Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

The effect of complex exercises according to playing positions in developing some physical abilities of football players aged(16-18)years

Mohammed Saleem [1], Ammar Darwash Rashid [2]

[1,2] University of Baghdad / College of physical Education and sport sciences

DOI:

https://doi.org/10.37359/JOPE.V37(2)2025.2083

Article history: Received 19/ April/2024 Accepted 6/ May/2024 Available online 28/ June/2025

Abstract

Research objective: To determine the extent of the impact of vehicle exercises on playing positions in developing some talents for football players aged (16-18) years. **The research assumed**: that there were statistically significant differences between the results of the pre- and post-tests in physical abilities according to playing positions for football players aged (16-18) years, in favor of the experimental group. **The researchers used the experimental method** (by designing two experimental groups and a control group with pre- and post-tests for its suitability and the nature of the problem, to achieve the research objectives). The community of origin (216) was deliberately identified, represented by Kirkuk Governorate football club players aged (16-18 years) who represent (10) clubs. The number of members of the research community was (26) players. The research sample was randomly divided into two groups, one experimental and the other a control, with (10) players for each group. A number of players were chosen from the research sample to conduct the exploratory experiment, numbering (6) players. The research sample numbered (20) players, with a percentage of (12.03%) of the total research community. The research sample was chosen intentionally, represented by North Gas Sports Club players aged (16-18) years, and the exploratory experiment was conducted on Tuesday, September 19/9/ 2023, at (five-thirty in the afternoon) at the North Gas Sports Club stadium. Football on a group of players in the basic research sample, which numbered (6) players. **The researchers concluded:** that complex exercises according to playing positions have an impact in developing the physical abilities of football players aged (16-18) years, **the most important recommendations**. The

[1] University of Baghdad / College of physical Education and sport sciences, Mohammed.Saleem1104@cope.uobghdad.edu.iq

[2] University of Baghdad / College of physical Education and sport sciences, Amar.ameen@ cope.uobghdad.edu.iq

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

necessity of using complex exercises according to playing positions in developing the physical capabilities of football players aged (16-18) years by coaches working in clubs and national teams.

Keywords: compound exercises, playing centers, physical abilities.

Introduction

Progress in the field of sports reflects the extent of countries' progress, the extent of their advancement, and their interest in building individuals and their personalities. Competitions at the continental, Olympic, international, and global levels It is considered a criterion and standard for demonstrating the level of physical, motor, functional, skill and planning progress in mastering the performance of sports movements with their various requirements that the athlete performs in their most beautiful forms، The great achievements made in various sporting events did not come by chance, but rather through correct scientific planning and the employment of specialists in the field of sports and all sports sciences Home and support to reach the highest levels in it, the training process in recent years has begun to take a different form and direction than it was in the past،This process began to focus on making the player train according to the conditions that occur in the competition and adapt to all the variables and different situations that the match witnesses. Therefore, the coaches resorted to using what are called compound exercises. Which usually take the form of what is called compound exercises (physical - skill), which means that the player performs exercises that contain a physical and skill aspect according to the type of event or activity. As for the other form of it, it includes compound exercises. (Skill-planning) which means that the player performs complex exercises that include performing certain skills specific to the type of activity or event being practiced and linking them to the plans for that event. Sami Al-Saffar believes that these exercises mean using more than one condition during one exercise. For example, the trainer can give exercises that include technical and tactical skills (skill-tactical) or give exercises (physical-skill) (Al-Saffar, 1990, page 32). Al-Khashab et al. (1999) believe that compound exercises are "those exercises that contain more than one exercise and are performed by two or more players. They can be used well to develop tactical, skill, physical and psychological training aspects. The player performing the exercise with his teammate represents a repetitive skill of the game." (Al-Khashab et al., 1999, p. 191). This is confirmed by the study (Khalaf et al., 2014) and the study (Bilal and Al-Sabry, 2020). Hence, the importance of the research came through the use of compound exercises according to playing positions in developing the physical abilities of football players aged (16-18) years.

According to the above, the researchers should review some studies that have a relationship in terms of the studied variables. Among these related studies are

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

A study- on the effect of specific exercises on developing speed, agility, and motor agility, and their relationship to some basic soccer skills. (Kamel Wameed, 2012)

This is confirmed by the study (Kamel Wameed, 2012), in which the experimental method was used because it is more appropriate to the nature of the research, on a sample of (20) players who were divided into two groups, a control and an experimental, in a random manner. The researchers concluded that the compound and specific exercises have a positive effect in developing the physical abilities under study, as they showed a tangible improvement in the post-tests of the experimental group.

A study- on the effects of compound exercises on some physical attributes and basic skills of youth futsal players. (Atrushi Deldar, 2023)

(Al-Atroshi Deldar, 2023) mentions in his study in which he used the experimental method for its suitability to the nature of this problem, as the main experiment was applied to the Al-Futowa Sports Club for football and to a sample of (22) players who were chosen intentionally and at ages (16-19) years. It was divided into two groups, experimental and control, with (8) for each group, after (6) players were excluded, (4) of them for the purpose of the main experiment and (2) of them were goalkeepers. The researchers concluded that the method used in the compound exercises led to the development of all physical characteristics and basic skills of indoor soccer players aged (16-10) years, through comparing the results of the pre-and pre-tests.

Study- The effect of compound exercises with added relative weights on some physical abilities in young soccer players (Hassan and Abbas, 2019)

In his study, in which he used the experimental method for its suitability and the nature of this problem, the main experiment was applied to the juniors of the Police Sports Club in football and to a sample of (25) players, representing (10%) of the research community. The sample was divided randomly into two equal groups using the double numbering method, and the experimental group received even numbers. The control group was based on odd numbers. The number of the experimental group was (10) players, the number of the control group was (10) players, and the number of the exploratory experimental group was (5) players Then the researchers conducted the pre-tests, and the researchers prepared compound exercises with added weights for the targeted muscle groups in football at a rate of (3) training units per week, and the duration of the prepared training units was (6) weeks at a rate of (18) training units. The researchers reached a set of conclusions and recommendations, including that compound exercises with added relative weights have a positive impact on some of the physical abilities under study. The researchers recommended the necessity of using compound exercises in preparing young football players, due to their clear impact on physical abilities.

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

Method and tools

The researchers used the experimental method (designing the experimental and control groups with pre- and post-tests to suit the nature of the problem, to achieve the research objectives). The original community was deliberately identified, numbering (216), represented by Kirkuk Governorate football club players aged (16-18 years) representing (10) clubs. The number of individuals in the research community was (26) players. The research sample was divided randomly by lottery into two groups, one experimental and the other control, with (10) players for each group. A number of players were chosen from the research sample to conduct the exploratory experiment, amounting to (6) players. The research sample numbered (20) players, with a percentage of (10.08%) of the total research community، The research sample was selected, which was represented by the players of the North Gas Sports Club, aged (16-18) years, and the exploratory experiment was conducted on Tuesday, corresponding to (9/19/2023), corresponding to (five thirty in the afternoon), and on the North Gas Sports Club football field, on a group of players from the basic research sample, numbering (6) players, and sample homogeneity was found in the variables (height, mass, chronological age, training age).

Table No. (1) shows the homogeneity of the sample in variables (height, mass, chronological age, training age)

N	the variables	Unit of measurement	Arithmetic mean	Standard deviation	mediator	skewness	distribution
1	height	**CM**	**177.3000**	**2.27342**	**177.5000**	**.065**	natural
2	mass	**k**	**54.4500**	**4.89334**	**55.0000**	**-.009**	natural
3	chronological age	In months	**212.8500**	**5.39273**	**212.5000**	**.058**	natural
4	training age	In months	**56.8500**	**5.39273**	**56.5000**	**.058**	natural

By reviewing Arab and foreign scientific sources and surveying the opinions of specialists in the field of sports training and football science for the purpose of accurately determining the tests that serve the subject of the researchers' study, and by conducting personal interviews to determine some physical abilities (explosive strength of the legs, distinctive strength with speed of the legs, transitional speed, speed endurance), The researchers used the following devices: (1) Beuer

Journal of Physical Education
Volume 37 – Issue (2) – 2025 Open Access
P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

medical scale, (2) Casio manual stopwatches, made in Japan, (1) HP laptop, (2) Data Show device, (1) Time Gate, and (1) Stop Watch.

The tools used under investigation

(3) whistles, (15) footballs, (25) flat markers, (30) cones of each type, (30) hurdles of (45-50-53-55-58 cm) in height and (10) in height (60 cm), (10) agility ladders, (80) agility rings, (30) agility poles, (60) cones of (5) cm in height, open football field, (50 m, 14 m) measuring tape.

Current search procedures

The tests used are under investigation

1- **Vertical Jump Test** (Eldridge, Brown and, 2020, p. 45)

2- **Leg Strength Test 10 (hops on one leg, right and left)** (Robert Morford, 2008, page 46)

3- **Transitional speed test (running (30) meters from a high start)** (Hassanin, 2001, page 220)

4- **Speed endurance test: Running-Based Anaerobic Sprint Test (RAST)** (European Society of Sports Traumatology, 2018, p. 22)

Exploratory experiment

In order to provide a clear and accurate picture of the vocabulary of the physical tests nominated to serve the training curriculum, the researchers, in cooperation with the assistant work team, conducted the first exploratory experiment for the tests of the above variables on (9/19/2023), corresponding to (Tuesday), at (5:30 PM). And on the North Gas Sports Club football field, on a group of players from the basic research sample, numbering (6) players, through the work of the assistant work team in applying the above tests, numbering (4) tests, in order to identify:

Knowing the suitability of the field for conducting tests, knowing the problems and difficulties in order to avoid them in the main experiment, knowing the suitability of the tools used in the research, knowing the time required to conduct the tests, knowing the efficiency of the support team for the measurement process and recording the results.

The second exploratory experiment

The researchers, in cooperation with the assistant work team, conducted the second experiment on (20/9/2023) corresponding to (Wednesday) at (5:30 pm) on the North Gas Sports Club football field on a sample of (6) players from the basic research sample, with the aim of obtaining the maximum pulse used in the research through a test whose content includes maximum performance for a period of (10) seconds (running a distance of (100) meters at the maximum possible speed). the time of this distance falls within the anoxic phosphagen system, which gives a true indicator of the maximum pulse and identifying the maximum pulse of each player from the experimental and control research sample and extracting the average rate of the maximum pulse for the purpose

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

of finding the target pulse for each exercise and according to the training intensity determined for the exercises in order to reach:
Developing complex exercises in terms of the components of the training load and their specificity (intensity, volume, density) after finding the maximum pulse for the sample, measuring the resting pulse of each player before starting the maximum exercise specific to the maximum pulse and immediately after finishing it via the carotid artery and within (6) seconds and multiplying the result by (10) to obtain the pulse per minute.
Then, the researchers conducted the pre-tests for the variables under study on Monday, November 23, 2023, at half past five in the afternoon, at the North Gas Sports Stadium. After that, they conducted the main experiment on Saturday, December 2, 2023. The researchers applied the curriculum using compound exercises, Appendix No. (3), as the number of training units was (3) training units per week on (Saturday, Monday, Wednesday) Appendix No. (4) with a total of (30-32) training units and the number of weeks between (10-12) weeks and the number of compound exercises used in one training unit (3-4) exercises, as the researchers used part of the main section of the training unit as the rate of compound exercises for the main section (42.35 min/second - 58.58 min/second).

Statistical methods:
The researchers used the statistical package (SPSS) to process the data obtained, as they used the following:

- Arithmetic mean.
- Median.
- Standard deviation.
- Coefficient of skewness.
- Percentage.
- Independent samples t-test.
- Non-independent samples t-test.

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

Results: -

Display and analyze the results of the pre- and post-tests of the physical abilities used in the research.

Table (4-1) shows the calculated T value and the error rate for the pre- and post-test of the physical abilities of the experimental and control groups used in the experimental groups

N	Tests	Unit of measurement	Groups	mean difference	Std. deviation	Standard error difference	T	error rate
1	Vertical Jump Test	M/C	Control	-.02200	.01549	.00490	-4.491	.002
			Experimental	-.32600	.21521	.56806	-4.790	.001
2	Leg Strength Test 10 (hops on one leg, right)	M/C	Control	-.20000	.79197	.25044	-.799	.445
			Experimental	-1.3050	.72419	.22901	-5.698	.000
3	Leg Strength Test 10 (hops on one leg, left)	M/C	Control	-1.32600	1.1978	.37879	-3.501	.007
			Experimental	-2.32200	1.14582	.36234	-6.408	.000
4	Transitional speed test	Second	Control	.10300	.13573	.04292	2.400	.040
			Experimental	.37000	.22760	.07197	5.141	.001
5	Speed endurance test	second	Control	.42800	.53013	.16764	2.553	.031
			Experimental	2.44300	2.14728	.67903	3.598	.006

* Significant at degree of freedom (20-2=18), and error level (0.05).

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

Table (4-2) shows the waist, Standard deviation, the specific (t) value, and the statistical significance of the creative tests for the experimental and control groups for the fitness abilities used in the research.

Statistical parameters of the studied variables	groups	creative tests		(T)	* sig	Result
		Waist	Standard deviation			
Vertical Jump Test	experimental	**2.5590**	**.16489**	**5.731**	**.004**	**Moral**
	control	**2.2440**	**.05502**			
Leg Strength Test 10 (hops on one leg, right)	experimental	**22.1900**	**1.14905**	**3.505**	**.024**	**Non-moral**
	control	**20.8100**	**0.47947**			
Leg Strength Test 10 (hops on one leg, left)	experimental	**22.0820**	**1.08222**	**2.395**	**.572**	**Non-moral**
	control	**21.0610**	**.80416**			
Transitional speed test	experimental	**3.1300**	**.02789**	**-9.616**	**.002**	**Moral**
	control	**3.4150**	**.08947**			
Speed endurance test	experimental	**33.4770**	**.46387**	**-4.446**	**.005**	**Moral**
	Control	**36.1050**	**1.81053**			

* Significant below the significance level < (0.05).

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

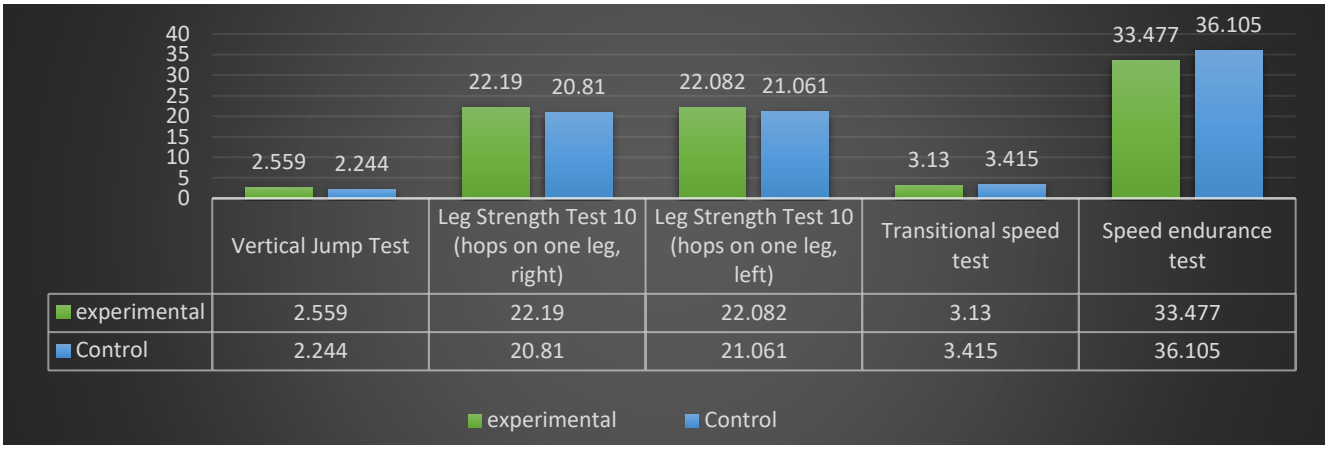


Figure (4-1) illustrates the arithmetic means of the post-tests in the physical ability variables for the experimental and control groups.

It is clear from the results of Table (2) and Figure No. (1) that the (Sig) values of the physical variables of the experimental group are smaller than the significance level, which is 0.05. This indicates the presence of significant differences in favor of the post-test for the experimental group, as the explosive strength of the two men had an arithmetic mean of (2.4030) and a standard deviation of (0.03889) and a significance value of (0.000), which indicates significant differences. In the post-tests in the variable of explosive power and in favor of the experimental group, as for the variable of power characterized by speed for the two men, it had an arithmetic mean of (22.2900) for the right man and a standard deviation of (1.36366) and a significance value of (0.238), as for the power characterized by speed for the left man, it had an arithmetic mean of (22.0820) and a standard deviation of (1.08222).

The significance value is (0.091), which indicates insignificant differences in the post-tests in the variable of strength characterized by speed for the two men, and the variable of transitional speed had an arithmetic mean of (3.1110) and a standard deviation of (0.02283) and a significance value of (0.001). Which indicates the significant differences in the post-tests in the variable of transitional speed in favor of the experimental group, and the variable of speed tolerance had an arithmetic mean (33.8120) and a standard deviation (1.25782) and a significance value (.005), which indicates the significant differences in the post-tests in the variable of speed tolerance in favor of the experimental group.

Discussion of the pre- and post-tests of physical abilities used in the research.

The researchers attribute the reasons for the significant differences between the results of the pre- and post-tests of the physical variables (explosive power, transitional speed, speed endurance) in favor of the results of the post-tests for the experimental research sample individuals to the nature of the compound exercises used in the training curriculum developed by the researchers،

The researchers attribute the reasons for the significant differences in the results of the two strength variables (explosive strength of the legs) to the use of compound exercises, which include a

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

homogeneous and harmonious mixture, matching the requirements determined by the external load, the most important of which are (training goal, age group, preparation stage, and specificity of the game). As the compound exercises include requirements with various objectives with a complex content whose goal is to include physical abilities (explosive power, strength characterized by speed, transition speed, and speed endurance) in each exercise, jumping over hurdles at different heights that are compatible with the intensity and goal designated for each training unit and appropriate for the age group and the research sample. Also, broad jump exercises for different repetitions according to the goal of the training unit, and ground ladder exercises by performing skipping movements on the ladder for different distances and in coordination with the work of the arms, legs and eyes, and providing the special requirements for each of the variables in the training unit، All of these exercises were developed in a precise and standardized scientific manner in terms of work and rest periods in terms of the number of repetitions and sets, and also taking into account the rest periods between repetitions and rest periods between sets in a way that serves the main goal of the training unit. **As for the variable of the long jump** from a standing position to measure the explosive power of the legs, it is considered one of the important physical abilities for a football player, as the leg muscles represent 50% of the body's muscles, and any development in the leg muscles is the main goal of the important goals in football in jumping, running and scoring, and we can see this by looking at the developed thighs of most football players. It has a major role in increasing speed, stability and balance while performing movements and duties on the field, friction with the opponent, scoring power and starting movement power, i.e. getting rid of the body's inertia, and this is identical to what was mentioned by (Jamal Sabry 2019). Leg training is key to total body growth. Leg muscles account for approximately 50% of the body's muscle mass, and leg training will have a positive impact on the upper body. Because leg training requires significant effort, it increases the production of testosterone and growth hormone, both of which are essential components of muscle growth. Also, because leg exercises form the main structure in the standing position, they require large and unspecified amounts of activation of the core muscles to support the spine, not only to perform their work in the legs, but the heart and lungs are also involved (Abdullah Jamal Sabr, 2019). By linking special strength with special speed, the compound exercises included exercises that would develop this physical ability as one of the important abilities for football players, and this is what is confirmed by (Al-Khashab Zuhair and others, 1999, page 626).

The training units also contain exercises using the plyometric training method according to two methods: first, power, such as performing the power bound jump exercise and jumping exercises from obstacles at different heights according to the player's maximum ability. Based on this, the intensity of the training unit is determined. Second, speed. For example: Performing the Fast High Knees exercise using a floor ladder and at different distances, as plyometric exercises develop the ability of soccer players. In addition, each of the previous types has a specific characteristic, as the ability exercises combine maximum strength and maximum speed in the activity as in explosive movements, and speed exercises help in reducing the time required to perform the required movements) (Amy Allmann, 2018, p. 100). Amy et al. (2018) state that "the three types of plyometric exercises (rhythmic, power, and speed) depend on the goal of the exercise

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

and the nature of the load or burden on the player's body. The researchers relied on the American College of Sports Medicine (ACSM 2012) classifications of plyometric exercises in terms of intensity level." On exercises of low, medium and high intensity levels, and these divisions came based on several factors, including the height of the obstacles, the length of the ground ladder and the degree of complexity associated with the exercise performed and the training unit containing more than one compound exercise, the goal and purpose of which is to develop the physical, motor and functional abilities and basic skills of football players. The researchers agree with scientific sources that show the importance of plyometric training in developing ability (explosive power) (Nicholas Ratamess, 2020, p. 396), as (Sabry 2018) states that (plyometric training is one of the effective ways to develop ability by developing the athlete's ability to be stronger and faster (Farag Gamal Sabry, 2018, pp. 451-520).

As for the variable of strength characterized by speed for the two legs through the test (10 hops on one leg), its results were not significant in the post-tests despite the fact that the compound exercises contained requirements with diverse objectives with a complex content whose goal was to include physical abilities (explosive strength, strength characterized by speed, transitional speed, and speed endurance). In each of these exercises, (jumping over hurdles at different heights that are compatible with the intensity and goal assigned to each training unit and appropriate for the age group and the research sample, as well as starting exercises for different distances and as far as possible and with different intensities and for different repetitions according to the goal of the training unit, Ground ladder exercises (agility ladder) by performing skipping movements on the ladder for different distances and in coordination with the arms and legs and the eye of the partridge on the agility ladder on one leg (right and left) and for different distances as well and providing the special requirements for each of the variables in the training unit. However, the results of the post-tests were not significant because the exercises used by the trainer in the control group in the training units were similar to these exercises in terms of jumping and hops for specific distances determined by the trainer, in addition to the fact that most of the skill exercises in football depend on the legs in performance, including: (Suppression, handling (short, medium and long), rolling, running with the ball, scoring, dribbling, receiving and delivering the ball) all depend on the legs in performance, (Mondher & Khalaf, 2023) so their results were insignificant, as the nature of the game of football requires the player to perform many and varied movements, most of which are of a fast nature, as well as manly play. In order to get the ball and quickly change the direction and location of the ball and the players frequently change their positions in defense and attack, in addition to the long time that the match takes, which is (90) minutes and may extend in some cases to (120) minutes, which requires the player to make a great effort by developing physical abilities, including strength distinguished by speed (Abdullah Jamal Sabr, 2019, page 167)

As for the 30m running tests from a high start to measure (transitional speed), the compound exercises according to the playing positions had a major role in developing the transitional speed of the experimental research sample, as running as fast as possible is one of the physical abilities that football players often need in counter-attacks and surprises, as well as in returning to defend the area. (Salman et al., 2022)

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

The researchers attribute this development to the existence of a link in exercises between strength and speed, and this was confirmed by (Qasim Hassan Hussein and Abdul Ali Naseef 1998), as speed generally depends relatively on strength, as speed is the performance of a movement resulting from strength with its connection to time as well as the mass of the body (Hussein and Naseef, 1998, page 91). The researchers attribute this result to the type of complex exercises developed by the researchers, which included transitional speed exercises using high and deep jumping exercises, jumping exercises, and exercises on the ground ladder for different distances, as well as launches for different distances. The compound exercises combined more than one characteristic that played a role in developing the transitional speed of the research sample, as these exercises were designed in a way that is consistent with the requirements of the modern game of football according to the playing positions and their specificity, and this is what was mentioned by (Mustafa Jassim 2019)

Transitional speed in football is linked to other physical qualities such as explosive strength, response speed, flexibility and agility (Zaid et al., 2019, p. 74).

The researchers attribute **the reasons for the significant differences** between the results of the pre- and post-test for the physical variable of speed endurance, in favor of the results of the post-test for the experimental sample members, to the compound exercises, which included training using hurdles of different heights, in addition to the circular rings, as well as jumping, hopping, running with a jump, and the ground ladder at different distances. (Kadhim, 2024) These exercises have a positive impact on developing and achieving speed endurance requirements، The researchers attribute these results to the effectiveness of the compound exercises that the members of the experimental group underwent, which led to the creation of adaptations that had an effective impact on developing and enhancing speed endurance capabilities، The exercises that were focused on in the training process had a high correlation with special endurance, as they included various distances performed by the player according to the intensity that changed with the change in the type of exercise, its goal, the distance, the speed, control of the required intensity, and the appropriate rest time between repetitions، The speed endurance training was appropriate to the levels of the experimental group members and according to their physical abilities, which contributed to stimulating the largest number of muscle fibers and causing physiological changes in the body, which led to improving the efficiency of the working muscles during performance. The more efficient the muscles performing the effort, the less time the tests are performed. Also, compound exercises contain several variables, including explosive power, characterized by speed, transition speed, and speed endurance، (Kadhim & Mousa, 2024) These exercises also contain the performance of quick launches with maximum intensity and for short periods of time not exceeding (5-15) seconds for each launch, within the scope of the work of the first phosphagen energy system, with rest at a ratio of (2:1) and up to (4:1) (Al-Fattah Abu Al-Ala Ahmed, 2016, page 333). (Work: Rest) between those starts, meaning the player performs a start at the maximum possible speed for a specific distance, after which he takes an incomplete positive rest, such as: (walking, jogging, or controlling the ball), then he performs another start, and so the performance continues at the same speed as much as possible until several starts are performed in one repetition، Although the apparent motor form of the performance is consistent with speed training in terms of

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

time and intensity of performance, giving incomplete rest between starts transformed the performance from speed training to speed endurance training, and the working energy system became the second lactic system. In support of this implemented method, (Abu Al-Ala 2016) (Al-Fattah Abu Al-Ala Ahmed, 2016, page 204) is mentioned. (When developing the speed element, the nature of the performance is at maximum intensity and with a work period of between (5-10) seconds, with a long rest period given to restore the recovery of the phosphagens components, and not giving sufficient rest will force the muscles to work with the lactic energy system instead of the phosphagens energy system، Instead of the goal being to develop the element of speed, the goal becomes to develop speed endurance. (Al-Jamal Shaimaa Al-Sayed Ibrahim, 2017, p. 133) explains: (When speed training is repeated using the phosphagen energy production system several times with incomplete rest periods, the training is directed towards developing speed endurance.) Regarding the method used to repeat the performance with short maximum bursts and partial rest periods in between, (Bomba and Carlo, 2015, p. 151) indicate: The ability to repeat bursts is called short lactic speed (lactic speed short), which expresses the non-lactic capacity in which bursts of less than (6) seconds are repeated, with partial recovery between those bursts until the performance becomes expressive of short lactic power (lactic power short). This method allows the aerobic capacity to participate with difficulty in short rest periods to replenish phosphate during aerobic phosphorylation (Bomba and Carlo, 2015, p. 276).

Through the study conducted by the researchers and after reviewing the results, they reached a set of conclusions as follows: -

- Compound exercises have a positive and noticeable effect on developing some physical abilities of football players aged (16-18) years, according to the results of the pre- and post-tests of the experimental group.
- The experimental group that used compound exercises achieved better development than the control group that used the curriculum used by the trainer to develop the physical abilities covered by the research, except for the strength characterized by speed for the legs.
- The curriculum prepared by the trainer for the control group led to a slight development in some of the physical abilities under investigation.

In light of the conclusions of this study, the researchers propose the following recommendations:

- The necessity of paying attention to compound exercises when developing training curricula for football players aged (16-18) years, given the research results that have shown a development in the physical abilities under study.
- Emphasizing the need to develop and prepare training curricula in scientific, studied, and standardized ways, in terms of work and rest periods between repetitions and sets, as this allows the player to recover and restore the ATP complex to produce energy within the muscles in the body in general, and the working muscles in particular.
- Preparing similar studies on important variables in other sports and events.

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

Appendix No. (1)
Personal interviews conducted by the researchers with experts and specialists in the field of training science and football to determine physical variables.

N	Name	Scientific title	Workplace	Scientific specialization
1	Sabah Qasim Khalaf	Professor	College of Physical Education / University of Baghdad	Training – Football
2	Saleh Radhi Amish	Professor	College of Physical Education / University of Baghdad	Tests and Measurements - Football
3	Zahra Shihab Ahmed	Professor	College of Physical Education / University of Baghdad	Tests and Measurements -
4	fairs same	Professor	College of Physical Education / University of Baghdad	Tests and Measurements - Football
5	Diaa Naji Abboud	Professor	College of Physical Education / University of Baghdad	Training – Football
6	Maytham Habib Subhan	Professor	College of Physical Education / University of Baghdad	Training – Football
7	Naji Kazim Ali	Professor	College of Physical Education / University of Baghdad	Training – Football
8	Asaad Lazim	Professor	College of Physical Education / University of Baghdad	Tests and Measurements - Football
9	Khalil Sattar Muhammad	Assistant Professor Dr	College of Physical Education / University of Baghdad	Tests and Measurements - Volleyball

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

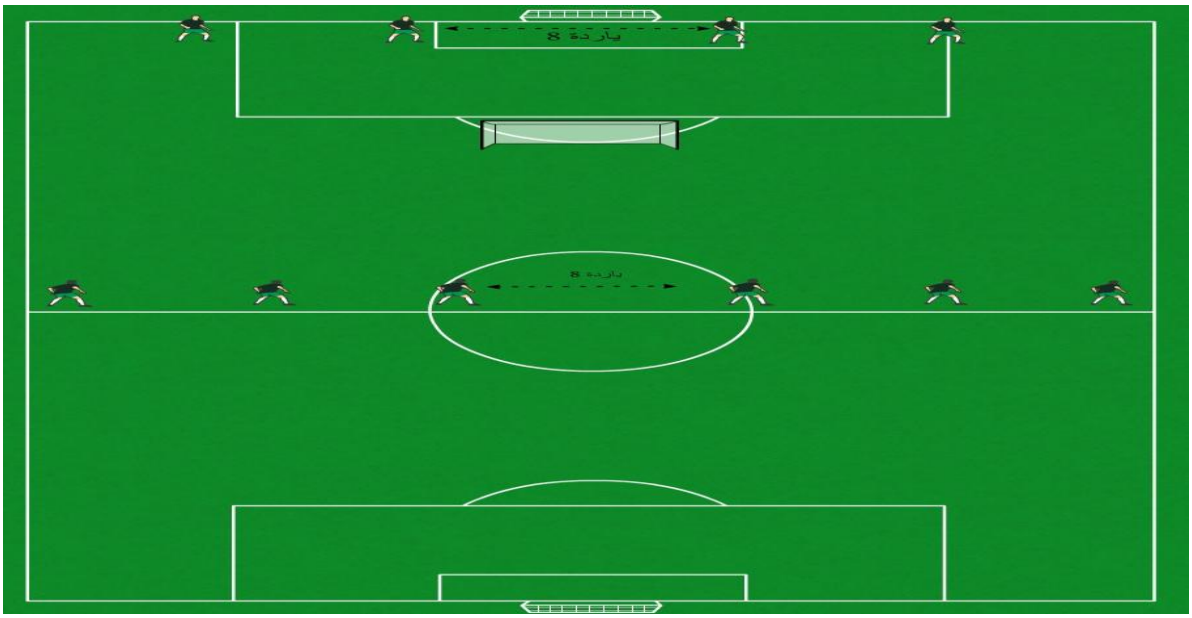
Addition No. (2)

Names of the support team

N	Name	Scientific title	Workplace	Scientific specialization
1	Wagdy Majeed Saeed	Assistant teacher	College of Physical Education / University of Kirkuk	Physiology of Sports Training - Handball
2	Mohammed Hadi Jassim	Doctor teacher	Kirkuk Education Directorate	Training – Football
3	Ali Sami Ezzat	Assistant teacher	Kirkuk Education Directorate	Psychology - Football
4	Ali Sabah Ahmed	Assistant teacher	Kirkuk Education Directorate	Psychology - Boxing

Appendix No. (3)

Examples of the compound exercises used in the research



Note:

• The basic position for the drills is for the defensive players to stand behind the goal at a suitable distance for performing the drills. The distance between each defensive player is 8 yards. The

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

midfielders and attackers stand on the midfield line, with a distance of 8 meters between each player. The players stand according to their playing position on the team.

•After completing the exercises set by the players, the normal playing situation with the ball begins, and each player performs the tasks, duties, and movements assigned to him according to the playing positions. The exercise ends with the ball being intercepted by the defending players, or scoring on goal by the attacking players, or when the ball goes out of the field.

• All exercises are complex, containing physical, motor, functional and basic skill variables.

Exercise symbol	Description of the exercise
A1	Players stand in the basic position of the exercise and perform skipping movements (raising the knees high and alternating) on a 5-meter floor ladder back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 6 poles, with each pole 50 cm apart from the other. Then they run at maximum speed for a distance of 11 meters back and forth، Then the player jumps into 30 cm diameter rings, each ring 30 cm apart, with one leg (right, left) back and forth. Then the exercise is completed according to the players' positions and movements.
A2	Players stand in the basic position for the exercise and perform skipping movements (raising the knees high and alternating) on a 5.5-meter floor ladder back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 6 poles, with each pole 50 cm apart from the other, and then they run at maximum speed for a distance of 11 meters back and forth، Then the player jumps into 30 cm diameter rings, each ring 30 cm apart, with one leg (right, left) back and forth. Then the exercise is completed according to the players' positions and movements.
A3	Players stand in the basic position of the exercise and perform skipping movements (raising the knees high and alternating) on a 6-meter-long ground ladder back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 8 poles, with each pole 50 cm apart from the other. Then they run at maximum speed for a distance of 12 meters back and forth، Then the player jumps into 4 rings with a diameter of 30 cm, each ring is 30 cm apart from the other, with one leg (right, left) back and forth. Then the exercise is completed according to the players' positions and movements.

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

A4	Players stand in the basic position for the exercise and perform skipping movements (raising the knees high and alternating) on a 6.5-meter-long ground ladder back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 5 poles, with each pole 50 cm apart, back and forth. Then they start at maximum speed for a distance of 12.5 meters back and forth، Then the player jumps into 5 rings with a diameter of 30 cm, each ring 30 cm apart from the other, with one leg (right, left) back and forth, and then the exercise is completed according to the players' positions and movements.
A5	Players stand in the basic position of the exercise and perform skipping movements (raising the knees high and alternating) on a 7-meter-long ground ladder back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 6 poles, with each pole 50 cm apart, back and forth، then they start at maximum speed for a distance of 13.5 meters back and forth. Then the player jumps into 6 rings with a diameter of 30 cm, each ring 30 cm apart from the other, with one leg (right, left) back and forth, and then the exercise is completed according to the players' positions and movements.
A6	The players stand in the basic position of the exercise and perform skipping movements (raising the knees high and alternating) on a 7-meter-long ground ladder, back and forth, in coordination between the legs and arms, and as fast as possible. Then they perform a roll between 8 poles, with the poles 50 cm apart, back and forth. Then they start at maximum speed for a distance of 14 meters, back and forth، Then the player jumps into 7 rings with a diameter of 30 cm, each ring 30 cm apart from the other, with one leg (right, left) back and forth, and then the exercise is completed according to the players' positions and movements.

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729
https://jcope.uobaghdad.edu.iq

References

Abdullah Jamal Sabr. (2019). Encyclopedia of Endurance and Training - Physiology - Achievement. Amman: Al-Safa Publishing House.

Al-Atroshi Dildar. (2023). The effect of compound exercises on some physical characteristics and basic skills among young indoor soccer players. Mosul: Scientific Journal / College of Physical Education and Sports Sciences.

Al-Basati, Amr Allah. (2015). Modern Training in Football. Cairo: Dar Al-Ulum Publishing.

Al-Fattah Abu Al-Ala Ahmed. (2016). Physiology of Training and Sports. Cairo: Dar Al-Fikr Al-Arabi.

Al-Jamal, Shaimaa Al-Sayed Ibrahim. (2017). Physiological Responses to Sports Activities. Cairo: Manshaat Al-Maaref.

Al-Khashab Zuhair et al. (1999). Football. Mosul: Dar Al-Fikr for Printing and Publishing.

Al-Saffar. (1990). Foundations of Football Training. Mosul, Iraq: Ibn Al-Atheer Printing and Publishing House.

Amy Allmann .(2018) .Soccer Coaching Program .Los Angeles: Amateur Athletic Foundation.

Bilal and Al-Sabry. (2020). A comparative study of some physical characteristics (persistence-explosive power-speed-agility) according to playing positions. A field study on the players of the Ain Fakroun city football team, juniors. Algeria, Oum El Bouaghi: Master's thesis, University of Larbi Ben M'hidi.

Bompa and Carlo .(2015) .Periodization training for sports . USA : Human Kinetics.

Bompa and Carlo .(2015) .Periodization training for sports . USA : Human Kinetics.

Eldridge, Brown and .(2020) .BTEC National Sport and Exercise Science .UK: Carmelite House.

Eldridge, Brown and .(2020) .BTEC National Sport and Exercise Science .UK: Carmelite House.

European Society of Sports Traumatology .(2018) .Return to Play in Football: An Evidence- based Approach .Berlin :Springer Nature.

European Society of Sports Traumatology .(2018) .Return to Play in Football: An Evidence- based Approach .Berlin :Springer Nature.

Hassan and Abbas. (2019). The Effect of Compound Exercises with Added Relative Weights on Some Physical Abilities of Young Soccer Players. Baghdad: College of Physical Education and Sports Sciences.

Hassanein. (2001). Measurement and Evaluation in Physical Education and Sports. Cairo: Dar Al Fikr Al Arabi.

Hussein and Naseef. (1998). Training Science. Mosul: Dar Al Kutub for Printing and Publishing.

Kadhim, M. J. (2024). Social Networks' Place in Contemporary Political Movements. *International Journal of Social Trends*, *2*(2), 51–59.

Kadhim, M. J., & Mousa, A. M. (2024). The use of an innovative device to improve the efficiency of the posterior quadriceps muscle of the man after the anterior cruciate ligament

Journal of Physical Education

Volume 37 – Issue (2) – 2025 Open Access

P-ISSN: 2073-6452, E-ISSN: 2707-5729

https://jcope.uobaghdad.edu.iq

injury of advanced soccer players. *Journal of Physical Education (20736452)*, *36*(1).

Kamil Wameed. (2012). The effect of special exercises in developing some physical abilities and basic skills and their relationship to scoring accuracy from a stationary and moving position in indoor soccer. Baghdad: Unpublished master's thesis / University of Baghdad / College of Physical Education.

Khalaf et al. (2014). The Effect of Special Compound Exercises According to Specific Zones on Developing Some Physical Abilities and Defensive Principles For football players. Anbar: Journal of Physical Education Sciences, Volume 7, Issue 3.

Mondher, H. A., & Khalaf, S. Q. (2023). The Effect of Game–Like Exercises on the Development of Some Physical Abilities and Fundamental skills In Futsal. *Journal of Physical Education*, *35*(2).

Nicholas Ratamess .(2020) .ACSMs Foundation of Strength Training and Conditioning .China: Lippincott Williams.

Nicholas Ratamess .(2020) .ACSMs Foundation of Strength Training and Conditioning .China: Lippincott Williams.

Robert Morford .(2008) .Training for Speed , power & Strength , National .Malaysia.

Robert Morford .(2008) .Training for Speed , power & Strength , National .Malaysia.

Salman, S. M., Kadhim, M. J., & Shihab, G. M. (2022). The effect of special exercises in the rehabilitation of the shoulder muscle for the youth wrestling category. *INTERNATIONAL JOURNAL OF EARLY CHILDHOOD SPECIAL EDUCATION*, *14*(5), 4606–4609. https://doi.org/10.9756/INTJECSE/V14I5.555

Zaid et al. (2019). Foundations of Futsal Training. Professionals for Printing and Publishing. Farag Gamal Sabry. (2018). Speed and Athletic Achievement. Beirut: Dar Al-Kotob Al-Aamliya.