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The Impact of an Educational Program Using the Inclusion Method in Teaching Some Basic Badminton Skills to Female Students

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Abstract: *The researcher used an experimental design with equivalent groups on a sample of (18) third-year female students from the College of Physical Education and Sports Sciences at Al-Qasim Green University during the academic year (2025-2026). The students were divided equally into two groups (experimental and control). The educational program consisted of (9) learning units, one unit per week, each lasting (90) minutes, interspersed with mental and practical exercises that considered individual differences. After conducting post-tests and statistically analyzing the data, the results showed that the experimental group, which studied using the Inclusion Style, outperformed the control group in terms of performance level in (learning the long high forehand serve, short backhand serve, and forehand shot). The researcher concluded that the Inclusion Style gives the learner freedom of decision and increases their motivation by allowing them to choose a performance level that suits their abilities, which effectively contributed to developing accuracy and skill.*

Keywords: *Inclusion Technique, Basic Skills, Badminton*

Introduction

Many humanities and sports disciplines are increasingly focusing on teaching methods that emphasize mental processes, given their ability to link physical activity with conscious mental processes. Mental training is a fundamental and crucial pillar in sports, contributing to students reaching peak performance levels by refining exemplary performance. The importance of the mind is evident in its pivotal role in developing skill and physical abilities, as physical fitness is an integral part of human mental health and efficiency. The educational process cannot achieve its goals without a delicate balance between cognitive facts and mental comprehension on the one hand, and practical skills on the other, to facilitate the attainment of desired educational objectives.

Experts emphasize that the choice of teaching method must consider the specific characteristics of each skill, as well as the individual differences and age groups of learners. In this context, the researcher adopted the inclusion method to teach the basic skills in badminton. This approach is based on placing the student at the heart of the educational

process by empowering her to perform movements at a level she deems appropriate to her abilities and potential (Al-Mousawi, 2024).

This approach also aims to involve all students in simultaneous performance of skills, thus enhancing the student's role in comprehension and making important field decisions. Hence, the importance of this research lies in investigating the effectiveness of the inclusion method and its impact on teaching some basic badminton skills to female students.

Research Problem:

Regarding the research problem, physical activity plays a crucial role in developing physical abilities, and badminton is an activity that requires high physical and technical effort. Through the researcher's field observations, his experience coaching and teaching badminton, and specialized readings indicating that integrating cognitive and skill-based methods reduces learning gaps (Al-Shammari, 2026), the researcher found a deficiency in the attention given to the physical and skill-based aspects related to the students' levels. The researcher believes that using the inclusion method is fundamental to teaching basic badminton skills, aiming to achieve optimal performance. Therefore, the research problem is formulated in the following question:

Does learning using the inclusion method have an effect on the performance of some basic badminton skills among female students?

Research Objectives:

1. To design an educational curriculum based on the inclusion method, specifically for teaching basic badminton skills to female students.
2. To determine the effect of using the inclusion method on accelerating the learning process of some basic badminton skills among female students.
3. To compare the two methods (the curriculum developed using the inclusion method and the traditional method) to identify which is more effective in teaching the basic skills under investigation.

To determine the differences in post-test results between the control and experimental groups, to assess the extent of development in the badminton skills under investigation among female students as a result of the method used.

Methodology

Research Methodology:

Based on the nature of the objectives, which aim to measure the effect of an independent variable (the inclusion method) on a dependent variable (learning the high forward serve, short back serve, and forehand stroke), the researcher adopted the experimental method, specifically the equivalent groups design. This method is the most accurate and suitable for addressing research problems that require controlling variables and comparing results between two groups (control and experimental). Al-Anzi (2024) indicates that the experimental design based on equivalent groups ensures the isolation of external factors and the determination of the true effect of the proposed educational program.

1. **Research Population and Sample**

The characteristics of the research population and sample were defined as follows:

a. Research Population: The research population consisted of third-year female students at the College of Physical Education and Sports Sciences at Al-Qasim Green University, for the academic year (2025-2026). The total number of students was (18), after excluding one student due to a health condition that prevented her from taking the tests. - Research Sample: The research sample was selected purposively, a method that allows the researcher to choose a group that efficiently fulfills the study's objectives. The sample included all members of the research population, totaling (18) female students.
b. Sample Division: The participants were divided into two equal groups to ensure statistical balance:
c. Experimental Group: This group consisted of (9) female students and will undergo the inclusion-based educational approach.
d. Control Group: This group also consisted of (9) female students and will undergo the traditional educational approach.

Table 1: Details of the Research Sample

Groups	Nature of learning	Number	Percentage
Experimental	Inclusion method	9	**50%**
Controlled	Followed by the teacher	9	**50%**
Total	**-**	**18**	**100%**

The researcher performed homogenization of the research sample for the research variables (height, age, and weight) for the control and experimental groups, and Table (2) shows this.

Table 2: mean, standard deviation, median, and skewness coefficient for the research variables (height, age, and weight)

S	Variables	Units	Mean	Std	Median	Skewness
1	Height	Cm	168.2	2.16	165	**0.29**
2	Age	Year	20.5	1.22	21	**-0.28**
3	**Weight**	**Kg**	**64.2**	**3.20**	**65**	**-0.08**

- Sample Homogeneity: The results showed that the skewness coefficient values were within the range of ±3, which is a precise statistical indicator of the homogeneity of the research sample in the variables under study. This result means that the research sample is normally distributed, which lends scientific rigor to the research and allows for the use of reliable statistical tests. Al-Hashemi (2024) confirms that the skewness coefficient being within this range ensures that the sample accurately represents the original population, avoiding extreme results.
- Equivalence of the Research Groups: To verify the rigor of the field procedures, the researcher conducted equivalence tests between the two groups (experimental and control) for all the investigated variables. The researcher adopted these tests as a pre-test for the sample to ensure that both groups started from the same level before the

educational program was implemented, and to guarantee that future differences would result from the methodology used in the study.

Table 3: Equivalence of the control and experimental groups in the research variables under study

Variables	Control		Experemental		Calculated T value	sig	Level of significance
	Mean	Std	Mean	Std			
High forwards serve	15.12	1.66	14.22	1.71	0.520	0.532	**Non sig.**
Short backhands serve	9.33	1.51	10.11	1.42	0.620	0.549	**Non sig.**
Forehand stroke	**8.22**	**1.32**	**9.01**	**1.42**	**0.765**	**0.634**	**Non sig.**

Research Tools:

The researcher relied on a set of scientific and field tools and methods to conduct this study, ensuring the accuracy of data collection and the achievement of the research objectives. These are as follows:

Data Collection Methods:

The following methods were used to obtain scientific data and information:

- Sources and References: Arabic and foreign scientific books and publications related to the research topic were consulted (inclusion method, badminton, mental processes).
- Mental Training Scale: A standardized scale, specifically designed for the research sample, was used to measure the level of mental abilities associated with athletic performance. Al-Hashemi (2024) indicates that psychological and mental scales are essential for interpreting the development of skill performance.
- Previous Studies and Research: Previous literature addressing the research variables was reviewed to benefit from the results and methodologies employed.
- The World Wide Web (Internet): Reputable databases and scientific websites were searched to obtain the latest developments in badminton training.
- Skills Tests: Standardized field tests were used to measure the level of development of basic badminton skills among the female students.

Equipment and Tools Used:

For the purpose of conducting the field tests and implementing the curriculum, the following equipment and tools were provided:

- Measuring Devices: Measuring tape (metric) for measuring distances, and a medical scale for measuring weight and mass.
- Spatial Requirements: A fully equipped regulation badminton court for conducting the training units and tests.

Sports Equipment:

- (24) rackets to meet the needs of the sample.

- (10) boxes of Unix brand shuttlecocks, each box containing 6 synthetic shuttlecocks.
- Auxiliary Tools: Tapes used to mark performance zones and guide the students' movement paths during the curriculum implementation.

Identifying the Skill Tests Used:

Testing the Accuracy of the Long High Serve:

This test is a standardized scientific tool for measuring serving efficiency. It is conducted after a thorough explanation and practical demonstration of the long high serve skill, clarifying the legal requirements for proper execution.

  - Test Name: Long High Serve.
  - Test Purpose: To measure the accuracy of the long high serve.
- Equipment Used:
  - Adhesive tape.
  - Measuring tape.
  - A badminton court divided into (3) overlapping squares as shown in Figure (1).
  - (5) boxes of Unix brand shuttlecocks.
- Performance Method:

1. The test subject is allowed two attempts (long high serve), which are not counted in the official record of attempts.
2. The test subject stands in the center of the court, ready.
3. The test subject serves with the racket in the forehand position.

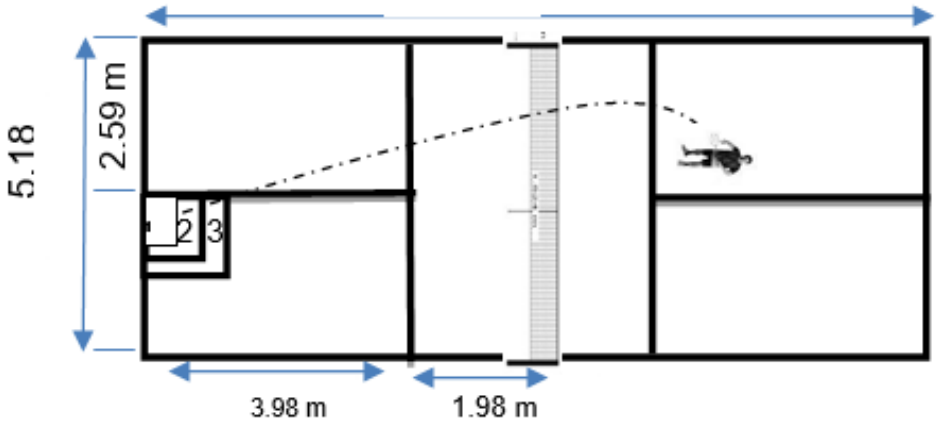

Figure 1. Long-distance high transmission

Test Instructions:

1. The serve should adhere to the following guidelines: International Rules of the Game.
2. The tester stands in the center of the court.
3. The dimensions of the three areas (squares) are as follows:
   a. The side length of the small square is 25 cm.
   b. The side length of the middle square is 50 cm.
   c. The side length of the large square is 75 cm.
4. The tester is allowed (10) attempts.

a. Scoring:
   i. The scorer observes and records all attempts, whether correct or incorrect, and awards points accordingly.
   ii. For area (1), (5) points are scored.
   iii. For area (2), (4) points are scored.
   iv. For area (3), (3) points are scored.
   v. Zero points are awarded if the ball falls outside the boundaries of the designated areas or the court.
   vi. The total score for the test is (50) out of (10) attempts.

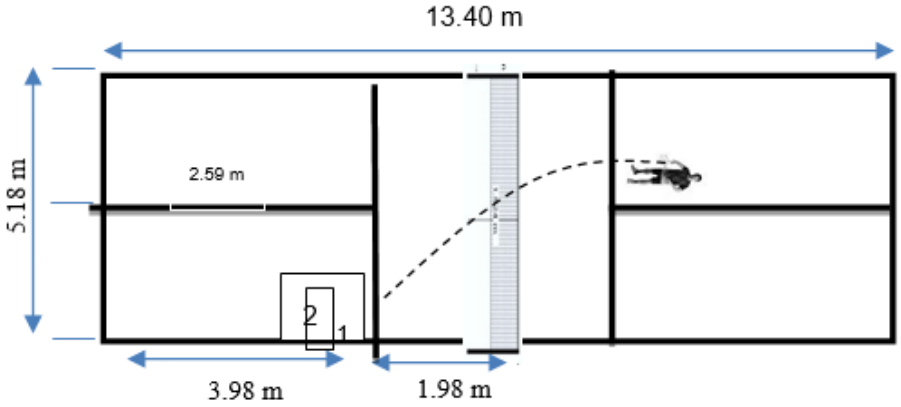

Figure 2. Short backhand

Pilot Study:

To verify the soundness of the field procedures and the effectiveness of the tools used, the researcher conducted a pilot study at 9:00 AM on Sunday, October 5, 2025, with a pilot sample of (6) female students from the original research sample and the same research population. This study focused on testing the students' ability to respond and work according to the requirements of the inclusion method, in addition to applying the skills tests under investigation.

Objectives of the Pilot Study:

The main objectives of conducting this study were as follows:

a. Evaluating the teaching method: Determining the suitability of the inclusion method to the students' abilities and their comprehension of its motor and cognitive requirements.
b. Efficiency of the support staff: Testing the ability and understanding of the support team regarding the mechanism for implementing the skills tests and adjusting the field standards.
c. The duration: the real-time needed for the execution of each skills test, the proper scheduling of the tests during the main study and the avoidance of test fatigue.

d. Identifying obstacles: Identifying and focussing on the most serious technical or administrative issues and problems that could obstruct the flow of the work, and find solutions to these problems in advance of the final implementation.

The Curriculum:

The researcher developed an extensive program focusing on some of the key skills being assessed. It was organised chronologically and organisationally as follows:

- Curriculum Structure: The curriculum comprised six (6) learning units implemented over six (6) consecutive weeks.
- Implementation Frequency: One (90) minute learning unit was assigned for every week.
- Scientific Evaluation: To ensure scientific rigor, the curriculum, in its initial form, was presented to a select group of experts and specialists in teaching methodologies, racquet sports, and testing and measurement for evaluation and necessary revisions before its final approval.
- Implementation Timeline: The curriculum was implemented in the field on Monday, October 6, 2025, and the program concluded on Monday, December 15, 2025.

Implementation Mechanism of the Embedding Method:

The researcher followed a strict procedure in the application of the experimental method that was carried out as follows:

- The research sample has been pre-tiaped with an introductory unit, so that the students can get a general idea of the nature of the work according to the embedding method, and familiarize themselves with the group system and self-directed work, which is different from the traditional method, in which the role of the teacher is dominant in guiding the work.

Groups' procedural design:

- The Experimental Group: received the curriculum with the embedding approach, with multi-level activities being demonstrated to teach the necessary motor skills.
- Control Group: Learners continued their learning through the subject teacher's method of teaching.
- The inclusion approach also gave the students freedom to start off at the level they felt was most appropriate for their motor skills and ability, with the teacher's only role being that of on-site observation and giving positive feedback to improve performance.
- In the main section (Applied) of the learning unit, the researcher used various educational practices in the applied activity, focusing on the multiple levels in line with the inclusion philosophy.
- Learning Environment: The curriculum design emphasized strengthening suspense and excitement to attract students' attention and motivate them, and fully implementing the three-part structure of the learning unit (introducing, developing and concluding).

Post-Test:

Once the proposed educational program based on inclusion approach is implemented 100% then the researcher continued to carry out post tests and measurements in the experimental and the control group. These field procedures were carried out on Monday, October 6, 2025.

During the implementation of these tests, the researcher ensured the following aspects were considered to guarantee the accuracy of the results:

- Controlling variables: The tests were conducted under conditions identical to those of the pre-tests to ensure the isolation of the influence of external factors.
- Adherence to technical requirements: All tools, equipment, and playing fields were prepared according to the same standards and requirements adopted in the pre-implementation phase.
- Procedural accuracy: Skill and cognitive tests were administered to all members of the research sample (both experimental and control groups) to extract the final data directly for statistical analysis.

Statistical methods:

The researcher used the Statistical Package for the Social Sciences (SPSS) to conduct statistical operations.

Result and Discussion

Presentation and discussion of the skill test results for the control group (pre- and post-tests):

Table 4: shows the means, standard deviations, calculated T-value, calculated F-value, and type of significance for the control group in the pre- and post-tests for the skills under investigation

Variables	Pre-test		Post-test		Calculated T value	Sig	Level of significance
	Mean	Std	Mean	Std			
Serve	15.12	1.66	20.11	1.75	6.78	0.000	**Sig.**
Forehand	9.33	1.51	12.22	1.52	3.79	0.013	**Sig.**
Backhand	**8.22**	**1.32**	**11.40**	**1.80**	**3.84**	**0.021**	**Sig.**

Based on the statistical results obtained, here is a detailed and comprehensive restatement of the analysis and discussion of the control group's results, while maintaining the required scientific context and documentation:

The data presented in Table (4) revealed statistically significant differences between the pre-test and post-test results, favoring the post-test scores of the control group. The findings support the second hypothesis of the study that skill performance would improve due to the curriculum adopted.

Presentation and discussion of the pre- and post-skills test results for the experimental group:

Table 5: Means, standard deviations, calculated t-value, calculated T-value, and type of significance for the experimental group in the pre- and post-skills tests under study

Variables	Pre-test		Post-test		Calculated T value	Sig	Level of significance
	Mean	Std	Mean	Std			
Serve	14.22	1.71	25.21	1.30	22.12	0.000	**Sig.**
Forehand	10.11	1.42	15.66	1.42	7.141	0.000	**Sig.**
Backhand	**9.01**	**1.42**	**14.20**	**1.62**	**5.327**	**0.000**	**Sig.**

The statistical results presented in Table (5) show statistically significant differences between the pre-test and post-test scores, favoring the post-test scores of the experimental group. The researcher is convinced that this fantastic improvement and positive difference in results is due to the efficiency and practical effectiveness of the designed curriculum. The course was definitely offering training in all of the athletic abilities and improving their skill performance using correct and step-by-step scientific procedures.

Control and experimental group post-test results will be presented and discussed:

Table 6: The results of the post test of the skills studied for control group and experimental group include means, standard deviations, t value and significance value

Variables	Control group		Experimental group		Calculated T value	Sig	Level of significance
	Mean	Std	Mean	Std			
Serve	20.11	1.75	25.21	1.30	6.16	0.000	**Sig.**
Forehand	12.22	1.52	15.66	1.42	4.20	0.001	**Sig.**
Backhand	**11.40**	**1.80**	**14.20**	**1.62**	**4.18**	**0.000**	**Sig.**

The statistical results presented in Table (6) revealed statistically significant differences between the post-test results of the control and experimental groups, with these differences favoring the experimental group. The researcher attributes this qualitative superiority to the effective positive impact of the inclusion method on the learning process compared to other traditional methods.

Discussion

The analysis of the underlying causes of the improvement on Control Group:

The researcher attributed this noticeable improvement in skill performance, especially in post-test to the effectiveness of the traditional teaching procedures that were used by the subject teacher, based on several educational pillars, including:

- Verbal explanation and model demonstration: The teacher gave a detailed explanation and precise clarification of the skills under study, and reinforced the explanation by allowing students to watch a live demonstration of the skills and examine an example of them. This enabled them to formulate their full mental picture and enough knowledge of the skill.
- Logical Sequence of Learning: The sequential learning strategy, progressing from easy to difficult and from part to whole, was followed. This sequence is logical in that it directly helps the motor understanding and comprehension of the skill being taught.

- Repetition and Correction: Skill was repeated and practiced regularly, giving the students enough repetition time to learn the skill and the teacher enough feedback time to identify and correct errors, which in turn had a positive effect on the quality of skill performance.
- Follow up and feedback: The teacher was very important in the learning process in terms of closely monitoring the students' performance and giving feedback to the students when needed, and when the students needed it.

Hanfi Mahmoud Mukhtar thinks it is the best way to teach an athletic skill, when a teacher or coach shows an example at practice and explains and demonstrates the skill verbally. It emphasizes that the learner's level of mastery of the skill is closely related to the teacher's ability to provide an accurate explanation and clear presentation of the art of performance, taking into account the correct anatomical and kinetic positions of all parts of the body during the different stages of education.

Analysis of the reasons for the improvement in the experimental group:

The following analytical points can be used to explain the success:

- Individual difference issues: The curriculum was planned to be fully compatible with the pupils' ability, physical capacity, and skill requirements so all available resources were used to allow pupils to acquire skills in their movement. This propelled the students' performance to very good levels. With this concern, Dhafer Hashem Al-Kadhemi highlights that the curriculum has been designed based on the students' abilities and needs, which has contributed to this qualitative difference in the application of the curriculum. It has enabled students to learn flexibly, to acquire skills according to their own pace and created a positive and effective impact on learning.
- Systematic and Organised Implementation: There has been good use of the exact curriculum and this has helped educational outcomes to improve in general. This is in line with the argument put forward by the writer of Muhammad Mahmoud Al-Hila who suggests that gainful implementation of the curriculum is bound to lead to a remarkable and visible improvement in students' overall performance.

Analysis of the reasons for the experimental group's superiority:

- This noticeable improvement in the experimental group's skill performance can be attributed to the following scientific and educational factors:
- Consideration of students' levels and freedom of decision-making: The inclusion method provides a flexible learning environment that grants students complete freedom to make appropriate decisions regarding their performance level, enabling them to work within the scope of their actual abilities and skill potential. Mustafa Muhammad Al-Sayeh confirms that this method takes into account all grade levels, allowing students to choose the feasible performance level within a single task. Clarence Darrow also points out that the availability of multiple levels of difficulty

allows students to start from where they deem appropriate, as they are best aware of their individual needs and capabilities.

- Mental exercises being integrated with skill-based activities: The learning units featured intensive mental exercises that were related to the skill-based performance in the major portion of the unit. It helped students to remove the anxiety, stress and confusion while executing. Badminton skills demands concentration and attention making mental training an important factor in avoiding distraction and relaxation. Osama Kamel Rateb says that in this context, mental training can help enhance focus and reaction time in several situations.
- The inclusion approach was characterized by drawing out all learners, not only abstract motor practice, but dealing with individual differences in terms of feedback effectiveness. Instead, accurate information and prompt feedback to the individual student's performance was provided to support performance. This aspect is of paramount importance and Ya'rab Khayoun explains that without feedback, there is no real learning, because it is the most powerful variable affecting performance and learning.

Conclusion

The applicability of the inclusion method was very effective in improving students' motivation to speed up learning and mastering the basic badminton skills. The whole set of exercises in the learning units, which are based on the philosophy of this method, had a clear effect in developing students' skills and improving their technical performance. In addition, the experimental group who learned through the inclusion method showed statistically and empirically significant superiority in comparison to the control group who learned through the traditional method that the teacher used. This validates the effectiveness of this technique in dealing with 'individual differences' of learners. Furthermore, the inclusion method in the learning units provided a learning environment that was stable and reduced anxiety and stress of the students by adding mental activities.

References

Al-Anzi, Saleh (2024): Scientific Research Methodologies in Physical Education: Theoretical Perspectives and Field Applications, Dar Al-Manahij for Publishing and Distribution.

Al-Hashemi, Marwan (2024): Applied Statistics in Sports and Educational Research, Dar Al-Kitab Al-Jami'i.

Ali, S. K. B. S., & Siong, N. U. (2023). Effectiveness of a comprehensive module in improving serving skills and lob shots during badminton training. Journal of Physical Education and Sport, 23(5), 1130-1141.

Al-Mousawi, Ali (2024): Active Learning Strategies in Physical Education: The Inclusion Method as a Model, Dar Al-Fikr Al-Arabi for Printing and Publishing.

Al-Shammari, Fahd (2026): Motor Learning and Multiple Intelligences in Individual Sports, Journal of Sports Science and Physical Education, Vol. 12, No. 1.

Dajrasek, Carnes and Pettigrew (1995): Development and Calibration of a Tennis Skills Test.

Darrow, Clarence (1997): Inclusion Styles in Physical Education, Physical Education Kinesiology program, Temple University (Internet).

Dhafer Hashem Ismail Al-Kazemi (2002): The Educational Curriculum and Physical Abilities.

Dhafer Hashem Ismail Al-Kazemi (2002): The Interdisciplinary Teaching Approach and its Impact on Learning and Development through Spatial Organizational Choices in the Tennis Environment, PhD Dissertation, College of Physical Education, University of Baghdad.

Eşkil, K. G., Eşkil, R., & Yapıcı, A. (2026). The effect of badminton training on the attention and motor skills performance of integrated students: a study including children with specific learning problems (SLD). BMC Sports Science, Medicine and Rehabilitation.

Hanafi Mahmoud Mokhtar (2001): Scientific Foundations of Football Training, Cairo, Dar Al-Fikr Al-Arabi.

Hensley, L.D. (1989): Tennis Skills Test Manual. Quoted By Tracy, Pellette and Curtlox. Journal of Teaching Physics. Ed., Human Kinetics Pub. Inc., 1998.

Komari, A., Setyawan, H., Kriswanto, E. S., Sujarwo, S., García-Jiménez, J. V., Pavlović, R., ... & Putra, A. M. I. (2024). The effect of physical education (PE) class management using badminton materials to improve elementary school (ES) students' concentration. Retos: nuevas tendencias en educación física, deporte y recreación, (55), 520-526.

Lin, M. L., Chen, N. C., Luo, Y. J., Liao, C. C., & Kao, C. C. (2024). From tradition to innovation: Analyzing strategies and Support for enhancing badminton course teaching quality through educational technology. Behavioral Sciences, 14(9), 857. https://doi.org/10.3390/bs14090857

Muhammad Mahmoud Al-Hila (2000): Educational Transparency Techniques, 1st ed., Amman, Dar Al-Masirah for Publishing.

Mustafa Muhammad Al-Sayeh (2001): Learning and Teaching in Physical Education.

Mustafa Muhammad Al-Sayeh (2001): Modern Trends in Teaching Physical Education and Sports, Alexandria, Al-Isha'a Al-Fanniya Press.

Osama Kamel Rateb (2000): Psychological Skills Training: Applications in the Sports Field, 1st ed., Cairo, Dar Al-Fikr Al-Arabi.

Osama Kamel Rateb (2000): Sports Psychology: Concepts and Applications, 3rd ed., Cairo, Dar Al-Fikr Al-Arabi.

Pellet, T. L. (1998): Validation of a Tennis Skills Test Battery for College Students.

Pratama, A. P., & Arief, N. A. (2026). Differences in interest between male and female students toward badminton learning. Citius: Jurnal Pendidikan Jasmani, Olahraga, dan Kesehatan, 6(1), 92-98.

Sutikno, J., & Suharjana, A. N. The impact of three-level differentiated instruction on junior high school students' badminton performance.

Wang, Y., Zhou, D., Liu, C., Long, L., & Cheng, G. (2025). Physical-intellectual badminton teaching intervention for children with intellectual disabilities. Frontiers in Psychology, 16, 1445620. https://doi.org/10.3389/fpsyg.2025.1445620

Ya'rub Khayoun (2002): Motor Learning: Between Theory and Application, Al-Sakhra Printing Office, Baghdad.