The impact of cognitive training on field intelligence growth and some composite skills of advanced football players

El impacto del entrenamiento cognitivo en el crecimiento de la inteligencia de campo y algunas habilidades compuestas de los jugadores de fútbol avanzados

Authors

Adnan Fadous Omar [1]
Waleed Khalid Hammadi [2]
Labeeb Zouyan Moseekh [3]
Kheiry mutar Muhammad [4]
Majdaldeen Mohammed Saleh [5]
Othman Adham Ali [6]

[1] University of Anbar, (Iraq)
[2] University of Anbar, (Iraq)
[3] University of Anbar, (Iraq)
[4]Anbar Education Directorate, (Iraq)
[5] Samarra University, (Iraq)
[6] University of Anbar, (Iraq)

Corresponding author:
Adnan Omar
ofcb993@gmail.com

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Abstract

Introduction: Does cognitive training accompanying composite exercises affect advanced football players' field intelligence growth and skill performance?
Objective: To develop cognitive training exercises to grow field intelligence and composite skills for advanced football players. To identify the impact of cognitive training on the growth of field intelligence and some composite skills for advanced football players.
Methodology: The researcher utilized an experimental design with a well-controlled adjustment method for two equal control and experimental groups. The research community consisted of football players from clubs in Anbar Province. Data Collection Methods: Arabic and foreign sources, experimentation and observation, social media communication with experts and specialists, testing and measurement, assistant work team, and expert questionnaire form to determine research tests. Statistical Means, Standard Deviation, Median, Skewness Coefficient (L), Law (T-TST) for Symmetrical Samples, and Law (T-TST) for Equal Independent Samples in Numbers were used in this study.
Results: Through the presentation and analysis of the pre- and post-experimental test results for both the control and experimental groups, evident improvement in all dependent research variables in favor of the post-experimental tests emerged. This indicates the positive impact of the following methodology.
Conclusions: Mental training significantly affected the development of football field intelligence for the experimental research sample. Mental training positively affected the development of compound skill performance in football for the research sample.

Keywords

Cognitive training; field intelligence; composite skills; football player; training efficacy.

Resumen

Introducción: ¿El entrenamiento cognitivo que acompaña a los ejercicios compuestos afecta el crecimiento de la inteligencia de campo y el rendimiento de las habilidades de los jugadores de fútbol avanzados?
Objetivo: Desarrollar ejercicios de entrenamiento cognitivo para aumentar la inteligencia de campo y las habilidades compuestas de jugadores de fútbol avanzados. Identificar el impacto del entrenamiento cognitivo en el crecimiento de la inteligencia de campo y algunas habilidades compuestas para jugadores de fútbol avanzados.
Metodología: El investigador utilizó un diseño experimental con un método de ajuste bien controlado para dos grupos de control y experimentales iguales. La comunidad de investigación estaba formada por futbolistas de clubes de la provincia de Anbar. Métodos de recolección de datos: fuentes árabes y extranjeras, experimentación y observación, comunicación en redes sociales con expertos y especialistas, pruebas y medición, equipo de trabajo asistente y formulario de cuestionario de expertos para determinar las pruebas de investigación. En este estudio se utilizaron medias estadísticas, desviación estándar, mediana, coeficiente de asimetría (L), ley (T-TST) para muestras simétricas y ley (T-TST) para muestras independientes iguales en números.
Resultados: A través de la presentación y análisis de los resultados de las pruebas pre y postexperimentales tanto para el grupo control como para el experimental, se evidenció una mejora en todas las variables dependientes de la investigación a favor de las pruebas postexperimentales. Esto indica el impacto positivo de la siguiente metodología.
Conclusiones: El entrenamiento mental afectó significativamente el desarrollo de la inteligencia en el campo de fútbol para la muestra de investigación experimental. El entrenamiento mental afectó positivamente el desarrollo del rendimiento de habilidades compuestas en el fútbol para la muestra de investigación.

Palabras clave

Entrenamiento cognitivo, Inteligencia de campo, Habilidades compuestas, Futbolistas, Eficacia del entrenamiento.

Introduction

The modern era is characterized by sporting achievements as a result of the advanced levels that teams from many countries have reached. Scientific research in this field plays a fundamental role, especially in recent years. Significant results have been obtained in terms of using various methods and techniques and applying different ideas in the field of sports training (Hammood et al., 2024). The practical application aimed to enhance the level of sports performance in general and to enable the player to achieve the best athletic achievements and levels mentally, physically, skillfully, strategically, and psychologically. Achieving the training goal is not limited to the physical and skill aspects only (Awad et al., 2024). Coaches must take important steps not to neglect the mental aspect of the athlete in order to invest much effort, save time, utilize the mental capabilities of the players, and include them in the planning of training units. Since an athlete's brain, like any other human, is not devoid of cognitive structure, which is the foundation of thinking, mental programs for athletes become an important field in sports training if they are correctly taken into account and applied, not neglected, and given attention in the preparation process for the training stages (Sousa et al., 2021). They are capable of developing many aspects and enhancing skill performance, as well as other skills such as motor behavior, the ability to intervene in performance situations at the right time, and improving the player's interaction with other teammates while also providing the player with ideal motor anticipation(Vestberg et al., 2017). In this regard, (Shamon, 2017)the necessity of developing mental processes that align with the requirements of the training situation, whether they are physical, skill-based, or tactical. Neglecting the mental aspect will hinder achievement in competitions. Within this framework, it is observed that optimal training encompasses psychological factors in the training domain(Mohammed Hammood et al., 2025). Meijman mentioned the need to develop a suitable training program to overcome the main causes of decreased levels of mental processes responsible for motor performance.

It also gives the player an ideal kinetic expectancy, so the player's success in football is not measured by technical and individual talent but also by the player's ability to interpret the match and make smart decisions at every moment of the match. Intelligence is to interact and adapt to a situation that you have not met or been exposed to before on the field, which requires a high ability of intelligence to solve it and make the appropriate decision for playing situations; the relationship between the cognitive and mental aspects of the football player is strong and positive, so football plays with the mind before the foot. One of the studies similar to the research is a study (Hossam Saad Momen, 2015) The study aimed to develop exercises for mental training to develop the level of field intelligence for junior football players, as well as to identify the extent of the impact of mental training in developing the level of field intelligence for junior football players, and the researcher used the experimental approach (the two equivalent groups) The research sample consisted of the players of the junior team of Najaf Governorate, numbering (30) players who were divided into two groups (control and experimental) Each group consisted of (10) players and (10) players to conduct the exploratory experiment, the researcher prepared mental training exercises and was applied to the experimental sample only The duration of the training unit for mental training (15) minutes for (12) weeks by two training units per week, the researcher concluded that the approved mental training exercises contributed to the level of field intelligence for the players of the research sample(Hussam, 2015).

Modern football relies on focusing on important aspects and differentiating between these conditions according to the various situations that arise during performance(Karim et al., 2024). Therefore, the problem was identified based on the precise observation of the training program for the research sample teams. It was noticed that there is a lack of attention to cognitive and composite exercises related to strategic aspects. Additionally, coaches are often not familiar with the nature of cognitive training and the mechanism of working with composite exercises. If they are aware, it is usually done individually by separating the mental aspects from the composite exercises. This prompted the researcher to address this problem by using accompanying mental exercises with composite exercises, which may contribute to the growth of field intelligence and the development of performance. Hence, the researcher poses the following question: Does cognitive training accompanying composite exercises affect the field intelligence growth and skill performance of advanced football players?

The study aims to:

•To develop cognitive training exercises for the growth of field intelligence and some composite skills for advanced football players.

•To identify the impact of cognitive training on the growth of field intelligence and some composite skills for advanced football players.

Study hypoth:

•There are statistically significant differences between the pre-tests and post-tests for the control and experimental research groups in field intelligence and some composite skills for advanced football players.

•There are statistically significant differences between the post-tests for the control and experimental groups in field intelligence and some composite skills for advanced football players.

•There are statistically significant differences between the post-tests for the control and experimental groups in field intelligence and some composite skills for advanced football players.

Method

The researcher utilized an experimental design with a well-controlled adjustment method for two equal control and experimental groups, each with a pre-test and post-test(Karim et al., 2024).

Participants

The research community includes all individuals relevant to the phenomenon studied by the researcher (Dhouqan Obeidat et al., 2015). This is the second step of the research procedure. Therefore, the research community consisted of football players from Anbar Province clubs (Anah, Hit, Al-Nasr, Al-Fahad, Al-Raed, Al-Habbaniyah, Al-Habbaniyah Al-Samoud, Fallujah, Al-Karma) for the second division for the football season 2022-2023, registered with the Central Iraqi Union, totaling 215 players. The research sample included (40) players divided into an experimental group, numbering (20) players from Al-Fahd Club and (20) players from Al-Karma Club, the control group. Procedures were applied to ensure the homogeneity of the research sample members in terms of chronological age and training age. Other procedures were also applied to achieve parity between the control and experimental groups in the research variables, namely field intelligence, suppression, receipt, evasion, and correction.

Procedure

Tools and devices used in the study

Devices Used in the study: Japanese electronic watch - 2 units, HP laptop - 1 unit, Canon camera for documentation - 2 units.

Instruments Used in the study: Legal football field, legal footballs - 10, colored tapes with a width of 5 cm - 5, 6 movable height barriers, three whistles, measuring tape, various office supplies (pens, papers, ruler, etc.).

Data Collection Methods: Arabic and foreign sources, experimentation and observation, social media communication with experts and specialists, testing and measurement, assistant work team, and expert questionnaire form to determine research tests (Saeed, Khalaf, et al., 2024; Saeed Sabti et al., 2024).

Determination of Research Tests

Field Intelligence Test

After reviewing the scientific sources, the researcher adopted the scale designed by (Odeh & Omar, 2022), which includes a field intelligence test in three areas (Speed of Strategic Thinking, Strategic Organization Domain, and Speed and Flexibility of Strategic Thinking Domain), as shown in Table 1.

Figure 1. displays three definitions: a) Speed, b) Organization, and c) Flexibility in Tactical Thinking.

The speed of strategic thinking (see Figure 1(a)) is a part of the player's ability to define the best course of action for strategic situations as fast as possible, which is measured by the 10 strategic situations. Strategic Organization Domain (see Figure 1(b)) indicated that the game was made up of players organizing issues and alternatives from higher to lower priorities within a given time frame, which is, in turn, composed of 10 strategic situations. Speed and Flexibility of Strategic Thinking Domain (see Figure 1(c)) for Players shows a player's performance in 10 tactical situations for an offensive scenario, in which the player has to find the best answer from the possible solutions within a limited time.

Each area contains ten strategic cases. The researcher applied part of the scale (Odeh & Omar, 2022). The other areas were prepared by the researcher, requiring the sample to answer according to the conditions and requirements of the test. Scores are calculated according to the correction scale prepared for this purpose.

Table 1. Alternative Responses of the Scale and Their Scores

No.	Alternative Scores							
	Speed of Strategic Thinking				Strategic Organization Domain			
1	3	4	2	1	1	3	2	4
2	4	3	1	2	3	2	4	1
3	3	2	4	1	2	1	3	4
4	4	1	2	3	2	3	4	1
5	2	3	1	4	1	3	4	2
6	3	4	1	2	3	4	1	2
7	4	3	1	2	3	4	2	1
8	4	2	1	3	3	2	4	1
9	4	2	3	1	3	1	2	4
10	3	4	2	1	3	4	1	2
11	1	4	2	3	3	2	4	1
12	3	4	1	2	4	2	1	3
13	4	2	1	3				
14	3	4	1	2				
15	1	4	2	3				

No.	Speed and Flexibility of Strategic Thinking Domain	
	Selected Solutions	Score
1	One solution	1
2	Two solutions	2
3	Three solutions	3
4	Four solutions	4

Skill Performance Test

To measure football skill performance, the researcher conducted an inquiry and research in scientific sources. The tests designed by (Shakour, 2010) were selected. After consulting the supervisor and considering the comments of the expert specialists, some modifications were made. Below is an explanation of the tests in their final form:

First Test: Ball Chest Control, Dribble, and Pass

Test Objective: To measure the time and accuracy of performing the skill of ball chest control, dribble, and pass.

Tools: Football field, legal footballs, stopwatch, goal.

Performance Specifications: A line is drawn 2 meters away to mark the starting point. Two stakes are set 2 meters apart, and a barrier (goal) with a width of 1 meter and a height of 60 cm is placed 10 meters

away from the second stake. The player stands at the starting line and then runs. Upon reaching the first stake, the player receives the ball at chest level from the coach, thrown by the coach using both arms in front of the player slightly to the side. Then, the player dribbles the ball between the first and second stakes and passes the ball towards the goal. Finally, the player runs back to the starting point. (See Figure 1).

Test Conditions:

•The ball must be chest-controlled before reaching the first stake.

•The player must perform the dribble skill in any way.

Recording Method:

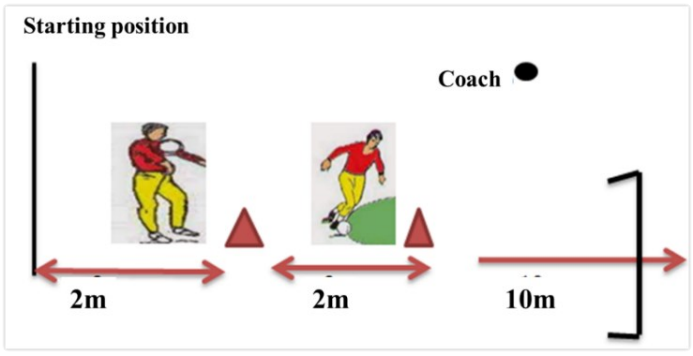
The performance time is calculated from the beginning of the movement for chest control until the moment of passing. The accuracy scores obtained by the player are calculated as follows:

•1 point if the ball does not enter the goal.

•3 points if the ball hits the goal.

•5 points if the ball goes into the goal

Figure 2. Illustrates the Ball Chest Control, Dribble, and Pass Test.



Second Test: Reception, Dribble, and Shot

Test Objective: To measure the time and accuracy of performing the reception, dribble, and shot skills.

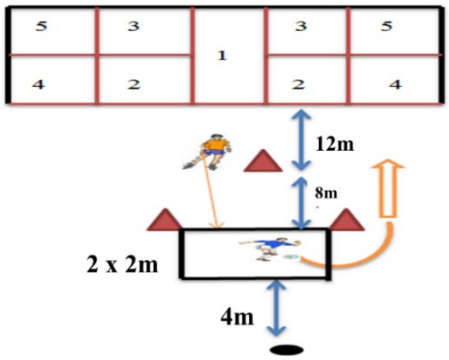
Tools: Football field, footballs, stopwatch, cones, legal football goal, wide colored tape.

Performance Specifications: The football goal is divided into five equal squares (146.4 cm) using colored tape, as revealed in Figure 2. Three cones are placed in front of the goal in a triangular formation. The player stands at the cone nearest to the goal, facing the square drawn on the ground measuring (2×2) m, which is 20 m away from the goal. The player then runs to the square to receive the ball from the coach, who stands 4 m away from the player, facing them. After receiving the ball, the player dribbles to dodge one of the cones and then shoots at the goal.

Test Conditions: The player must use shooting skills in any way.

Recording Method: The performance time is calculated from the beginning of the movement for receiving until the moment of shooting. The accuracy scores obtained by the player are calculated by following Figure 2:

Figure 3. Illustrates the Reception, Dribble, and Shot Test



Main Experiment Procedures

Pre-Testing

Following the division of the research sample into control and experimental groups, the main experiment was initiated. The researcher and the assisting team conducted pre-tests to measure field intelligence on (Date) at 4:00 PM. The pre-tests were conducted on the control group (Al-Karma Club) at the club's field. Simultaneously, the experimental group (Al-Fahad Club) underwent the same testing procedures. The sequence was as follows:

1. Preparation of the test location and equipment.

2. Measurement of field intelligence.

After data collection, they were statistically processed to verify the equivalence of the two groups in the dependent research variables. All spatial, temporal, and testing procedure conditions were kept consistent. Table 2 illustrates the equivalence between the two groups.

Table 2. Demonstrates the Equivalence Between the Two Groups

Test	Measurement Unit		Control Group		Experimental Group		Calculated (t) Value	Significance
			M	± (SD)	M	± (SD)		
Field Intelligence	Degree		90.7	5.16	91.5	4.99	0.5	Not significant
Chest Ball Control	Accuracy	Degree	2.1	1.33	2	1.34	0.23	Not significant
	Speed	Sec	12.77	1.46	13.01	1.86	0.46	Not significant
Receiving, Dribbling, Shooting	Accuracy	Degree	1.8	0.78	1.95	1.32	0.44	Not significant
	Speed	Sec	19.6	2.22	19.4	2.90	0.24	Not significant

(t) Table value (2.10), below the significance level (0.05), and degree of freedom (18). And M for Mean, SD refers to the Standard Deviation

From Table 2, it is evident that both the control and experimental groups are equivalent in the dependent research variables. The calculated (t) value for all tests was smaller than the tabular value of (2.10), below the significance level (0.05), with a degree of freedom of (18).

Mental Training Program

In preparing his training program, the researcher aimed to adhere to performance-based principles to ensure the utilization of mental training, which is as follows:

1. Description of the exercise to be implemented by the coach.

2. Observing the performance model of the exercise and player movements before implementation.

3. Concentration and listening to the coach.

4. Focusing on performance possibilities and selecting the appropriate response according to the game situation.

5. Achieving the exercise goal to impact the field intelligence variable.

6. The researcher used (20) exercises in the training program (see appendix (1)) at an average of (4) exercises in each training unit, as follows:

1. Mental exercise.

2. Mental exercise

Main Research Experiment

The initiation of the mental training program (see appendix (1)) application began on Monday, May 1, 2023, at the football field of Al-Fahd Club. The program lasted for eight weeks, with four weeks in the pre-competition period and another four weeks in the pre-competition period. This was conducted through two training units per week, on Monday and Wednesday. These days were determined after consulting the team's training program. The study lasted for two months, during which 16 training units were implemented. These training modules can be distributed over the two months according to a specific training plan. The duration of each training unit was 120 minutes. The execution of the compound exercises took minutes from the training unit in the main section. The researcher did not interfere in the unit sections except for the time allocated for mental training. The team coach and assistants were responsible for training the experimental group. The researcher monitored the training units to ensure adherence and implementation of the training program. The researcher ensured that the exercises possessed the following characteristics:

1. The researcher adhered to the rest periods guided by the second pilot study to ensure that the players did not reach stages of unnatural exhaustion. The researcher ensured that the players' functional devices had a suitable period for recovery or transitioned to the other repetition group.

2. Progression in the application of exercises from easy to difficult.

3. Coordination with the coaches of both the control and experimental groups to apply the work and unify the time and the number of training units to be applied.

4. The training program was successfully completed on Tuesday, July 1, 2023.

Post-Experimental Tests: With the same conditions of pre-tests and similar in terms of time and space and the method of applying the tests, the researcher conducted the post-tests on (Thursday) the seventh of July 2023, on the experimental and control sample so that the researcher could process the data statistically.

Data analysis

Statistical Means, Standard Deviation, Median, Skewness Coefficient (L)(Ali et al., 2022), Law (T-TST) for Symmetrical Samples(Ali et al., 2024), and Law (T-TST) for Equal Independent Samples in Number were used in this study.

Results

Pre- and Post-Experimental Test Results for the Research Groups

From Table 3, it is evident that the differences were statistically significant between the pre-and post-experimental test results for the control group, favoring the post-experimental tests in the dependent research variables, except for the intelligence variable, where no significant differences were observed in favor of the post-experimental tests.

Table 3. Illustrates the mean (M), standard deviation (SD), computed t-value, mean differences MD, and standard deviation difference (SDD) in the pre-and post-experimental tests for the control group.

Test	Measurement Unit		Control Group		Experimental Group		MD	SDD	Calculated (t) Value	Significance
			M	(SD)	M	(SD)				
Field Intelligence	Degree		90.7	5.16	91.55	5.41	1.48	5.09	1.30	Not significant
Chest Ball Control	Accuracy	Degree	2.1	1.33	3.15	1.37	1.3	1.14	5.2	Significant
	Speed	Sec	12.77	1.46	11.38	0.88	1.39	0.95	6.61	Significant
Receiving, Dribbling, Shooting	Accuracy	Degree	1.8	0.78	2.7	1	0.95	0.92	4.75	Significant
	Speed	Sec	19.6	2.22	17.65	1.85	2	1.18	7.69	Significant

*Table's t-value (2.26), below the significance level (0.05), and the degrees of freedom (9).

Pre- and Post-Experimental Test Results for the Experimental Group

From Table 4, it is evident that the differences were statistically significant between the pre-and post-experimental test results for the experimental group, favoring the post-experimental tests in the dependent research variables. This clearly demonstrates the significant development achieved through the implementation of mental training.

Table 4. Illustrates the mean, standard deviation, computed t-value, differences in means, difference standard deviation, and significance in the pre-and post-experimental tests for the experimental group.

Test	Measurement Unit		Control Group		Experimental Group		MD	SDD	Calculated (t) Value	Significance
			M	(SD)	M	(SD)				
Field Intelligence	Degree		91.5	4.99	116.45	5.74	24.95	9.99	11.18	Significant
Chest Ball Control	Accuracy	Degree	2	1.34	4.2	0.97	2.3	1.38	7.66	Significant
	Speed	Sec	13.01	1.86	9.71	0.92	3.29	1.96	7.65	Significant
Receiving, Dribbling, Shooting	Accuracy	Degree	1.95	1.32	4.2	0.87	2.2	1.18	8.46	Significant
	Speed	Sec	19.4	2.90	14.7	1.48	4.75	2.27	9.5	Significant

*Table's t-value (2.26), below the significance level (0.05), and the degrees of freedom (9).

Post-Experimental Test Results for Field Intelligence for the Research Groups:

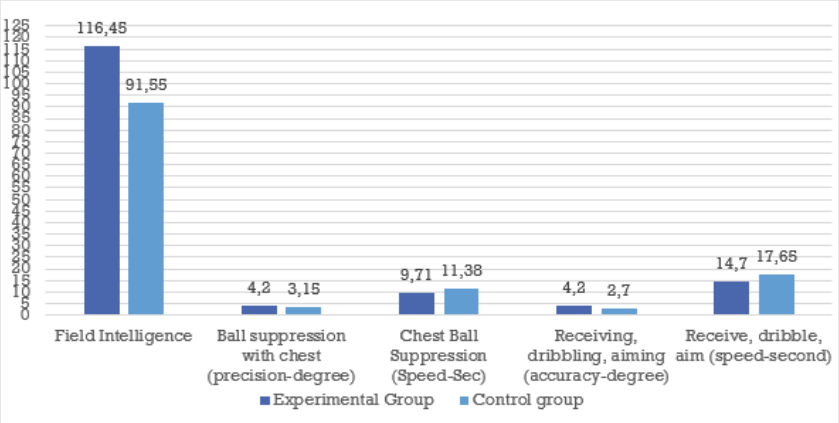
From Table 5, it is evident that the differences were statistically significant between the post-experimental test results of the control and experimental groups, favoring the experimental group in the dependent research variables. This demonstrates the superiority of the experimental group, which applied mental training, over the methodology followed by the control group.

Table 5. Illustrates the mean, standard deviation, computed t-value, and significance of the post-experimental tests between the control and experimental groups.

Test	Measurement Unit		Control Group		Experimental Group		Calculated (t) Value	Significance
			M	(SD)	M	(SD)		
Field Intelligence	Degree		91.55	5.41	116.45	5.74	14.14	Significant
Chest Ball Trapping	Accuracy	Degree	3.15	1.37	4.2	0.97	2.83	Significant
	Speed	Sec	11.38	0.88	9.71	0.92	5.96	Significant
Receiving, Dribbling, Shooting	Accuracy	Degree	2.7	1	4.2	0.87	5.17	Significant
	Speed	Sec	17.65	1.85	14.7	1.48	6.14	Significant

*Table's t-value (2.10), below the significance level (0.05), and the degrees of freedom (18).

Figure 1. shows the arithmetic media between the post-tests of the two research groups.



Discussion

Discussion of the first hypothesis (Statistically significant differences exist between the pre- and post-experimental test results for both the control and experimental groups)

Through the presentation and analysis of the pre-and post-experimental test results for both the control and experimental groups, evident improvement in all dependent research variables in favor of the post-experimental tests emerged. This indicates the positive impact of the following methodology, as well as

the mental training accompanied by compound exercises. Carefully planned training programs are a priority for successful coaches to achieve training goals(Firmansyah et al., 2023). This is achieved by working on the appropriate training loads according to the players' levels and facilitating their adaptation to real training adaptations, understanding, and absorbing diverse exercises, which work to develop the mental, physical, and skill capabilities of the players. Particularly, they are in harmony with the nature of motor performance in the game of football. As noted, "Training has become a process that keeps pace with the individual's life according to his characteristics and needs(Sabarit et al., 2020). The training seeks to bring about changes in the behavior patterns of the players by directing them to the best methods for the correct understanding of their personality and abilities and using exercises that affect the function and efficiency of the body's systems for the athlete to achieve sporting achievements(Hummadi et al., 2024).

The researcher attributes the results of the control group, which did not show statistical significance in the research tests such as field intelligence, to the absence of mental exercises during motor performance of the exercises and the failure of the players to carry out a motor duty that allows them to think about performance and respond to a stimulus among the stimuli, whether in passing or facing a defending player(Reinhard et al., 2025). However, the development of compound skills, both accuracy and speed, is due to the impact of the contents of the training curriculum set by the coach. This led to clear results, considering the development of players' capabilities according to the planning based on scientific principles. There should be a progression in the training loads in intensity, volume, and rest periods(Ahmed et al., 2018).

Discussion of hypothesis two (There are statistically significant differences between the post-test results between the control and experimental groups)

Through presenting and analyzing the results of the post-tests between the control and experimental groups, the development of all dependent research variables in favor of the experimental group became evident. This indicates the positive impact of the accompanying mental training with compound exercises. Achieving athletic success necessitates a holistic training process(Omar et al., 2018). Players must be comprehensively prepared, which includes mental, skill, physical, strategic, and psychological aspects according to the specificity of the practiced activity. This should also encompass the style that supports the training method(Mosleh et al., 2018). Mental training is a significant factor in the players' thought processes and the development of their mental abilities and field intelligence. It is one of "the methods in which mental skills are used to try to improve performance"(Al-Naqib, 1990). Therefore, the superiority of the experimental group in the field intelligence variable over the control group was established. Mohamed El-Arabi and Abdulnabi Jamal (1996) confirm this. Despite intelligence being an inherited trait that may vary from one individual to another, it requires development, especially in the sports field, including football. Compound exercises enhance cohesion and increase the player's ability to think strategically(Al-Arabi Shamoun & A. N. J., 1996).

Conclusions

1. Mental training significantly affected the development of football field intelligence for the experimental research sample.

2. Mental training positively affected the development of compound skill performance in football for the research sample.

3. The methodology followed for the control group did not achieve the desired development in football field intelligence.

4. The methodology followed for the control group positively affected the development of football skill performance.

Based on the conclusions drawn, the researcher recommends the following:

1. Emphasize mental training in football for second-tier players and other levels.

2. Utilize the mental training program used in the current study.

3. Conduct further similar studies that have not been utilized and understand their impact on other variables in football.

4. Necessitate football coaches to focus on the mental aspect of players due to its positive implications on the development of football.

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Authors' and translators' details:

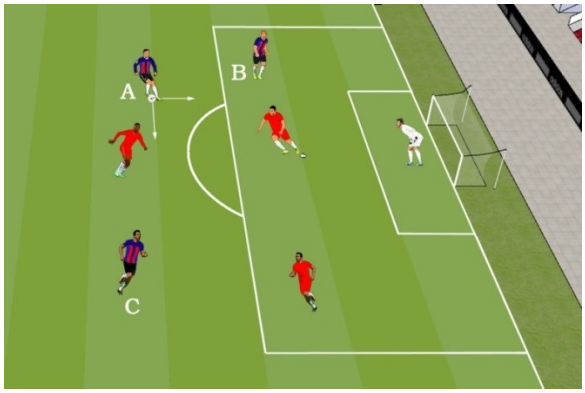
Adnan Fadous Omar	pe.adnan.fa_1973@uoanbar.edu.iq	Author
Waleed Khalid Hammadi	pe.waleed_khaled@uoanbar.edu.iq	Author
Labeeb Zouyan Moseekh	pe.dr.la.su@uoanbar.edu.iq	Author
Kheiry mutar Muhammad	khyryastadh89@gmail.com	Author
Majdaldeen Mohammed Saleh	majdaldeen.m@uosamarra.edu.iq	Author
Othman Adham Ali	othmanadhamali@uoanbar.edu.iq	Author
Adnan Omar	ofcb993@gmail.com	Translator

Appendix (1)
Exercise 1
Exercise Name: Concentration of attention and complex skill performance
Tools: legal half field – football – cones – small football goals – mobile – playing shirts – colored – stopwatch – whistle.
Exercise Description: The players are divided into two parts; every five players form a team, and the two teams start playing and competing for the ball, provided that each team attacks two goals and defends the other two goals.

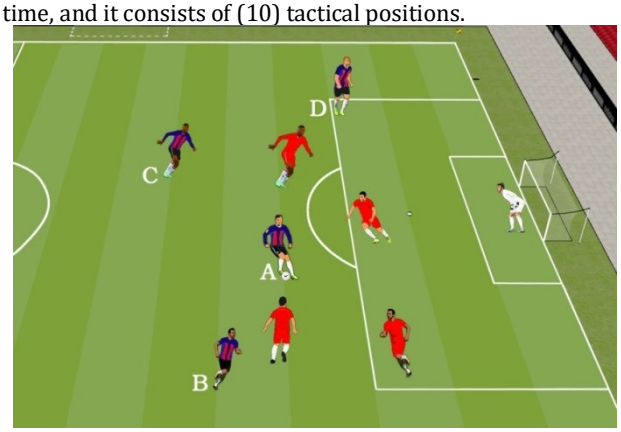
The mental training program accompanying the complex exercises
Week (1) Today : Training module (1)
Department: Main Unit Intensity (81%)

Workout time	Comfort		Totals	Iteration	Performance tim second	Intensity	Exercise number
	Between the total seconds	Between duplicates seconds					
10.2	90	45	3	3	8	%82	1
12.9	120	60	3	3	6	%85	2
13.8	120	60	3	3	12	%88	3
11.1	90	45	3	3	14	%80	4
48minute	Total workout time						

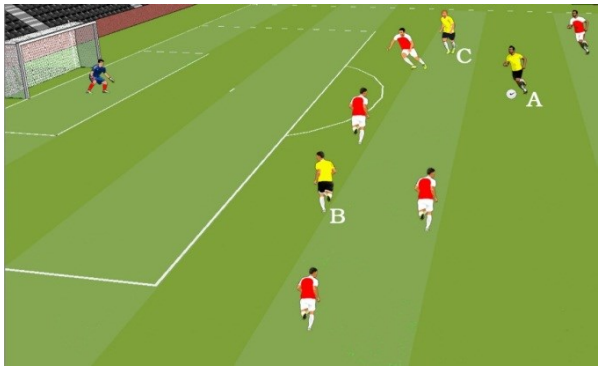
Appendix (2)
The speed of tactical thinking / the player's ability to choose a correct solution to the tactical situations in the shortest time, and consists of (10) tactical situations.



The field of planning organization / is the player's ability to arrange solutions and alternatives at the time of their relative importance and at a specific time, and it consists of (10) tactical positions.



The flexibility of the offensive tactical thinking of the players / expresses the player's ability to produce the most important solution of the correct solutions to the tactical situation in a specific time and be of (10) tactical positions for offensive situations.



Appendix (3). Shows the alternatives to the answer of the scale and its degrees

Degrees of alternatives								
The field of organization of tactical thinking				The field of speed of tactical thinking				
4	2	3	1	1	2	4	3	1
1	4	2	3	2	1	3	4	2
4	3	1	2	1	4	2	3	3
1	4	3	2	3	2	1	4	4
2	4	3	1	4	1	3	2	5
2	1	4	3	2	1	4	3	6
1	2	4	3	2	1	3	4	7
1	4	2	3	3	1	2	4	8
4	2	1	3	1	3	2	4	9
2	1	4	3	1	2	4	3	10
Scope and flexible tactical thinking								
degree				Number of solutions selected				
1				One solution				1
2				Two solutions				2
3				Three solutions				3
4				solutions				4