



# The Effect of Educational Units According to the Cognitive Training Strategy on Cognitive Flexibility and Learning the Skill of Scoring in Football

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DOI:

<https://doi.org/10.47134/jpo.v1i3.383>

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Received: 15-01-2024

Accepted: 04-02-2024

Published: 21-03-2024



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**Abstract:** The first chapter contained the introduction and importance of the research, as the importance of using the cognitive training strategy according to cognitive flexibility was addressed for learning football for first-stage students. The research aims to address whether educational units developed by the researchers positively influence learning outcomes in football scoring. The objectives of the research were to prepare educational units using a cognitive training strategy according to cognitive flexibility in learning the skill of scoring in football. Where the research areas were: The human field: first-year students in the College of Basic Education, Department of Physical Education and Sports Sciences / Al- Mustansiriya University, the time field: for the period from 10/12/2022 until 2/ 10/2023. As for the research community, it was represented by the students of the first stage in the College of Basic Education/Al-Mustansiriya University (70) students. The sample consisted of two equal groups (10), experimental and control. The Vina system was used using a three-dimensional test to determine cognitive flexibility. The researcher conducted pre-tests for the research sample, then the main experiment was applied for a period of 10 weeks, one educational unit per week, after which the researcher conducted the post-tests and the pre-tests with the same procedures, which indicated that there were significant differences between the two research groups and in favor of the experimental group. The conclusions were that there was a positive impact of the educational units used in the research to learn skills, as the researcher recommended using a cognitive training strategy according to cognitive flexibility in learning other skills.

**Keywords:** Cognitive Training Strategy, Cognitive Flexibility, Learning Outcomes

## Introduction

Education is considered one of the most important aspects that play a distinctive role in the progress of peoples due to its positive impact in preparing generations according to sound and modern scientific principles. This progress can be identified by knowing the extent of the use of modern methods, methods, techniques and theories of teaching and learning. Teaching methods and strategies have gained importance in the world because of their impact on the capabilities of the human mind, so organized efforts began to employ these strategies to design curricula that meet the needs of the learner (Isa, 2021; Komar, 2019; Safapour, 2019). Due to the importance of the educational process, scholars and specialists have created methods, methods, and strategies to keep pace with the progress and development taking place in the educational process, which has prompted societies to seriously think about evaluating their educational policies and reconsider formulating their strategies and philosophy in light of the changes to create a creative student (Klingenberg, 2020; Ogunniyi, 2020; Vizcaya-Moreno, 2020; Zhang, 2021). Which is compatible with the nature of the student to develop the ability to learn in light of previous experience, which begins with simple ideas and then they are collected and stored in memory to form new, more complex ideas, so that they become decision makers, self-reliant, and able to solve problems and discover useful information through understanding within the lesson, as studies have confirmed (Patton, 2023; Susilowati, 2020). When learners learn together and experience discussion, consultation, and interaction among themselves, and exchange experiences and skills, their learning is better.

Since effective teaching aims to develop the student's ability to think logically, the inputs of the educational process must be seriously considered, most notably teaching strategies and modern teaching methods, and through a cognitive training strategy (de la Cruz, 2023; Klingenberg, 2020; Sardegna, 2022). This strategy is considered one of the most promising educational strategies at all levels of education at school and university, and it is expected that the effectiveness of the specific training will be greater on university campuses, because it has specific tasks in addition to the fact that students are more able to plan their education, their future, and their interim and final future goals, and it makes the student motivated (Aldawsari, 2023; Cheng, 2020; Ray, 2022). Thinking and pushing it towards action, innovation and problem solving in an innovative way of stimulating thinking in thinking, organizing knowledge and internal reflection in applying problem solving. Hence the importance of research lies in finding a teaching strategy that helps in learning the skill of football handling.

The game of football is one of the fun and easy sports games that lead to fun and excitement in all international schools, due to the speed of moving the balls and moving to occupy the space and the appropriate place for the purpose of disrupting the defense and its accuracy with one touch, so that the game of football appears to be an easy and enjoyable game through skillful performance (Buckthorpe, 2019; López-Valenciano, 2020, 2021). However, playing skills still require a lot of work and development, because they are characterized by slowness and traditionalism, which leads to a loss of enjoyment and a lack

of clear skill appearance due to the lack of use of modern methods in their daily educational units, through which emphasis is placed on teaching the skills and accuracy required to achieve football duties.

By reviewing previous research and studies, asking people with specialization and experience, in addition to the researcher's modest experience, as he works in the field of academic education, revealed to him that there is a weakness in some basic skills such as handling, and the scarcity of introducing modern strategies within educational units, as well as a lack of use of modern strategies integrated between in-person learning and e-learning, especially in the current situation. What happened to the Corona pandemic in teaching football in the first stage.

The research objectives encompass two key aims: firstly, the preparation of educational units tailored to the cognitive training strategy in cognitive flexibility, specifically targeting the acquisition of football handling skills among students within the research sample. Secondly, the study seeks to discern the impact of these educational units on both cognitive training strategy implementation and the learning of football handling skills among students. The research hypotheses propose that statistically significant differences will emerge between the pre- and post-test results for both the experimental and control groups concerning football handling skill acquisition. Additionally, the hypotheses posit significant disparities in post-test outcomes between the two research groups in terms of football handling skill acquisition. The research areas focus on the human domain, comprising a sample of twenty first-year students from the Department of Physical Education and Sports Sciences at the College of Basic Education, Al-Mustansiriya University. The study's temporal scope spans from December 10, 2022, to February 10, 2023, while its spatial arena encompasses foreign playgrounds within the Department of Physical Education and Sports Sciences at Al-Mustansiriya University. Finally, the definition of terms elucidates the cognitive training strategy, emphasizing its efficacy as an educational approach, particularly within university settings, where students possess heightened abilities to plan their academic endeavors and future aspirations.

## Methodology

Research methodology and field procedures involved the utilization of the experimental method, employing two equivalent groups by the researcher. The research population and sample were meticulously identified, focusing on first-year students in the Department of Physical Education and Sports Sciences at Al-Mustansiriya University (Abd Zaid & Al-Nuaimi, 2021). The selection of the research sample was intentional and closely aligned with the researcher's objectives and procedural framework. The research community comprised three divisions, totaling 70 students, from which a sample of 20 students was systematically and randomly chosen, divided equally into experimental and control groups, each comprising 10 students, constituting 28% of the total research population. Additionally, an exploratory experiment involved a sample of 5 students from outside the primary research sample but within the same community. Sample equivalence

was essential to attribute any differences to the experimental factor, necessitating complete equality between the two groups in all aspects except the experimental variable. To ensure parity, the researcher employed the T-test for independent samples with equal numbers in pre-tests, aiming to minimize disparities between the control and experimental groups across all research variables (Al-Nujahi & Morsi, 2011). Analysis indicated the randomness of differences in pre-tests, affirming the equality between the two groups across all variables, as depicted in Table 1.

**Table 1.** Equality of the Sample in the Pre-Tests for the Experimental and Control Groups

The meaning of the difference	(Sig)	(T)	(Sig)	value Levin	standard deviation	Arithmetic mean	the group	Dependent variables
Not a sign	0.714	0.372	0.469	0.546	1.135	2.2	Experime	Handli
					1.265	2.4	ntal	
							Female	Learn a
							officer	ng skill

Not significant if < (Sig) ( 0.05 ) at a significance level ( 0.05 ) and degree of freedom (n 1 + n (2 - 2 = 18)

The results presented in Table (3) indicate equivalence between the experimental and control research groups in the pre-test results for each variable listed, with statistical significance (Sig) values exceeding 0.05 at a degree of freedom of 18 and a significance level of 0.05. This suggests that students commenced the study on equal footing. Pre-test conditions were standardized, including consistent locations, devices, tools, and evaluators, facilitating replication during post-tests.

Tools, means, and devices utilized in the research encompassed diverse methods of information collection, including Arab and foreign references, objective scientific observation, personal interviews, tests and measurements, and expert forms. Devices incorporated a Japanese Casio stopwatch, 15 legal soccer balls of Chinese origin (Mekasa type), and homemade banners and flags of various heights.

Field research procedures were meticulously followed to achieve research objectives. Handling skills were determined by two researchers, each holding academic titles in the specialty. An exploratory experiment conducted on January 13, 2023, involved a sample of five students from the research community, assessing exercise validity and test suitability, affirming the tools' validity and test suitability, and the proficiency of supporting staff.

Pre-tests were administered to both experimental and control groups before implementing educational units, assessing candidate skill levels, conducted on December 17, 2023, at the Department of Physical Education and Sports Sciences.

The experimental curriculum, consisting of eight learning units, was developed according to the cognitive training strategy for learning football handling skills. The curriculum, based on scientific sources, expert opinions, and teaching methodologies, featured a 90-minute duration per unit, divided into preparatory, main, and final sections.

Post-tests for both groups occurred on February 21, 2023, under identical conditions to pre-tests, ensuring consistency in assessment parameters. Statistical analysis was conducted using the SPSS software package to extract relevant data treatments.

### Result and Discussion

In the presentation, analysis, and discussion of the results, Table 2 illustrates the pre- and post-handling skill learning test outcomes for both experimental research groups. This table serves as a visual representation of the cognitive flexibility and scoring skill results, enabling a comparative analysis between the experimental and control groups.

**Table 2.** Results of the Pre- and Post-Handling Skill Learning Test for the Two Research Groups

The meaning of the difference	(Sig)	(t)	Variance deviation	Average differences	standard deviation	Arithmetic mean	Comparison	the group	The test and the unit of measurement
D	0.000	15.461	1.35	6.6	1.135	2.2	Tribal	Experimental (10)	Manipulating towards a small target at a distance of (20) meters (degrees)
					0.632	8.8	after me		
D	0.000	8.337	1.252	3.3	1.265	2.4	Tribal	Control (10)	Manipulating towards a small target at a distance of (20) meters (degrees)
					0.949	5.7	after me		

D: ( Sig ) > ( 0.05 ) at a significance level ( 0.05 ) and degree of freedom (n) - (1)

The results depicted in Table (2) reveal a significant difference in the post-test handling skills between the experimental group, which employed the cognitive training strategy, and the control group, which followed the standard educational method. This difference was confirmed by the t-test for correlated samples, with a significance level of 0.05 and a degree of freedom of 9, as indicated by the Sig score below 0.05. Moving forward, Table (3) presents and analyzes the outcomes of the post-handling skill proficiency tests, offering a comparative examination between the experimental and control groups.

**Table 3.** Results of the Post- Handling Skill Proficiency Tests between the Two Research Groups

The meaning of the difference	(Sig)	(t)	standard deviation	Arithmetic mean	the number	the group	The test and the unit of measurement
D	0.000	8.598	0.632	8.8	10	Experimental	Manipulating towards a small target at a distance of (20) meters (degrees)
			0.949	5.7	10	Female officer	

D: ( Sig ) > ( 0.05 ) at the significance level ( 0.05 ) and the degree of freedom (n1 + n2 - 2) = ( 18 )

Show the table results (3) The statistical significance of the differences is determined by the t - test. For unrelated samples in tests Cognitive flexibility was in favor of the students of the experimental group, the cognitive training strategy at a significance level of (0.05) and a degree of freedom (18), based on the score (Sig) that was smaller than (0.05).

The analysis of Table (2) reveals notable advancements in the football handling skills of students across both research groups, as evidenced by improvements from pre-test to post-test levels. Specifically, significant differences were observed in the post-test results of the experimental group, which implemented the cognitive training strategy, compared to the control group, which followed traditional educational methods. These disparities were established through the t-test for correlated samples, with a Sig score below 0.05 at a degree of freedom of 9, suggesting a marked enhancement in the cognitive flexibility and skill acquisition of the experimental group.

Moving to the discussion of post-test results, as illustrated in Table (3), it becomes apparent that students in the experimental group, trained under the cognitive training strategy, outperformed their counterparts in the control group. This superior performance is attributed to the efficacy of the educational units formulated within the cognitive training framework. The utilization of this strategy facilitated students in diagnosing errors, adapting to challenging situations, and engaging in problem-solving exercises, thus fostering a flexible and creative thinking approach. Moreover, the cognitive training strategy encouraged active learning, motivation, and mental clarity, aligning with contemporary pedagogical advancements and leveraging the vast resources available through internet networks.

Further, the researcher underscores the significance of student autonomy in the learning process, as advocated by Ismail and colleagues, promoting an interactive learning environment that enhances metacognitive skills and communication abilities. Similarly, Al-Zoghbi highlights the role of cognitive training in developing metacognitive skills, facilitating effective communication and collaboration among learners.

Moreover, Nabil Mahmoud emphasizes the correlation between motivation, skill mastery, and goal specificity, positing that challenging goals stimulate performance and motivation, particularly when accompanied by repetitive exercises within the educational units. This resonates with Alwan's assertion regarding the importance of skill repetition for automated learning and individualized instruction.

In conclusion, the research objectives are fulfilled through the development of educational units that foster skill mastery and progression, guided by the cognitive training strategy. By encouraging active participation and problem-solving, this approach instills a deep understanding of motor skills and enhances performance levels, thereby advancing the overall learning experience.

## Conclusion

In conclusion, the findings of this study demonstrate the profound influence of employing the cognitive training strategy on attaining the educational unit objectives. The adoption of this strategy not only enhances students' adaptability to educational settings but also empowers them to select optimal solutions. Moreover, it fosters problem-solving abilities, critical thinking, and innovative approaches to learning. Therefore, it is recommended to prioritize the integration of the cognitive training strategy in physical education instruction, given its substantial impact on the educational process. Additionally, extending the use of this strategy to other academic subjects is advised, leveraging its benefits across diverse learning domains.

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