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The effect of a training program using two different playing surfaces on some coordination and skill abilities of female students at the College of Education for Girls in football

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Abstract

The importance of the research lies in preparing a training methodology to reveal the effect of using different training surfaces on developing the coordinative and skill-related aspects of female football players, as these elements are crucial in football performance. By evaluating the effect of natural grass and artificial grass, the research contributes to providing scientific data that helps coaches choose the optimal training environment to achieve maximum benefit. It also highlights the differences in performance between surfaces, opening the door to designing more specialized training programs that suit the nature of each field. Additionally, the research offers a new perspective on training females in football, a category that requires more studies to develop their performance in this athletic aspect.The experimental method of two equivalent groups (natural grass and astroturf) was used, where each group consisted of (8) female students who were deliberately selected from among (18) female students from the fourth stage of the Department of Physical Education and Sports Sciences, excluding two students for survey purposes. They were randomly distributed to the two experimental groups, and each group performed the prepared physical training which was applied to both experimental groups for a period of (8) weeks at a rate of three units per week on Sundays, Tuesdays, and Thursdays, totaling (24) units. After completing the experimental program, post-tests were conducted following the same procedures used by the researcher in the pre-tests, after which the results were statistically processed.

Keywords :(Skill abilities) (Coordination abilities) (Female students of the College of Education)

أثر برنامج تدريبي باستخدام ارضيتين مختلفين على بعض القدرات التوافقية والمهارية لدى طالبات كلية التربية للبنات بكرة القدم

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ملخص

تكمن أهمية هذا البحث في إعداد منهجية تدريبية لكشف أثر استخدام أرضيات تدريب مختلفة على تطوير مهارات التنسيق والمهارات لدى لاعبات كرة القدم، إذ تُعدّ هذه العناصر أساسية في الأداء الرياضي. ومن خلال تقييم أثر العشب الطبيعي والعشب الصناعي، يُسهم البحث في توفير بيانات علمية تُساعد المدربين على اختيار بيئة التدريب الأمثل لتحقيق أقصى فائدة. كما يُسلّط الضوء على الاختلافات في الأداء بين

الأرضيات، مما يفتح المجال لتصميم برامج تدريبية أكثر تخصصًا تُناسب طبيعة كل ملعب. بالإضافة إلى ذلك، يقدم البحث منظورًا جديدًا لتدريب الإناث في كرة القدم، وهو مجال يتطلب المزيد من الدراسات لتطوير أدائهن في هذا الجانب الرياضي. استُخدمت الطريقة التجريبية لمجموعتين متكافئتين (عشب طبيعي وعشب صناعي)، حيث تألفت كل مجموعة من 8 طالبات تم اختيارهن عمدًا من بين 18 طالبة من السنة الرابعة في قسم التربية البدنية وعلوم الرياضة، باستثناء طالبتين لأغراض المسح. تم توزيعهن عشوائيًا على المجموعتين التجريبيتين، وقامت كل مجموعة بتنفيذ التدريب البدني المُعد مسبقًا والذي طُبّق على المجموعتين لمدة 8 أسابيع بمعدل 3 حصص أسبوعيًا أيام الأحد والثلاثاء والخميس، بإجمالي 24 حصة. بعد انتهاء البرنامج التجريبي، أُجريت اختبارات لاحقة باتباع نفس الإجراءات التي استخدمها الباحث في الاختبارات القبلية، ثم جرى تحليل النتائج إحصائيًا.

الكلمات المفتاحية: القدرات المهارية ، القدرات التوافقية ، طالبات كلية التربية

Introduction:

Football is considered one of the team sports that requires integrating many basic individual and collective skills. The coordinative abilities, which form the motor coordination set, are a fundamental condition for ensuring excellence and achievement in the sports field.

This requires the player to prepare all their physical, psychological, mental, and social abilities and capabilities for the purpose of achieving the best performance. The coordinative abilities are one of the basic requirements and actually contribute to influencing basic skills and achieving high-level performance for any sport in general and in the field of football in particular. Therefore, the researcher focused on an important aspect of it, which is the components of coordinative abilities, as they are considered an important requirement for the success of the skillful aspect. They are interconnected and complementary abilities that aim to achieve the quality of harmony for motor, physical, and internal body systems.

Training on different ground surfaces has a clear impact on many sports that have used this type of training in general. The current research aims to study the effect of a training program using two different surfaces (artificial grass and natural grass) on some skillful and coordinative abilities for female students of the College of Education in football.The research indicates the importance of training environment diversity in its impact on athletic performance, and how these environments integrate to achieve tangible improvements in skill and motor coordination

Through this study, the focus will be on evaluating the effect of different floor types on motor coordination ability, performance speed, and accuracy of technical skills such as passing, blocking, and dribbling. The research will also include a comparison of training results on different surfaces to determine the most effective one in developing the students' athletic skills.

Training methods are a fundamental means of developing and improving the physical fitness, coordination abilities, and motor skills of players, with the aim of achieving advanced sports accomplishments. No coach can do without these methods, which have become the foundation of sports development processes. One of the main features of these methods is their comprehensive and effective applicability to various types of sports.and effective,and all the coach needs to do is be an artist in choosing the appropriate method for the effectiveness with which a method can be used more than other methods(perfect athletic form)

As for (Mohammed Hassan Alawi), he indicates that "a work style or organizational process based on the three training methods, and that it is a method of sports training methods, as switching is done collectively or individually according to the objective set within a training course that is repeated with the rest period being short".

Research Problem:

Skill and coordination abilities are fundamental elements for developing athletic performance in football, especially among female students in the College of Education. However, research lacks studies highlighting the effect of applying training programs based on the use of different training surfaces (such as natural grass and artificial turf) on improving these abilities. Therefore, there is a need to design a training program aimed at studying this effect, which contributes to developing athletic performance and enhancing the effectiveness of training programs used in the academic and educational field.

Importance of the research:

Designing a training program using two different surfaces and the effect on developing some skill and coordination abilities for female students at the College of Education in football

Research Objectives

Developing a training methodology

Identifying the effect of the training program using two different surfaces (natural grassandartificial grass) on some coordination and skill abilities of female students in the College of Education's football team

The theoretical aspect:

Football fields:

Football fields are one of the cornerstones of the global sports system, where their importance is not limited to being mere spaces for play, but rather represent complex systems that are subject to strict standards governing their design and operation. Among the most prominent technical aspects that continue to evolve

in these fields are the types of surfaces, which vary between natural fields with natural grass, artificial fields that use artificial grass, and hybrid fields that combine both types.

FIFA (FIFA) and the Union of European Football Associations (UEFA) have established strict technical specifications for types of playing surfaces, as the choice of type affects player performance, safety, and overall game quality. While natural grass fields provide flexibility and a texture closer to nature, artificial fields offer higher durability and reduce maintenance costs, making them a popular choice in regions with harsh climatic conditions. In recent years, advanced technologies have emergedsuch as hybrid fields, which enhance the strength of natural grass with artificial fibers, increasing the field's durability without compromising performance quality, Beyond the sports aspect, playing surfaces play an important role in environmental and economic aspects, as the choice of materials used affects water consumption, carbon emissions, and long-term operational costs. Therefore, this study aims to explore types of football field surfaces, evaluate their impact on sports performance, sustainability, and spectator experience, thereby contributing to providing a comprehensive vision of the role of these fields in the modern sports system.

Coordination abilities:

Arabic and foreign sources have addressed motor skills such as agility, coordination, balance, and accuracy as separate motor abilities that are closely related to each other and have a significant impact on physical attributes and capabilities like strength, speed, and endurance, influencing and being influenced by one another. Some German scientists have pointed this out in their books and attempted to find relationships among these abilities in their research and studies. Since 1937, Herz began linking more than one coordinative motor ability with one another, and in 1997, Koch succeeded in combining multiple motor abilities under one term, which he called "Koordinative Fahigkeite"

Coordination abilities are the harmony between physical attributes and motor abilities, and the body's internal systems. The muscular system, with its ability to control these systems during various activities and motor movements performed through muscular strength (Al-Bedri and Al-Hamad, 2002: 115)

Consequently, coordinative abilities are regarded as among the most essential determinants for enhancing a player's technical performance, as evidenced by qualitative analyses of specialized sports activities, with their development substantially contributing to both technical and related aspects. Coordinative abilities function as means of regulating and controlling diverse motor performances; thus, their presence in athletes enables the attainment of optimal levels of coordinated performance required to execute any motor skill (Khalid

Fared Zaidah, 2007:12). Although recently prominent in sports discourse, despite existing global research, some sources refer to them as coordinative capabilities, a term that distinguishes them from motor coordination and agility, with the aggregate of coordinative abilities often equated with agility. Hoffman described it as "the psychological and physical conditions for controlling numerous skilled athletic actions."Coordination abilities depend on the nervous and sensory-motor systems and also on information regulation, making them part of motor abilities. They are divided into seven abilities, and these abilities do not appear individually in a football player, but must overlap with each other in order to perform the skillfuland tactical performance in the sports field, as in the development of the athlete's general level through the following (Haytham Kamal Khalaf Al-Husaini)

1. Efficiency of coordination abilities that work to reduce the time needed to learn sports skills.

2. Quality of athletic performance in movements and economy of effort during execution.

3. The degree of utilization of his physical abilities to achieve the desired accomplishment.

4. Helps the athlete to use the athletic skills quickly and purposefully in changing conditions and situations.

5. It works on the athlete's learning speed when it is necessary to modify a skill or learn a new skill for the athlete who has been training for many years.

6. Coordination abilities, in conjunction with other elements of performance, determine the limits of an athlete's performance capability.

7. The athlete's ability to learn movements in general and movements related to the type of specialized sport.

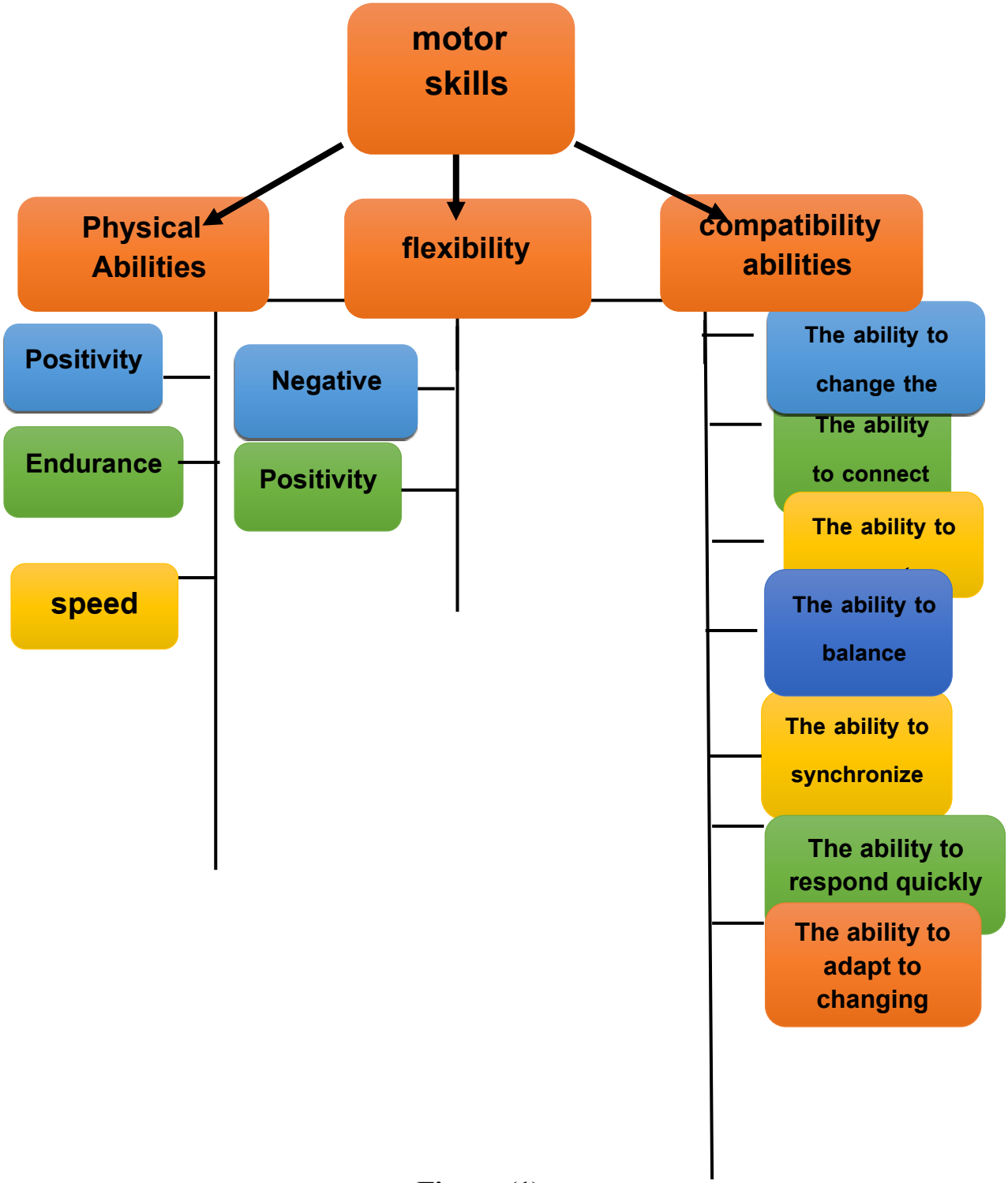


Figure (1)

(Coordination abilities, flexibility, physical abilities)

Previous study:

Study (by Engineer Hassan 2014)

Title of the Study:(The effect of specific exercises on two different courts for learning defensive steps in basketball for first-stage students at the College of Physical Education, University of Karbala).

Study objectives:

Designing defensive exercises on two different surfaces (tartan, sandy) to develop the learning of defensive footwork skills for first-stage basketball students at the University of Karbala.

Identifying the effect of defensive exercises on two different surfaces (tartan, sandy) in developing the defensive footwork skill for first-stage students

Identifying the superiority of either tartan or sandy ground in developing defensive steps for first-stage students.

Study Assumptions:

1- There is a positive effect of specific anaerobic training on some biomotor abilities and cognitive aspects of passing the test for football refereesfor indoor courts.

Methodology of the Study:

The researcher used the experimental approach

Community andStudy Sample:

The researcher used the experimental method with a sample of (14) players, who were selected by purposive sampling and lottery method. They were divided into two equivalent groups with (7) students in each group

Conclusions:

Defensive exercises have a positive effect on learning defensive steps

The sandy floor showed a significant advantage in developing defensive steps compared to the tartan floor

The group that trained on the sandy surface showed greater improvement in the accuracy and speed of executing defensive steps, compared to the tartan group, which indicates that the nature of the surface plays a crucial role in acquiring skillst .

The study confirmed that varying training conditions (in terms of surface type) improves motor learning ability, especially for beginners in the early educational stages.

Research Procedures:

Research Community and its sample:

""It is all individuals, events, or things that are the subject of the research"(Mashi: 2016: 143),The study population was determined from female students at the College of Education for Girls at Al-Qadisiyah University, specifically from the Department of Physical Education and Sports Sciences for the academic year 2024/2025. The study relied on the purposive sampling method, where fourth-year female students from the Department of Physical Education and Sports Sciences were selected, numbering (18) students. Subsequently, two students were excluded from the sample for the pilot experiment, which represented 89% of the study population. The remaining sample, consisting of (16) students, was randomly divided into two groups: the first experimental group and the second experimental group, with each group consisting of (8) students as shown in Table (1).

Table (1) shows the statistical sample individuals

T	Totals	The methodology used	Number of group members
1	Experimental 1	Training sessions prepared on natural grass	8
2	The Second Experimental	Training sessions prepared on artificial grass	8

The researcher conducted homogeneity testing for the research sample variables that could be an external intervening factor affecting the research results. Homogeneity was tested for variables (height - weight - age) using the coefficient of variation, which states that the closer the coefficient of variation is to (1%), the higher the homogeneity, and if it exceeds (30%), it means the sample is not homogeneous (161:4).

Table (2)

Shows the homogeneity of the research sample individuals

T	Variables	Unit of measurement	Arithmetic mean	Standard deviation	Mediador	Torsion Laboratory	Percentage of difference %
1	Age	Year	24.187	1.775	24.5	_0.528	7.58

2	**Length**	Name	160.375	2.753	160.5	_0.136	1.72
3	**Weight**	Kg	57.375	1.821	56.5	1.44	3.17

Sample equivalence of the research:

The researcher conducted equivalence between the research sample to limit the experimental factors affecting the methodology, and starting from a single baseline point while raising the level of experimental control, as equivalence was conducted using the following variables (response speed, adaptation to changing positions, measurement of hand-eye coordination, rolling, passing the ball, damping) and the results were as shown in Table (3).

Table (3)

Shows equivalence between the two groups (natural grass, artificial grass) in research variables

T	Tests	Natural grass		Artificial grass		Calculated (t) value*	Semantic level	Significance of Differences
		I	SD	I	SD			
1	Response speed	10.159	0.479	10.367	0.504	1.153	0.258	Random
2	Coordination ability	8.337	0.497	8.469	0.361	0.836	0.410	Random
3	Adapting to changing situations	4.850	0.244	4.986	0.331	1.279	0.211	Random
4	Passing the ball	8.933	1.907	9.000	1.195	0.115	0.909	Random
5	Rolling	14,1	0,567	14,3	0,674	0,707	0.410	Random
6	Damping	7.667	1.543	7.733	4.162	8.000	0.404	Random

Study Design:

The methodology is "an effective organizational method for a set of diverse and purposeful ideas to discover the truth that constitutes the phenomenon or that" (Al-Ghali: 2001: 35). The researcher used the experimental method with the two-

group experimental design due to its suitability and the nature of the research, and because the experimental method is "an attempt to control all the main factors affecting the dependent variables in the experiment except for one factor that the researcher controls and changes in a specific way with the aim of determining and measuring its effect on the dependent variable(s)" (Al-Tikriti and Al-Obaidi: 1999: 59).

Studied Variables:

The study included the following variables:

Independent Variable:

Physical exercises.

two different playing surfaces.

Dependent variable:

Table (4) shows the dependent variables

T	Coordination Abilities	Motor skills
1	Coordination ability	Rolling
2	Quick reaction ability	Passing the ball
3	The ability to adapt to changing situations	Damping

Tests Used:

Coordination Tests:

Response speed (test Nelson)

*Purpose of the test: measuring the speed of motor response of the legs

* Tools used: Stopwatch / Adhesive tape / Measuring tape

* Performance specifications: Two sideline markers are positioned 6.4 meters apart, parallel to a central line measuring 1 meter in length. The athlete occupies the central line while the coach stands in front of them, holding a stopwatch. Upon the coach's signal to one side, the athlete runs toward the indicated direction, alternating for the two directions as directed.

* Registration: The duration from the moment the signal is given to the moment the player fully crosses the sideline is measured, with each player allotted three attempts in both directions. A 20-second rest interval is provided between attempts, and the best performance is recorded.As shown in Figure(1)

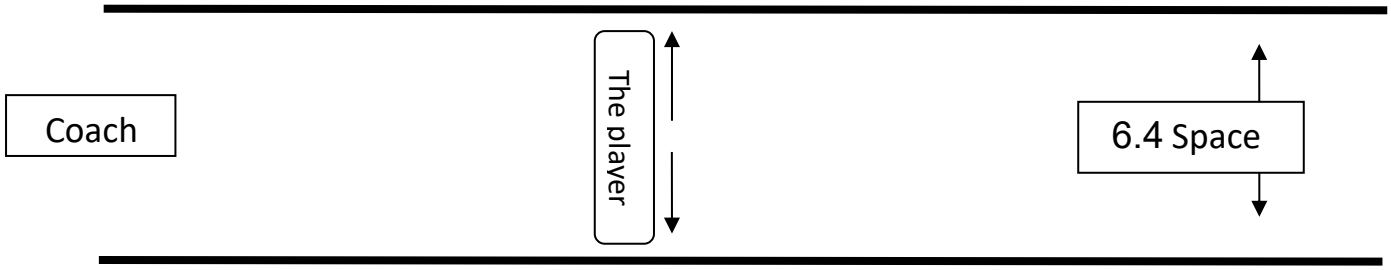


Figure (1) illustrates the reaction speed test

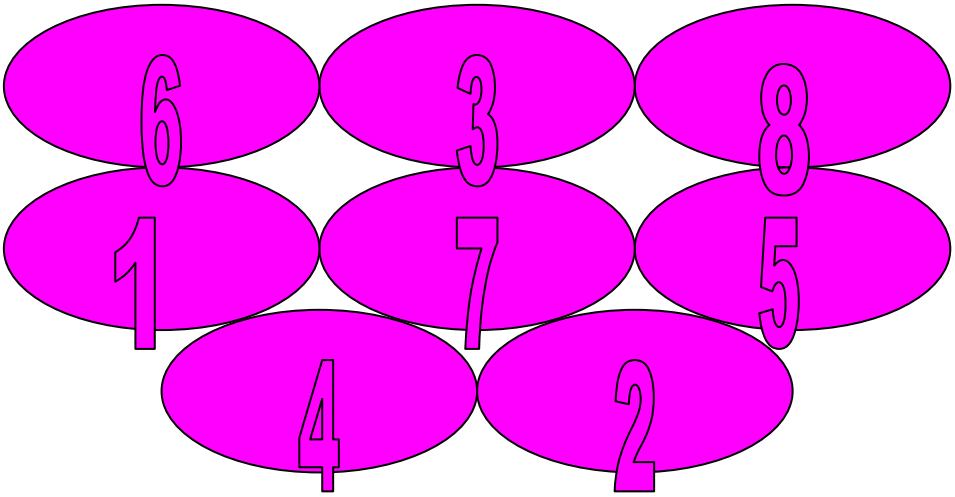
Testof jumping on numbered circles:

* Purpose of the test: Measuring hand-eye coordination

* Tools used: A stopwatch and a tool to draw eight circles on the ground, with each circle having a diameter of 60 cm.

* Performance Description: The participant begins within circle number 1 and, upon the commencement signal, propels themselves with both feet to circle number 2, followed by circle number 3, continuing in sequence to circle number 8, executing the movement at maximal velocity.

* Registration method: Record the time it took the player to move through eight circlesas shown in Figure(2)



Figure(2) Measuring eye-foot coordination

Test of the zigzag run in the shape of(8)

* Purpose of the test: Measuring adaptation to changing situations.

*Tools used:Stopwatch, five markers, drawing a rectangle on the field ground with measurements.

(4.80 × 3 m) and a pole is placed in each corner and at the intersection of the rectangle, the fifth pole is placed.

* Test Description: Upon hearing the start signal, the player runs in a figure (8) pattern and the time is measured manually.

* Registration:The laboratory performs only one attempt and the time is recorded for it, where the less the test time, the better the laboratory's grade and vice versa.As shown in figure (3)

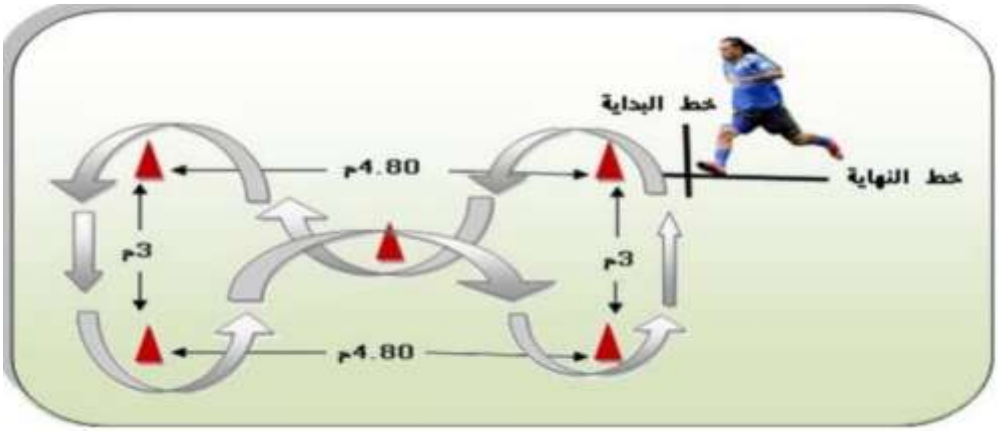


Figure (3) Figure-eight running test

Thehorizontal test:

- Ball passing test is a passing accuracy test towards a drawn target on the ground

* Purpose of the test:Measuring handling accuracy

* Tools used: 5 balls, stopwatch, we draw three concentric circles with diameters of (3m) (5m) (7m) .

* Test Description:We draw three concentric circles with diameters (3m) (5m) (7m) The starting line is marked at a distance of (25 m) from the center and with a length of (5m) on one side. The player stands behind the starting line and then performs five consecutive ball tosses in the air, attempting to drop them into the small circle.

The player makes two consecutive attempts.

When the ball touches any common line, the higher score is counted.

Five balls per attempt.

* Registration:Smallest circle (3) points, Second circle (2) points, Third circle (1) point, Outside the circle (0) points.As shown in figure (4)

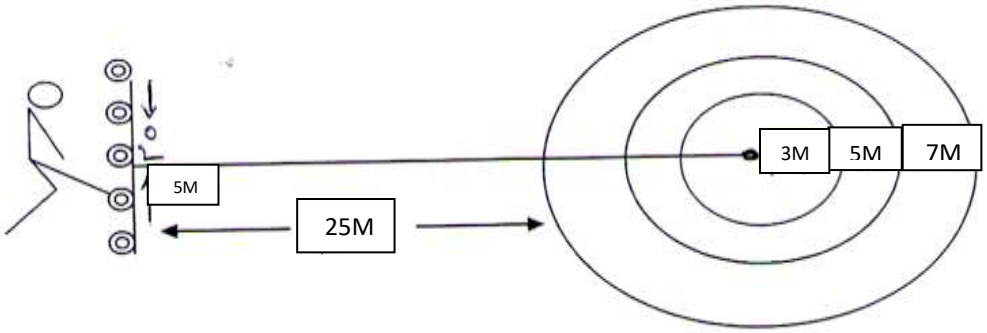


Figure (4) shows the passing accuracy test

- An experimental ball-rolling test conducted with five fixed markers on the ground, spaced at 2-meter intervals, involving forward and return trajectories.

* The objective of the assessment is to evaluate the player's proficiency in ball control and in maintaining progress with the ball between the markers.

* Equipment used:5 cones, soccer ball, stopwatch , : Place (5) poles in a straight line with a distance of (2 m) between each pole and the next, and also a distance of (2 m) between the starting line and the first pole.

* Test Description:The player stands with the ball on the starting line. When given the start signal, the player runs between the poles in a zigzag pattern until reaching the last pole, circles around it, and returns to the starting line in the same manner.

* Registration:The player's time is calculated as the closest (1%) of a second from the moment they are given the start signal until they return to the starting line again.

-Test of controlling the ball stop from a distance of (6) meters into a (2) meter square box

* Purpose of the test:Damping and controlling by stopping the ball's movement.

* Tools used:Football balls number (5) square with a side length of 2 meters, a line is drawn at a distance of (6) meters from the square.

* Test Description:: The player stands behind the designated test area or the tester approaches into the test area attempting to stop the ball's movement and then sprinting again, and so on, repeating the five consecutive movements.

The ball movement must be stopped within the designated test area.

If the laboratory makes a mistake in the throw, the attempt is repeated.

Do not count the attempt as correct in any of the following attempts.

If the player fails to stop the ball's movement.

If the player passes the designated test area.

If the ball touches the arm while its movement is stopped.

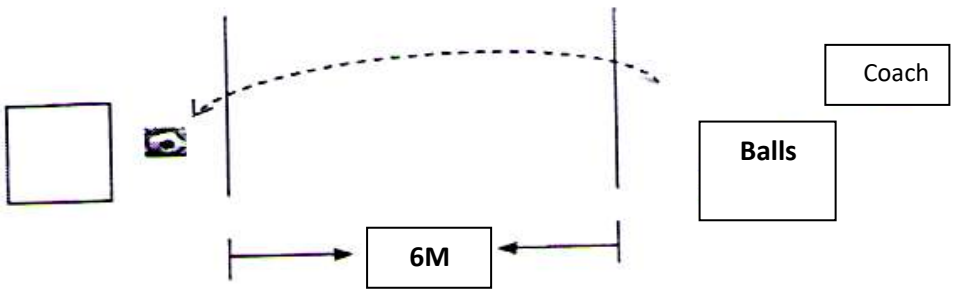
* Registration: Five attempts Two points for each correct attempt on the first touch, one point for each correct attempt on the second touch, zero if the ball goes outside the designated test area .As shown in figure (5) .

Figure (5)shows the suppression test in older Field research procedures

Pilot Study:

A pilot study is one of the most essential procedures that a researcher conducts before carrying out the main experiment. It is "an initial experimental study conducted by the researcher on a small sample before conducting his research with the aim of selecting research methods and tools" (Ibrahim: 2000: 42)

The researcher conducted a pilot experiment on 12/24/2024 on a sample consisting of (2) fourth-year female students who were outside the research sample at exactly (10) AM on the fields of the College of Physical Education and Sports Sciences, and its purpose was:



The objective of the exploratory experiment is:

1) The suitability of the test for the research sample.

2) Time taken to perform the test.
3) Workforce efficiencyAssistant.
4) Preventing errors that might occur in the main experiment.
5) Identifying the suitability of the place where the experiment is applied .
6) Scientific proceduresfor the tests.

Pre-tests :

The pre-tests for the research sample were conducted on Monday, December 23, 2024, at 10 AM on the fields of the College of Physical Education and Sports Sciences at the University of Al-Qadisiyah. The researcher ensured that the conditions related to the tests—including the location, time, equipment used, execution method, and assisting team—were standardized. This was done to create the same conditions as much as possible for the post-tests. The researcher conducted the compatibility ability tests (response speed, adaptation to changing positions, measurement of eye-foot coordination) and skill tests (rolling, passing the ball, dribbling) all in one day.

The main experiment

The researcher aims through this method to develop some of their coordination and skill abilities and skills by using specific exercises for those skills. The training method was based on scientific foundations and reviewing scientific training sources, then discussing them with a group of experts and specialists in the field of football training science, and then relying on the following characteristics:

1) Its components were characterized by diversity and flexibility.
2) Considering individual differences among female students.
3) Featured a gradual progression in exercise performance from easy to difficult.
4) Contributed to raising the students' morale and strengthening their willpower.
5) Contributed to achieving the general and specific objectives.
6) Taking into account the availability of equipment and tools.
7) Basing the training intensity measure on time rate at the female student.

The training program aims to prepare female students and enable them to reach the highest possible level of performance in skill-based and motor skills, and the

researcher followed the following:

1) Reliance on motor exercises to develop coordination abilities without tools and according to field measurements.
2) Using skill exercises to develop fundamental ball skills.
3) The main section has an average time of (60) minutes and is divided as follows:
- (30) minutes of physical exercises to develop coordination abilities.
- (30) minutes of skill exercises to develop basic skills(passing the ball, rolling, and blocking).

4) Training unit duration: 60-90 minutes
5) Number of weekly training units (3) units
6) The total training duration was(8) weeks.
7) The intensity used ranged between(70-90%)

The methodology was implemented from Wednesday 25/12/2024 until Sunday 16/2/2025, each in its designated field, and then the training program components were precisely implemented for both experimental groups equally. The researcher relied on coordination and skill exercises, along with some specialized experts in the field of sports training and experts in the field of football. Subsequently, the most important physical, motor, and skill and strength exercises, rest periods, and repetitions that work to develop coordination and skill abilities were identified.

Post-test:

Following the completion of implementing the training units with the research sample, post-tests were administered to the two experimental groups (natural grass and artificial grass) on Wednesday, February 19, 2025, while maintaining all conditions identical to those of the pre-tests in terms of location, timing, procedures, and instruments used.

Results and Discussion:

Presentation and analysis of pre-test and post-test results of the variables of coordination and skill abilities for the first experimental group

Table (5) Shows the means, standard deviations, calculated (t) value, and significance level for the first experimental group's coordination and skill abilities between the pre-tests and post-tests

T	Tests	Pretest		Dimensions		Calculated (t) value*	Difference Environments	Difference Deviations	Semantic level	Significance of Differences
		I	o	I	A					
1	Response speed	10.159	0.479	9.597	0.013	5.814	0.562	0.466	0.000	Semantic
2	The ability to coordinate	8.337	0.497	6.383	0.342	12.934	1.954	0.155	0.000	Semantic
3	Adapting to changing situations	4.850	0.244	4.534	1.167	3.743	0.316	0.923	0.002	Semantic
4	Passing the ball	8.933	1.907	14.933	1.624	8.367	6-	0.283	0.000	Semantic
5	Rolling	14,1	0,567	11,75	0,54	11,112	2.35	0.027	0.000	Semantic
6	Damping	7.667	1.543	13.333	1.290	11.039	5.666-	0.253	0.000	Semantic

An analysis of the data in Table (5) indicates statistically significant differences between pre-test and post-test outcomes for the

coordination-related measures targeted in the study, namely the response speed test, coordination ability test, and adaptation to changing situations test, within the first experimental group that trained on natural grass. The calculated t value was smaller than the designated significance level ($p < 0.05$), signaling significant improvements from pre-test to post-test. These differences suggest a positive impact of the researcher-designed training method, reflecting notable enhancements in both physical and cognitive abilities of members of the first experimental group .

Similarly, examination of Table (5) reveals statistically significant differences between pre-test and post-test results for the skill-related measures central to the investigation—specifically the ball passing, ball rolling, and blocking tests—among members of the first experimental group trained on natural grass. The computed t statistic fell below the 0.05 significance threshold, confirming statistically significant improvements in the group's pre-test versus post-test performance. These differences indicate a favorable effect of the researcher-designed training method, corresponding to notable gains in physical and skill-related aspects for the first experimental group.

Presentation and analysis of pre-test and post-test results of the second experimental group's coordination and skill abilities variables

Table (6) Shows the means, standard deviations, calculated (t) value, and significance level for the second experimental group's coordination and skill abilities between the pre-tests and post-tests

By analyzing the data in Table (6), it was found that there are statistically significant differences between the pre-test and post-test results of the

T	Tests	Pretest		Dimensions		Calculated (t) value*	Difference	Difference	Semantic level	Significance of Differences
		I	A	I	A		Environments	Deviations		
1	Response speed	10.367	0.504	9.758	0.008	4.671	0.609	0.496-	0.000	Semantic
2	The ability to coordinate	8.469	0.361	6.613	0.245	17.817	1.856	0.116	0.000	Semantic
3	Adapting to changing situations	4.986	0.331	4.810	0.123	1.891	0.176	0.208	0.080	Random
4	Passing the ball	9.000	1.195	13.467	1.959	8.375	4.467-	0.764-	0.000	Semantic
5	Rolling	14,3	0.674	11,5	0,707	8,573	2.8	0.033	0.000	Semantic
6	Damping	7.733	4.162	12.133	1.552	11.000	4.4-	2.61	0.000	Semantic

coordination abilities targeted in the research, which included response speed test and coordination ability test) for the second experimental group that trained on artificial grass. The results showed that the calculated (t) value was less than the specified statistical significance level (0.05), indicating significant differences between the group's performance in the pre-test and post-test. In contrast, the results ofadaptation to changing positions test did not show statistically significant differences between the pre-test and post-test, as the differences were random and did not indicate a clear effect of the training method in this aspect. And through analyzing the data presented in table (6), it was observed that there are statistically significant differences between the pre and post-test results of the skill abilities that represent the research axis, which included tests (ball passing, rolling, and suppression), among the individuals of the experimental second group that underwent training on natural grass. The results indicated that the calculated (t) value was less than the specified statistical significance level (0.05), confirming the existence of statistically significant differences between the group's performance in the pre and post-tests. These significant differences reflect the positive effect of the training method designed by the researcher, indicating a noticeable improvement in the physical and skill aspects among the individuals of the experimental second group.

Presentation, analysis, and discussion of post-test results of the study variables for the first and second experimental groups of the coordination abilities

Table (7)

Shows the arithmetic means, standard deviations, and calculated (t) value andlevel of significance for the total two

(The first experimental group and the second experimental group) for research variables of compatibility abilities in post-tests

T	Tests	The first experimental group		The second experimental group		Calculated (t) value*	Semantic level	Significance of Differences
		I	A	I	o			
1	Response speed	9.597	0.013	9.758	0.008	4.585	0.000	Semantic
2	Coordination ability	6.383	0.342	6.613	0.245	2.119	0.043	Semantic
3	Adapting to changing situations	4.534	1.167	4.810	0.123	5.125	0.000	Semantic

Through analyzing the data in Table (7), it was found that there are statistically significant differences in the post-test results of the coordination abilities, which included (response speed test, coordination ability test, and adaptation to changing situations test). The results of the two experimental groups – the first group (natural grass) and the second group (artificial grass) showed significant differences in the post-tests where the significance level was (50.0). These significant differences indicate the effectiveness of the method that was developed by the researcher in enhancing the coordination abilities of the sample individuals. The results confirm that the applied method contributed positively to The improvement in test performance indicates a positive effect on the development of coordinative abilities among female students in both experimental groups. This finding aligns with Esam Abdel Khaleel (2005), who defines coordinative abilities as a set of physical capacities; when these abilities are harmonized, the highest level of general motor coordination necessary for motor performance and the execution of motor skills can be attained. From the foregoing table, it is evident that the first experimental group (natural grass) achieved superior outcomes in the post-tests of coordinative abilities conducted on the natural grass field, recording lower times than on the artificial grass, as shown in the table above through the means and standard deviations. The researcher attributes this progress of the first experimental group, which trained throughout the study period on the natural grass field, to the advantages of natural grass fields over others. The natural grass field enables students to perform coordination movements with greater speed and less time due to motor balance and physical stability, along with moderate speed, which helps the player perform the tests skillfully. This is because moderate speed helps in successfully performing coordination skills. Khalid Farid (2007) confirms that coordination abilities are of great importance in training, as the level of coordination abilities directly reflects the level of skill performance. That is, the higher the degree of mastery of coordination abilities, the more skillful the performance. In other words, motor performance is directly proportional to the coordination abilitiesCoordination, on grass fields, the performance is under difficult conditions and thus requires the player to have high speed in returning the body's motor positions as well as coordination of body parts in addition to the ability to adapt to different positions, which the researcher can attribute to the type of exercises provided to the sample during the program period, and continued training creates a state of adaptation to this difficulty. Stanstua Henrek (2015) points to the importance of linking coordination abilities with the skill aspect in various sports activities, where the athlete who has a high level of coordination abilities can achieve a developed level of skill performance.

As for the support on grass fields, since it is a closed or fixed support, it helps to control body movement easily and with high speed, and as a result, the skill

performance is faster, more proficient, and the ability to return to the subsequent preparatory position is quicker.

Presentation and analysisand discussion of the results of the post-tests of the study variables for both experimental groups: the first and second experimental groups for skill abilities

Table (8) Shows the arithmetic means, standard deviations, and calculated (t) value and level of significance for the total two

(The first experimental group and the second experimental group) for the research variables of skill abilities in the post-tests

T	Tests	The first experimental group		The second experimental group		Calculated (t) value*	Semantic level	Significance of Differences
		I	o	I	o			
1	Passing the ball	14.933	1.624	13.467	1.959	2.232	0.034	Semantic
2	Rolling (time)	11.75	0.54	11.5	0.707	2.822	0.000	Semantic
3	Damping	13.333	1.290	12.133	1.552	2.302	0.029	Semantic

Through analyzing the data in Table (8), it was observed that there were statistically significant differences in the post-test results of the skill abilities, which included tests (ball passing, rolling, and trapping). The results showed that the differences between the two experimental groups – the first group (natural grass) and the second group (artificial grass) – were statistically significant at a significance level less than (0.05), as the calculated (t) value was lower than this level,These significant differences indicate the effectiveness of the method preparedbytheresearcherin enhancingthe skill abilities of the sample individuals. The results also confirm that the applied method contributed positively to improving performance in the mentioned tests, reflecting its positive impact on developing the skill abilities of the students in both experimental groups.The researcher explains this progress of the first experimental group, which was originally trained throughout the program period on the natural field, due to the advantages of the natural field over other fields, as the natural field is characterized by the gentleness of playing speed, which suits the difficulty of passing and trapping the ball, as performing kicks becomes more complex if the ball has high speed, and passing is more successful when the ball speed is

moderate in the natural field,The superiority in these two skills is attributed to the mechanical properties of natural grass, where the ball's rebound speed is lower compared to artificial grass, making it easier to control the ball's trajectory and direct it accurately. This result aligns with the fact that moderate ball rebound speeds in the natural field give the player the opportunity to successfully perform the required actions, whether in passing or trapping. As for the roll, the ball's speed is higher on artificial pitches than on natural pitches which can be explained by the higher coefficient of restitution on artificial pitches,and this is due to several factors, which may include the wet natural surface as well as the friction factor and absorption of the ball's momentum and the speed of striking the ball by the performer during the roll and bounce on artificial pitches it is moderate, and this helps the player in rolling the ball in multiple ways whether with (inside of the foot or with the instep or even with the outside of it) as the height of the ball is moderate and also the process of controlling the direction of the ball is varied as receiving easy balls helps in the performance of successful rolls.

The process of performing exercises in the training program that the researcher followed had a significant impact on the results of the post-tests, so continuing performance on natural grass fields leaves a more positive impact than on artificial grass. These results confirm the importance of considering the type of surface in designing training programs, as the advantages of each type can be utilized to develop various skill aspects for players

Conclusions and Recommendations

Conclusions:

In light of the results reached by the researcher through conducting practical applications to determine the effect of the training method using two different playing surfaces on developing some coordination and skill abilities for female students in the College of Education for football, we conclude the following:

1) There is a positive effect of the training program using two different surfaces (natural grass and artificial grass) on developing some coordination and skill abilities for female students.
2) The results showed a clear superiority for the group that trained on natural grass in all variables of coordination abilities (response speed, coordination ability, adaptation to changing situations) compared to the group that trained on artificial grassy
3) The first experimental group (natural grass) recorded better performance in skill tests (passing the ball, extinguishing) which confirms the effect of the type of surface on the skill aspect

Recommendations:

1) Using the principle of simplicity and variation in training curricula to simplify the training process and adaptation to different conditions.
2) Adoption of qualitative training on natural grass to improve coordination and skill abilitiess
3) Design training programs that suit the characteristics of each type of playing surfacet
4) Conduct similar research on other age groups and skills.

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