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The Effect of Lead-Up Games Based on Performance-Simulated Situations on Bodily-Kinesthetic Intelligence and the Learning of Selected Basic Soccer Skills among Students

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ABSTRACT
Backgroud: The aim of this study was to investigate the effect of lead-up games based on performance-simulated situations on the development of bodily–kinesthetic intelligence and the learning of selected basic soccer skills among seventh-grade students.
Methods: The researcher employed an experimental approach using a two-group design (experimental and control) with pre- and post-tests. The study population consisted of 157 students, and a final sample of 50 students was selected from Ibn al-Mu'tam Middle School in Tikrit, with 25 students in each group. The experimental group underwent a six-week instructional program based on performance-like preparatory games, consisting of two instructional units per week for a total of 12 instructional units, with 12 minutes allocated to practical activities in each unit, for a total of 144 minutes of actual exposure, while the control group learned the same skills using the conventional method. The study employed a kinesthetic-motor intelligence scale consisting of 24 items distributed across three dimensions, along with soccer dribbling, handling, and stopping tests.
Results: The results showed equivalence between the two groups in the pre-test, followed by a statistically significant improvement in all variables for the experimental group; the mean physical-motor intelligence score increased from (56.68±6.27) to (64.48±6.58), rolling time decreased from (31.81 ± 2.17) to (29.62 ± 2.35) seconds, the average dribbling score increased from (2.36 ± 0.81) to (3.88 ± 0.93), and the stopping distance from (2.52 ± 0.92) to (4.40 ± 1.19); all differences were statistically significant at ($p < .001$). The post hoc comparison also showed that the experimental group outperformed the control group on all variables.
Conclusions: The study concludes that performance-like preparatory games represent a suitable teaching method for developing kinesthetic-motor intelligence and improving the learning of basic soccer skills among middle school students.

Keywords: Warm-up games; Performance-like situations; Kinesthetic intelligence; Basic skills; Soccer.

INTRODUCTION

Bodily-kinesthetic intelligence is a cognitive-motor ability that enables an individual to efficiently use their body and its parts to perform, express themselves, and respond to the demands of a motor situation. It is associated with various aspects, including balance, strength, flexibility, speed, and the sense of body movement and position (Habash et al., 2015). Introductory games, as performance-like activities, serve as an educational tool that places the learner in motor situations similar to actual game conditions and provides repeated opportunities to apply cognition and movement and make appropriate responses in a meaningful context. In this regard, the literature on mini-games has shown that changes in the format of the mini-game, the number

of players, the playing area, and task constraints influence the repetition of technical actions and the quality of skill performance. Meta-analyses have also demonstrated a positive effect of mini-game programs on technical execution among young players (Clemente & Sarmento, 2020; Clemente et al., 2021). Additionally, Akbai (2024) demonstrated that a program based on motor games contributed to improving intelligence levels among preschool-aged children.

Multiple studies have examined the impact of mini-games and small-sided games on the physical and technical abilities of soccer players. Katis and Kellis (2009) compared 3-on-3 and 6-on-6 play among 34 players with an average age of 13 years, The results showed a higher heart rate and an increase in the number of short passes, kicks, dribbles, defensive actions, and goals in the 3-on-3 format, and the researchers concluded that this format provides greater stimulation for physical conditioning and technical development. Al-Faqih (2018) also demonstrated that the group that used small-sided games outperformed the control group in motor flexibility, ball control, passing accuracy, and heading among 8–10-year-old youth soccer players.

Arslan et al. (2020) found that a five-week mini-game program achieved greater improvements in agility and technical performance compared to high-intensity interval training based on running, while Karahan (2020) showed that maximum-intensity skill training yielded greater improvements than mini-games in a number of physical performance indicators, suggesting that the impact of these games may vary depending on the nature of the targeted variable. Ahmad et al. (2024) demonstrated that six weeks of mini-games improved speed, passing, dribbling, and VO_2max, while Taha et al. (2025) highlighted the effectiveness of competitive small-sided games ( ) in developing dribbling, ball control, tackling, and scoring among youth aged 14–16, and noted that a higher level of kinesthetic intelligence was associated with better development of skill performance.

Despite the importance of these findings, most previous studies have focused on examining mini-games in terms of their impact on physical or skill-related variables, while other studies have addressed intelligence in children or investigated its relationship to skill performance, without focusing directly on motor intelligence as a dependent variable of a game-based instructional program using performance-like preparatory games. Furthermore, while mini-games share with preparatory games the ability to expose learners to real-performance conditions, they do not fully embody the same concept; preparatory games can be designed to address specific cognitive, motor, and skill-based requirements that precede the full performance of the game. Hence, to the best of the researcher's knowledge, there is a need to study the impact of preparatory games on the development of motor intelligence and the acquisition of certain basic soccer skills among students.

Based on this gap, the current study employs an educational program based on performance-like preparatory games, applied to an experimental group, as opposed to a control group that receives instruction according to the conventional method. The impact of the program is assessed through preliminary and final tests that measure motor intelligence and performance level in some basic football skills, allowing to determine the extent of change in these variables and make a comparison between the two groups.

The study aims to identify the impact of warm-up games on the development of motor intelligence and the learning of certain basic soccer skills, and to determine the significance of the differences between the experimental and control groups in the post-test. The research question focuses on determining the effectiveness of using performance-based preparatory games in developing motor intelligence and learning certain basic skills among soccer students. The researcher hypothesizes that there will be statistically significant differences between the pre- and post-tests of the experimental group in motor intelligence and basic skills, favoring the post-test, as well as statistically significant differences between the pre- and post-tests of the control group in the same variables in favor of the post-test, and statistically significant differences between the post-tests of the experimental and control groups in favor of the experimental group.

METHODS

Study Design

The study adopted an experimental design with two equivalent groups and pre- and post-tests, as it is suitable for verifying the effect of performance-based preparatory games. The sample was divided into an experimental group that underwent an educational program based on preparatory games and a control group that followed the usual teaching method. Measurements of motor intelligence and certain basic soccer skills were conducted before and after the program using the same instruments and under comparable conditions. Lesson duration, the number of instructional units, the location of implementation, the instruments used, and testing conditions were standardized as much as possible. After the program concluded, the results from the pretest and posttest were compared within each group and then between the two groups based on the posttest results to accurately determine the extent of the effect resulting from the proposed educational program.

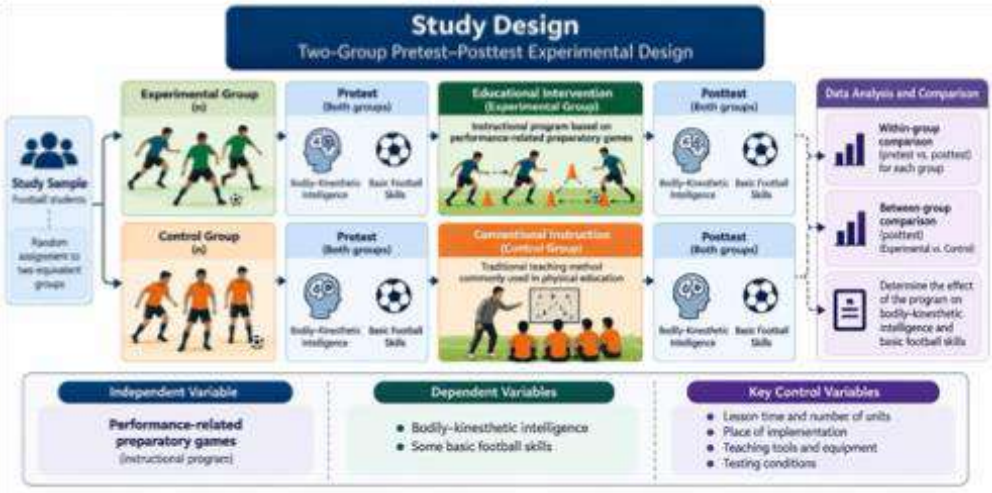


Figure 1. Two-Group Pretest–Posttest Experimental Design of the Study

Participants

The study population consisted of all first-year middle school students at Ibn al-Mu'tam Middle School in Tikrit, Iraq, for the 2025–2026 school year, totaling 157 students distributed across five classes. First-year middle school students were selected because this stage is well-suited to the nature of the research variables; students are at an appropriate stage for learning basic soccer skills, and at the same time possess a level of cognitive and motor maturity that allows for the measurement of motor intelligence and the tracking of any changes that may occur as a result of the educational program. Furthermore, the presence of five classes at the same grade level made it possible to select two classes that were similar in terms of school environment, instructional content, and time allocated to physical education classes, thereby helping to minimize the influence of external variables associated with differences in schools or grade levels.

Two classes were selected from among the five by lottery; classes (B) and (C) were chosen, with one assigned to the experimental group and the other to the control group. The final sample consisted of 50 students, 25 students in each group, representing about 31.8% of the original group. While the control group continued to learn using the usual method, the experimental group underwent an educational program based on prep games that resembled actual performance. The use of existing classrooms rather than individual redistribution of students is in line with the nature of the school environment, reduces disruption to the daily schedule, and facilitates the implementation of the instructional intervention in conditions that are closer to real-world learning situations.

The selection of this sample was based on several methodological and practical considerations, foremost among which is that seventh-grade students represent a suitable group

for studying motor intelligence and the acquisition of basic soccer skills, as they are at an educational stage characterized by a clear capacity to acquire motor patterns and develop skill performance. Furthermore, selecting students from a single school ensures greater homogeneity in the educational environment, available resources, the nature of lessons, and organizational conditions, and minimizes variations that might result from differences between schools. Furthermore, selecting groups by lottery helped minimize the impact of bias in the selection of the two groups, while dividing the sample into two numerically equal groups provided a suitable basis for comparing the impact of the proposed program with the usual approach, along with the ability to conduct pre- and post-tests of the target variables under similar practical conditions.

Measurement

Kinesthetic Intelligence Test

The researcher used the Kinesthetic Intelligence Scale developed by Shafaa (2021) to measure the level of kinesthetic intelligence among middle school students. The scale consists of 24 items distributed evenly across three dimensions, with eight items per dimension. The first dimension measures problem-solving ability through items (1–8); the second dimension measures the ability to engage in physical and athletic activities through items (9–16); and the third dimension measures kinesthetic perception through items (17–24).

Responses to the scale items are rated on a five-point Likert scale, with students selecting one response from the following options: Always, Often, Sometimes, Rarely, Never, which are scored 5, 4, 3, 2, and 1, respectively. All items are formulated in positive terms; therefore, scoring does not require reversing the scores of any item. Students are asked to read each item carefully and then select the option that most accurately reflects their situation or opinion by placing an "×" next to the appropriate response.

The score for each dimension is calculated by adding the scores of its eight items; thus, the score for a single dimension ranges from 8 to 40 points. The total score for the scale is calculated by summing the scores of the twenty-four items and ranges from 24 to 120 points. Higher scores indicate a higher level of motor intelligence, while lower scores indicate a lower level. The researcher adopted the total score of the scale as a primary procedural indicator of the student's level of bodily-kinesthetic intelligence, with the option to use the scores of the three dimensions independently when analyzing the components of the variable.

Basic Soccer Skills Tests

The researcher adopted three skill tests to measure the level of mastery of some basic skills in football, including dribbling and handling and controlling the ball.

These tests were selected due to their direct relevance to the targeted skills in the educational programme, their applicability in a school setting and the clarity and ease of their performance procedures and result recording.

Dribbling Test: This test involves dribbling the ball back and forth between ten cones to measure the student's ability to control the ball while moving (Jawad, 2004). The ten cones are placed in a straight line, 1.5 meters between each cone and the other, and the student stands holding the ball behind the starting line. At the start signal, the student rolls the ball between the cones along the specified path, first forwards and then backwards. A student can use one or both feet. Students are allowed one attempt, but must repeat it if they make an unintentional error that affects the test, such as passing two cones at once or knocking over a cone. Time is measured from the start signal until the round trip is completed, and recorded to the nearest 1/100^(th) of a second. A lower time indicates a higher level of dribbling performance.

Passing test: Passing accuracy was measured using a passing test towards a small target from a distance of 10 m (Lazim, 2004). The small target, measuring 100 × 75 cm, was placed 10 m from the ball's position and the student passed the stationary ball towards it. Students are allowed three attempts, with two points awarded if the ball enters the goal directly, one point if it touches a poster or crossbar before entering the goal, and zero points if the ball goes out of goal. Results are collected from the three attempts to obtain the final score, with a higher score indicating a higher level of passing accuracy.

Ball Control Test: The ball control test was performed inside a box of 2m×2m to measure the accuracy of the ball stop and control In it (Al-Khashab et al., 1988). The performance area is defined by a 2 m × 2 m square. A 3-metre line is drawn 6 metres from the square, where the instructor stands, and another 3-metre line is drawn 1 metre behind the square, where the student stands. The instructor throws the ball towards the test area and the student runs towards it as soon as it is thrown, attempting to stop and control it within the square. The student has five attempts and receives two points for each successful attempt. The total score can range from 0 to 10 points. An attempt is not counted if the ball is not controlled within the designated area, the student crosses one of its boundaries by more than one foot or an illegal method is used to stop the ball. A higher score indicates a higher level of ball-trapping skill.

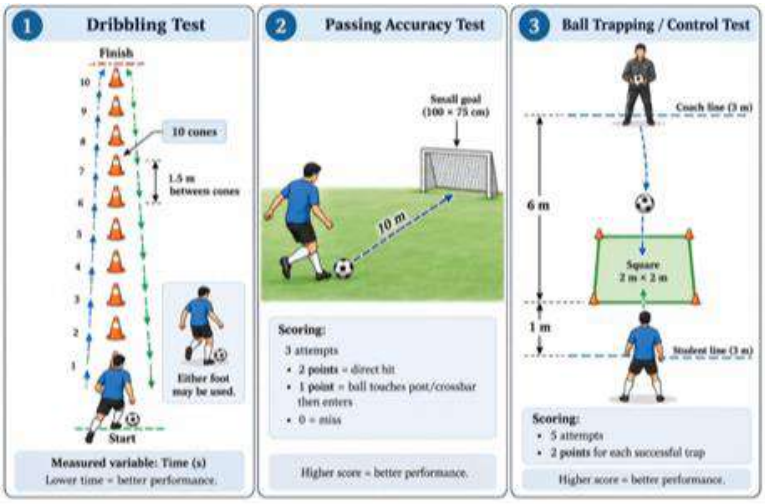


Figure 2. Schematic Illustration of the Three Soccer Skill Tests: Dribbling, Passing Accuracy, and Ball Trapping/Control

To measure the research variables, the researcher adopted a set of tools that had been used in previous related studies: the Kinesthetic Intelligence Scale, and tests of soccer dribbling, passing and ball-trapping. These tools were selected based on their demonstrated suitability in terms of validity, reliability and objectivity, as well as the clarity of their application procedures and suitability for use with secondary school students. Regarding the Kinesthetic Intelligence Scale,

its scientific indicators demonstrated a high level of validity and reliability. The validity coefficients for its three dimensions ranged from 0.86 to 0.91, and the reliability coefficients ranged from 0.87 to 0.90. The reliability coefficient for the problem-solving ability dimension was 0.91 and the stability coefficient was 0.87. For the dimension of "ability to engage in physical activities", the confidence factor was 0.86 and the stability coefficient was 0.90. For the dimension of "motor cognition", the confidence factor was 0.91 and the stability coefficient was 0.88. These values indicate that the scale has sufficient consistency and stability, which supports its use in measuring the level of motor intelligence of the study participants.

The rolling test between ten marks showed a high level of stability, with a stability coefficient of 0.895 and an internal consistency coefficient of 0.946. These values confirm the test's ability to give stable results when reperformed under similar conditions. The test is also highly objective, with performance based on recorded completion time, which reduces the impact of subjective judgment on the score.

In the test involving aiming at a small target from a distance of 10 metres, the stability coefficient was 0.82 and the reliability coefficient was 0.90 values indicating the test's reliability of the test was calculated to be approximately 0.910, based on the square root of the stability coefficient, which reinforces the test's validity in measuring the student's ability to stop and control the ball within the designated area.

Overall, the scientific indicators for the instruments used demonstrate that they possess adequate levels of validity, reliability, and objectivity, making them suitable for measuring the study variables. The researcher was also keen to standardize the procedures for conducting the preliminary and final exams as much as possible in terms of the place of the test, the tools used, the method of providing instructions, the order of the tests, and the exam supervisors, which helped to minimize the impact of external factors and increase the accuracy of the results.

Research Procedures

The study was conducted at Ibn Al-Mu'tam Preparatory School in Tikrit, Iraq, during the first semester of the 2025/26 academic year. The study population consisted of 157 first-year students, spread over five classes. Two of these classes were randomly selected Classes B and C and one was placed in the experimental group and the other in the control group. The final sample consisted of 50 students, 25 students in each group. The study procedures were organized within the usual schedule of physical education classes to implement the intervention in the students' normal learning environment and minimize the impact of any exceptional arrangements on their behavior or performance.

Prior to the start of the educational program, the two groups underwent preliminary tests, including Shifa's "Motor Intelligence Scale" (2021) application, along with selected tests of basic skills in football. These tests were conducted in conditions comparable in terms of location, tools used, test sequence, and guidance method, and the same procedures were followed in the subsequent test. Participants in both groups were also evaluated under similar conditions to help reduce the impact of factors not associated with experimental treatment. The educational programme lasted six weeks, with two instructional units per week for a total of 12 units. Instead of implementing warm-up games throughout the entire module, the hands-on activity from the main section of these games was allocated to 12 minutes per module. The total actual exposure time to the experimental treatment was 144 minutes. The remaining part of each module followed the standard pattern used in physical education classes. Thus, the main difference between the two groups was limited to the nature of this period. Table 1 provides a summary of the structure of the intervention program and the main details of the experiment.

Table 1. Summary of the Intervention Program and Experimental Design

Control Group	Experimental Group	Component
Ibn al-Ma’tam Middle School – Tikrit, Iraq	Ibn al-Ma’tam Middle School – Tikrit, Iraq	Location
First Year of Middle School	First Year of Middle School	Grade Level
2025/2026	2025/2026	School Year
25 students	25 students	Number of Participants
Two sections (C) were selected by lottery from a total of five sections, and one of them was assigned to the control group	Two sections (B) were selected by lottery from a total of five sections, and one of them was assigned to the experimental group	Course Selection
6 weeks	6 weeks	Program Duration
2 units	2 units	Number of Units Per Week
12 learning units	12 learning units	Total Units
Practical activity from the main section	Practical activity from the main section	Location of the application within the unit
12 minutes per unit	12 minutes per unit	Duration of the practical activity
144 minutes	144 minutes	Total Time
The usual approach used in a physical education class	Introductory performance-based games related to basic soccer skills	Instructional Approach

Standard instructional activities for learning the same skills	Simplified game situations that closely resemble actual play, involving motor perception, situational response, and skill repetition	Nature of the Activity
The same fundamental skills	Selected fundamental soccer skills	Skill Content
Usual Approach	Performance-like warm-up games	Independent variable
Bodily-kinesthetic intelligence and some basic soccer skills	Bodily-kinesthetic intelligence and some basic soccer skills	Dependent Variables
Same instruments	Motor Intelligence Scale + Basic Skills Tests	Pre-test
Re-administration of the same assessment tools after the program ends	Re-administration of the same assessment tools after the program ends	Post-test
Identical Conditions	Location of implementation, number of units, duration of the activity, tools, skill content, and measurement conditions	Standardized Factors

During the application activity, the experimental group participated in real-world performance-like warm-up games, designed to match the core skills of the study and the level of seventh grade students. The intervention was based on the presentation of skill in simplified play situations that retain the key characteristics of actual soccer matches, rather than limiting the skill to discrete training.

The games included situations that required students to use the targeted skill while moving, being aware of their body position, responding to changes in the situation, choosing the appropriate action, and interacting with teammates thereby linking skill performance to components of kinesthetic intelligence.

When designing the introductory games, care was taken to ensure a progression from simple to more complex, so that activities began with situations involving fewer performance and decision-making demands, and then gradually increase in complexity by altering certain characteristics of the situation such as the performance area, direction of movement, number of participants, or conditions for executing the skill in accordance with the objective of each instructional unit. Care was also taken to ensure that the games allow for the greatest possible active participation by all students, minimize waiting times, and provide repeated opportunities to use the skill in a variety of situations rather than repeating a single pattern of performance.

At the beginning of the practical activity, the teacher explained the objective of the game, how to play it, and the rules governing it; then the students began the activity within the allotted time. During the activity, the teacher's intervention was limited to organizing the performance, providing necessary instructions, correcting major errors, and offering appropriate feedback, while avoiding frequent interruptions to the activity in order to maintain the continuity of play and its real-world-like nature. When it was observed that the game's requirements had become too easy or difficult for the students, certain conditions were adjusted to ensure they continued to be challenged and participate while maintaining the same educational objective.

The control group learned the same basic skills using the standard method employed in physical education classes. Unlike the experimental group, they did not participate in structured warm-up games. We have made sure to harmonize the general requirements of the two groups as much as possible in particular the number of units, the duration of the program, the time devoted to the practical activity, the location, the equipment used, and the content of the skills so that the main difference is in the nature of the educational approach to the practical activity, as described Table (1).

After completing the twelve instructional units, post-tests were administered to both groups using the same instruments as in the pre-test, following the same sequence and under the same conditions as much as possible. The Kinesthetic Intelligence Scale and the basic soccer

skills tests were administered again; the data were then collected, coded, and prepared for statistical analysis. The results of the pre- and post-tests were compared within each group to determine the extent of change achieved during the program duration. The results of the two groups were also compared in the post-test to reveal the effect of performance-like preparatory games on the development of kinesthetic intelligence and the acquisition of certain basic soccer skills.

Statistical Methods

The research data were analyzed statistically using IBM SPSS Statistics (Version 26.0). The data were coded, entered, and reviewed prior to conducting the statistical analyses. The arithmetic mean and standard deviation were used to describe the levels of participants in the experimental and control groups for the variables of kinesthetic intelligence, dribbling, ball handling, and ball control in both the pre- and post-tests. To verify the equivalence of the two groups before implementing the educational program, an independent-samples t-test was used to compare the means of the two groups at the pre-test, while a paired-samples t-test was used to detect differences between the pre- and post-tests within each group separately. An independent-samples t-test was also used to compare the two groups on the post-test after the educational intervention ended. A statistical significance level ($\alpha = 0.05$) was adopted to determine the statistical significance of the differences, and the results were presented as arithmetic mean ± standard deviation, along with the t-value and the level of statistical significance (p). When interpreting the results, it was observed that a decrease in the time spent completing the rolling test indicated an improvement in performance, while higher scores in motor intelligence, manual dexterity and braking ability also indicated an improvement in performance.

RESEARCH RESULTS

Table 2 shows the parity in the results of the preliminary test between the experimental group and the control group across the study variables. The results showed that the mean scores in the two groups were very close before the implementation of the educational program. Specifically, the experimental group had an average score of 56.68 ± 6.27 in somatomotor intelligence, compared to 55.40 ± 5.87 for the control group. Similarly, the mean dribbling times were 31.81 ± 2.17 s and 32.38 ± 1.90 s, re , respectively. Similar patterns were observed for passing and ball control. The calculated t-values ranged from −1.031 to 1.149, with all significance levels exceeding 0.05, indicating the absence of statistically significant differences between the two groups prior to the intervention. These findings confirm that both groups were equivalent at baseline.

Table 2. Means, Standard Deviations, and t-Values for Differences Between the Experimental and Control Groups in the Pre-test Measures of the Study Variables.

Sig.	t-value	Control Group (Mean ± SD)	Experimental Group (Mean ± SD)	Variable
0.460	0.745	55.40 ± 5.87	56.68 ± 6.27	Bodily-Kinesthetic Intelligence
0.330	-0.985	32.38 ± 1.90	31.81 ± 2.17	Dribbling (s)
0.256	1.149	2.08 ± 0.91	2.36 ± 0.81	Passing (score)
0.308	-1.031	2.80 ± 1.00	2.52 ± 0.92	Ball Control (score)

Note: An independent-samples t-test was used to compare the pre-test scores of the experimental and control groups. No statistically significant differences were found between the two groups across all study variables ($p > .05$), indicating that the groups were equivalent before the implementation of the educational program.

Table 3 shows the differences in the pre-test and post-test scores of the experimental group. The results showed significant improvements in all study variables after the educational programme was implemented. The mean score for bodily–kinesthetic intelligence increased from 56.68 ± 6.27 to 64.48 ± 6.58, while mean dribbling time decreased from 31.81 ± 2.17 seconds to 29.62 ± 2.35 seconds, indicating enhanced performance. Similarly, passing performance

improved from 2.36 ± 0.81 to 3.88 ± 0.93, while ball control increased from 2.52 ± 0.92 to 4.40 ± 1.19. A paired-samples t-test revealed statistically significant differences in all variables ($p < .001$), indicating substantial gains following the intervention.

Table 3. Means, standard deviations, and t-values for differences between the pre-test and post-test measures of the experimental group.

Sig.	t-value	Post-test	Pre-test	Variable
<0.001	-20.140	64.48 ± 6.58	56.68 ± 6.27	Bodily-Kinesthetic Intelligence
<0.001	16.839	29.62 ± 2.35	31.81 ± 2.17	Dribbling (s)
<0.001	-11.635	3.88 ± 0.93	2.36 ± 0.81	Passing (score)
<0.001	-12.953	4.40 ± 1.19	2.52 ± 0.92	Ball Control (score)

Note: a paired-samples t-test revealed statistically significant improvements in all study variables in favour of the post-test ($p <.001$). For the dribbling test, shorter completion times indicate better performance.

Table 4 shows the comparison between the pre-test and post-test scores of the control group. Although statistically significant improvements were observed across all study variables, the magnitude of change was smaller than that recorded for the experimental group. Bodily-kinesthetic intelligence increased from 55.40 ± 5.87 to 57.56 ± 6.49, while dribbling time decreased slightly from 32.38 ± 1.90 seconds to 31.69 ± 1.87 seconds. Passing performance improved from 2.08 ± 0.91 to 2.68 ± 1.25, and ball control increased from 2.80 ± 1.00 to 3.44 ± 1.29. All paired-samples t-tests were statistically significant ($p <.001$), indicating measurable improvement following the regular instructional programme.

Table 4. Means, standard deviations, and t-values for differences between the pre-test and post-test measures of the control group.

Sig.	t-value	Post-test	Pre-test	Variable
<0.001	-10.506	57.56 ± 6.49	55.40 ± 5.87	Bodily-Kinesthetic Intelligence
<0.001	13.901	31.69 ± 1.87	32.38 ± 1.90	Dribbling (s)
<0.001	-5.196	2.68 ± 1.25	2.08 ± 0.91	Passing (score)
<0.001	-6.532	3.44 ± 1.29	2.80 ± 1.00	Ball Control (score)

Note: A paired-samples t-test showed statistically significant improvements between the pre-test and post-test measurements ($p < .001$). However, the magnitude of improvement was smaller than that observed in the experimental group.

Table 5 compares the post-test performances of the experimental and control groups after completion of the educational intervention. The results revealed statistically significant differences in all study variables in favor of the experimental group. Participants in the experimental group achieved a higher mean score in bodily–kinesthetic intelligence (64.48 ± 6.58) than those in the control group (57.56 ± 6.49). They also demonstrated superior performance in passing (3.88 ± 0.93 vs. 2.68 ± 1.25) and ball control (4.40 ± 1.19 vs. 3.44 ± 1.29). Furthermore, the experimental group completed the dribbling test in a significantly shorter time (29.62 ± 2.35 s) than the control group, which was the " " group (31.69 ± 1.87 s), indicating better performance. Independent-samples t-tests confirmed statistically significant differences between the two groups across all variables, with p-values ranging from < .001 to 0.009.

Table 5. Means, Standard Deviations, and t-Values for Differences Between the Experimental and Control Groups in the Post-test Measures of the Study Variables.

Sig.	t-value	Control Group (Mean ± SD)	Experimental Group (Mean ± SD)	Variable
<0.001	3.742	57.56 ± 6.49	64.48 ± 6.58	Bodily-Kinesthetic Intelligence
0.001	-3.435	31.69 ± 1.87	29.62 ± 2.35	Dribbling (s)
<0.001	3.857	2.68 ± 1.25	3.88 ± 0.93	Passing (score)
0.009	2.731	3.44 ± 1.29	4.40 ± 1.19	Ball Control (score)

Note: An independent-samples t-test revealed statistically significant differences between the experimental and control groups in all post-test variables. The experimental group demonstrated superior performance across all measures. For the dribbling test, a shorter completion time indicates better performance.

DISCUSSION

The results of the current study demonstrated the effectiveness of performance-based preparatory games in improving kinesthetic-motor intelligence and basic soccer skills among students in the experimental group, as well as their superior performance compared to the control group in the post-test. This superiority is significant in light of the similarity between the two groups prior to the start of the program; no statistically significant differences were observed in the pre-test, whereas the mean psychomotor intelligence of the experimental group increased from (56.68 ± 6.27) to (64.48 ± 6.58), the dribbling time decreased from (31.81 ± 2.17) to (29.62 ± 2.35) seconds, the average ball handling score increased from (2.36 ± 0.81) to (3.88 ± 0.93), and ball control from (2.52 ± 0.92) to (4.40 ± 1.19); all differences were statistically significant. This can be explained by the fact that the intervention did not increase learning time compared to the control group, but rather changed how practice was organized within the applied activity, as students practiced the skills in simplified games that closely resembled real-life situations, requiring them to handle the ball, move, change direction, respond to the situation, and interact with teammates.

This interpretation is consistent with the review by Sgrò et al. (2018), which showed that mini-games allow for the practice of technical skills under conditions that retain aspects of match requirements, and with the post-hoc analysis by Clemente et al. (2021), which demonstrated a significant positive effect of mini-game programs on technical performance among young and junior players. Iraqi evidence also provides significant support for this finding; in an experimental study of eighth-grade students, Jamal (2024) found that a constructivist-based educational curriculum was more effective in developing psychomotor intelligenceand motor intelligence and certain basic soccer skills, while a study by Abbas and Abdulkarim (2025) demonstrated an improvement in students' psychomotor intelligence following a six-week mini-games program consisting of two sessions per week. Similarly, Muftan and Hashim (2025) demonstrated a positive relationship between physical-motor intelligence and performance in certain basic soccer skills; this is a correlational finding that does not prove causation, but it theoretically supports the importance of the integration between cognitive-motor abilities and skill performance.

It appears that the similarity of learning situations to the actual use of the skill and the progression in task difficulty were important factors in explaining these results. The current program did not present dribbling, passing, or ball control skills as separate responses; rather, students were placed in situations where space, direction, number of participants, and performance conditions varied, requiring them to adapt their motor responses to the demands of the situation. Mesquita et al. (2012), in a soccer module for school students, showed improvements in skill execution, decision-making, and overall performance when using a hybrid model based on physical education and competitive play.

Praxidis et al. (2018a) found that adjusting the level of resistance in mini-games particularly by providing offensive numerical superiority can improve decision-making and dribbling execution in certain groups of young players. Another study by Praxidis et al. (2018b) emphasizes the importance of accuracy in interpreting these effects; a program based on nonlinear teaching and modified games led to a clear improvement in decision-making and maneuvering execution, while dribbling did not show a significant improvement in that study, suggesting that the response of different skills to modified games is not necessarily uniform, but is influenced by the nature of the task and the constraints applied. Similarly, Sierra-Ríos et al. (2020) compared face-to-face instruction and "teaching games for understanding" (TGfU) over a six-week period, at an average of two sessions per week, between players under the age of 12; the results showed greater improvement in certain aspects of decision-making while in possession of the ball in the TGfU group. Similarly, a study by Griff et al. (2022) demonstrated the feasibility of applying a

"teach through games for understanding" approach in actual school physical education classes, even though their study focused primarily on student experiences and the use of digital media rather than directly measuring improvement in skills. Although the current program is not a literal application of a "teaching through games for understanding" approach or nonlinear instruction, it shares with these approaches the principle of presenting skills within a meaningful and adaptive play situation, rather than completely detaching them from the context of their use.

The increased opportunities to participate and interact frequently with the ball partly explains the superiority achieved by the experimental group. Organizing matches in simplified situations and reducing wait times allowed students to use the skill multiple times. Times under varying conditions, a fact that is particularly evident in the results for ball handling and control. In the post-test, the experimental group achieved an average of (3.88 ± 0.93) in passing compared to (2.68 ± 1.25) for the control group, and an average of (4.40 ± 1.19) in ball control compared to (3.44 ± 1.29). The dribbling results are consistent with the study by Yulian et al. (2026), which reported an improvement in instep dribbling after using TGfU through modified 4-on-4 games among high school students, noting that this study employed a single-group before-after design, and therefore provides additional support but does not constitute empirical evidence comparable in strength to that provided by controlled studies.

Rahmoune et al. (2026) found that, following a six-week intervention involving two additional sessions per week, mini-games yielded greater gains in dribbling accuracy and certain technical indicators, as well as increased enjoyment of the activity compared to circuit training with a ball, which supports the value of game-like situations in enhancing skill engagement. As for the control group, improvements from (55.40 ± 5.87) to (57.56 ± 6.49) in psychomotor intelligence, and from (32.38 ± 1.90) to (31.69 ± 1.87) seconds in the dribbling test, along with improvements in ball handling and control, is to be expected as a result of continued instruction and routine practice; however, the experimental group's superior performance at the follow-up indicates the importance of the quality and organization of practice, rather than mere exposure to the content.

This finding is consistent with the review conducted by Barba-Martín et al. (2020), which highlighted the widespread implementation of the TGfU programme in primary and secondary schools, and is also consistent with the meta-analysis conducted by Tufikji et al. (2026) (2026), which included 20 studies and 1,478 participants and demonstrated an overall positive effect of the TGfU programme compared with traditional methods, including a statistically significant effect in the physical/motor domain. Thus, the current results can be explained in light of the integration of contextual practice, situational variety, progression in difficulty, and increased active participation elements that provided students with better opportunities to engage their bodies, perceive the situation, select a response, and execute soccer skills in a functional context closer to the demands of actual play.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that organizing learning through preparatory games that closely mimic actual performance requirements can provide more effective learning experiences than the conventional approach in developing psychomotor intelligence and improving the acquisition of basic soccer skills among middle school students.

It is recommended that educators and sports coaches implement the performance situation-based preparatory games method in their teaching programs, as this method has been proven to be effective and appropriate for developing kinesthetic-motor intelligence and improving the mastery of basic soccer skills in secondary school students

REFERENCES

Abbas, W. K., & Abdul Karim, A. I. (2025). The effect of small games supported by three-dimensional images on the development of bodily–kinesthetic intelligence among pupils aged 6–7 years. Journal of Physical Education Sciences, 18(6), 147–162.

Ahmad, M. F., Low, J. F. L., & Nadzalan, A. M. (2024). The effects of small-sided games on fitness components and technical abilities among youth soccer players. Central European Journal of Sport Sciences and Medicine, 45(1), 83–93.

Al-Faqih, M. A. I. (2018). The effect of using small-sided match games on developing certain motor abilities and basic soccer skills among young players aged 8–10 years. Journal of Sport Sciences and Physical Education, 3(2), 23–40.

Al-Khashab, Z. Q., et al. (1988). Soccer. Dar Al-Kutub for Printing and Publishing.

Arslan, E., Orer, G. E., & Clemente, F. M. (2020). Running-based high-intensity interval training vs. small-sided game training programs: Effects on physical performance, psychophysiological responses, and technical skills in young soccer players. Biology of Sport, 37(2), 165–173.

Barba-Martín, R. A., Bores-García, D., Hortigüela-Alcalá, D., & González-Calvo, G. (2020). The application of Teaching Games for Understanding in physical education: A systematic review of the last six years. International Journal of Environmental Research and Public Health, 17(9), 3330. https://doi.org/10.3390/ijerph17093330

Clemente, F. M., & Sarmento, H. (2020). The effects of small-sided soccer games on technical actions and skills: A systematic review. Human Movement, 21(3), 100–119.

Clemente, F. M., Ramirez-Campillo, R., Sarmento, H., Praça, G. M., Afonso, J., Silva, A. F., Rosemann, T., & Knechtle, B. (2021). Effects of small-sided game interventions on the technical execution and tactical behaviors of young and youth team sports players: A systematic review and meta-analysis. Frontiers in Psychology, 12, 667041. https://doi.org/10.3389/fpsyg2021..66704

Clemente, F. M., Ramirez-Campillo, R., Sarmento, H., Praça, G. M., Afonso, J., Silva, A. F., Rosemann, T., & Knechtle, B. (2021). Effects of small-sided game interventions on the technical execution and tactical behaviors of young and youth team sports players: A systematic review and meta-analysis. Frontiers in Psychology, 12, 667041.

Greve, S., Diekhoff, H., & Süßenbach, J. (2022). Learning soccer in elementary school: Using Teaching Games for Understanding and digital media. Frontiers in Education, 7, 862798. https://doi.org/10.3389/feduc2022..862798

Habash, H. N., Hassan, A. M., & Sumaisim, S. M. S. (2015). Bodily-kinesthetic intelligence and its relationship with motor satisfaction in passing and shooting skills among University of Kufa futsal team players. Journal of Physical Education Sciences, 8(5), 267–282.

Jamal, M. (2024). The effectiveness of an educational curriculum based on constructivist learning in bodily–kinesthetic intelligence and the acquisition of basic soccer skills among students. University of Anbar Journal of Physical and Sport Sciences, 14(28), 416–428. https://doi.org/10.37655/uaspesj2024..149120.1136

Jawad, A. S. (2004). Tests, Measurement, and Statistics in the Sports Field. Al-Qadisiyah University Press.

Karahan, M. (2020). Effect of skill-based training versus small-sided games on physical performance improvement in young soccer players. Biology of Sport, 37(3), 305–312.

Katis, A., & Kellis, E. (2009). Effects of small-sided games on physical conditioning and performance in young soccer players. Journal of Sports Science and Medicine, 8(3), 374–380.

Lazim, A. (2004). Establishing normative scores for selected physical and skill abilities as indicators for the selection of youth soccer players aged 15–16 years in Iraq [Unpublished master's thesis]. College of Physical Education, University of Baghdad.

Mesquita, I., Farias, C., & Hastie, P. (2012). The impact of a hybrid Sport Education–Invasion Games Competence Model soccer unit on students' decision making, skill execution, and overall game performance. European Physical Education Review, 18(2), 205–219. https://doi.org/10.1177/1356336X12440027

Muftan, M. K., & Hashim, A. H. (2025). A study of the relationship between bodily-kinesthetic intelligence and the performance of a set of basic soccer skills. Damu Journal of Sport Sciences, 2(3), 189–198. https://doi.org/10.64002/96hee551

Oqabi, M. (2024). The effect of a proposed physical activity program using movement games on improving intelligence levels among preschool children aged 5–6 years. Journal of Society and Sport, 7(1), 141–155.

Práxedes, A., Del Villar, F., Pizarro, D., & Moreno, A. (2018b). The impact of nonlinear pedagogy on decision-making and execution in youth soccer players according to game actions. Journal of Human Kinetics, 62, 185–198. https://doi.org/10.1515/hukin-2017-0169

Práxedes, A., Moreno, A., Gil-Arias, A., Claver, F., & Del Villar, F. (2018a). The effect of small-sided games with different levels of opposition on the tactical behavior of young soccer players with different levels of sport expertise. PLOS ONE, 13(1), e0190157. https://doi.org/10.1371/journal.pone0190157.

Rahmoune, M. A., Selmi, O., Bouali, S., Bouassida, A., Alexe, D. I., Aldhahi, M. I., Cojocaru, A. M., Ştef, M., & Alexe, C. I. (2026). Effects of small-sided games and dribbling circuit training on physical and technical skills in youth soccer players. Scientific Reports, 16, 1731. https://doi.org/10.1038/s41598-025-31382-7

Sgrò, F., Bracco, S., Pignato, S., & Lipoma, M. (2018). Small-sided games and technical skills in soccer training: Systematic review and implications for sport and physical education practitioners. Journal of Sports Science, 6(1), 9–19. https://doi.org/10.17265/2332-7839/2018.01.002

Shafaa, A. (2021). Design and construction of a bodily-kinesthetic intelligence scale for middle school students [Unpublished master's thesis]. Mohamed Boudiaf University of M'Sila.

Sierra-Ríos, J. V., Clemente, F. M., Rey, E., & González-Víllora, S. (2020). Effects of 6 weeks of direct instruction and Teaching Games for Understanding programs on physical activity and tactical behavior in U-12 soccer players. International Journal of Environmental Research and Public Health, 17(14), 5008. https://doi.org/10.3390/ijerph17145008

Taha, H. M., Hussein, L. M., & Mohammed, A. A. J. (2025). The effect of an educational program using small-sided games based on bodily-kinesthetic intelligence on selected basic soccer skills among youth players. Journal of Physical Education Sciences, 18(1), 220–240.

Tufekci, S., Aygun, Y., Boke, H., Yagin, B., Tufekci, S., Turhan, F. H., & Berktaş, H. (2026). Effects of Teaching Games for Understanding on students' learning outcomes in physical education: A hierarchical meta-analysis of domain-specific effects. Scientific Reports, 16, 29747. https://doi.org/10.1038/s41598-026-59931-8

Yulian, S., Fuadiah, N. F., & Handayani, W. (2026). Teaching Games for Understanding improves inside-foot passing ability in soccer learning among high school students. Musamus Journal of Physical Education and Sport, 8(3), 1278–1284. https://doi.org/10.35724/mjpes.v8i3.7813