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# The effect of an educational approach using random and sequential exercises in learning some basketball passes and shooting for juniors

**ASST. PROF. DR. MAJID HAMEED MERZAH**
College Physical Education and Sport Sciences, University of Kerbala, Kerbala, Iraq.
majid.hamed@uokerbala.edu.iq

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**ABSTRACT**

The purpose of this paper is to preparing an educational curriculum using random and sequential exercises in performing some basketball tackles and shooting for juniors, and identifying the effect of the educational curriculum prepared using random and sequential exercises in performing some basketball tackles and shooting for juniors. The researcher used the experimental method with the design of (equivalent groups) to suit the nature of the research and its problem. The research community was determined as the young players in Al-Hilla Sports Club for the 2024-2025 season, numbering (18) players. The entire community was selected using the comprehensive enumeration method, so that 2 pilot experiments and 16 players were divided into two experimental groups. One of the most important results reached by the researcher is that: The emergence of a positive effect of the experimental method used according to sequential and random exercises in learning some basketball passes and shooting for juniors , and the study showed a development in the selected research variables and for all sample members (the experimental group, the sequential method - the experimental group, the random method) except for the shooting skill in its two forms for the experimental group, the sequential method, which did not achieve development and the development rate was by a large difference between the two groups and in favor of the experimental group, the random method. One of the most important recommendations recommended by the researchers is that : Work on benefiting from the results of the study by using the sequential and random exercises under study - to improve the level of skill performance.

**Keywords**: Educational approach, Random exercises, Sequential exercises, Basketball.

## Introduction:

The tremendous scientific revolution that the world witnessed during the first years of the twenty-first century has given all fields of science and various knowledge a lot of development, and the sports field is one of these fields that includes various sciences and knowledge, and motor learning is one of these sciences that has received a large share of development through harnessing various knowledge and other sciences and modern methods and techniques to bring about change for the better in society, and this development was the result of the accumulation of experiences, research and studies conducted by many scientists and researchers in the field of motor learning to support this science with the best ways, which focused in their entirety on developing the performance of the athlete's motor skills and in a way that serves the motor path of the sports event. Basketball is one of the sports that has occupied a large space among its fans and followers, like other different sports because it is characterized by a special character, which is the fast pace when performing, so in basketball matches we see that the players are distinguished by a high performance of skills that came as a result of the continuous

development in continuing training. Exercise and its organization are important in the learning process, as through it the teacher can give exercises to learners with a special schedule that enables them to benefit from time and repetition. This is evident in the sequential exercise method, which is a successive series of exercises with several successive attempts for one skill without practicing another skill until the previous skill is completed. The benefit of the sequential exercise method is that the learner is free to focus on the skill from all aspects until reaching good performance of the skill, as it gives the learner an opportunity to perform the skill automatically. The other method of exercise is random, which is for the student to learn more than one skill in the educational unit, as this method challenges the abilities of the player or learner and charges his drive to discover and adapt new and quickly to the sudden change that occurs in the performance requirements, as it also makes him ready to recognize and distinguish between different skills. Based on the above, it can be said that teaching is one of the most important aspects that play a major role in the progress of peoples, due to its positive impact in preparing generations on sound and modern scientific foundations. This progress can be known among these peoples through their use of modern teaching and learning methods, means, styles and theories. Hence, the importance of the research lies in the use of sequential and random exercises in performing some basketball passes and shooting for juniors.

**Research problem:**

Each game has a specific characteristic in learning skills, and the success of any educational situation helps the teacher and the learner to achieve the planned goals, and this success depends on the good choice of teaching methods that organize the process of students learning the basic skills of basketball.

Through the researcher's knowledge and field follow-up of the junior basketball league, he noticed that there are difficulties in learning skills and fluctuations in levels, which require the use of appropriate methods that lead to increasing the motivation of learners towards correct learning. The researcher attributes this fluctuation to the failure to use an educational method through which the player works with great independence in the implementation and evaluation stages of the lesson, or it may be the failure to use a method that ensures that each player, while performing the duty or the required skill, has a player who observes his work, corrects his mistakes immediately and evaluates his work. The impact of this method used on learning basketball skills is not hidden. Hence, the study of the problem represented in the effect of using an educational method using random and sequential exercises in learning some basketball passes and shooting for juniors and to find out which methods are better in learning.

**Research objective:**

- Preparing an educational curriculum using random and sequential exercises in performing some basketball tackles and shooting for juniors.
- Identifying the effect of the educational curriculum prepared using random and sequential exercises in performing some basketball tackles and shooting for juniors.
- Identifying which exercises (random and sequential) in performing some basketball tackles and shooting for juniors.

**Research hypotheses**:

- The educational curriculum using random and sequential exercises has an advantage in performing some basketball tackles and shooting for juniors.

**Research fields:**

- Human field: Junior players in Al-Hilla Sports Club for the 2024-2025 season.
- Time field: (18/7/2024) to (28/1/2025)
- Spatial field: The closed hall in Babylon Governorate.

**Research methodology and field procedures:**

**Research Methodology:**

Research Methodology: The researcher used the experimental method with the design of (equivalent groups) to suit the nature of the research and its problem.

**Community and sample research:**

The research community was determined as the young players in Al-Hilla Sports Club for the 2024-2025 season, numbering (18) players. The entire community was selected using the comprehensive enumeration method, so that 2 pilot experiments and 16 players were divided into two experimental groups.

**Devices, tools and means used in the research:**

- Personal interviews.
- Questionnaire. Testing and measurement. Observation and experimentation. Legal basketballs, number 10. Measuring tapes (20m, 3m). Medical scale. Colored adhesive tapes.
- Colored plastic signs, number 10. Colored flags, number 10. (2) Fox whistles. Canon data show. (1) PANASONIC 24 image/second camera. (20) Laser discs.
- DELL laptop.

**Field research procedures:**

**Selection of skills:-**

The researcher, in agreement with the team coach, selected some offensive skills for passes and shooting the basketball, which are:

- Chest passes.
- Long passes.
- Jump shooting.
- Ladder shooting.

**Determining the tests:**

After reviewing a number of theses and dissertations as well as scientific sources, a special closed questionnaire was prepared that included a set of tests (accuracy tests for passes and shooting for the skills under study). This questionnaire was presented to a number of specialists in the fields of basketball, testing and measurement. The specialized experts indicated the phrases (suitable and not suitable) on the tests. After collecting the questionnaires, sorting their

data and extracting the survey results, the research tests were determined, which obtained a percentage of agreement, as shown in Table (1).

Table (1) shows the determination of the validity of the basketball passes and shooting test

| No. | Tests | Number of experts | Agree | Disagree | Agreement rate |
|---|---|---|---|---|---|
| 1 | Accuracy of chest handing, handing the ball and receiving it towards the overlapping circles from a distance of 6 m | 10 | 10 | 0 | %100 |
| 2 | Accuracy of long handing (passes the ball towards the overlapping circles on the wall for a distance of (10.5) m | 10 | 9 | 1 | %90 |
| 3 | Accuracy of shooting by jumping from the front left of the free throw line then moving semi circularly to the middle and right | 10 | 10 | 0 | %100 |
| 4 | Accuracy of peaceful shooting after performing the tapping from the middle of the field | 10 | 9 | 1 | %90 |

**Exploratory experiment:**

The researcher conducted a first exploratory experiment on a sample of (2) players on 25/7/2024 for the studied variables in Hamza Nouri Hall in Hillah. After 5 days, the experiment was repeated on the same individuals on (30/7/2024). The purpose of it was:

- The validity of the tests for the sample.
- The validity of the tools used in the test.
- The time taken to perform the test.
- The adequacy of the assistant work team.

**Scientific foundations for tests:**

**Test validity:**

Test validity means (that a valid test measures what it was designed to measure) (Mustafa Bahi. 1999). To ensure the validity of the tests, the researcher used content validity, as it relies on the opinions of specialists to confirm that the test actually measures the phenomenon for which it was developed. The experts confirmed this when they agreed that the tests used in the research actually measure the phenomenon for which they were developed. In addition, the researcher

also used self-validity to ensure that the tests are valid and without a doubt measure the phenomenon, for which the test was developed.

**Test stability:** Test stability is one of the basic components of a good test. states that "the test is considered stable if it consistently gives the same results, if it is repeatedly applied to the same subjects, and under the same conditions" (Muhammad Subhi Hassanein. 1995). To find the test stability, the researcher used the test and retest method, and the test coefficient was applied to a sample of (8) players from outside the research sample (Al-Hashemiya Youth Forum). The test was conducted on 17/12/2024. After (7) days, the same test was repeated on 24/12/2024, under the same conditions, and in the same place again on the same sample. After that, the simple correlation coefficient (Pearson) law was used between the two tests to find the test stability. The results showed that the tests are characterized by a high degree of stability, as shown in Table (2).

**Objectivity:**

Objectivity means (freedom from bias and prejudice and not including personal factors in the researcher's judgments) (Marwan Abdul Majeed Ibrahim. 2000). Therefore, the two arbitrators conducted the tests used in the research. The value of the objectivity of the tests was extracted using the simple correlation coefficient (Pearson) between the arbitrators' results, as shown in Table (2).

Table (2) shows the stability and validity coefficients of the tests studied for the research sample

| Tests | Stability | Self- validity | Objectivity |
|---|---|---|---|
| Attention Techniques | 0.85 | 0.92 | 0.91 |
| Transitional Motor Response | 0.84 | 0.91 | 0.89 |
| Chest Passes Accuracy | 0.78 | 0.88 | 0.93 |
| Over-Shoulder Passes Accuracy | 0.84 | 0.91 | 0.88 |
| Ladder Shooting Accuracy | 0.88 | 0.93 | 0.82 |
| Jumping Shooting Accuracy | 0.80 | 0.89 | 0.80 |

**Pre-tests:**

Pre-tests were conducted for the research sample (control group) on (2/8/2024) for the research sample (experimental group).

**Sample homogeneity:**

For the purpose of verifying the homogeneity of the research sample, statistical methods were used through the arithmetic mean, standard deviation, and skewness coefficient for the measurements of the sample to determine the reality of the difference or not, and Table (3) shows this.

Table (3) shows the arithmetic means, standard deviations and skewness coefficient for the purpose of homogeneity of the research sample

| Variables | Measuring unit | Arithmetic means | Standard deviations | Mode | Skewness |
|---|---|---|---|---|---|
| Age | Month | 178.3 | 0.59 | 17 | 0.700 |
| Training Age | Month | 11.6 | 2.285 | 10 | 0.31 |
| Mass | Kg | 64.11 | 8.42 | 65 | 0.36 |
| Length | Cm | 178.31 | 4.01 | 178 | 0.39 |

It is noted that the values of the skewness coefficient range between -1 and +1, which indicates the homogeneity of the sample individuals in these variables, i.e. the normal distribution is moderate for them.

**Equivalence of the two research groups:**

One of the important things that the researcher must follow is to attribute the differences to the experimental factor. On this basis, the control and experimental groups must be equivalent in the research variables as in Table (4).

Table (4) shows the equivalence of the two research groups

| Variables | Experimental group | | Control group | | T value calculated | Level Sig | Type Sig |
|---|---|---|---|---|---|---|---|
| | Arithmetic means | Standard deviations | Arithmetic means | Standard deviations | | | |
| Chest Passes Accuracy | 18.5 | 1.35 | 18.3 | 1.76 | 0.284 | 0.292 | Non sig |
| Long Passes Accuracy | 18.4 | 1.64 | 18.2 | 1.22 | 0.308 | 0.182 | Non sig |
| Jump Shooting Accuracy | 18.5 | 1.26 | 18.8 | 1.31 | 0.519 | 0.171 | Non sig |
| Ladder Shooting Accuracy | 4.9 | 0.73 | 5 | 0.81 | 0.287 | 0.171 | Non sig |

**Educational curriculum:**

Upon completion of the exploratory experiment and the pre-tests, the researcher prepared a special educational curriculum for the individuals of the two experimental groups. The

curriculum was implemented on Monday 10/8/2024 until 11/9/2024. The curriculum included (12) educational units, one educational unit per week, with a time of 90 minutes per educational unit.

The following is the time distribution of the proposed curriculum:

- Number of weeks (4).
- Number of educational units per week (3) alone, so we have (12) educational units.
- Time of the educational unit (90) minutes.
- Total time of the educational units (90X12=1080) minutes.
- The program was presented to experts and specialists in the field of teaching methods, where it was modified and refined to come out in the final form as follows:
- Preparatory section (20 minutes), which includes recording absences and general and special preparation (physical exercises).
- The main section (55 minutes), of which (15) minutes are for the educational part (explaining the skill and presenting the model) and (40) minutes for the practical part.
- The final section (15 minutes) includes a small match and calming and relaxation exercises. As shown in Table (5).

Table (5) shows the distribution of the educational unit sections in minutes with the percentages of the educational unit sections

| Unit sections | Unit time/min | Number of units per week | Total time/min | Percentage |
|---|---|---|---|---|
| Preliminary Section | 20 | 12units | 240 | %22,22 |
| Main Section | 55 | | 660 | %61,11 |
| Final Section | 15 | | 180 | %16,67 |
| Total | 90 | | 1080 | %100 |

**Post-tests:**

Conducted on (13/9/2024) for individuals in both groups with all conditions controlled.

**Statistical methods:**

Arithmetic mean. Standard deviation. T-test for matched samples. T-test for independent samples. Correlation coefficient.

**Results and discussion:**

**Presentation and analyzing the accuracy results for the passes and aiming variables for the two groups in the pre- and post-tests**

Table (6) shows the arithmetic means and standard deviations of the accuracy for the passes and aiming variables and the calculated (t) values for the pre- and post-tests for the two groups

| Variables | Sequential method | | | | T value calculated Type Sig | Sig | Random method | | | | T value calculated Type Sig | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre-test | | Post-test | | | | Pre-test | | Post-test | | | |
| | Arithmetic mean | Standard deviation | Arithmetic mean | Standard deviation | | | Arithmetic mean | Standard deviation | Arithmetic mean | Standard deviation | | |
| Chest Passes | 18.3 | 1.76 | 20.8 | 0.87 | 4.44 Sig | 0.000 | 18.5 | 1.35 | 25.1 | 0.78 | 11.74 Sig | 0.000 |
| Long Passes | 18.2 | 1.22 | 21.4 | 1.17 | 5.23 Sig | 0.000 | 21.4 | 1.17 | 25.1 | 0.87 | 6.87 Sig | 0.000 |
| Jump Shooting | 18.8 | 1.31 | 19.3 | 1.05 | Non sig | 0.081 | 21.3 | 1.05 | 24.6 | 0.69 | 7.35 Sig | 0.000 |
| Ladder Shooting | 5.00 | 0.81 | 5.2 | 0.78 | Non sig | 0.062 | 5.2 | 0.78 | 7.4 | 0.69 | 6.73 Sig | 0.000 |

**Presentation the performance results of the passes and correction variables for the two groups in the pre- and post-tests and analyzing them.**

Table (7) shows the arithmetic means and standard deviations of the performance for the passes and correction variables and the calculated (t) values for the pre- and post-tests for the two groups

| Variables | Sequential method | | | | T value calculated Type Sig | Sig | Random method | | | | T value calculated Type Sig | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Pre-test | | Post-test | | | | Pre-test | | Post-test | | | |
| | Arithmetic mean | Standard deviation | Arithmetic mean | Standard deviation | | | Arithmetic mean | Standard deviation | Arithmetic mean | Standard deviation | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chest Passes | 18.75 | 1.44 | 20.7 | 1.32 | 4.48 Sig | 0.000 | 18.2 | 1.11 | 22.8 | 0.86 | 11.97 Sig | 0.000 |
| Long Passes | 18.4 | 1.50 | 20.6 | 1.04 | 5.59 Sig | 0.000 | 18.6 | 1.64 | 23.3 | 0.87 | 12.71 Sig | 0.000 |
| Jump Shooting | 18.3 | 1.66 | 20.6 | 1.71 | Non sig | 0.081 | 18.1 | 1.56 | 22.9 | 0.76 | 12.83 Sig | 0.000 |
| Ladder Shooting | 18.9 | 1.45 | 20.8 | 1.24 | Non sig | 0.081 | 18.3 | 1.49 | 22.9 | 0.88 | 11.5 Sig | 0.000 |

**Discussion of the results of the pre- and post-tests for the two groups in the research variables:**

Through what was presented from the results in the tables, which showed the existence of significant differences between the pre- and post-tests for the two groups in favor of the post-tests, except for the accuracy and performance tests for the shooting variables of jumping and ladder shooting for the experimental group using the sequential method. The researcher attributes the reason for the development of the experimental group using the sequential method to the exercises that were given by the trainer in the main part of the educational unit, which helped the members of the control group to increase the values of their arithmetic means, considering that the exercises given by the trainer, despite not being placed in a manner and sequence that serves the development of these variables, had a slight effect on the control group, and although they were not placed specifically to develop these variables, but were placed to serve the development of the accuracy and performance of passes and shooting, and this is what we see when we review the previous tables, as we see that the values of the arithmetic means did not have a wide difference between the pre- and post-tests, and the same is the case with the standard deviations that show the existence of high dispersion within the experimental group using the sequential method, despite the simple development that occurred in learning. What the development rate shows. As for the significant differences between the pre- and post-tests of the experimental group using the sequential method for the variables of accuracy and performance of the chest passes and the long passes, the researcher attributes the reason for this difference to the fact that these passess are one of the easy and frequently used passess within the learning and training units. In addition, the exercises given by the trainer to this group are originally designed to develop this type of passes, but they are not designed on a scientific basis that takes into account the sequence and gradation of skill. Therefore, we see that the differences in the values of the arithmetic means were normal for this type of exercises. We also notice the high dispersion in the values of the pre- and post-standard deviations of the research variables. This is also shown by the development rate achieved by these tests. During the educational unit for the experimental group using the sequential method, the focus was on increasing the number of repetitions only, without paying attention to diversity in practice or including new exercises. On the contrary, the focus was on repetition in performance and adherence to the traditional exercises of the original trainer (repeating the exercise several times enables the player to master the skill and perform it better because a lot of practice on motor skills and repeating them correctly helps to perform them properly during play (Owen B. and Clark.N . 1975).

As for the insignificant significance of the accuracy and performance variables for the shooting skills of jumping and shooting ladder, the researcher attributes the reason for this to the fact that the exercises that were given to the experimental group using the sequential method were exercises that focused on repetition in performance only, which was mentioned previously. This is what caused a lack of desire and motivation among the individuals in the control sample during learning because the exercises given did not contain any kind of suspense and excitement that makes the learning process faster. In addition, these shootings are of the difficult types in basketball that require more specialized exercises that do not only deal with the increase in the number of repetitions, but also an increase in the diversity of practices within each exercise, which gives the desire to improve and develop accuracy and performance and develop the motor program specific to the skill. For this reason, the significance values appeared insignificant in terms of the value of (T) between the pre- and post-tests of the experimental group using the sequential method. As for the experimental group using the random method, it was proven that all tests showed significant differences between the pre- and post-tests for all research variables and in their favor. This is confirmed by the values of the arithmetic means between the pre- and post-tests and in favor of The post-tests showed greater results that enhance the ability of the experimental sample using the random method to respond optimally to the exercises. This is what the researcher attributes to the fact that the exercises applied in the main part, including new responses for the learner, and the progression of the exercises from easy to difficult, as well as taking into account the age group of the young people and their previous level of learning, have made a difference in the level of learning and training compared to the pre-tests in all tests in attention, motor response, accuracy, and performance in passes and aiming.

**Presentation and analyzing the performance results of the passes and aiming variables for the two groups in the post-tests**

Table (8) shows the arithmetic means and standard deviations of the performance of the passes and aiming variables and the calculated and tabulated (t) values for the post-tests for the two groups

| Variables | Sequential method | | Sequential method | | T value calculated | Level Sig | Type Sig |
|---|---|---|---|---|---|---|---|
| | Arithmetic mean | Standard deviation | Arithmetic mean | Standard deviation | | | |
| Chest Passes/Degree | 20.7 | 1.32 | 22.8 | 0.86 | 6 | 0.000 | Sig |
| Long Passes/Degree | 20.6 | 1.04 | 23.3 | 0.87 | 8.83 | 0.000 | Sig |
| Jumping Shooting/Degree | 20.6 | 1.17 | 22.9 | 0.76 | 7.41 | 0.000 | Sig |
| Ladder Shooting/Degree | 20.8 | 1.24 | 22.9 | 0.88 | 6.17 | 0.000 | Sig |

**Discussion of the results of the post-tests for the two experimental groups in the research variables:**

Through the results of the tables that were presented, the researcher found that the values of the (T) coefficient between the two groups in the post-tests, as this confirms that the increase in the values of the arithmetic means for the experimental group using the random method in all research variables is what made success an ally of this group at the expense of the experimental group using the sequential method and added a large amount of development to the learners. This was through the commitment of the experimental group to the educational exercises using the random method. These exercises, in addition to the educational model, represented a new type of exercises through which not only the accuracy and performance of passes and aiming are developed, but also go beyond that to develop skills. Therefore, the exercises have proven their high ability to develop and improve mental processes, accuracy and performance of the skills under study. Therefore, the researcher attributes the results of the (T) coefficient to the experimental group's use of the exercises using the random method introduced into the main part as a reason for the development of the experimental group at the expense of the control group. The exercises that were introduced into the main part of the experimental group contained various exercises in a varied manner, taking into account the progression from easy to difficult on the one hand. Accuracy and performance as it helps to develop and improve the research variables (that the diversity of practice helps the learner to form different motor outputs which improves the learner's performance for all skill forms and thus will work to develop the general motor program) (Wasam Salah Abdul Hussein. 2008).

**Conclusions and Recommendations:**

**Conclusions:**

- The emergence of a positive effect of the experimental method used according to sequential and random exercises in learning some basketball passes and shooting for juniors.
- The study showed a development in the selected research variables and for all sample members (the experimental group, the sequential method - the experimental group, the random method) except for the shooting skill in its two forms for the experimental group, the sequential method, which did not achieve development and the development rate was by a large difference between the two groups and in favor of the experimental group, the random method.
- It appeared through the study that there are significant statistical differences in favor of the experimental group using the random method.
- The study showed, through the results achieved by the experimental group using the educational program using the random method, superiority over the exercises used by the experimental group using the sequential method.

**Recommendations:**

- Work on benefiting from the results of the study by using the sequential and random exercises under study - to improve the level of skill performance.
- Not limiting the teaching programs to the method of working with sequential or random exercises, without the other to develop and improve skill performance in basketball, but rather emphasizing the use of both methods.
- Focusing on random exercises, in open skills.
- Conducting similar studies on other samples, and for different age groups to ensure the validity of the results reached by the study in other games.

**References:**


1- Mustafa Bahi. 1999. Scientific Transactions between Theory and Application. Cairo, Book Center for Publishing, p. 23.
2- Muhammad Subhi Hassanein. 1995. Measurement and Evaluation in Physical Education and Sports: 3rd ed., Vol. 1, Dar Al Fikr Al Arabi, p. 186.
3- Marwan Abdul Majeed Ibrahim. 2000. Foundations of Scientific Research for Preparing University Theses. 1st ed. Al-Warraq Publishing and Distribution Foundation, Amman, p. 44.
4- Owen B. and Clark.N. 1975. beginning Guide to soccer running and cooching,Delhen book, LTD, London, P13.
5- Wasam Salah Abdul Hussein. 2008. Diversity of practice to generalize motor programs and its effect on learning some basic skills for badminton players, Master's thesis, University of Babylon, p. 68