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The Effect of Skill Exercises Using The (Fit Light) Technique on Attentional Control and Performance of the Corner Kick and Penalty Kick Skills in Football

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Abstract

The aim of the research was to construct an attentional control scale in football for fifth-grade secondary school students, design skill exercises using Fitlight technology, employ them in practical physical education football lessons, and identify the effect of these exercises on attentional control and the performance of corner kick and penalty kick skills. The researcher hypothesized that there would be statistically significant differences between the pre- and post-test results of both the experimental and control groups in attentional control and in the performance of the corner kick and penalty kick skills in football, as well as statistically significant differences between the post-test results of the experimental and control groups in the same variables. The experimental method was adopted using a design with two groups (experimental and control). The research population consisted of fifth-grade secondary school students in the morning study at Al-Jawahiri Secondary School during the academic year (2024–2025), totaling 180 students, all intentionally selected using the comprehensive enumeration method (100%) from this population. The sample was distributed as follows: 10 students for the pilot experiment, 110 students for constructing the attentional control scale in football, and the remaining 60 students were selected as the main experimental sample representing the experimental and control groups. The researcher developed a new specialized attentional control scale in football for this category of students by following several field procedures and statistical analyses. Skill exercises using Fitlight technology were designed and applied to the experimental group for eight weeks at a rate of one lesson per week. After completing the experiment, the research results were analyzed using the SPSS statistical system. The conclusions indicated that the attentional control scale in football is suitable for fifth-grade secondary school students and possesses acceptable scientific foundations and coefficients. The use of skill exercises with Fitlight technology within football teaching in practical

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physical education lessons was found to be appropriate for fifth-grade secondary students and helped improve attentional control as well as the performance of corner kick and penalty kick skills in football among the students who practiced them compared with their peers who studied without them. The study also recommended adopting cognitive measurement in physical education lessons, particularly measuring each student's level of attentional control to support the improvement of football skill performance, avoiding excessive intensity or levels of lighting when using Fitlight technology, and emphasizing practice and repetition in the practical application of skill exercises when designing motor programs for football skill performance.

Keywords: Skill exercises, Fit Light technique, attentional control, corner kick, penalty kick, football

Introduction

Students need to enhance their ability to effectively select stimuli that require directing their attention and to control this attention with full mental awareness in order to manage the executive details of the skill to be performed. This is essential for meeting the requirements of various educational situations, particularly when learning football skills during practical physical education lessons. Such processes enable students to become aware of the stimuli present within the lesson and regulate their behavior through controlling attentional processes toward these stimuli. Therefore, it becomes necessary to provide support and facilitation for students by employing modern technological tools in teaching, which also take into account individual differences among learners. Educational technology represents a comprehensive revolution built upon information technology, which is the result of integrating three types of technologies: computer technology, software technology, and communication technology. This integration has the ability to enhance scientific productivity both quantitatively and qualitatively and includes instructional aids, multimedia, and educational resources (Fawzi & Rabhi, 2018, p. 29). Furthermore, there exists an integrative relationship between teaching methods, learning styles, and instructional media. This becomes evident through the teaching process and the procedures followed to achieve predetermined objectives, whereby instructional media form an essential component of the educational environment. They represent tools provided by the teacher, who ensures their suitability for use and effectiveness in influencing students, thus facilitating classroom learning and reinforcing it when used appropriately (Al-Suleiti, 2015, p. 23).

One of the modern technological tools used in education is Fitlight technology, which consists of instructional aids designed to attract attention and increase learners' interest in lesson topics. These tools provide sensory experiences that give meaning to the teacher's explanations by embodying ideas through tangible teaching aids, thereby facilitating understanding and forming visual images in learners' minds in the form of light stimuli that help guide their responses (Abdul Aziz, 2015, p. 3). Light has also been used considerably in research to study how the brain works and improve cognitive performance, as stimulating the brain using light can also enhance motor responses and thus increase the speed of neural response (Marder & Bucher, 2019, pp. 38–43). When visual images focus on retinal cells, they stimulate them and produce electrical currents that

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pass through nerve fibers toward the back of the eye, where they combine to form the optic nerve that transmits signals to the brain (Goldberger & Gurney, 2013, p. 21). Stimuli may either be organized into a cognitive schema or transmitted directly to appropriate response areas in the brain with minimal processing (Al-Fadhli & Al-Bayati, 2010, p. 105). Neural stimulation plays a crucial role in activating nerves, and consequently the strength and speed of the mechanical work of muscles depend on this stimulation, which requires biological energy to continue. When stimulation ceases, the chemical processes responsible for releasing muscular energy also stop (Guyton, 2010, p. 232). The neuron remains in a stable electrochemical state until it is stimulated by a signal transmitted from a neighboring neuron. When this signal arrives, the receiving neuron allows approximately one hundred million positive ions per second to enter, changing its charge from negative to positive and forcing the signal to travel along the axon toward the next neuron before returning to its resting state (Al-Masha'lah, 2010, p. 32).

Attentional systems directed toward goals are located in the frontal areas of the brain and are referred to as the anterior attentional system, which is governed by expectations, knowledge, and current goals, contributing to executive performance through voluntary attentional control (Eysenck et al., 2007, p. 337). The researcher believes that teaching the accuracy and performance of corner kicks and penalty kicks in football requires perceptual abilities based on attention and concentration when estimating fixed distances, observing the goalkeeper's movement, and dealing with environmental changes associated with these open skills. Thus, skill performance becomes closely linked to the student's attentional control ability. Attentional control is defined as a higher-level cognitive process that is organized and planned to help individuals select meaningful stimuli and ignore unrelated ones. It is also described as a conscious cognitive attentional system representing the ability to select and execute appropriate responses in conflicting situations and is associated with self-regulation mechanisms (Abdul-Hafiz, 2016, p. 17). Attentional control reflects the outcome of the limited capacity of the information-processing system; according to Broadbent's theory, the surrounding world consists of thousands of sensations that cannot all be processed simultaneously. Therefore, a filtering mechanism directs attention toward certain information while ignoring others (Al-Zughoul & Al-Zughoul, 2014). Attentional control also refers to focusing attention on specific behavioral aspects in terms of frequency and intensity, as individuals cannot regulate their actions unless they are aware of them. Self-monitoring thus becomes a process through which individuals observe their behavior to enhance their ability to regulate it (Zakeya, 2010, p. 60). Attentional Control Theory (ACT): Eysenck and colleagues (2007) elaborated further on the concept of attentional control, referring to it as a number of complex cognitive processes responsible for a wide variety of behaviors and executive performance during information processing. These processes include attentional focusing, attentional shifting, and flexible attentional control (Eysenck et al., 2007, pp. 336–353). The attentional control system operates by selectively detecting sensory events relevant to behavior, particularly when such events are salient, while goal-directed and stimulus-driven attentional systems interact in a balanced manner (Kennedy, 2015, p. 23). However, learners' brains may experience a state of cognitive fatigue due to excessive stimuli or mental exhaustion, which negatively affects information-processing memory. Activating this memory increases learners'

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perceptions and facilitates the reception, storage, and retrieval of information, leading to the required responses. Such activation depends on the type and intensity of the stimulus received by the learner, and psychological studies indicate that activation may occur either voluntarily or externally, although effective responses cannot be forced; instead, the educational environment should provide appropriate conditions for activation without coercion (Nazer, 2010, p. 325).

Avoiding monotony and boredom is one of the most important requirements for stimulating excitement and motivation in teaching football skills. Fitlight technology can serve multiple purposes in practical teaching, which depends on attention, understanding, and the application of purposeful exercises. It can be used to deliver instructions and provide feedback while also contributing to improvements within the lesson, provided that its integration with instructional exercises does not disrupt or distract from skill performance. Based on the researcher's academic experience in teaching methods of physical education, particularly football, a noticeable weakness was observed among fifth-grade secondary school students in performing corner kick and penalty kick skills. There is also a need to measure the level of attentional control required when performing these skills. Therefore, this research aims to construct an attentional control scale in football for fifth-grade secondary school students, design skill exercises using Fitlight technology and integrate them into practical football lessons in physical education, and identify the effect of these exercises on attentional control and on the performance of corner kick and penalty kick skills. The researcher hypothesized that there would be statistically significant differences between the pre- and post-test results of the experimental and control groups in attentional control and in the performance of corner kick and penalty kick skills in football, as well as statistically significant differences between the post-test results of the two groups in the same variables.

Methods and Procedures

The research problem required the adoption of the experimental method using a design of two equivalent groups (experimental and control) with strict control through pre- and post-tests. The research population consisted of fifth-grade secondary school students enrolled in the morning study at Al-Jawahiri Secondary School, which belongs to the formations of the Rusafa Directorate of Education/2 during the academic year (2024–2025). The total number of students in this population was 180, who were naturally distributed equally across six classes. All students were intentionally selected using the comprehensive enumeration method (100%) from this population because they represent the target population of the research problem and meet the research objectives and requirements. In addition, the availability of a regulation-size football field at the school facilitated the implementation of the experimental procedures.

Initially, ten students were randomly selected from Class (A) to represent the pilot study sample, constituting 5.556% of the total population. In addition, 110 students from Classes (A), (B), and (C) were selected to represent the sample for constructing the attentional control scale in football, accounting for 61.111% of the research population. This selection was based on the rule of allocating five participants for each item of the scale. The other two classes comprised of 60 students, or 33.333%

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of the population who served as the primary application sample. These students were balanced across the two classes, either being randomly allocated to the experimental group (Class E) or to the control group (Class F).

The educational research problem emphasizes the need to introduce a tool for measuring attentional control in football among the fifth-grade secondary school students directly within their educational environment, which in this case was practically exercising physical education lesson. Thus, the researcher created a paper-and-pencil scale according to scientific methods relevant in this particular context. The need for the construction of attentional control high was based on the factthat this research focused on such a specific area as age and football teachingmethods during practical lessons of physical education.

The researcher also analyzed the common characteristics of the research population. The participants belonged to the same educational level and age group, and they shared similar academic conditions. Moreover, the measurement context was limited to the educational environment of the practical football lesson in physical education, which excluded variables related to different social environments and ensured that the measurement focused specifically on the research context.

In constructing the scale, the theoretical framework presented in the introduction of the research served as the main reference for defining the concept of attentional control in football and for formulating the scale items. The items in the scales create three dimensions of attentional control which were: Attentional Focus, Attentional Shifting and Attentional Flexibility with his educational environment practical football lesson.

The initial preparation of the scale items followed the standard procedures for paper-and-pencil scales. Each item was phrased according to three response options: (Always applies to me), (Sometimes applies to me), and (Does not apply to me). Scoring was based on a 1 to 3 Likert-type scale (weights of (3, 2, 1), respectively.

The scale face and logical validity was checked via a team of professionals to ensure the scale's conformity. A questionnaire was designed and sent to 17 specialists, in addition to a copy of the scale, to evaluate their attitude about items being fit for use as well as the general organizational structure of scale. There was 100% consensus between the experts to keep everything as is. During this process, from Wednesday (18/9/2024) to Thursday (26/9/2024), the face and logical validity of the scale was confirmed.

Afterward, the first pilot study of the attentional control scale was conducted. The scale was administered to ten students at Al-Jawahiri Secondary School on Sunday (29/9/2024). The purpose of this pilot study was to identify any potential difficulties or obstacles that might arise during the main experiment and to determine the average time required to complete the scale. The results indicated that the average time required for answering the scale items was nine minutes.

First: Discriminatory power of the scale

The researcher adopted the extreme groups method. Item scores were arranged in descending order and multiplied by 27% to determine the number of participants in the upper and lower groups, resulting in 29.7 students in each group, which was rounded to 30 students. Statistical analysis was

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then performed using the t-test for independent samples to determine the differences between the two extreme groups for each item of the scale, as presented in Table (1).

Table 1. Discriminatory Power of the Scale Items

Item No.	Group	N	Mean	SD	t-value	Sig.	Significance	Item Discrimination
1	Upper	30	2.43	0.504	5.676	0.000	Significant	Discriminating
	Lower	30	1.73	0.450				
2	Upper	30	2.33	0.479	11.886	0.000	Significant	Discriminating
	Lower	30	1.10	0.305				
3	Upper	30	2.63	0.490	11.758	0.000	Significant	Discriminating
	Lower	30	1.23	0.430				
4	Upper	30	2.40	0.498	12.187	0.000	Significant	Discriminating
	Lower	30	1.10	0.305				
5	Upper	30	2.53	0.507	8.142	0.000	Significant	Discriminating
	Lower	30	1.47	0.507				
6	Upper	30	2.70	0.466	16.858	0.000	Significant	Discriminating
	Lower	30	1.07	0.254				
7	Upper	30	2.70	0.466	12.665	0.000	Significant	Discriminating
	Lower	30	1.23	0.430				
8	Upper	30	2.67	0.479	16.155	0.000	Significant	Discriminating
	Lower	30	1.07	0.254				
9	Upper	30	2.57	0.504	9.349	0.000	Significant	Discriminating
	Lower	30	1.37	0.490				
10	Upper	30	2.60	0.498	12.540	0.000	Significant	Discriminating
	Lower	30	1.17	0.379				
11	Upper	30	2.63	0.490	13.697	0.000	Significant	Discriminating
	Lower	30	1.13	0.346				
12	Upper	30	2.83	0.379	10.320	0.000	Significant	Discriminating
	Lower	30	1.87	0.346				
13	Upper	30	2.53	0.507	8.142	0.000	Significant	Discriminating
	Lower	30	1.47	0.507				
14	Upper	30	2.73	0.450	12.121	0.000	Significant	Discriminating
	Lower	30	1.30	0.466				
15	Upper	30	2.87	0.346	19.416	0.000	Significant	Discriminating
	Lower	30	1.13	0.346				
16	Upper	30	2.97	0.183	23.433	0.000	Significant	Discriminating
	Lower	30	1.17	0.379				
17	Upper	30	2.83	0.379	16.089	0.000	Significant	Discriminating
	Lower	30	1.20	0.407				
18	Upper	30	2.40	0.498	9.707	0.001	Significant	Discriminating
	Lower	30	1.23	0.430				
19	Upper	30	2.90	0.305	12.642	0.000	Significant	Discriminating
	Lower	30	1.53	0.507				
20	Upper	30	2.93	0.254	22.990	0.000	Significant	Discriminating
	Lower	30	1.13	0.346				
21	Upper	30	2.97	0.183	21.700	0.000	Significant	Discriminating
	Lower	30	1.20	0.407				
22	Upper	30	2.37	0.490	10.608	0.000	Significant	Discriminating
	Lower	30	1.17	0.379				

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Item discrimination criterion: The item is considered discriminating when Sig. ≤ 0.05 at the significance level (0.05) and degrees of freedom (58).

Second: Internal Consistency of the Scale

To verify the second requirement of construct validity, namely internal consistency, the scores of the students in the scale construction sample were statistically analyzed using the Pearson simple correlation coefficient. This analysis aimed to determine the correlation between the score of each item and the total score of the scale. The purpose of this procedure was to identify the degree to which each item contributes to measuring the overall concept of attentional control in football and to ensure that the items of the scale are internally consistent with the total score of the scale. The results of this statistical analysis are presented in Table (2).

Table 2. Internal Consistency Between Each Item and the Total Score of the Scale

Item No.	Correlation with Total Score	Sig.	Item No.	Correlation with Total Score	Sig.
1	0.523*	0.000	12	0.665*	0.000
2	0.542*	0.000	13	0.616*	0.000
3	0.652*	0.000	14	0.445*	0.000
4	0.565*	0.000	15	0.698*	0.000
5	0.451*	0.000	16	0.551*	0.000
6	0.602*	0.000	17	0.584*	0.000
7	0.476*	0.000	18	0.497*	0.000
8	0.514*	0.000	19	0.611*	0.000
9	0.628*	0.000	20	0.483*	0.000
10	0.604*	0.000	21	0.659*	0.000
11	0.633*	0.000	22	0.732*	0.000

* Item consistency criterion: The item is considered consistent when Sig. ≤ 0.05 at degrees of freedom (108) and significance level (0.05).

Verification of the Reliability of the Attentional Control Scale in Football

The researcher verified the reliability of the scale by statistically analyzing the scores obtained from applying the scale to the scale construction sample in this study. The Cronbach's Alpha coefficient was used to determine the reliability level of the scale. The results showed that the reliability coefficient reached 0.905 at 108 degrees of freedom and a significance level of (0.05), which indicates a high level of reliability and confirms the stability of the scale for measuring attentional control in football.

Verification of the Normal Distribution of the Attentional Control Scale in Football

Statistical analysis was performed on the scores obtained from the construction sample to ensure that the scale was appropriate for the target sample, and the normal (Gaussian) distribution of data. This process sought to confirm the distribution of the scores was normally distributed, as this is a prerequisite for utilizing parametric statistical analyses. Table (3) presents the results of this analysis.

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Table 3. Final Statistical Indicators and Normal Distribution Values of the Scale

Scale Name	Construction Sample Size	Number of Items	Total Score	Mean	Standard Deviation	Skewness
Attentional Control in Football	110	22	66	33.7	2.745	0.22

The distribution is considered normal (moderate) when the skewness value falls within ±1.

After completing the construction procedures and statistical analyses on the scale construction sample, the scale reached its final form (Appendix 1) with a total score ranging from 22 to 66 and a hypothetical mean of 44. This means that the higher the student's score, the higher the level of the desired phenomenon, namely attentional control in football, for the responding student.

To measure the performance of the corner kick and penalty kick skills in football, the researcher adopted a performance evaluation form for each tested participant during the skill tests without considering accuracy. The performance was recorded through video and later evaluated by experts to determine the technical performance score. The score distribution was as follows: the preparatory phase was assigned 3 points, the main phase was assigned 5 points, and the final phase was assigned 2 points.

In order to implement the skill exercises using Fitlight technology within the practical component of the physical education lesson while teaching the corner kick and penalty kick skills to the students of the experimental group, the researcher followed several procedures. First, the technological system was prepared so that the teacher could electronically control the device through an integrated system of LED lighting used to guide movement paths and supervise the learning process. The system consisted of several components, including ground LED lights placed on the field surface with three daylight colors, in addition to four colored lights placed at the corners of the goal. Care was taken not to exaggerate the intensity of lighting or color levels when using the Fitlight technology so as not to distract students from performing the skills. The system also included a remote control device powered by a dry battery, which allowed the teacher to control the color type and the level of light intensity, in addition to the necessary electrical wiring connecting the system components.

The researcher relied on the fundamental operational principle of Fitlight technology, which is based on the stimulus–response concept derived from the behavioral psychology theory of B. F. Skinner, where correct performance is associated with following the rapid light path provided by the Fitlight system. These included Thorndike's Law of Exercise with the Sense of Effect and Immediate Reinforcement to help strengthen connections between a stimulus and a response to facilitate learning corner kick and penalty kick skills in football. In this way, the implementation of these procedures was carried out based on the psychomotor objectives of Bloom's taxonomy in accordance with age and gender characteristics of fifth-grade secondary school students by means of visual reinforcement signals and light paths addressed to a football field.

The researcher completed the preparation of the measurement tools required for each of the three dependent variables as well as designing skill exercises in distinctive ways using Fitlight technology, then executed a second pilot experiment on Sunday morning (6/10/2024) at (the football field of Al-Jawahiri Secondary School. The pilot experiment was performed on 10 students who were

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not representative of the main research sample, and there were no severe challenges encountered at this stage.

The researcher also studied the most popular exercises at practical physical education lessons of football for Al-Jawahiry secondary school. In the skill exercises, which were developed using Fitlight technology, lights were installed along the paths of movement followed by the football during executing both studied skills with guidance from their teacher. A remote control device was used to manage the repetitions and pauses for each teaching condition Appendix (2).

The skill exercises based on Fitlight technology were implemented during the main part of training for a total duration of 30 minutes out of the entire physical education (45-minute) football lesson. The main portion of the session consisted of a combination of 5 minutes of instruction followed by 25 minutes dedicated to practicing the Fitlight-based exercises. Four 5-min long exercises were performed with a 1-min break partitioned on the four exercises. All parts of the lesson other than that (which involved the researcher) were left in control of physical education teacher, including preparatory phase (10 min) and cooling down period (5 min).

The practical lessons were implemented over a period of eight weeks, with four lessons allocated for each skill. The lessons were conducted at a rate of one lesson per week, scheduled every Tuesday.

The research experiment started with the pre-testing of the dependent constructs for both research groups and 60 students. This involved distributing the attentional control scale and executing the skill performance tests for corner kick and penalty kick on Monday (7/10/2024). Skill tests were video recorded at the school after which three experts reviewed the recordings to determine if the technical performance met criteria stipulated by testing requirements.

The Fitlight-based skill exercises (Appendix 2) were then applied to the students of the experimental group from Tuesday (8/10/2024) until Tuesday (25/11/2024), while the control group continued to perform the traditional educational exercises normally used in their lessons without researcher intervention. Both groups received the same number of lessons and time duration for learning the corner kick and penalty kick skills. The experiment concluded with conducting the post-tests on Wednesday (26/11/2024) by reapplying the attentional control scale and the two skill performance tests under the same conditions as the pre-tests.

After completing the experiment, the results were statistically processed using the SPSS statistical software to calculate percentages, arithmetic means, standard deviations, Levene's test for homogeneity of variance, the independent samples t-test, and the paired samples t-test.

Results

Table 4. Results of the Pre-tests Between the Two Research Groups

Dependent Variables (Unit of Measurement)	Group (N)	Mean	SD	Levene's Test	Sig.	t-value	Sig.	Difference

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Attentional Control in Football (Score)	Experimental (30)	34.17	2.653	0.996	0.322	0.507	0.614	Not Significant
	Control (30)	33.80	2.941					
Corner Kick Skill Performance (Score)	Experimental (30)	2.73	1.143	1.58	0.214	0.646	0.521	Not Significant
	Control (30)	2.53	1.252					
Penalty Kick Skill Performance (Score)	Experimental (30)	2.83	1.392	0.015	0.904	1.401	0.167	Not Significant
	Control (30)	2.33	1.373					

Table 5. Results of the Pre- and Post-Tests for Both Research Groups

Dependent Variables	Group (N)	Comparison	Mean	SD	Mean Difference	SD of Difference	t-value	Sig.	Difference
Attentional Control in Football (Score)	Experimental (30)	Pre-test	34.17	2.653	22.267	2.84	42.947	0.000	Significant
		Post-test	56.43	1.135					
	Control (30)	Pre-test	33.80	2.941	11.90	3.745	17.405	0.000	Significant
		Post-test	45.70	3.385					
Corner Kick Skill Performance (Score)	Experimental (30)	Pre-test	2.73	1.143	5.067	1.143	24.286	0.000	Significant
		Post-test	7.80	0.407					
	Control (30)	Pre-test	2.53	1.252	2.60	1.567	9.089	0.000	Significant
		Post-test	5.13	0.900					
Penalty Kick Skill Performance (Score)	Experimental (30)	Pre-test	2.83	1.392	4.467	1.332	18.365	0.000	Significant
		Post-test	7.30	0.651					
	Control (30)	Pre-test	2.33	1.373	3.10	1.213	13.993	0.000	Significant
		Post-test	5.43	1.040					

The differences are considered statistically significant when Sig. < 0.05 at 29 degrees of freedom for each group.

Table 6. Results of the Post-tests Between the Two Research Groups

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Dependent Variables (Unit of Measurement)	Group (N)	Mean	SD	t-value	Sig.	Difference
Attentional Control in Football (Score)	Experimental (30)	56.43	1.135	16.466	0.000	Significant
	Control (30)	45.70	3.385			
Corner Kick Skill Performance (Score)	Experimental (30)	7.80	0.407	14.794	0.000	Significant
	Control (30)	5.13	0.900			
Penalty Kick Skill Performance (Score)	Experimental (30)	7.30	0.651	8.332	0.000	Significant
	Control (30)	5.43	1.040			

The differences are considered statistically significant when Sig. < 0.05 at 58 degrees of freedom.

Discussion

A review of the results presented in Table (5) indicates that students in both the experimental and control groups demonstrated improvements in attentional control and the performance of corner kick and penalty kick skills in football in the post-tests compared with the pre-tests. This suggests that the instructional activities and continuous practice provided during the lessons contributed to enhancing students' learning outcomes in these skills. Furthermore, the results in Table (6) show that the students in the experimental group outperformed their peers in the control group in improving attentional control as well as in performing the corner kick and penalty kick skills in football during the post-tests. The researcher attributes these findings to the application of skill exercises using Fitlight technology, which helped students organize stimuli through improving their level of attentional control. This improvement enabled them to better perceive the details of skill performance and accurately determine the correct movement paths of the ball when performing corner kicks and penalty kicks.

In addition, the element of stimulation and excitement provided by Fitlight technology contributed to focusing students' thinking on how to perform the targeted skills, which created cognitive space in the brain for better estimation and allowed students to explore information about the practical performance themselves through increased interaction and participation during the lesson. The application of these skill exercises also enhanced students' inclination toward practical engagement when performing the two football skills, both of which require directing sensory perception toward evaluating correct performance by comparing it with the visual light paths and points provided by the system. This process facilitated the encoding of movement patterns in the brain, which supported the activation of memory and real-time information processing during various learning situations related to the required skill performance. The exercises were structured through repeated practical application of each instructional task.

The researcher also ensured that the skill exercises designed with Fitlight technology considered individual differences among students, provided a fair distribution of tasks, and activated each student's role within the physical education lesson in an atmosphere characterized by freedom and enjoyment. Moreover, care was taken not to exaggerate the intensity or number of lights used, which helped maintain control over the stimuli that enhance attentional control while reducing distraction that might hinder students' perception of the technical details of corner kick and penalty kick performance. These results may also be attributed to the role of Fitlight-based exercises in transforming students from

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passive recipients into active participants exploring the learning environment, encouraging self-reliance in executing motor programs consistent with the model of skill performance phases and appropriate repetitions required to achieve correct performance with fewer errors. This occurred through linking attentional processes with the required motor responses by preparing and guiding the learner's mind—essentially pre-planning the performance through attentional focus, attentional shifting, and attentional flexibility, which were organized through the use of Fitlight technology in the practical applications of these exercises.

It has been noted that repetition in its natural form may become monotonous for learners; therefore, the use of motivational elements and stimulating tools becomes necessary to maintain engagement and encourage continued practice (Sewell & George, 2018). In addition, motor skill learning cannot occur without organized knowledge of performance that relies on the brain's interpretation of stimuli through cognitive processes that help construct motor programs in memory according to the learner's abilities. Practical application thus directs learning toward improving existing capabilities and developing motor programs that correspond to the desired performance model through the comparison mechanism in motor control, which reflects the principle of learning through action and practical experience (Al-Bayati, 2023; Al-Aboudi, 2025).

Research also indicates that light stimulation can influence the motor system, which plays a role in controlling movement, motor coordination, and motor learning and memory (Kim & Lee, 2015). Learners must be capable of regulating their attentional processes to focus on relevant stimuli and make appropriate decisions without being affected by irrelevant distractions (Gharib, 2018, p. 5). Moreover, light-based stimulation techniques can enhance brain activity and improve learning and memory processes through the use of colored lights or rapid light pulses (Ronald, 2017). Furthermore, with respect to attentional control skills, they help learners manage the level of stimuli to which they are necessarily exposed and processed in an effective manner, permitting dynamic cognitive processing of information regardless of whether the stimuli are visual or auditory (Theeuwes & van der Burg, 2007; Abdulkareem et al., 2025).

In addition, attentional control enhances the cognitive resources available in working memory and enables students to address more cognitive representations conducive to learning and processing knowledge provided during lessons (Furley & Wood, 2016; Salahub, 2021; Yousif, 2023). Conversely, repeated presentation of stimuli can stimulate attention and this teaches us that training be innovative in its approach to avoid fatigue along with ensuring that whatever is being presented has different geopolitical locations alongside needing to ensure differences in intensity as well as also novelty (Melhem, 2016, p. 204).

Simulation motor sports skills must also be constantly evaluated and feedback given where performances are assessed in conjunction with constructive learning for improved motor and technical skills. Methods of active learning promote systematic thinking that will lead to analytical and critical thinking skills (through the use of activities, learn by doing, Learn from mistakes) (Mustafa, 2019:127) Hence to the modern day teaching has moved focus from solely based on giving knowledge to arranging a classroom that defined as an effective learning environment by promoting thinking, openness and participation. It means that the teacher is not the only source of knowledge in these so-

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called environments, but instead they become one of several sources from which to generate knowledge together with learners and encourage inquiry and discussion (Adas, 2015, p. 31).

Finally, the interaction between stimuli and responses requires effective attentional control, as the attentional control system operates by selectively detecting sensory events related to behavior (Abdul-Hafiz, 2016, p. 43). In motor skill learning, students benefit from observing a skill, analyzing its execution, and then attempting to perform it themselves through repeated practice within small groups and practical activities (Brooker & Butterworth, 2019; rda, 2024). These principles collectively support the interpretation of the results obtained in this study and explain the superiority of the experimental group that practiced skill exercises using Fitlight technology.

Conclusions

1- The attentional control scale in football is appropriate for fifth-grade secondary school students and is suitable for the purpose for which it was developed, as it possesses acceptable scientific foundations and psychometric properties.
2- The use of skill exercises employing Fitlight technology within the teaching content of football skills in practical physical education lessons is appropriate for fifth-grade secondary school students.
3- The application of skill exercises using Fitlight technology contributes to improving the level of attentional control in football among students who are taught using this method compared with their peers who are taught without it.
4- The application of Fitlight-based skill exercises contributes to improving the performance of the corner kick skill in football among students who practice them compared with those who do not use this technology.
5- The application of Fitlight-based skill exercises contributes to improving the performance of the penalty kick skill in football among students who practice them compared with their peers who learn through traditional methods.

Recommendations

1- It is necessary to adopt cognitive measurement in physical education lessons, particularly measuring the level of attentional control for each student, in order to support the improvement of football skill performance.
2- It is recommended to avoid excessive intensity or levels of lighting when using Fitlight technology, while emphasizing practice and repetition in the practical application of skill exercises when designing motor programs for football skill performance.
3- It is recommended to conduct similar studies using Fitlight technology in teaching tactical aspects of football.

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Appendix 1. Attentional Control Scale in Football

No.	Scale Item Statements	Always Applies to Me	Sometimes Applies to Me	Does Not Apply to Me
1	I can block distracting thoughts during my football skill performance in the physical education lesson.			
2	I focus on my football skill performance regardless of the level of noise during the physical education lesson.			
3	I can regain my performance of the specified skill sequence when I receive feedback about my football skill performance in the physical education lesson.			
4	I remain mentally alert to receive information related to the details of my football skill performance during the physical education lesson.			
5	I select the movements necessary to perform football skills during the physical education lesson.			
6	I can identify stimuli related to the transitions between the stages of performing football skills during the physical education lesson.			
7	I can easily alternate my thinking between two ideas that support the motor program when performing football skills during the physical education lesson.			
8	I maintain my attentional focus at the same level even when my peers interrupt my football skill performance during the physical education lesson.			
9	I can complete the motor program by isolating distracting stimuli from my thinking while performing football skills during the physical education lesson.			
10	I can develop strategies to focus my attention on important details when performing football skills during the physical education lesson.			
11	I feel capable of quickly shifting my attention while performing football skills during the physical education lesson.			
12	I can direct my senses toward the most important aspects required for performing football skills during the physical education lesson.			
13	I can exclude irrelevant thoughts that accompany my performance of football skills during the physical education lesson.			
14	I believe that shifting my attention becomes more effective while performing football skills during the physical education lesson.			
15	I can easily recall ideas that improve my performance of football skills during the physical education lesson.			
16	I can distribute my attention by focusing on the most important aspects while performing football skills during the physical education lesson.			

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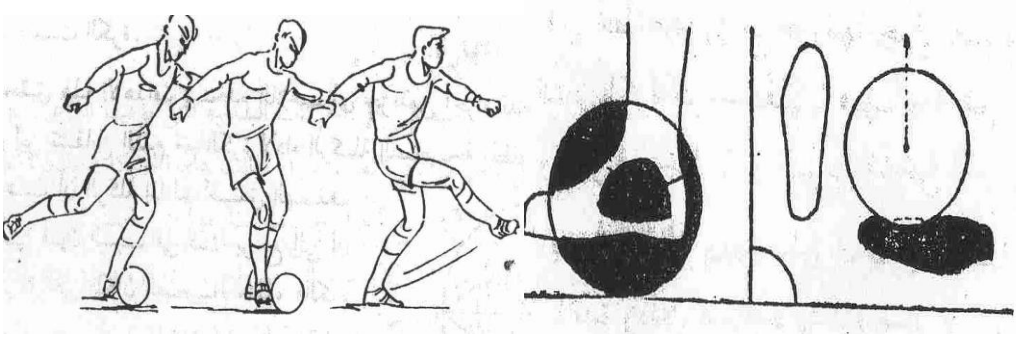
17	I can control the speed of my performance when executing football skills during the physical education lesson.
18	I control my attention according to the neural signals required for the timing of each phase of football skill performance during the physical education lesson.
19	I can control the amount of force required for muscle contractions in each movement phase when performing football skills during the physical education lesson.
20	I focus my attention on producing smooth and aesthetic movements without hesitation while performing football skills during the physical education lesson.
21	I strive to be the best in paying attention to the details of football skill performance during the physical education lesson.
22	I can control the movements of different parts of my body during rapid transitions while performing football skills during the physical education lesson.

Appendix 2. A Sample Model of Skill Exercises Using Fitlight Technology



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