significant	4.61	Significant

Table (t) value (2.04), significance level 0.05, and degree of freedom (15)

Table (4) shows the presence of statistically significant differences between the results of the pre-and post-test of the control group in the dependent research variables (special agility - skill performance), as the value of the difference of the means reached (3.12- 0.9) respectively and the difference of the deviations of the means (1.53- 1.07) respectively, while the calculated T value reached (5.77 - 4.61) respectively, which are greater than the table T value of (2.04) with a significance level (0.05) and degree of freedom 16-1=(15), and thus the differences are significant in favor of the post-tests of the control group.

Presentation and analysis of the results of the pre-and post-tests of the experimental group.

Table 5. shows the results of the pre-and post-tests of the experimental group

Test	Unit of measure	Pre-test		Post-test		The difference in arithmetic means	Standard deviation difference	Calculated T value	Significance
		M	SD	M	SD				
Special Agility	second	22	1.73	16.25	1.19	5.75	1.72	9.36	Significant
Skill Performance	second	19.20	0.62	15.39	1.42	3.81	1‹62	4.81	Significant

*Table (t) value (2.04), significance level 0.05, and degree of freedom (15)

Table (5) shows the presence of statistically significant differences between the results of the pre-and post-test of the experimental group in the dependent research variables (special agility - skill performance), as the value of the difference of the means reached (5.75 - 3.81) respectively and the difference of the deviations of the means (1.72- 1.62) respectively, while the calculated t value reached (9.36- 4.81) respectively, which are greater than the table t value of (2.04) with a significance level of (0.05) and degree of freedom 16-1 = (15), and thus the differences are significant in favor of the post-tests of the experimental group.

Presentation of the results of the post-test between the control and experimental groups.

Table 6. Shows the results of the post-test between the control and experimental groups

Test	Unit of measure	Control group		Experimental group		Calculated T value	Significance
		Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Special Agility	second	19.12	1.16	16.25	1.19	4.94	Morale
Skill Performance	second	17.59	0،72	15.39	1.42	4.61	Morale

Table (t) value (2.04) at a degree of freedom (n1 + n2 - 2) under a significance level of (0.05)

Table (6) shows the existence of a statistically significant difference in the results of the post-tests between the control and experimental groups in the dependent research variables (special agility - skill performance), as the calculated t value reached (4.94-4.61) respectively, which is greater than the table t value of (2.04) at a significance level of 0.05 and a degree of freedom (32-2 = 30). Thus, the difference is significant in favor of the experimental group.

Discussion

Discussion of the first hypothesis: (There are statistically significant differences in special agility and skill performance in football between the results of the pre-and post-test for the control and experimental groups in favor of the post-test).

It is clear from Tables (4-5) that both the methods followed for the control group and the proposed method for the experimental group using play exercises have positively impacted the research variables (special agility - skill performance) but at varying rates. There is a clear development in the results of the post-measurement of the experimental group at the expense of the control group in the number of successful attempts. This development is due to using play exercises correctly in terms of applying their vocabulary, in addition to the regularity of training and proper planning. This was confirmed by (Furegato Moraes et al., 2024): "Since basic skills are the basis of the game of football, and without them, the player cannot carry out the tactical duties assigned to him. A football player can be good if he absorbs the basic skills and masters them in the required manner. Therefore, the most important training duty is to bring the players to the highest possible level of training status"(Yousef et al., 1999). The researchers attribute the reasons for the slight development of the members of the control group to the irregularity of training doses accurately, as well as the weakness of coordination between the components of the training load in terms of intensity and volume and not giving sufficient rest periods for recovery that are commensurate with the intensity and volume of training, as "the training load is the basic pillar On which sports training depends through its components in terms of (intensity, volume, and rest)(Hussein et al. Shaghati, 2006).

The researchers explain this development that came to the experimental group as a result of using play exercises in the training units and preparing scientifically, which affected the development of the level of performance, which helped to bring the players to the level of mastery through their diversity and repetition during training(Forster et al., 2023), as the training curricula scientifically depend on planning and organization, and that preparing the player skillfully requires setting repetitions of the exercises that achieve the goal and make the football players more in control of the ball, and with the continuation of correct repetitions, errors will decrease(Burgos Angulo et al., 2024). In addition, the players acquire many physical, motor, and mental abilities that are the basic foundation for any skillful performance, as the skillful preparation of the players aims to "learn motor skills, master them, and consolidate them to reach a better level in the game of football through the multiple exercises that the coach plans and applies"(Hamad et al. Hammad, 1994).

2- Discussion of the second hypothesis: (There are statistically significant differences in the specific agility and skill performance in football between the post-test results between the control and experimental groups, in favor of the experimental group).

It is clear from Table (6) that the results of the differences between the control and experimental groups for the post-tests were in favor of the experimental group, thanks to the play exercises and the way they were implemented, as they represented play situations similar to the conditions of competition, and that these exercises outperformed the application of traditional exercises because they increase harmony and change performance situations by changing the directions of play and increasing the repetitions of performance for the special agility and skill performance characteristic (Hassan Elhofy, 2013), which led to the players reaching ideal adaptations within the playing field, which was reflected in the results of the experimental group and raised the motivation for training. This is confirmed by (Hamad et al., 1999) as "the success of training curricula is measured by the extent of progress achieved by the athlete in the type of sports activity practiced through skill, physical and functional levels, and this depends on the adaptation achieved by the individual with the training curriculum that he applies." The researchers attribute the superiority of the experimental group over the control group to the reliance of the preparation of the curriculum on the methods of interval and repetitive training, as well as the gradual increase in the volume of training since any exercise performed by the athlete includes within it two main components of the training process(Abd Karim et al., 2020), which are The size and intensity of the exercise. Since the main goal of training is to acquire a set of qualities and abilities through which the required level of skill performance can be reached, this means that the improvement in the level of performance of the skills under study was not a coincidence. However, the result of the proposed play exercises that take skill performance to advanced stages was confirmed by (Ezzat et al., 1991)"that achieving high-level achievements requires the availability of the appropriate and continuous amount of physical and skill preparation" .From what was mentioned above, it became clear that play exercises are effective in raising the level of special agility and skill performance, and they have a specificity related to the performance that develops motor and skill capabilities, in addition to the possibility of raising the tactical and physical condition(Ali et al., 2022).

Conclusions

• The training curriculum prepared by the control group coach did not produce the desired results, as it is irregular and does not rely on scientific foundations in developing training curricula.
• Play exercises positively affect the development of special agility and skill performance in football.
• Using play exercises within the training curriculum in the special preparation stage has an effective positive effect on developing special agility and skill performance for the research sample.
Considering the findings, the researchers recommend the following:
• Using the proposed training curriculum to train youth football teams in Iraq.
• Focusing on using play exercises during training units for age groups and in forms that suit them.
• Generalizing the results of this study to specialized school teams in football in Iraq to benefit from the results of this study.
• Conducting other studies that address the style of play exercises on movement, physical and skill variables that were not covered by the study, and other levels of football players.

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