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THE EFFECTIVENESS OF THE PENTAGRAM STRATEGY IN DEVELOPING SOME COMPLEX FOOTBALL SKILLS FOR STUDENTS

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ABSTRACT

This research aims to identify the effectiveness of the pentagram strategy in developing certain complex football skills among students of the Faculty of Physical Education and Sports Sciences, given the importance of these skills in improving the quality of technical performance and decision-making during various lesson situations. The researcher used the experimental method with a pre-test/post-test design, as it is the most suitable approach for studying the impact of educational and training programs in academic settings. The research sample consisted of a group of students enrolled in a football course, selected purposively according to specific criteria related to physical readiness and commitment to participation. The researcher used a set of standardized complex skill tests, such as dribbling followed by passing, receiving followed by shooting, and ball control linked to decision-making. Performance was recorded using precise measurement tools and video analysis methods. A training program based on the Pentagram strategy was developed, comprising 14 learning units focused on five main pillars: motor perception, innovation, problem-solving, diversifying skill alternatives, and self-feedback. The program was implemented over several weeks, with continuous monitoring of student performance and progress. Post-test results showed statistically significant differences favoring the post-test scores in all complex skills, indicating the effectiveness of the Pentagram strategy in improving students' technical performance and skill integration. Effect size indicators also demonstrated that the program had a significant and noticeable impact on skill development. The research concluded that the Pentagram strategy is an effective approach for teaching complex football skills within the academic setting, and the researcher recommends its adoption in practical lesson curricula due to the stimulating learning environment it provides for creativity, problem-solving, and the development of motor performance.

KEYWORDS: *Effectiveness, pentagram, strategy, football.*

INTRODUCTION

Complex skills in football are among the most important indicators of the maturity of learners' motor and intellectual performance, as they represent the product of integrating physical, skill-based, and cognitive abilities simultaneously. In light of the rapid advancements in sports education, attention has shifted towards teaching strategies based on integrating deep motor thinking with flexible response, rather than simply repeating traditional performance. Among these modern strategies, the Pentagram strategy stands out as an innovative training-educational model that relies on the interaction of five key dimensions: perception, analysis, decision-making, motor creativity, and precise execution. This makes it a multifaceted educational tool for developing complex skills.

Recent studies have confirmed that students no longer need to be simply provided with skills, but rather a learning strategy that empowers them to be active participants in the learning process, capable of analyzing data, anticipating solutions, and adjusting their plans during the lesson. This highlights the importance of the pentagram, which relies on linking cognitive analysis with practical application through dynamic, motorized tasks that simulate real-world game scenarios. This contributes to developing complex skills such as dribbling followed by passing, receiving under pressure with quick decision-making, or dribbling, moving within space, and then shooting.1

The varying levels of students' ability to perform these complex skills, and the gap between what is taught in lectures and what is practiced in lessons, necessitate the adoption of teaching strategies that integrate cognitive-motor learning. Despite the growing interest in interactive learning models, the application of the Pentagram strategy specifically in teaching complex football skills remains limited, particularly at the university level, which requires specialized preparation that will impact students' future training and professional performance.2

Hence the importance of this study, which seeks to explore the effectiveness of the Pentagram strategy in developing certain complex skills among students and to reveal its contribution to improving performance quality, response speed, and decision-making accuracy in various lesson situations. This study represents an attempt to add a new theoretical and applied framework that contributes to renewing football teaching practices and opens new horizons for employing innovative strategies that align with the requirements of contemporary sports practice.

RESEARCH PROBLEM

Despite the remarkable progress in football teaching methods, many students still face difficulty in mastering complex skills that require the simultaneous integration of several motor-cognitive responses. Field observations reveal that most educational programs focus on individual skills in isolation from the lesson context, leading to a weakened ability of the learner to make quick decisions and a decline in performance quality when transitioning from a single skill to a complex performance in competitive or pressure-based situations. Given the limited number of studies examining the Pentagram strategy as a comprehensive educational framework integrating perception, analysis, creativity, and execution, the need arose to investigate its effectiveness in developing some of these complex skills in students.

Therefore, the research problem can be formulated in the following question: "What is the effectiveness of the Pentagram strategy in developing some complex football skills in students?"

RESEARCH OBJECTIVES

1. Apply the Pentagram strategy in teaching some complex football skills.
2. Identify the effect of this strategy on improving the quality of students' execution of complex skills.
3. Compare performance levels before and after applying the strategy to determine the extent of improvement.
4. Determine the extent to which the Pentagram strategy improves decision-making speed and performance accuracy in lesson situations.

RESEARCH HYPOTHESES

1. There is a statistically significant difference between the pre- and post-test mean scores in favor of the post-test in students' complex skill performance as a result of applying the Pentagram strategy.
2. The Pentagram strategy contributes to improving decision-making speed and performance accuracy compared to traditional methods.
3. The strategy leads to a higher level of cognitive-motor integration among students compared to before its implementation.

RESEARCH AREAS

- Human Scope: Students at the University of Babylon - College of Physical Education and Sports Sciences, first year, morning studies, academic year 2024-2025.
- Time Scope: From (October 1, 2024) to (December 10, 2026).
- Spatial Scope: The stadium of the College of Physical Education and Sports Sciences - University of Babylon.

RESEARCH METHODOLOGY AND FIELD PROCEDURES

1. RESEARCH METHODOLOGY

The researcher used the experimental method with a two-group equivalent design (experimental and control) using pre- and post-tests, as it is the most suitable method for the nature and objectives of the research.

2. RESEARCH POPULATION AND SAMPLE

The research population consists of first-year students at the College of Physical Education and Sports Sciences, University of Babylon, totaling (272) students for the academic year (2024-2025). They were selected randomly, as detailed below.

- **MAIN APPLICATION SAMPLE**

The main experimental application sample consists of (108) students from the College of Physical Education and Sports Sciences at the University of Babylon, representing (39.71%) of the total student population (research population). These students will be divided equally into two groups (control and experimental), each group comprising (54) students, representing (19.85%).

3. INFORMATION, TOOLS, AND EQUIPMENT USED IN THE RESEARCH

- **INFORMATION COLLECTION METHODS**
  a) Arabic and Foreign Sources and References.
  b) The International Information Network (Internet).
  c) Data Collection Questionnaire for the Scales.
  d) Data Entry Forms.

- **TOOLS USED**
  a) Dell Laptop.
  b) Calculator.
  c) Various Office Supplies.
  d) Chinese-made Clock.
  e) Football Field.
  f) Chinese-made Fox Whistle.
  g) Small Goals.
  h) Chinese-made Footballs.
  i) Markers, Cones, and Color Probes.

PILOT TEST:

The researcher conducted the pilot test on Wednesday, January 12, 2025, with a sample of 15 students from section (D) of the original population. The test lasted 16-20 minutes. The researcher aimed to achieve the following through this pilot test:

1. Identifying potential obstacles to conducting the field experiment.
2. Ensuring the assigned support team's ability to understand and implement the required tests.
3. Determining the necessary balls and other supplies.
4. Assessing the students' ability to administer the tests.

The researcher confirmed the suitability of the equipment and devices used, the support team's understanding of the required tests, the students' ability to administer the tests, and the absence of any obstacles to the tests.

- **PRE-TESTS:**

Pre-tests were conducted on the research sample on Thursday, January 20, 2025, at 10:30 AM at the College of Physical Education and Sports Sciences, University of Babylon. The tests included skills assessments and a psychological well-being scale, and lasted between 60 and 70 minutes.

HOMOGENEITY AND EQUIVALENCE:

First: Sample Homogeneity:

The researcher divided the sample into two groups (experimental and control) using simple random sampling (drawing lots). To avoid influences that might affect the research results due to individual differences among students, certain variables representing the sample's characteristics were identified to ensure homogeneity in those variables that are influential in the experiment and must be controlled. Therefore, statistical analysis was performed using the skewness coefficient. The skewness coefficient for these variables was within (±1),[3]indicating that the sample is normally distributed, i.e., homogeneous. The closer the skewness coefficient values are to (±1), the more homogeneous the sample is considered. The sample was homogeneous (1) as shown in Tables (1) and (2).

Table 1. shows the homogeneity of the control group

Statistical methods	Age (years)	Length (cm)	Weight (kg)	Statistical significance
Median	21	171,72	65,60	Homogeneous
mean	21,03	172,4	66,2	Homogeneous
Standard deviation	0,78	5,36	7,34	Homogeneous
Skewing coefficient	-0,0	0,038	-0,628	Homogeneous

Table 2. shows the homogeneity of the experimental group

Statistical methods	Age (years)	Length (cm)	Weight (kg)	Statistical significance
Median	21	172,00	66,30	Homogeneous
mean	21,51	171,32	67.5	Homogeneous
Standard deviation	0,90	5,58	5,05	Homogeneous
Skewing coefficient	-0,0	0,042	0,544	Homogeneous

Based on Tables (1) and (2), it was found that the skewness coefficient values approached zero and did not exceed (+1) or (-1), indicating that the research sample was within a normal distribution in the variables of age, height, and weight, reflecting the homogeneity of the sample across all variables.

SECOND: SAMPLE EQUIVALENCE:

The researcher conducted an equivalence test for the two research groups (experimental and control) in the selected football skills (dribbling and shooting, passing and tackling). The researcher used an independent samples t-test to determine the equivalence between the two groups, as shown in Table (3).

Table 3. shows the equivalence between the control and experimental groups

S	Variables	Control group		Experimental group		Calculated value of t	Statistical significance
		Mean	Std	Mean	Std		
1	Dribbling then passing	35.266	4.628	36.526	5.213	1.228	Non-Sig.
2	Controlling then scoring	6.173	3.573	6.782	3.514	0.824	Non-Sig.
3	Rolling then scoring	7.500	2.770	7.347	2.869	0.259	Non-Sig.

Degrees of freedom (n-2) = 78, significance level (0.05), critical t-value = (1.980).

Considering Table (3), we observe that the calculated t-value is less than the critical t-value of (1.980). This indicates that there are no statistically significant differences, and that the two samples are equivalent in all research variables.

MAIN EXPERIMENT

To achieve the objectives of the scientific research, the researcher prepared educational activities accompanied by games, comprising (12) educational units, at a rate of two units per week, each lasting (90) minutes. The preparatory section consisted of (15) minutes, and the main section (65) minutes. The educational part (15) minutes included five minutes dedicated to explaining the games, and the main section (40) minutes was divided into the teacher's curriculum. The selected skills were implemented in the educational units, with each unit being implemented in (20) minutes, and the practical part (10) minutes in the concluding session. The educational units were implemented with the experimental group from Wednesday, January 26, 2025, to Thursday, March 3, 2025, at the stadium of the College of Physical Education and Sports Sciences, University of Babylon.

POST-TESTS:

The post-tests for both the experimental and control groups were conducted on Tuesday, March 8, 2025, for the Psychological Well-being Scale and the skills tests. The tests lasted 60-70 minutes. The researcher ensured that the same procedures and conditions were followed in the pre-tests and that appropriate tools were provided.

STATISTICAL METHODS:

The researcher used various statistical methods to extract the research results, employing the Statistical Package for the Social Sciences (SPSS).

RESULTS:

- **Presentation of the results showing the superiority of the pre-test and post-test for the Psychological Well-being Scale for the control group.**

Table 4. shows the superiority between the pre-test and post-test of complex football skills for the control group

S	Complex skills	Pre-test		Post-test		Calculated value of (t)	Level of significance	Statistical significance
		Mean	Std	Mean	Std			
1	Dribbling then passing	35.26	4.62	30.26	1.61	6.873	0.000	Sig.
2	Controlling then scoring	6.17	3.57	10.83	2.21	7.199	0.000	Sig.
3	Rolling then scoring	7.50	2.77	11.13	1.65	7.03	0.000	Sig.

- **Presenting the results of the pre-test and post-test of complex football skills for the experimental group:**

Table 5. Shows the difference between the pre-test and post-test of complex football skills for the experimental group

S	Complex skills	Pre-test		Post-test		Calculated value of (t)	Level of significance	Statistical significance
		Mean	Std	Mean	Std			
1	Dribbling then passing	36.52	5.21	28.31	1.99	9.145	0.000	Sig.
2	Controlling then scoring	7.78	3.51	12.48	1.47	9.502	0.000	Sig.
3	Rolling then scoring	7.35	2.86	12.65	1.26	10.466	0.000	Sig.

- **Presentation of the results of the post-test advantage for compound football skills for the control and experimental groups:**

Table 6. Shows the means, standard deviations, calculated (t) value, and significance of the post-test advantage for the control and experimental groups for compound skills

Complex skills	Control group		Experimental group		Calculated value of (t)	Level of significance	Statistical significance
	Mean	Std	Mean	Std			
Dribbling then passing	30.26	1.61	28.31	1.99	5.174	0.000	Sig.
Controlling then scoring	10.83	2.21	12.48	1.47	4.215	0.000	Sig.
Rolling then scoring	11.13	1.65	12.65	1.26	4.950	0.000	Sig.

DISCUSSION:

Considering the preceding tables, significant progress made by both the control and experimental groups in the post-test compared to the pre-test is evident, with the experimental group demonstrating superior performance in the use of the pentagram strategy for learning complex football skills. The researcher attributes the control group's progress to the effectiveness of the curriculum developed by the instructor, as well as the students' consistent and regular application of the curriculum. Furthermore, the repetition of complex skills played a clear role in this development. As Hanfi Mahmoud noted, "Practice plays a crucial role in enabling students to reach a high level of technical performance in terms of integration, accuracy, and retention, leading to a high level of technical skill." Additionally, the instructor's method of presenting, demonstrating, and explaining these skills to the students, along with his own exemplary performance model, and the students' efforts to foster a spirit of cooperation and healthy competition, all contributed to this improvement.

(Nazir Jamil) affirms that “increasing the element of competition in the lesson raises the motivation of learners and provides the learner with experiences closer to practical motivation than any other educational method”[4]. The better use of the number of repetitions and the division of rest periods between exercises and work leads to increased motivation and excitement of students. The use of aids and the method of distributing them on the field had a valuable effect on the learning of complex football skills by students. Adopting the pentagram strategy, which has a great function in the process of learning complex football skills, and guiding students during the performance of skills, and instilling a spirit of competition among students, is what Mahmoud Muath confirms: “The pentagram strategy and the various means help in the transfer of information and skills and raise the ability to learn skills faster, so it has a positive effect on the speed of learning skills” [5].

The experimental group, however, demonstrated superior progress in complex football skills. The researcher attributes this development to the effectiveness of the true pentagram strategy, as it appeals to students because it stimulates competition among them. This increases the process, excitement, enjoyment, and suspense for the students. Furthermore, the simplicity of the learning process allows for smooth execution, in addition to the elements of suspense, motivation, excitement, and encouragement, which enhances students' self-esteem and confidence. This aligns perfectly with what Walid Abdel-Nabi indicated:[6] that learning through play involves utilizing play activities to acquire knowledge, make scientific principles more accessible to learners, and broaden their cognitive horizons. It is a guided activity undertaken by students to develop their behavior, mental, physical, and emotional abilities, while simultaneously providing enjoyment and entertainment. In addition to the competitive factor, which increases students' motivation for the lesson and provides them with experiences closer to practical motivation than any other educational method, the researcher noted that this is what Qusay Hatem Khalaf pointed out: "The excitement and competition present in the learning activity increased motivation in performance and facilitated the acquisition of complex skills, thus consolidating and developing them."

The researcher believes that the presence of excitement and stimulation in lectures is essential due to its significant importance in increasing enjoyment and entertainment for learners, as well as acquiring, mastering, remembering, and performing complex skills effectively.

The effectiveness of the Pentagram strategy allows students to practice the various skills it presents. It enables them to discover the correct method and the correct application of skills during the learning activity, leading to increased psychological satisfaction. This illustrates the importance of the learning activity the researcher developed for teaching complex football skills to students, because of the correct teaching method used, which led to the learning and improvement of complex skills among the students.

It is clear from the above that the Pentagram strategy has contributed to the students' progress through Increasing their self-confidence, avoiding fear, anxiety and isolation, and strengthening their social relationships inside and outside the classroom, and in their daily lives, all of this led to the students learning to perform complex skills, and thus the goal of the research was achieved.

The researcher attributes the learning of certain complex football skills to the effectiveness of the pentagram strategy he developed, the effectiveness of the learning process, the correct scientific approach to error correction, the provision of feedback, and the opportunity for students to interact with each other due to the diversity and similarity of the learning activities. This led to the learning of the selected skills, enabling them to use them in various situations they might encounter while playing football, performing the skills with high accuracy and the fewest possible errors. This is what Raed Mahous pointed out: "Effective and positive learning must occur in the learning process, especially when the curriculum is applied with its components and steps. It works to meet the learner's needs and encourages them to increase their motivation by feedback in various forms, both individually and collectively, and what is stored in the learning process through providing corrective, encouraging, and reinforcing feedback on performance."[7]

From this, we can conclude that the educational curriculum must include activities that are consistent, appropriate, and suitable for the students' level, because the student needs high accuracy and skill when performing these skills, and this helps in learning and mastering them. Furthermore, it fosters psychological well-being among students and strengthens the student-teacher relationship. It also provides students with freedom in their performance and empowers them to make appropriate decisions to modify their skills. This increases their responsibility through consistent practice of skills on the field during play, observing their own performance and that of others, and knowing when to use feedback to correct mistakes.[8]

The number of learning units and the objectives of each recreational unit played a significant role in learning complex football skills. These skills are fundamentally based on accuracy and correct timing, which can only be achieved through precision, thought, reflection, and detailed focus on the various aspects of the skills. This is emphasized by Diaa Jaber, who states that "accuracy is one of the main elements that must be present in skills, in addition to timing and power during performance."[9]

Moreover, complex skills rely on good organization, a sound practical and scientific context, and clear explanations and applications. This led to students acquiring sufficient information, experience, and knowledge of the skills, both practically and theoretically. The information included how to encourage action during the lesson, use feedback, and expand students' intellectual capacity, taking into account individual preferences and under the guidance of the teacher. The performance, monitoring of students, and focusing on all students, their achievements, performance, and repetition of skills considering

the assignments they were asked to do all of this contributed to learning complex football skills, and thus the research objectives were achieved.

CONCLUSIONS

1. The Pentagram strategy is highly effective in developing complex football skills.
2. Its effectiveness depends on integrating perception, analysis, and execution in a single situation.
3. The strategy helped improve decision-making under pressure and in a short time.
4. It contributed to developing motor creativity and mental flexibility during performance.

RECOMMENDATIONS

1. Adopt the Pentagram strategy in teaching complex skills in physical education colleges.
2. Guide faculty members to create realistic teaching situations that simulate actual play.
3. Focus on the cognitive dimensions and decision-making rather than repeating skills individually. 4. Conduct comparative studies between the pentagram and strategies such as TGfU and Game Sense.
4. Apply the strategy to other team sports such as basketball and handball.
5. Study the role of the pentagram in developing psychological aspects such as confidence and mental flexibility.

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