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Effect of an exercise program on physical-kinetic intelligence and the skills of dribbling and shooting in basketball among female students

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ABSTRACT

The current research aimed to study the effect of an exercise program on physical-kinetic intelligence and the skills of dribbling and shooting in basketball among female students. The research community was composed of 102 female students in the second stage of the Physical Education and Sports Sciences College for Girls of Baghdad University, in the academic year 2021-2022. A total of 40 female students were the sample of the study: 20 female students in the control group and 20 female students in the experimental group. After the implementation of the exercise program, there were significant improvements from pre-tests to post tests in the two groups (control and experimental groups), in physical-kinetic intelligence and in the skills of dribbling and shooting in basketball. When comparing the differences between the post tests of both groups, the results of the experimental group were significantly better than the results of the control group. In conclusion, the exercise program used in this study is effective to improve physical-kinetic intelligence and the skills of dribbling and shooting in basketball among female students.

KEYWORDS

Exercises; Physical-kinetic intelligence; Skills; Basketball

1. INTRODUCTION

The recent scientific development in the world has contributed to the creation of various educational formulas that have helped to speed up the learning process. This has been reflected in the field of physical education and sports sciences, where new ideas and methods have emerged and put forward on the scene to make teachers being the most important factor in managing the education process. The teachers play the pivot role through diversification strategy of educational methods to reach the level of mastery by taking into account the individual differences between learners to provide additional education.

Skilled exercises are a well-known physical activity for the learner that is applied and practiced regularly according to established bases and standards prepared specifically to suit the age

group, the type of game and the nature of the kinetic duty. It is an important factor in stimulating and increasing the desire to use the best educational methods. Learning method considers the one of the best for learning for the sake of being mastery, which depends on the idea of providing the learner with educational exercises with specific objects without allow transition from one educational exercise to another up until the learner reaches the required level, taking into account the individual differences between the learners (Al-Selmi et al., 2022).

Basketball is one of the collective games beloved for both sexes because of its fun, excitement, speed of transition from defense to attack and vice versa. It depends on offensive and defensive skills as a base to rise towards proficiency and excellence. As a results, the attention must be directed to the stages of learn it since needs a lot of effort and practice in order to master it. In this game, physical-kinetic intelligence is introduced as an important aspect that has a major role in learning since it refers to the body ability to use its various organs to perform rhythmic movements.

In this context, the problem of this research can be crystallized in the following question: Is it possible to obtain better learning results using skilled learning exercises in order to be able to master the physical-kinetic intelligence and learn the skills of dribbling and shooting in basketball to get female students to the desired degree of learning?

The importance of this research through preparing skilled exercises according to the method of learning for empowerment the physical-kinetic intelligence and learn the skills of dribbling and shooting basketball provide to all students enough time to learn. Also, this research aims to recognize the effectiveness of the exercises implemented in the way of learning of the students. The research hypothesis was that the exercise program would have a positive effect on the physical-kinetic intelligence and the skills of dribbling and shooting in basketball among the female students participating in the study.

2. METHODS

2.1. Design and participants

The researcher used the experimental approach (with two equal groups). The research community was composed of 102 female students in the second stage of the Physical Education and Sports Sciences College for Girls of Baghdad University, in the academic year 2021-2022. A total of 40 female students were the sample of the study: 20 female students in the control group and 20 female students in the experimental group.

2.2. Instruments

The tools and devices used in this study included 20 basketballs balls, a height measurement bar, a medical scale, two stopwatches and one laptop. The study was conducted on a basketball court. The following tests were used in this research to measure the variables of the study:

1) *Physical-kinetic intelligence scale:* The researcher adopted the physical-kinetic intelligence scale used by Kzar et al. (2022) and presented it to the experts, who agreed on the appropriateness of the scale. Four alternatives for each item were identified (always apply to me - apply to me a lot - apply to me a little - do not apply to me never) (Ali & Malih, 2022).
2) *Dribbling test* (Younes & Amin, 2020): The purpose of this test was to measure the speed of dribbling around a number of sensors. The necessary tools are basketball, stopwatch, and 6 sensors drawing two lines for the beginning and the end (5 feet away from the first person, and the distance between the sensors is 8 feet or 240 cm). It should be recorded the performance time for each student from the start signal until the ending line.
3) *Shooting test* (Kadhum & Malih, 2022): The purpose of the test was to measure the accuracy of shooting in basketball. Each student had 10 attempts and one point was received for each correct case.

2.3. Procedures

The three tests were conducted on Wednesday 20/10/2021 on a sample of 4 students who did not participate in the basic experiment, in order to know the difficulties that the researcher might face in the course of the measurements (Al-Selmi et al., 2019). Also, the researcher conducted parity tests between the control and experimental research groups to ensure the equality of the two research groups (Table 1). Pre tests were conducted at 9:00 a.m. on Sunday 24 October 2021.

Table 1. Comparison between control and experimental group

Variables	Unit	Control group		Experimental group		t	p
		Mean	SD	Mean	SD		
Physical-kinetic intelligence scale	Degree	39.3	12.06	48.7	12.9	1.67	0.111
Dribbling test	Time	19.3	3.29	16.45	3.21	1.95	0.066
Shooting test	Number	2.7	0.94	3.6	1.50	1.59	0.127

The control group received the traditional teaching method. The experimental group participated in the learning program for empowerment through reliance on repetition and feedback. The criterion for mastering skills has been determined by presenting them to a group of basketball specialists and this means that repetition is determined by the level of performance of the individual, so some students are given more repetitions than the outstanding students. To overcome boredom and monotony, a brochure in addition to the home works where used, also to increase suspense, the researcher used the principle of small groups that take into account individual differences. The students are distributed in the form of small groups according to performance: distinguished group, medium group and weak group (Alwan, 2022). This facilitates the process of giving each group educational doses commensurate with their performance (Taresh & Alwan, 2022). Also, we used the principle of involving distinguished students in learning based since individual differences could help other student to elevate the level of the performance and can be helpful individuals who are below the required level (Yaqoob, 2022). We consider it as a motivation factor for others to reach distinguished students level. We also used the periodic testing method to determine the effectiveness and promote the educational method. The modules lasted 8 weeks, divided into 4 weeks to develop the skill of dribbling and 4 weeks to develop the skill of shooting, with two educational units per week. Then, the total number of educational units was 16, and each educational unit had a duration of 90 minutes.

After completing the educational units to develop kinetic physical intelligence, dribbling skills and shooting skills, post tests were conducted on the two research groups (control group and experimental group), under the same conditions of the pre-tests, on Wednesday 22 December 2021, to find the amount of differences.

2.4. Statistical analyses

The researcher used the SPSS (Statistical Package for the Social Sciences), version 24, to carry out the statistical analyses. Arithmetic means, standard deviations, and t-tests tests were calculated in the analyses.

3. RESULTS AND DISCUSSION

Table 2 presents the results of the pre and post-tests of the control group. Table 3 describes the results of the pre and post-tests of the experimental group. Table 4 presents the results of the post tests of the control and experimental groups.

Table 2. Results of the pre and post-tests of the control group (n=20)

Variables	Unit	Pre		Post		t	p
		Mean	SD	Mean	SD		
Physical-kinetic intelligence scale	Degree	39.3	12.06	42.2	16.41	0.64	0.537
Dribbling test	Time	19.30	3.29	15.62	2.11	5.65	0.000
Shooting test	Number	2.7	0.94	3.7	1.15	2.23	0.005

The researcher attributes these results to the fact that the intelligence comes at the forefront of the psychological aspects and mental abilities that should be cared by physical education workers, especially in group games, including basketball because of its great implications in this field. Physical kinetic intelligence is the ability to optimize the body in the expression of feelings and ideas and includes skills with balance, kinetic balance, speed, flexibility and sense of body movement in order to reach the solution of the problem (Mohammed, 2018).

While the results of the two tests (dribbling and shooting) appeared from the natural phenomena of the learning process, there will be a development in learning as long as the teacher follows the proper scientific steps and foundations of the learning process, practicing the correct performance and focusing on it until the consolidation and stability of performance (Hassan et al., 2019).

Table 3. Results of the pre and post-tests of the experimental group (n=20)

Variables	Unit	Pre		Post		t	p
		Mean	SD	Mean	SD		
Physical-kinetic intelligence scale	Degree	48.7	12.9	64.3	4.08	4.11	0.003
Dribbling test	Time	16.45	3.21	11.93	1.9	4.23	0.002
Shooting test	Number	3.6	1.50	7.2	0.91	7.56	0.000

The p values in Table 3 (0.000, 0.002 and 0.003) are smaller than 0.05, indicating significant differences in favor of post-tests. The researcher attributes these results to the process of setting learning goals for empowerment and the good clarification for female students, with a clear role in motivating them to perform the skills the largest number of attempts and in small groups. Also, the educational units included additional duties, which generated a state of suspense and competition, as suggested by Abbas & Ali (2022). The use of interesting exercises for learning is an important factor to rise the technical and physical level of the learner.

Table 4. Results of the post tests of the control and experimental groups

Variables	Unit	Control group		Experimental group		t	p
		Mean	SD	Mean	SD		
Physical-kinetic intelligence scale	Degree	42.2	16.41	64.3	4.08	4.13	0.001
Dribbling test	Time	15.62	2.11	11.93	1.99	4.02	0.001
Shooting test	Number	3.7	1.15	7.2	0.91	7.48	0.000

In Table 4, p values are also smaller than 0.05, indicating significant differences in the post tests in favor of the experimental group. The researcher attributes these results to the nature of the skilled exercises prepared to the way of learning for empowerment as mentioned by Hameed & Abdullah (2022). This method is an educational plan that provides each student with the time he/she needs to reach the level of ability, as individuals learn in different ways (Ali & Uaid, 2021). The use of the principle of assistance by the good student for the lowest level student has been invested in this factor to improve the level of physical motor intelligence and learn the skills of dribbling and shooting in basketball, under the supervision of the auxiliary team and by using small groups for learning. Feedback was also frequent because the learner needs to improve performance, and this repetition is at its best when there are small groups, which greatly increases the likelihood of repeating skilled learning, particularly in the initial learning stages (Al-Hadithi, 2003).

4. CONCLUSIONS

After the implementation of the exercise program, there were significant improvements from pre-tests to post tests in the two groups (control and experimental groups), in physical-kinetic intelligence and in the skills of dribbling and shooting in basketball. When comparing the differences between the post tests of both groups, the results of the experimental group were significantly better than the results of the control group. In conclusion, the exercise program used in this study is effective to improve physical-kinetic intelligence and the skills of dribbling and shooting in basketball among female students. For future research, the author recommends to apply this method to other basketball skills and to other stages of study.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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