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The impact of a training program using small-sided games and experimental matches on developing the physical attributes of football players

(تأثير برنامج تدريبي باستخدام الألعاب الصغيرة والمصغرة والمباريات التجريبية في تنمية الصفات البدنية لدى لاعبي كرة القدم)

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Abstract: The aim of this study was to investigate the impact of a training program using small-sided games and experimental matches on the development of physical attributes among football players. The research sample consisted of (40) players from Al-Yarmouk Club, randomly selected, with ages below (15) years. The researchers employed an experimental approach using a pre-test and post-test design for the experimental group, considering its suitability for the nature of the study. Physical tests were used as a study tool. The researchers implemented a (12-week) training program, comprising (four) training sessions per week. Data were collected through pre-test and post-test measurements, which were then processed using appropriate statistical methods with the SPSS software. The researchers found that the training program resulted in the development of physical attributes including "endurance, speed, strength, flexibility, agility, and coordination". They recommended that coaches prioritize the use of small-sided games and experimental matches when designing training programs for football players, particularly for the youth category.

Keywords: Small-sided games, Mini-games, Experimental matches, Physical attributes, Football.

الملخص: هدف البحث التعرف إلى تأثير برنامج تدريبي باستخدام الالعاب الصغيرة والمصغرة والمباريات التجريبية في تنمية الصفات البدنية لدى لاعبي كرة القدم، تكونت عينة البحث من (40) لاعبًا في نادي اليرموك تم اختيارهم بالطريقة العشوائية والتي تكونت أعمارهم تحت (15) سنة، واستخدم الباحثان المنهج التجريبي، حيث استمر البرنامج (12) اسبوع بواقع (4) وحدات تدريبية في الاسبوع، وقد توصل الباحثان الى أن البرنامج التدريبي أدى الى تنمية الصفات البدنية (التحمل، السرعة، القوة، المرونة، الرشاقة، التوافق)، وقد وصيا بضرورة اهتمام المدربين باستخدام الالعاب الصغيرة والمصغرة وكذلك المباريات التجريبية عند اقتراح البرامج التدريبية للاعبي كرة القدم وبالأخص لفئة الاصاغر.

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- **الكلمات المفتاحية:** الألعاب الصغيرة، الألعاب المصغرة، المباريات التجريبية، الصفات البدنية، كرة القدم

1- The Theoretical Aspect:

1-1- Research Introduction:

Undoubtedly, football is unequivocally the world's most popular sport. It is rare to find a country in the world where its people are unfamiliar with football or at least haven't heard of. Football has spread across different parts of the globe, but it did not appear in its current form overnight. Rather, it gradually emerged and gained popularity from one year to another, attracting more enthusiasts until it became the most widely played sport worldwide.

The modern requirements of football have created a significant need for high-level physical preparation of players. This is particularly evident as contemporary football achievements are associated with accelerating defensive and offensive activities, necessitating a high level of strength, speed, endurance, agility, flexibility, coordination, and adopting a comprehensive style of playing. Players now occupy multiple positions within the team, with defenders making significant contributions to the team's attack, and attackers retreating to defend their own goal. This necessitates the adoption of effective training methods to elevate athletes and teams to the highest levels.

Football is a team sport that requires various requirements, including technical, tactical, physical, and mental aspects. The preparation of football players should involve physical preparation, which, as described by **(Hassan Alawi, 1990, p.79)**, is the development of fundamental and necessary physical qualities in athletes. Physical preparation aims to utilize various training

methods and principles to develop general and specific physical qualities in football, such as endurance, strength, speed, agility, flexibility, and coordination, as well as related qualities, such as speed-strength or speed endurance. Physical preparation also includes a set of organized and hierarchical training processes aimed at developing and utilizing different physical qualities in athletes, which should be alternated at various levels of sports training.

(Mustafa Mohamed, 2007, p.28) believes that the use of small-sided games holds great importance as it serves as a means to enhance physical and skill capacities. These games also encourage individuals to work productively for the benefit of the team, enabling children to engage in football without boredom and experience the joy of accomplishment. The presence of competitive elements within these games, for example, is considered a factor in improving skill performance and enhancing physical fitness.

Mini-games, on the other hand, are considered one of the modern and most effective methods. The current formations and setups are clearly present in various forms, depending on the characteristics and objectives set by the majority of coaches. They prepare their players in small squares and confined spaces. Additionally, mini-games hold significant importance in achieving the desired goals for the development of physical qualities. **(Dellal, 2008, p.15)**

Researchers, from a physical perspective, do consider experimental matches crucial as they allow coaches to assess the team's readiness comprehensively, evaluate the team's implementation of pre-drawn plans, identify the team's strengths and weaknesses, and indirectly familiarize players

with the physical aspects. Furthermore, they help break the barrier of fear associated with matches and alleviate boredom from regular training sessions.

1-2- Problem statement

Physical attributes are among the most important aspects that coaches focus on in sports training, working towards their development and improvement in the desired manner. They play a crucial role in enhancing players' abilities in all areas (physical, technical, tactical), serving as the fundamental element that enables coaches to execute any plan and implement it effectively, without difficulty or hardship.

While engaging in the field of sports training, the researchers have observed a low level of physical attributes among football players in the Republic of Yemen. This indicates a lack of sufficient attention to physical attributes by football coaches in the country, as well as a lack of scientific knowledge regarding the importance of incorporating training programs that enhance physical attributes within their training plans.

Furthermore, through monitoring training sessions and observing matches held between clubs, the researchers have also noticed a subpar and undesirable level of physical attributes in football players, which are essential for modern play.

Additionally, the researchers have observed that many coaches, or the majority of them, do not prioritize focusing on physical attributes, primarily due to concerns about injuries, fatigue, and physical stress, especially when it comes

to younger players. This can be attributed to the absence of a scientific mindset in training physical attributes, selecting the appropriate time and sufficient duration to improve them, and utilizing sound scientific methods that can elevate young players to higher levels.

The researchers believe that acquiring physical attributes is the cornerstone for building any aspect of a football player (technical, tactical, etc.) and other important aspects. Therefore, it is imperative to prioritize physical attributes as they facilitate the training requirements and enable their implementation by both the player and the coach, providing numerous solutions in the application of skills or tactical strategies. This has led the researchers to propose a training program utilizing small-sided games and experimental matches to develop the physical attributes of football players.

1-3- Research Objectives:

The aim of this study was to investigate the impact of a training program using small-sided games and experimental matches on the development of physical attributes (endurance, speed, strength, flexibility, agility, coordination) among football players at Al-Yarmouk Club in the Capital Municipality.

1-4- Research Hypotheses:

There are statistically significant differences at a significance level of 0.05 between the pre-test and post-test measurements in favor of the post-test measurement regarding the impact of the training program using small-sided games and experimental matches on the development of physical attributes

(endurance, speed, strength, flexibility, agility, coordination) among football players at Al-Yarmouk Club in the Capital Municipality.

1-5- Key Terms in the Research:

- **Small-sided games:** A diverse set of games involving running, balls, equipment, and physical fitness and motor skills. These games are designed to achieve specific purposes, such as improving functional, physical, and mental abilities, while instilling a sense of fun and competition among participating individuals. **(Qahtan Al-Azzawi, 2009, p. 369)**
- **Mini-games:** Games played in confined spaces are determined according to the training objective, simulating situations similar to actual performance during matches, and involving different numbers of players (2v2, 3v3, 4v4, 5v5, etc.). **(Rahmun Amin et al., 2021, p. 48)**
- Experimental matches: Matches that are not part of a formal competition but are played by teams to improve performance, identify errors, and prepare for important events (procedural definition).
- **Physical attributes:** A set of general and specific physical fitness elements that enable players to perform physical activities with high efficiency and minimal effort. **(Omar Sharab, 2011, p. 8)**
- **Football:** A sport played between two teams, each consisting of eleven players, using an inflated ball on a rectangular field with goals at each end. Each team aims to score the highest number of goals in the opponent's goal to win the game. The ball is primarily moved by the players' feet, and only the

goalkeeper is allowed to handle the ball within the penalty area with his hands. **(Mustafa Kamel, Mahmoud Hossam El-Din, 1999, p. 05)**

6-1- Previous Studies:

- Study **(Sadouki Bilal, 2021)** The aim of this study was to investigate the impact of intermittent training (strength - running) and training using small-sided games (3v3, 2v2) on the agility of football players. The researchers used an experimental method with equivalent groups on a purposive sample of 24 players. The sample was divided into two experimental groups, with the first group receiving intermittent training and the second group receiving a program of small-sided games. The researchers concluded that both programs had a significant impact on improving test results, with the training program using small-sided games showing an advantage over the intermittent training program.
- Study **(Nassil Nour El-Din et al., 2019)** The aim of this study was to investigate the impact of proposed training units on selected physical and motor variables in mini-handball. The researchers used an experimental method with a sample of 16 junior handball players, selected purposively and divided into controlled and experimental groups. The researchers found that the proposed training units had an impact on the development of physical attributes (speed, reaction speed) and motor abilities (flexibility, agility). They recommended adopting modern training programs and abandoning outdated methods for developing physical and motor attributes, especially for young athletes.

- Study **(Simah Aoumi, Shaimaa Zaqzour, 2019)** The aim of this study was to investigate the impact of proposed teaching units based on small-sided games on developing motor coordination. The study sample consisted of two groups, an experimental group and a controlled group, with each group comprising 18 students aged 11-12 years. The researchers used an experimental method and the results showed statistically significant differences in favor of the experimental group in tests of coordination (jumping rope, throwing and receiving the ball, jumping numbered circles). The researchers concluded that the use of small-sided games is effective in developing targeted physical attributes in second-grade students, aligning with the requirements of this age group.
- Study **(Mahmoud Ezzab, 2015)** The aim of this study was to investigate the impact of using small-sided games in physical education classes on selected physiological and physical variables among primary school students aged 9-10 years. The researcher used an experimental method with a sample of 20 students, randomly selected. The results showed statistically significant differences in physical measurements (flexibility, agility, long jump, kicking power, speed) and physiological measurements (body weight, body fat percentage, physical efficiency, maximum oxygen consumption) due to the small-sided games. The researcher recommended the use of small-sided games in all parts of physical education classes, especially in lower primary grades (9-10 years), as they have a positive

impact on the development of physical and physiological variables in students.

2- Applied Aspect:

2-1-Research Methodology: The researchers employed an experimental methodology utilizing a pretest-posttest design for the experimental group, which was deemed suitable for the nature of the research.

2-2- Research Population: The original research population consisted of football players from Al-Yarmouk Club under the age of 15, with a total of 75 registered players for the year 2024-2023.

2-3- Research Sample: The research sample included 40 randomly selected football players from Al-Yarmouk Club, all of whom were under the age of 15.

2-3-1 Homogeneity of the Research Sample: The researchers conducted homogeneity measurements for the individuals within the primary research sample prior to implementing the training program. This was done to ensure the homogeneity of the primary research sample in relation to the research variables. Table number (1) illustrates this.

Table (1) illustrates the normality of the research sample distribution, noting .(0.05) that (N = 40) is significant at the level of

Basic changes and physical characteristics	tmeasruing uni	Arithmetic Mean	standard deviation	Skewness Coefficient	value minimum	value maximum	Wilk test -Shipro	
							Significance level	Significance level
Chronological age	year	13.81	0.67	-0.33	12.1	14.9	0.12	No sign
height	Cm	160.70	7.84	0.14	141	178	0.47	No sign
weight	kg	45.73	6.61	-0.28	30	60	0.51	No sign
Training age	year	1.97	1.19	0.33	0.5	3.0	0.08	No sign
Endurance	second	53.84	2.79	0.16	48.75	59.40	0.52	No sign
speed	second	5.10	0.38	0.41	4.34	5.97	0.42	No sign
Power	meter	1.91	0.16	0.03	1.58	2.24	0.36	No sign
Flexibility	Cm	8.68	2.54	0.28	5	14	0.06	No sign
Agility	second	7.12	0.56	0.19	6.12	8.34	0.39	No sign
Coordination	second	5.62	0.75	0.37	4.12	7.30	0.26	No sign

As shown in Table (1) the values of the basic variables and physical traits ranged between (0.52-0.06) and all of these values were not statistically significant at the significance level of (0.05). Additionally, the values of skewness were within the range of (±3), confirming the normality and homogeneity of the research sample.

2-4- Data Collection Methods: (Referential survey of references, scientific research, and studies - Expert opinion survey form - Registration and tabulation forms - Tests and measurements).

2-5- Exploratory Study:

The researchers conducted two exploratory studies, The first exploratory study was conducted from Saturday, (September 2, 2023), corresponding to (Safir 16, 1445 AH), until Wednesday, (September 6, 2023), corresponding to (Safir 20, 1445 AH). The second exploratory study was conducted from (Saturday, November 11, 2023), corresponding to (Rabi Al-Thani 27, 1445 AH), until Wednesday, (November 15, 2023), corresponding to (Jumad Al-Awal 2, 1445 AH), on the grass pitches of the Yemeni Football Association in the Sports City of the Capital Secretariat, Sana'a. The aim was to become familiar with the tests and the process of starting the training program.

2-6. The Scientific Transactions:

1.6.2 Validity of Referees:

The two researchers presented the variables to (10) specialized expert referees in the field of sports training and physiology. After making the necessary modifications based on the referees' opinions regarding the clarity, comprehensiveness, and relevance of the variables to the research, the researchers excluded the variables that did not obtain a percentage of (75%) or more.

2.6.2 Discriminant Validity:

The researchers used discriminant validity by finding the differences between two groups: a distinguished group of 5 players from the Al-Yarmouk Football Club under the age of (15), and a non-distinguished group of (5) players from one of the academies. The application was carried out from Saturday,

(October 14, 2023), corresponding to (Rabi' Al-Awwal 29, 1445) AH, until Wednesday, (October 18, 2023), corresponding to (Rabi' Al-Thani 3, 1445 AH). The researchers calculated the significance of the differences between the distinguished and non-distinguished groups to ensure the discriminant validity of the research variables, as shown in Table (2).

Table (2) illustrates the significance of the differences between the distinguished group and the non-distinguished group for the calculation of discriminant validity. Note that the tabulated t-value at the significance level of (0.05) is (1.86).

Physical attributes	measruing unit	Distinctive group		The undistinguished group		value (v)	Significance level	indication
		Arithmetic Mean	standard deviation	Arithmetic Mean	standard deviation			
Endurance	second	51.83	0.97	53.33	0.94	8.88	0.00	Sign
Speed	second	4.74	0.06	5.07	0.12	7.57	0.00	Sign
Power	meter	2.06	0.06	1.91	0.11	3.68	0.02	Sign
Flexibility	Cm	12.80	1.92	7.20	1.48	4.35	0.01	Sign
Agility	second	6.38	0.44	7.26	0.44	6.09	0.00	Sign
coordination	second	5.35	0.41	5.84	0.58	3.88	0.02	Sign

It is clear from Table (2) that there are statistically significant differences between the distinguished group and the non-distinguished group in all physical

characteristics. The differences were significant in favor of the distinguished group, as the level of significance was less than the significance level of (0.05). Additionally, the calculated t-value ranged between (3.68) and (8.88), which is greater than the tabulated t-value of (1.86). This indicates the existence of discriminant validity.

3-6-2- Reliability: The researchers calculated the reliability by applying the test and re-applying it to a pilot sample of 6 players, from Saturday, (September 9, 2023), corresponding to (Safir 23, 1445 AH), to Wednesday, (September 13, 2023), corresponding to (Safir 27, 1445 AH). It was then re-applied with a time difference of 16 days, on the same sample and under the same conditions as the first application, on the same days, from Saturday, (September 30, 2023), corresponding to (Rabi' Al-Awal 15, 1445 AH), to Wednesday, (October 4, 2023), corresponding to (Rabi' Al-Awal 19, 1445 AH). The correlation coefficient between the first and second applications was calculated, as shown in Table (3).

Table (3) illustrates the correlation coefficients between the first and second applications for calculating the reliability of the research variables (N = 6). (0.72)The tabulated r-value at the level of (0.05) is

Physical attributes	measruing unit	The first application		Second application		value (v)	Significance level	Indication
		Arithmetic Mean	standard deviation	Arithmetic Mean	standard deviation			
Endurance	second	52.71	2.11	52.22	1.33	0.84	0.04	Sign
Speed	second	4.85	0.23	4.96	0.45	0.83	0.04	Sign
Power	second	1.97	0.15	1.98	0.12	0.86	0.02	Sign
Flexibility	meter	9	2.30	9	2.46	0.96	0.00	Sign
Agility	second	6.94	0.28	7.01	0.26	0.82	0.04	Sign
Coordination	second	5.79	0.85	5.81	0.95	0.88	0.02	Sign

It is clear from Table 3 that there is a statistically significant correlation between the first and second applications for all research variables, as the calculated r-value is greater than the tabulated value. The correlation coefficient ranged between 0.82 and 0.96, which confirms the existence of reliability and that the test will yield the same results if re-applied to the same sample under the same conditions.

7-2- Research Variables:

- **Independent Variable:** The training program using small-sided games, reduced games, and friendly matches.

- **Dependent Variable:** Physical characteristics (endurance, speed, strength, flexibility, agility, coordination).

8-2- Main Experiment of the Research:

The researchers followed the following steps for the main experiment procedures:

- **Pre-Tests:** The pre-tests for the physical characteristics were conducted for three days before the start of the training program, i.e., (from October 28 to November first, 2023), corresponding to (Rabi' Al-Thani 13-17, 1445 AH).
- **The Training Program:** The researchers proposed the training program using small games, mini-games, and experimental matches, based on scientific principles and foundations, after referring to the relevant references. It was then presented to the specialized experts. The program lasted for (12) weeks, with four training units per week, from (November 18, 2023) corresponding to (Jumada Al-Awwal 5, 1445 AH) to (February 7, 2024), corresponding to (Rajab 27, 1445 AH).
- **Post-tests:** The post-tests for the physical attributes were conducted under the same conditions and procedures as the pre-tests, with the same assisting individuals, two days after the completion of the training program, from (February 10, 2024), corresponding to (Rajab 30, 1445 AH) to (February 14, 2024) corresponding to (Sha'ban 4, 1445 AH).

2-9- Statistical Analysis Methods:

The statistical program (SPSS) was used to calculate the mean, standard deviation, skewness coefficient, highest value, lowest value, Shapiro-Wilk test, t-

tests, Pearson's correlation coefficient, and Cohen's effect size. The percentage and rate of improvement were also calculated.

3- Presentation and Discussion of Research Results:

The presentation and discussion of the research hypothesis, which states that there are statistically significant differences at the significance level (0.05) between the pre-test and post-test, in favor of the post-test, on the effect of the training program using small games, mini-games, and experimental matches in the development of physical attributes (endurance, speed, strength, flexibility, agility, coordination) among football players in the Capital Secretariat, Al-Yarmouk club.

Table (4) illustrates the pre-test and post-test for the endurance characteristic (5x55m shuttle run), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (ν)	Cohen's effect size	Improvement rate	catioindin
test-Pre	53.84	2.79	10.68	1.69	4.26	Sign
test-Post	51.55	2.88				

The previous table shows that there are statistically significant differences between the pre-test and post-test measurements in favor of the post-test, where the calculated t-value was (10.68), which is greater than the tabular t-value. The improvement rate reached (4.26%), while Cohen's effect size (1.69) indicates a large effect of the training program on the endurance characteristic **(5x55m shuttle run)** which is considered the most important component of physical fitness and the basic foundation from which the

development of other physical characteristics begins. It is also the first element to be started with players to improve their physical fitness.

The researchers believe that endurance is the most important physical characteristic for a soccer player, and the player's excellence in this characteristic allows them to perform the defensive and offensive duties assigned by the coach in a highly effective manner, distinguishing them from other players and enabling them to play the match from the beginning to the end.

The researchers attribute this improvement to the effectiveness and impact of the general and specific small-sided games included in the training program, which rely on continuous work and positive rest, as well as the players' continued attendance and regularity in performing endurance games. Most small-sided games develop the endurance characteristic, either generally or specifically, through the transition from one game to another, in a scientific manner according to the standardized scientific principles of the training method used in the training program, as well as the friendly matches played by the players within the training program. This allowed for the improvement of the cardiorespiratory system, ensuring the continuity of the necessary energy production for performance, which is in line with what **(Hassan Hussein, 1987)** pointed out regarding the necessity of endurance training in achieving accomplishments, as the more endurance develops, the more (accomplishments) develop. **(Amr Allah Al-Basati, 1995)** also emphasizes that training with games is one of the best modern training methods for achieving functional adaptation and raising the level of physical fitness, especially the comprehensive development of strength endurance, flexibility, as well as cardiorespiratory endurance, speed, and speed endurance, as these elements require strong design and determination during performance, which is the nature of games, in addition to the increase in the number of participants, the availability of intensity and

challenge to abilities during performance through teamwork, which creates a spirit of challenge and enjoyment together.

Table (5) illustrates the pre-test and post-test for the speed characteristic (30-meter sprint), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (v)	Cohen's effect size	Improvement rate	indication
ttes-Pre	5.10	0.39	6.43	1.02	9.34	Sign
test-Post	4.63	0.60				

From the previous table, it is evident that there are statistically significant differences between the pre-test and post-test measurements, in favor of the post-test. The calculated t-value (6.43) was greater than the tabulated t-value, and the improvement rate was (9.34%). Moreover, the Cohen's effect size (1.02) indicates a large effect of the training program on the speed feature **(30-meter sprint)**, which is of utmost importance for a soccer player. This ability makes the player a source of fear for the opponent, and it enables the player to be of great importance to the team. Therefore, coaches should be aware of the different players who possess this ability, and the current research findings have been able to reveal the various differences in this ability among the players. Speed is one of the most essential characteristics for all attacking players, defenders, and midfielders. The attacker needs it to overcome tight marking and penetrate the opponent's dense defensive tactics, while the midfielder needs it during maneuvers in the middle of the field or to build a fast counterattack.

Defenders also require this ability for longitudinal and lateral coverage, rapid response, and building counterattacks.

The researchers attribute this improvement to the training program that utilized engaging and exciting small-sided games, which broke the monotony of traditional training. The researchers implemented this program in a systematic and progressive manner, gradually introducing speed-related games. They employed the method of repetitive training, which is used to develop transitional speed. Sufficient rest periods were also provided between the small-sided games to allow for the development of this physical attribute. The researchers carefully and scientifically structured the distances of the small-sided games to ensure proper and efficient development, free from any unscientific flaws.

The players continued to perform speed-related games with the full cooperation of the entire sample, and they executed the small-sided games with high confidence and intense competition. The focus was on improvement and the selection of the appropriate method for speed development, which was the repetitive training approach using small-sided games and a sound scientific progression.

In this regard, **(Amin Sadou, Nouman Makhluf, 2018)** emphasize that speed is of great importance in many sports, especially football, and that a gradual increase in speed up to the maximum is often utilized. This gradual progression leads to an improvement in transitional speed, especially when the games are implemented in a fluid manner. As for the rest periods, it is important not to overestimate the duration, as that can lead to a decline in performance.

The rest periods between games should be appropriate for the heart rate to return to its normal state before engaging in the next game or repeating the same game, which is what the researchers implemented in the training program.

The results of this variable are consistent with the findings of **(Sadouqi Bilal, 2021)**, **(Nassil Noureddine et al., 2019)**, and **(Mahmoud Azab, 2015)**.

Table (6) illustrates the pre-test and post-test for the strength characteristic (standing long jump), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (v)	Cohen's effect size	Improvement rate	indication
test-Pre	1.91	0.16	13.97	2.21	13.27	sign
test-Post	2.16	0.17				

The previous table clearly indicates that there are statistically significant differences between the pre-test and post-test measurements, in favor of the post-test. The calculated t-value was (13.97), which is greater than the tabulated t-value. The improvement rate was (13.27%), while the Cohen's effect size was (2.21), indicating a large effect size of the training program on the muscular strength **(standing long jump)** attribute, which is considered one of the most important physical fitness qualities for athletes in all sports, especially football players.

Accordingly, the researchers believe that muscular strength is a crucial attribute that every sports participant, especially football players, should possess and strive to develop through practice. This is supported by **(Ibrahim Salama's 1980,**

p.133) assertion that muscular strength is the key to success, progress, and the foundation for achieving optimal performance levels in various sports.

The researchers attribute this improvement to the carefully selected games in the training program, which were implemented in a systematic and progressive manner, utilizing small-sided games to develop the strength component. The training sessions employed various and gradual intensities, using the interval training method with small-sided games that were tailored to the players' level. Additionally, the researchers emphasize the proper use of the repetition method and appropriate rest periods.

Furthermore, the researchers affirm the high improvement rate and large effect size of the training program, which utilized small-sided and mini games (with a strong competitive nature and teamwork spirit) as well as practice matches, to enhance the strength attribute. During these activities, the players engaged in running, jumping, and ball striking/receiving movements that were characterized by muscular strength, as evidenced by the Cohen's effect size of 2.21 for the strength quality.

Table (7) illustrates the pre-test and post-test for the flexibility characteristic (standing trunk flexion), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (v)	Cohen's effect size	Improvement rate	indication
test-Pre	8.68	2.54	16.57	2.62	57.64	sign
test-stPo	13.68	2.77				

The previous table clearly indicates that there are statistically significant differences between the pre-test and post-test measurements in favor of the post-test, where the calculated t-value was (16.57), which is greater than the tabulated t-value. The improvement rate reached (57.64%), while Cohen's effect size (2.62) indicates a large effect of the training program on the element of (flexibility). Flexibility is the characteristic that allows the athlete to use their capabilities in the best, widest, and highest manner. It also helps the athlete to economize time and effort during training, as it is the player's ability to perform motor skills with a wide range, ease, and smoothness, due to the elongation of the muscles and ligaments working on those joints to achieve the required range for performance in soccer.

The researchers worked to improve the quality of flexibility through the games of the implemented training program, with an engaging, enthusiastic, and competitive approach among the players, determining the winning group and imposing a training-style penalty on the losing group. Each group strives to win and perform the games in an ideal manner that corresponds to the goal set by the coach. **(Hanafi Mukhtar, 1980, p.61)** confirms that flexibility is considered one of the main determining factors for the accomplishment of various skills during matches, and it is clearly demonstrated in the player's performance when raising their legs high to receive and control the ball, or bending the torso backward to receive the ball with the chest, or heading the ball, or using the arms as a reference for the throw-in, and in all performances that require swinging the legs, such as shooting or passing, especially during running.

The results of this variable are consistent with the studies of **(Nasil Noureddine, et al., 2019)** and **(Mahmoud Azzab, 2015)**.

Table 8 illustrates the pre-test and post-test for the agility characteristic (zigzag run), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (v)	Cohen's effect size	Improvement rate	indication
test-Pre	7.12	0.56	10.42	1.65	19.62	sign
test-Post	5.72	0.68				

The previous table clearly indicates that there are statistically significant differences between the pre-test and post-test measurements in favor of the post-test, where the calculated t-value was (10.42), which is greater than the tabulated t-value. The improvement rate reached (19.62%), while Cohen's effect size was (1.65), which indicates a large effect of the training program using small-sided games, modified games, and experimental matches. This suggests a statistically significant difference in favor of the post-test for the agility component, which is considered important for football players to enable them to quickly learn and master various skills. The researchers also consider that agility in a football player means the player's ability to perform different skills with proficiency and the ability to quickly change direction with the changing situations that occur in the game. A player can be judged to have high agility through the graceful movement of the player's body when performing skills.

The researchers attribute these differences to the training program implemented by the researchers using small-sided games at the beginning of the training session, which is supported by **(Hassan Hussein, p.631)** when he said

that placing agility development exercises at the beginning of the training unit improves it positively.

The improvement rate reached (19.62%), and the researchers attribute this improvement to the organized training program through the exciting and enthusiastic performance of the players for the small-sided games, which were a way to prove the players' abilities and the intense competition between them during the game performance, as well as through the small-sided games and experimental matches in which the player uses sudden movements, rapid movements, deception, shooting, and dribbling, which indirectly develop the agility component. The Cohen's effect size reached (1.65), indicating a large effect of the training program on the agility component.

The results of this variable are consistent with the study of **(Mahmoud Azab, 2025).**

Table (9) illustrates the pre-test and post-test for the coordination characteristic (numbered circles jump), noting that N = (40) and the tabulated t-value = (2.02) at the significance level of (0.05)

Test type	Arithmetic Mean	standard deviation	value (v)	Cohen's effect size	Improvement rate	indication
test-Pre	5.62	0.75	13.27	2.09	25.28	sign
test-Post	4.19	0.64				

The previous table clearly indicates that there are statistically significant differences between the pre-test and post-test measurements in favor of the post-test. The calculated t-value was (13.27), which is greater than the tabulated t-value. The improvement rate was (25.28%), while Cohen's effect size was

(2.09), indicating a significant effect of the training program on the element of coordination. The importance of coordination is not limited to technical and tactical performance, but extends to considering the various environments and surrounding conditions of the training process. Coordination is also used when the player's body moves in the air, as in jumping, and the player needs coordination in case of losing balance during performance, whether landing or stopping quickly. It is also essential in sports that require movement control. Levels of coordination depend on the ability to perform difficult and rapid movements with varying degrees of effectiveness. Possessing high levels of coordination not only helps the player perform motor skills accurately and precisely, but also helps in avoiding expected errors.

The researchers consider motor coordination a crucial aspect of athletic performance, as no skill can be performed without the initial processes of sensory reception of internal (human body) and external (environment) stimuli, perception, and central processing, followed by the motor response resulting from muscle action. Therefore, the researchers worked through the training program to improve coordination by designing small games with an appropriate rhythm that serve this element and applying them in a sound scientific manner with intense competition among the sample players, exerting maximum effort during the games indirectly. **(San Majid, 1998, p. 44)** emphasizes that training on coordination exercises between movements within a specific rhythm will lead to the development of good movement coordination, which is evident through the transfer of the whole body or movements of the lower limbs.

These findings are consistent with the study by **(Sima Awlamy, Shaimaa Zagrour 2019)**.

The researchers attribute the improvement in all physical attributes (endurance, speed, strength, flexibility, agility, coordination) to the training program using small-sided games that primarily aim to improve these variables either directly or indirectly. Additionally, the organization of the training units using small-sided games in a gradual manner has been beneficial. The small-sided games act as a process of integrating all physical attributes, as the player engages in repeated running, short sprints, repeated jumps, body bending to head the ball, throw-in execution, and various feinting and dribbling maneuvers, as well as receiving the ball and then running, among other skills that indirectly and scientifically improve all physical attributes. The experimental matches serve as an application of these attributes in a highly competitive environment, allowing for a high level of physical performance during the match.

4- Conclusions:

- The proposed training program utilizing small-sided games, mini-games, and experimental matches led to an improvement in physical attributes (endurance, speed, strength, flexibility, agility, coordination).
- The proposed training program utilizing small-sided games, mini-games, and experimental matches led to an improvement in physical attributes, with flexibility ranking first at (57.64%), coordination ranking second at (25.28%), agility ranking third at (19.62%), strength ranking fourth at

(13.27%), speed ranking fifth at (9.34%), and endurance ranking last at (4.26%).

5- Recommendations:

- Emphasizing the need for the development and improvement of physical attributes and not neglecting them among young football players.
- The researchers recommend that coaches utilize small-sided games and experimental matches when designing training programs for football players, especially the youngest age groups, as these are considered modern training methods for both children and adults.
- The researchers recommend that the relevant authorities, when selecting coaches for the Yemeni national teams and particularly the youth national team, utilize the proposed training program, but only after assessing the players' level and adjusting the program's intensity and volume accordingly.

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