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The Effect of the Random Stimulation Strategy on Learning the Skills of Upper and Lower Passing in Volleyball for Second-Year Middle School Girls

Zahraa Ali¹✉, Luma Sameer Hamoudi²✉ 

1&2 Physical Education and Sport Sciences college for women, University of Baghdad

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Abstract

Randomization stimulation strategy is one of the strategies that encourage learners to think by making connections between two or more images that may initially appear to have no relationship. Here, learners are required to think and search for the link or relationship between the images. The research problem lies in the students' lack of proficiency in passing the volleyball from above and below, attributed by the researchers to the limited use of modern strategies that engage learners actively, as well as the learners' feelings of boredom. Therefore, the research aims to prepare instructional units using the randomization stimulation strategy for learning the skill of passing the volleyball from above and below, in addition to investigating the impact of the randomization stimulation strategy on learning the studied skill. The researchers employed an experimental approach with two groups, a control group and an experimental group, using both pre-test and post-test assessments with random selection. The study involved 50 female students from the second intermediate grade out of a total of 72 students, drawn from two classes, (B) and (C). The research tools included skill tests for both passing from above and passing from below. After conducting the pre-tests, eight instructional units were implemented using the randomization stimulation strategy, with an average of four instructional units for each skill. The duration of each instructional unit was 45 minutes. Subsequently, post-tests were administered, and the most significant findings indicated that the randomization stimulation strategy had a positive impact on learning both passing skills from above and below in volleyball. Additionally, the group that utilized the randomization stimulation strategy outperformed the group that used the conventional approach in learning the studied skills, and this achieves one of the sustainable development goals of the United Nations in Iraq which is (Quality Education). The researchers recommended that the study's results be considered as a starting point for new research projects in the field of volleyball and other sports. They also suggested utilizing the study's findings for teaching the skill of passing from above and below using the randomization stimulation strategy, given its demonstrated effectiveness in the educational process. Furthermore, they encouraged the exploration of new strategies in this regard.

Keywords

Randomization Stimulation Strategy, Passing from Above, Passing from Below, Volleyball

Introduction:

Despite the efforts made by our educational institutions and the changes they have undergone, their educational curricula, strategies, and methods still require modernization. Therefore, there is a need to adopt modern teaching strategies, methods, and educational models to enhance the level and effectiveness of learning. To achieve this, today's

educators adopt a scientific plan in the teaching process to overcome the obstacles that hinder the learning process. Some teaching strategies, methods, and models have been designed to focus on learners facing a real problem situation, encouraging them to seek solutions through research and critical thinking. Furthermore, the randomization stimulation strategy is one of the approaches that encourage learners to think

critically by establishing connections between two or more images that may initially appear unrelated. In this context, learners are prompted to engage in analytical thinking and actively search for the links or relationships between the images. Volleyball is considered one of the renowned and widely recognized sports worldwide since the beginning of the current century. It has garnered substantial popularity due to its distinctive technical skills and tactical plans, diverging from any form of violence or brute force. Volleyball has become an essential sport in our educational institutions, practiced by both male and female students alike. It is crucial that students acquire all the fundamental skills at an equitable level to enable each student to fulfill their assigned tasks on the court. Through these skills, team members collaborate and can execute prescribed playing strategies to achieve the best performance. Passing skills from above and below are considered foundational skills in the game of volleyball, especially for beginners. Learning these skills is imperative as they form the basis from which more advanced technical skills derive. Through the researchers' experience and observations of the students' performance, the research problem has been identified. It lies in the majority of female students' weak performance in passing the volleyball from above and below. This can be attributed to the limited use of modern teaching strategies in the educational process, which has resulted in a lack of excitement and engagement among learners. Hence, the significance of this research lies in the utilization of the randomization stimulation strategy as one of the modern strategies that blend fun and excitement, offering new perspectives to break away from the conventional methods. The study aims to experiment with this strategy scientifically to obtain precise results in the learning of passing skills from above and below in volleyball. We seek to understand its role in the educational process and its impact on learning these two skills within the context of volleyball. The

research aimed to develop educational units using the randomization stimulation strategy for learning the skill of passing the volleyball from above and below. Additionally, it aimed to investigate the impact of the randomization stimulation strategy on learning the mentioned skill. The researchers hypothesized that there would be statistically significant differences between pre-test and post-test scores for both the control and experimental groups in learning the skill of passing the volleyball from above and below. Furthermore, they anticipated finding statistically significant differences between the control and experimental groups in the post-tests related to learning this skill in volleyball. The research was conducted with second-year middle school female students at Al-Fadakh Girls' Middle School for the academic year 2022-2023.

Method and Procedures:

The researchers adopted an experimental approach by designing two equivalent groups, the control group and the experimental group, with randomized pre-tests and post-tests. This methodology is considered the most suitable and accurate for achieving the research objectives and is well-suited for addressing various research problems. The research population consisted of second-year middle school female students at Fudik Girls' School for the academic year 2022/2023, totaling 72 students divided into 3 classes. The research sample was selected using random sampling and lottery methods, representing two classes (B and C) with a total of 50 students, constituting 69.4% of the total population. Additionally, the survey experiment sample was chosen using random sampling and lottery methods, representing 5 students from class A, accounting for 6.94% of the total population. Since the sample was from the same age group, with similar heights and weights, and the researchers excluded failing students, the sample can be considered homogeneous. To conduct their research, the researchers utilized the following tools and equipment:

(Volleyballs - a volleyball court - adhesive tape - a measuring tape - a video camera - laser discs - a laptop computer - a handheld calculator - a smooth wall)

The researchers also employed the following skill tests:

Passing from Below Wall Test (4)

Test Purpose: To measure the skill level of passing from below, as assessed by experts.

Tools: Regulation volleyball court, three volleyballs, smooth wall.

Test Description: The participant stands in front of the smooth wall and continuously passes from below towards the wall.

Number of Attempts: 3 attempts.

Assessment: The participant's performance in the three attempts is assessed by experts, and the scoring is as follows:

- Preparation Section: 3 points
- Main Section: 5 points
- Conclusion Section: 2 points

The final score is calculated by taking the average score of the three attempts, with a total possible score of 10 points.

Passing from Above Wall Test (4)

Test Purpose: To assess the skill level of passing from above, as evaluated by experts.

Tools: Regulation volleyball court, three volleyballs, smooth wall.

Test Description: The participant stands in front of the smooth wall and continuously passes from above towards the wall.

Number of Attempts: 3 attempts.

Assessment: The participant's performance in the three trials is evaluated by experts, and the scoring is categorized as follows:

- Preparation Section: 3 points

- Main Section: 5 points

- Conclusion Section: 2 points

The final score is determined by calculating the average score of the three attempts, with a total possible score of 10 points.

The researchers conducted a preliminary survey experiment for the skill tests on a survey experiment sample consisting of 5 female students from class A at Fadak Girls' School on November 2, 2022. The purpose of this preliminary experiment was to address potential obstacles and difficulties that might arise during the main experiment. Additionally, it aimed to confirm the suitability of the location for placing the camera and ensure that the tests were appropriate for the sample's skill level. Based on the results of the preliminary survey experiment, any obstacles were addressed, and the camera's location was fixed at a height of 1 meter above the ground and a distance of 3 meters from the participant.

The pre-tests for the skill tests (upper pass and lower pass) were conducted on 9-10/11/2022, in the schoolyard and on the main sample of the experiment. The researchers prepared a form to record the test data. Additionally, they filmed the students' performance during the tests, converted the footage to CDs, and then distributed these to three experts for evaluation. The students' performance was assessed out of 10 points, and the arithmetic mean of the three experts' scores was used to determine the final grade. Based on the results of these tests, the equivalence of the control and experimental groups in the skill tests was verified. Table 1 illustrates this.

Table .1 It illustrates the Equivalence of the Control and Experimental Groups in the Study Variables

Seq.	Tests	Control Group		Experimental Group		Calculated T-Value	Error Value	Statistical Significance
		-Arithmetic Mean	Standard ± Deviation	-Arithmetic Mean	Standard ± Deviation			
1	Upper Pass	3.16	0.47	3.12	0.53	0.283	0.779	Not Significant

2	Lower Pass	3.64	0.91	3.44	0.71	0.867	0.390	Not Significant
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It is evident from Table (1) that the control and experimental groups are equivalent in the skill tests. This is indicated by the error values being greater than the significance level of 0.05, which demonstrates the equivalence of the sample.

The educational units employing the Random Stimulation Strategy were implemented with the experimental group, which comprised of class (B) with a total of (25) students. The curriculum was executed from November 14, 2022, to December 14, 2022. During this period, (10) educational units were conducted to teach the skills of upper and lower passing in volleyball. The implementation of the curriculum spanned (5) weeks, with an average of two educational units per week. Each educational unit lasted (45) minutes. The educational units included in the Random Stimulation Strategy comprised the following:

Preparatory Section: Lasting (7) minutes, this section included an introduction and both general and specific warm-up exercises to prepare the muscle groups.

Main Section: With a duration of (32) minutes, this section comprised both educational and practical aspects. The educational component, lasting (7) minutes, involved explaining and demonstrating the skill. Then, the students were divided into (5) groups, with (5) students in each group. This was followed by presenting a slide containing images that at first glance do not seem similar but are connected. The teacher asked the students to find the connection between the two images, giving them ample time to discuss within their groups. For example: For instance, two images were presented, one showing the upper

pass and the other the lower pass in volleyball. The students were asked to find the connection between these two images. While it might initially appear that there is no link between them, in reality, there is a connection: both images depict types of volleyball passes. Additionally, the foot positioning in both images is similar, with the feet spaced shoulder-width apart and one foot forward, the other back. Another connection is that both skills require bending the knees and torso before receiving the ball, followed by a straightening movement at the moment of contact with the ball. After this discussion, the leader of each group would provide an answer.

As for the practical aspect, it lasted (25) minutes and included a set of exercises specifically designed to facilitate the learning of the targeted skill. During this time, the teacher asked the students to find the purpose of this section in applying the Random Stimulation Strategy.

Conclusion Section: This lasted (6) minutes and included recreational games or cool-down exercises, in addition to providing feedback to all the students. Praise was given to the group that provided the correct answer, incorrect answers were corrected, and then the session concluded with the students returning the equipment and dispersing.

After completing the educational units, the post-tests for the upper and lower passing skills were conducted on 18-19/12/2022. The researchers ensured that these tests were conducted under the same conditions as the pre-tests. For the analysis of the research data and variables, the researchers utilized a statistical software package.

Results:

Table .2 It illustrates the Results of the Pre- and Post-Tests for the Control Group in the Study Variables

Variables	Pre-test Arithmetic Mean	Post-test Arithmetic Mean	Mean of differences	Deviation of differences	Calculated T-Value	P-value	Significance
Passing from Above	3.16	3.44	0.28	0.613	2.28	0.032	Significant
Passing from Below	3.64	4.08	0.44	0.917	2.400	0.024	Significant

Significant when the error level value is $< (0.05)$

Table .3 It Illustrates the Results of the Pre- and Post-Tests for the Experimental Group in the Study Variables

Variables	Pre-test Arithmetic Mean	Post-test Arithmetic Mean	Mean of differences	Deviation of differences	Calculated T-Value	P-value	Significance
Passing from Above	3.12	4.76	1.64	2.02	4.063	0.000	Significant
Passing from Below	3.44	5.56	2.12	1.42	7.446	0.000	Significant

Significant when the error level value is $< (0.05)$

Table .4 It shows the Results of the Post-Test Comparisons Between the Control and Experimental Groups in the Study Variables

Seq.	Variables	Control Group		Experimental Group		Calculated T-Value	Error Value	Statistical Significance
		- Arithmetic Mean	Standard \pm Deviation	- Arithmetic Mean	Standard \pm Deviation			
1	Passing from Above	3.44	1.01	4.76	1.74	3.29	0.02	Significant
2	Passing from Below	4.08	1.12	5.56	1.64	3.74	0.01	Significant

Significant when the error level value is $< (0.05)$

Discussion:

The data from Tables 2 and 3 indicate significant differences between the pre-and post-tests for both the experimental and control groups, with the post-tests showing more favorable results. This suggests an improvement in the performance of the two skills under study (upper pass and lower pass in volleyball). Consequently, there was a notable advancement in the post-test results compared to the pre-test results. The researchers attribute this improvement to the effective impact

of the Random Stimulation Strategy on learning these skills. This strategy presumably enhanced the cognitive structure in developing the motor programs for each of the skills. The strategy is particularly significant in broadening scientific and intellectual perceptions and in imparting knowledge and experiences to learners. Additionally, the method is essential in providing students with the chance to voice their ideas and opinions, thus providing a platform for free expression while respecting the views of their

peers. This involves consultation and reaching solutions through discussion, aligning with the findings of Tamara and Mawahib's study. Their study indicated that the use of modern teaching methods plays a vital role in achieving positive results in the performance of basic skills in general, and specifically in upper and lower passing in volleyball (9). All these factors contribute to making the learner a central and active part of the educational process. They also encourage the use of mental processes, foster a spirit of cooperation among individuals, promote participatory work, and motivate others to engage. Consequently, all these aspects had a significant impact on learning the skills of upper and lower passing in volleyball. The results also showed progress in the control group in performing the upper and lower passing skills in volleyball. This was evidenced by significant differences between the pre-tests and post-tests, favouring the post-tests. The researchers attribute this improvement to practice and application, as well as the continuous pursuit of learning without interruption. This creates new motivations for productive and beneficial work. Furthermore, the results from Table 4 demonstrated the superiority of the experimental group over the control group in learning the skills of upper and lower passing in volleyball. The findings showed significant differences between the control and experimental groups in the post-tests, favoring the experimental group. This aligns with the study by Raheeq and Nuhad, which attributed this superiority to learning being "linked to focusing attention for the precise execution of skills and also because concentration is one of the important mental preparations for a player executing any skill" (6). This finding is also in line with the study by Ali and others, which states that "attention is very necessary for capabilities requiring technically distinguished performance" (7). Additionally, the study by Ula and Huda pointed out that the educational process "also relies on the physical, technical, and psychological interconnection" (5), which positively reflects in the learning process.

The use of mental processes in the educational method contributed to learning the skills under study. This is supported by Hussein Sabhan's observation that "it is not possible to focus only on skill exercises; the learner needs high mental requirements and must think creatively, with the ability to visualize and give opinions" (8). Moreover, the displayed images contribute to forming a mental image of the motor program in the brain and envisioning the skill. This assists in building a mental model of the mentioned skill visualization, facilitating the process of constructing this mental model in the brain to establish connections between the images shown to them about the two skills in the lesson and the model (2). The researchers also attribute the improvement in skill performance to what Hamoudi pointed out, which is "the clarity of educational objectives for each unit and their coherence with the learners' levels and capabilities" (1). This, in turn, led to the experimental group outperforming the control group. The researchers attribute the lower performance of the control group compared to the experimental group to what was indicated by (Abdul Ameer and others). They agree with the idea that there is a lack of emphasis on physical education in schools and that other specialities take priority. Additionally, the researchers suggest that the grades students receive in physical education do not carry the same importance as other subjects, leading to a weaker performance in the skills under study (3).

Conclusions:

Based on the results obtained, the researchers have drawn the following conclusions:

1. The randomization stimulation strategy has a positive impact on learning the skill of passing from above and from below in volleyball among the research sample.
2. The teaching method employed by the instructor contributed to the learning of the passing skill from above and from below in volleyball.

3. The experimental group, which used the randomization stimulation strategy, outperformed the control group, which used the conventional method, in learning the skill of passing from above and from below in volleyball.

Recommendation:

Based on the results of the current study, the researchers make several recommendations:

1. Utilize the findings of the study in teaching the two skills under study to second-year middle school female students.
2. Emphasize the importance of using the randomization stimulation strategy for learning certain volleyball skills, given the positive outcomes it has shown.
3. Continue to explore and experiment with modern teaching strategies to understand their role in the educational process.

Author's declaration:

Conflicts of interest: None

We confirm that all tables and figures in this article are ours and written by the researchers themselves.

Ethical-Clearance: this manuscript approved by local ethical committee of physical education and sport sciences college for women on (November /2023)

Author's contributions:

All contributions of this study were done by the researchers (Z.A. and L.S.) who get the main idea and work on writing and concluding also with number of experts, Ali Smoum (Al-Mustansiriah University) in Statistics, Oliver Stoll in revision, Inaam Ghalib in translating, Maurizio Bertollo in proofreading

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Appendices

Educational unit

Educational goal: Emphasizing commitment and calmness

Date and Time:

Sample size: 25 students

Behavioural objective: To think and focus on the image with accurate observation and perform the skill of overhand passing

Educational objective: Learning the skill of overhand passing

Unit Sections	Time	Activities and Motor Skills	Organization and Execution	Observations
Preparatory Section Introduction	8 min 2 min	Students standing up and performing the salute while taking attendance.	XXXXXXXXXX Δ	Emphasis on organized standing among the students.
General Warm-up Specific Warm-up	3 min 3 min	-A set of exercises to prepare the muscle groups. -A set of exercises specific to the muscles related to warming up with balls.	XXXXXXXXXX Δ XXXXXXXXXX	Ensuring that all students perform the exercise for warming up the body.
Main Section Educational Aspect	31 min	Explanation of the skill by the teacher followed by a demonstration in front of the students. Then the students are divided into (5) groups, with a display of a flex showing images of passing in basketball, another for handball, another for overhead passing, and an image for underhand passing in volleyball. Then, the groups are asked to explain the connection between the displayed images	X x X x X x X x X x Xxx	Equality among the groups and focus on the question posed by the researcher.
Practical Aspect	24 min 8 min 8 min 8 min	-Performing overhead passing without a ball. -Performing overhead passing using a ball suspended from both sides. -Performing overhead passing towards a teammate.	XXXXXX XXXXXX XXXXXXΔXXXXX x X Δ x	Performing correctly.

			X x	
Concluding Section	6 min	-Recreational game or calming exercises. -Each group discusses among themselves and answers the posed question, correcting wrong answers and praising correct answers, with providing feedback to all students. -Gathering the equipment and dismissal.	XxxxΔxxxx	- Praising the correct answer.
	2 min		Xxx xxxx	- The response from a chosen student from each group.
	3 min		xxxx xxx xx	- Adherence to discipline.
	1 min		Xxxxxx	
			Xxxxxxxxxx	Δ

تأثير استراتيجيات الاثارة العشوائية في تعلم مهارتي التمير من الاعلى والاسفل بالكرة الطائرة لطالبات الثاني متوسط زهراء علي¹، لمى سمير حمودي² 2&1 جامعة بغداد/ كلية التربية البدنية و علوم الرياضة للبنات

مستخلص البحث

تعد استراتيجيات الاثارة العشوائية احد الاستراتيجيات التي تحث المتعلم على التفكير من خلال إيجاد الربط بين صورتين او اكثر قد يبدو في بادئ الامر بانه لا توجد بينهم علاقة وهنا يتطلب من المتعلم التفكير والبحث عن الربط او العلاقة بين الصور، تكمن مشكلة البحث بأن هناك ضعف في الاداء المهاري لمهارة التمير من الاعلى ومن الاسفل بالكرة الطائرة من قبل الطالبات وتعزو الباحثان سبب ذلك الى قلة استخدام الاستراتيجيات الحديثة التي تجعل المتعلم دور فعال فضلا عن شعور المتعلمين بالملل. لذلك هدف البحث الى اعداد وحدات تعليمية باستراتيجيات الاثارة العشوائية لتعلم مهارة التمير من الأعلى ومن الأسفل بالكرة الطائرة فضلا عن التعرف على تأثير استراتيجيات الاثارة العشوائية في تعلم المهارة قيد الدراسة، واستخدمت الباحثتان المنهج التجريبي ذو المجموعتين الضابطة والتجريبية ذات الاختبار القبلي والبعدي عشوائية الاختيار على طالبات الصف الثاني متوسط والبالغ عددهن (50) طالبة من مجموع (72) طالبة من شعبي (ب) و (ج) وتضمنت أدوات البحث الاختبارات المهارية لكل من التمير من الاعلى ومن الاسفل، وبعد اجراء الاختبارات القبلية تم تنفيذ (8) وحدات تعليمية باستراتيجيات الاثارة العشوائية وبمعدل (4) وحدات تعليمية لكل مهارة وان زمن الوحدة التعليمية الواحدة استغرق (45) دقيقة، بعدها تم اجراء الاختبارات البعدية والحصول على اهم الاستنتاجات والتي تمثلت ان لاستراتيجيات الاثارة العشوائية تأثير ايجابي في تعلم مهارتي التمير من الأعلى ومن الأسفل بالكرة الطائرة فضلا عن تفوق المجموعة التي استخدمت استراتيجيات الاثارة العشوائية على المجموعة التي استخدمت الأسلوب المتبع في تعلم مهارتي قيد الدراسة، وهذا ما يحقق احد اهداف التنمية المستدامة للامم المتحدة في العراق (التعليم الجيد). وأوصت الباحثتان على الاخذ بنتائج الدراسة لبدائية مشاريع بحثية جديدة في لعبة الكرة الطائرة وألعاب أخرى فضلا عن الاستفادة من نتائج الدراسة لتعلم مهارة التمير من الأعلى ومن الأسفل باستخدام استراتيجيات الاثارة العشوائية كونها اثبتت ايجابيتها في العملية التعليمية والبحث عن كل ما هو جديد من الاستراتيجيات.

الكلمات المفتاحية: استراتيجيات الاثارة العشوائية، التمير من الأعلى، التمير من الاسفل، الكرة الطائرة.

الكلمات المفتاحية