

The impact of using small-sided games on teaching basic handball skills to students of the College of Sports Sciences at Mu'tah University

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ABSTRACT

The purpose of this study was to identify the effect of using small-sided games on teaching basic handball skills to students of the College of Sports Sciences at Mutah University, using the experimental method. The study sample consisted of 20 students from the College of Sports Sciences at Mu'tah University who were enrolled in the handball course. They were selected using the purposive method and divided into two equal groups (experimental group = 10 students, and control group = 10 students). An educational program was prepared using small-sided games to teach basic handball skills. The program was implemented during eight weeks, with three meetings per week. The data were processed through the Statistical Package for the Social Sciences (SPSS). Our results showed that using small-sided games in teaching basic skills in handball has a positive impact on improving the level of performance of learners ($p < 0.05$). Therefore, the authors recommend to use small-sided games in teaching basic skills in handball.

KEYWORDS

Small-sided games; Passing; Shooting; Dribbling

1. INTRODUCTION

Small-sided games are one of the preferred methods for stimulating learners' activity and increasing their motivation to perform, since they rely on team dynamics similar to performance during matches and competitions. This improves the efficiency with which various sports skills are performed. As a result, the use of small-sided games provides learners with a variety of skill exercises, such as performing fast and appropriate passing, maintaining the ball, changing places, and

recognizing the movement of fellow players and the opponent, all of which are performed in small spaces (Dhiba, 2013).

According to Al-Sheikh (2000), small-sided games are physical activities that are considered one of the important fields in the physical education lesson because of the nature of fun, pleasure, and relaxation for learners and flexibility in their rules. These games contribute to improve physical and skill abilities and are characterized by their suitability to different educational conditions as they can be implemented without tools or with alternative materials.

Small-sided games are an effective way to meet the needs of learners and players by participating in the most number of them in the playing spaces and utilizing the available time, through which the participants have opportunities to touch the ball more and perform motor skills in ideal competitive situations that achieve fun and excitement for the participants. Also, small-sided games are regarded as an appropriate educational environment for making and taking decisions, solving problems, and developing abilities through frequent movement and selecting the best solutions while participating in those games (Mahmoud & Wahab, 2021).

According to Al-Azzawi (2009), small-sided games are an important part of educational activity and have a prominent place among the various activities. These games have become one of the components that any educational program requires, as educational curricula can be developed based on these games in order to achieve the best results in development and achieve an advanced level of performance.

Small-sided games are an exciting teaching and training method that allows teachers and coaches to vary their teaching and training experiences by varying the size of the ball, goal, pitch, number of players on the team, and opposing team. In addition to its physical benefits, it provides opportunities for teaching and skill training in front of teachers and coaches (Boukhalafa, 2021).

Al-Dhahabi (2019) emphasizes the importance of small-sided games in developing decision-making and motor skills due to their direct impact on the skill side, as it forces players and learners to access the game's basic skills, such as passing, receiving, dribbling, and shooting for the mastery stage due to the limited playing space, and determining the number of touches for players and learners during small-sided games that teach them to make quick decisions under pressure.

The basic skills in handball are considered the cornerstone in the formation of learners, as it works to develop aspects of the personality and learn basic skills, in addition to acquiring knowledge and information. It helps in the teaching of basic skills, resulting in an integrated unit that is physically, mentally, psychologically, and socially balanced. Also, it is regarded as the basic unit in

the physical education curriculum, as well as the mini unit that achieves integrated construction through the progression of all experiences (Al-Lami, 2015).

Hamouda & Salem (2008) indicated that the beginning of teaching beginners the game of handball must be done through a program developed by the teacher, and this program must have the basic elements for its success and achievement of its goals. By putting handball in an interesting template for learners and beginners, it works to motivate to practice and absorb the greatest amount of skills that must be mastered for learners and beginners, whether individually or collectively.

Small-sided games play an important role in the early stages of teaching handball skills as they are one of the most effective methods of teaching basic and motor skills as well as improving reaction and balance ability.

According to Al-Faqih (2015) in order to encourage the development of the performance of learners and beginners, the teacher must use a set of exercises and games that develop learners who can perceive the relationship between the different elements of the game, such as the area of the field, the ball, the goal, colleagues, competitors.

The process of discovering innovative and serious teaching methods that resemble actual competition in team games is one of the most important tasks that teachers must focus on when beginning to teach the basic skills of any game. Small-sided games contribute to the development of various mental and motor abilities as these games provide the learner with multiple opportunities to develop the speed of thinking, various mental and motor abilities, and numerous opportunities to improve thinking speed, visualization, perception, and concentration.

Based on the foregoing, the researcher concluded that the majority of practical lectures for practical subjects taught in the College of Sports Sciences, Mu'tah University, are delivered in a traditional, restricted, and specific format for learners and are far away from modern educational development. The researcher believes that using small-sided games in education may indirectly provide learners with basic skills and improve them better than traditional methods of education.

The objectives of this study were: 1) To determine the impact of the traditional teaching method used on teaching basic handball skills to members of the control group members. 2) To determine the impact of small-sided games on teaching basic handball skills to experimental group members. 3) To compare the effect of small-sided games and the traditional method of teaching basic handball skills.

The hypotheses of this study were: 1) There are statistically significant differences at the level ($\alpha \leq 0.05$) between the two measurements before and after teaching basic handball skills (passing, shooting, dribbling) among members of the control group in favor of the post-measurement. 2) There

are statistically significant differences at the level ($\alpha \leq 0.05$) between the two measurements before and after teaching basic handball skills (passing, shooting, dribbling) among members of the experimental group in favor of the post-measurement. 3) There are statistically significant differences at the level ($\alpha \leq 0.05$) in the dimensional measurement between members of both the control and experimental groups on teaching basic skills (passing, shooting, dribbling) in handball and in favor of the experimental group.

2. METHODS

2.1. Study Design and Participants

In this study, the researcher used the experimental approach. The study population consisted of 54 students from the College of Sports Sciences, Mu'tah University, who were enrolled in handball during the first semester of the academic year 2021/2022.

The researcher selected the study sample in a purposive method and it consisted of 20 students who had never played handball before. They were divided into two groups (experimental and control group). The experimental group consisted of 10 students who learn using the small-sided games. The program was implemented for eight weeks, with three meetings per week lasting 60 minutes each. The control group consisted of 10 students who learn using the traditional method for eight weeks, with three meetings per week lasting 60 minutes each. Table 1 shows the homogeneity of the experimental and control group members in terms of age, height, and weight measurements.

Table 1. The homogeneity of the experimental and control groups in terms of age, height, and weight measurements

Variables	Experimental Group			Control Group		
	Arithmetic Mean	Standard Deviation	Variation Coefficient	Arithmetic Mean	Standard Deviation	Variation Coefficient
Age	18.40	0.52	2.83	18.40	0.52	2.83
Height	170.60	1.51	0.89	170.70	1.70	1.00
Weight	69.30	1.57	2.27	70.00	1.56	2.23

Looking at the coefficients of variation among the members of the experimental group, it can be seen that the first variable (age) achieved the highest value (2.83%), while the members of the control group had the highest coefficient of variation (2.83%) to measure age. These values express acceptable and normal degrees of difference between individuals within each group, where these values were less than 50%.

Table 2 shows the homogeneity of the experimental group and the control group (prior measurement). Reviewing these values related to the experimental group members showed that the skill of shooting had the highest value (17.60%), while the skill of passing had the highest coefficient of variation value (13.86%) for the control group members. These values express acceptable and normal degrees of difference between individuals within each group regarding the performance of these skills, where these values were lower than 50%.

Table 2. Homogeneity of the experimental and control group members (prior measurement)

Basic Skills	Experimental group			Control group		
	Arithmetic mean	Standard deviation	Coefficient of variation	Arithmetic mean	Standard deviation	Coefficient of variation
Passing	13.70	2.16	15.77	14.00	1.94	13.86
Shooting	10.00	1.76	17.60	10.10	1.37	13.56
Dribbling	11.37	1.04	9.15	11.05	1.05	9.50

The following table shows the equivalence of the two groups regarding the measurements of age, height and weight (Table 3). As we can see from the results of Table 3, there is no statistically significant difference between the two groups regarding these three measurements ($p > 0.05$), so the equality of the groups is confirmed.

Table 3. Equivalence of the two groups regarding the measurements of age, height and weight.

Variables	Group	Total ranks	No.	Average of ranks	Z value	p value
Age	Experimental	105.00	10	10.50	0.000	1.00
	Control	105.00	10	10.50		
Height	Experimental	104.50	10	10.45	- 0.039	0.969
	Control	105.50	10	10.55		
Weight	Experimental	95.00	10	9.50	- 0.786	0.432
	Control	115.00	10	11.50		

Table 4 shows the equivalence result between the two groups in the basic skills in handball (passing, shooting and dribbling).

Table 4. Equivalence of the two groups in the basic skills in handball

Basic skills	Prior arithmetic mean		Mann Whitney test results					
	Experimental	Control	Group	Total ranks	No.	Average of ranks	Z value	p value
Passing	13.70	14.00	Experimental	101.00	10	10.10	- 0.306	0.759
			Control	109.00	10	10.90		
Shooting	10.00	10.10	Experimental	103.00	10	10.30	- 0.156	0.876
			Control	107.00	10	10.70		
Dribbling	11.37	11.05	Experimental	112.00	10	11.20	- 0.529	0.597
			Control	98.00	10	9.80		

The mean differences between the two groups in these skills are not considered statistically significant, which results in the equality of the two groups in these skills according to the prior measurement.

2.2. Exploratory Experiment

An exploratory study was conducted on 9 students from the College of Sports Sciences outside the study sample. This experiment was applied for one week with three training sessions on the application of the proposed educational program. The tests under this study were conducted to identify the most important mistakes and problems that may occur while applying the program. The researcher did not encounter any significant problems.

2.3. Tools and equipment used

The tools and equipment used in the present study were: Handball court, hand balls, cones, whistle, data collection form, medical scale, colored t-shirts, and stopwatch.

2.4. Proposed educational program using a mobile phone

To achieve the objectives of the study, the researcher made the proposed educational program, based on previous literature related to the subject of the study (Gnawi, 2021; Al-Tqatqa, 2021; Al-Shaalan et al., 2016; Al-Shaalan, 2010; Higab, 2019; Al-Lami, 2015; Al-Shaalan, 2006; Al-Kilani, 2003). Then the researcher presented the content of the educational program to a group of arbitrators who hold a PhD and work as physical education supervisors, to express their opinion on the program and whether it is suitable to achieve the objectives of the study and its sample and to make any appropriate modification. Indeed, the modifications were made according to the opinions of experts. The tests that correlate to the skills under this study were only used to determine the level of skill performance in handball after referring to the scientific references specialized in handball and measuring its skills (Al-Tqatqa, 2021; Al-Shaalan et al., 2016; Al-Shaalan, 2010; Al-Shaalan, 2006).

2.5. Study Tests

2.5.1. The pass-and-receive test facing a wall for 30 seconds.

- Test purpose: measuring the accuracy and speed of passing.
- Tools used: legal hand ball, flat wall and a stopwatch.
- Performance method: the tested person stands at a distance of 3 m from the wall and then passes the ball to the wall and receives it as many as possible during the specified time (Figure 1).

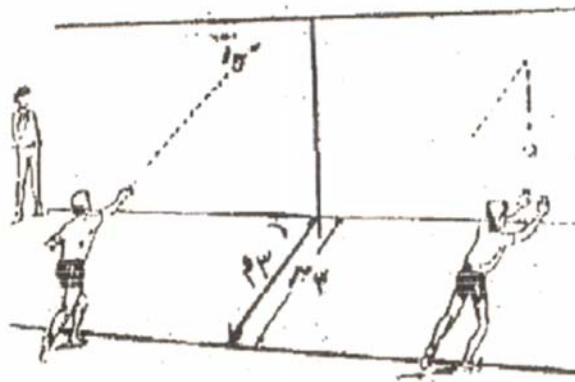


Figure 1. The pass-and-receive test facing a wall for 30 seconds

- Measurement method: The number of passing and receiving times is calculated in the specified time.
- Notes: *If the tested person passed the test, it would be repeated after a sufficient rest period.
*The tested person would perform the test with its commonly used hand.

2.5.2. Shooting accuracy test (Figure 2)

- Test purpose: measuring shooting accuracy.
- Tools used: a legal hand ball, a throw line, a divided goal.
- Performance method: The goal is divided into nine rectangles to measure the shooting accuracy and a line is drawn on the ground 9 m away from this shape. The player shoots from behind the line with a pivot step, bearing in mind that the one whose ball hits rectangles (1, 3, 7, 9), which represents the four corners of the goal, gets 3 degrees, and the one whose ball hits the rectangles (6, 4) gets 2 degrees, and the one whose ball hits the rectangles (2, 5, 8) gets 1 degree only, and whoever shoots outside the goal limits gets zero. Each player has 10 attempts.



Figure 2. Shooting accuracy test

2.5.3. Dribbling the ball in a zigzag shape for a distance of 15 meters.

- Test purpose: Measuring the skill level of dribbling.
- Tools used: 5 flags – stopwatch – hand ball.
- Performance method: Five flags shall be installed on the ground in a straight line, the first being 3 meters from the start line, and the distance between the poles is 3 meters. The student stands behind the start line. When signaling the start, the student dribbles the ball while running zigzag between the flags back and forth until reaching the finish line.
- Recording: The recorded time is calculated back and forth from the start line to the finish line.

2.6. Scientific transactions of study tests

2.6.1. Validity of tests

The researcher used the face validity by reviewing the scientific references and previous studies that used these tests (Al-Shaalan, 2006, 2010; Al-Mansi, 2013; Al-Tqatqa, 2021).

2.6.2. Test reliability

The researcher applied the tests to a sample outside the study community, which numbered 9 persons, by conducting the test and then repeating it as shown in Table 5, in order to calculate the reliability of the tests, to ensure the scientific and statistical validity of their application to the study sample (Table 5).

Table 5. Reliability of basic skills in handball by the method of application and re-application of tests to the members of the exploratory sample (n =9)

Skills	First application		Second application		Correlation value	p value
	Arithmetic mean	Standard deviation	Arithmetic mean	Standard deviation		
Passing	14.00	2.40	14.89	2.52	0.785	0.012
Shooting	9.78	1.30	10.00	1.32	0.798	0.010
Dribbling	11.02	0.67	10.94	0.70	0.969	0.000

By reviewing these values, it was found that the reliability value reached 0.785 for the skill of passing, while it reached 0.790 for the skill of shooting, and 0.969 for the skill of dribbling. These values express high reliability, as all of these values were higher than 0.70, so all of them are statistically significant, because the calculated significance level values were lower than 0.05.

2.7. Study Procedures

The study was conducted and carried out by following these steps:

- The researcher made the content of the proposed educational program using small sided games to teach basic skills of handball, according to the specialized scientific references and previous literature.
- The researcher designed data collection forms for the study sample members.
- After that, an exploratory study was conducted for a week with three training sessions on the application of the educational program and the tests under this study.
- Applying the prior tests to the study sample members.
- Applying the proposed educational program using small sided games for a period of eight weeks, with three sessions, the duration of each is 60 minutes. Each unit included three parts (introductory, main, and final).
- After the end of the application period, post-tests were conducted for the study sample.

2.8. Statistical Analysis

The search data was processed through the Statistical Package for the Social Sciences (SPSS). The following statistical methods and treatments were used: descriptive statistics, Spearman's correlation coefficient, Mann Whitney test, and Wilcoxon test. Statistical significance was $\alpha = 0.05$.

3. RESULTS AND DISCUSSION

In order to answer the first hypothesis which states: “there are statistically significant differences at the level ($\alpha \leq 0.05$) between the pre and post-measurements in teaching basic skills in handball (passing, shooting, and dribbling) using small-sided games among the control group’s members and in favor of the post-measurement”, the non-parametric Wilcoxon test was used, and the following table shows the results of this test (Table 6).

As we can see from the results of Table 6, we have statistically significant differences between the pre and post-measurements in these skills, in favor of the post-measurement ($p < 0.05$). This result can be explained by the fact that the improvement of the members of this group consist in the fact that they participated in an educational program with sufficient time to make changes in their motor level related to basic skills in handball, through what the teacher provided to the students of information, experiences, and concepts that contribute to achieving the general objective of the educational process. This is in addition to the effectiveness of the teacher in implementing the parts

of the educational unit such as warm-up, exercises, and application, as well as the important role of feedback that was provided to students.

Table 6. The effect of the program used by the control group in teaching basic skills (passing, shooting and dribbling)

Basic Skills	Arithmetic Mean		Wilcoxon Test Results					
	Pre-Measurement	Post-Measurement	Sign of the Rank	Total Ranks	No.	Average of Ranks	Z-Value	Significance Level
Passing	14.00	19.10	Negative	0.00	0	0.00	-2.859	*0.004
			Positive	55.00	10	5.50		
Shooting	10.10	19.00	Negative	0.00	0	0.00	-2.810	*0.005
			Positive	55.00	10	5.50		
Dribbling	11.05	9.69	Negative	52.00	9	5.78	-2.497	*0.013
			Positive	3.00	1	3.00		

The researcher attributes the improvement in the post-measurement to the traditional method, as the teacher makes all decisions related to the educational process, such as explanation of the technical aspects of skills, educational aspects, application start and stop time, immediate feedback, and a model of the skill. Indeed, the learner only has to respond to these decisions and implement them. Moreover, the repetition of exercises to develop the skills learned in this way leads to an improvement in the performance level. This is consistent with what was indicated by Al-Baik & Zaid (2003) that teacher's ability to provide a range of gradual exercises from easy to difficult commensurate with the age group contributes to the development of their skill level.

The researcher claims that the traditional method, which only relies on verbal explanations of the technical aspects of the skill, followed by the teacher modelling the skill in front of the students, and then the learners putting the exercises into practice, is to blame for the improvement of the members of the control group. Indeed, this gives the learners a good opportunity to learn and acquire the skills of the study.

The researcher also believes that the improvement is also a result of the teacher's diligent follow-up, which includes following up with students, giving them immediate feedback, correcting errors, controlling the degree of performance difficulty, and raising the degree in accordance with students' learning and progress.

This is in line with what Al-Hakim (2009) stated, according to which the teacher is the primary decision-maker in the traditional method of education and is responsible for all planning, implementation, and evaluation. This is accomplished by first pre-preparing the lesson, presenting it with a variety of models and examples to support the explanation, and then evaluating the teachers'

performance. As for the learner, he/she fulfils his/her obligations, which demonstrates the value of the teacher in this regard and improves the efficacy of the educational process.

The results of this study are consistent with the study from Al-Faqih (2019) which indicates that the control group members' performance and the levels of motor and skill abilities of the young players in the sport of football have improved.

Next, Table 7 shows the results of the second hypothesis which states: "there are statistically significant differences at the level $\alpha \leq 0.05$ between the pre and post-measurements in teaching basic skills in handball (passing, shooting, and dribbling) using small-sided games among the experimental group's members and in favor of the post-measurement."

Table 7. The effect of using small-sided games by the experimental group members in teaching basic skills (passing, shooting and dribbling).

Basic Skills	Arithmetic Mean		Wilcoxon Test Results					
	Pre-Measurement	Post-Measurement	Sign of the Rank	Total Ranks	No.	Average of Ranks	Z-Value	p value
Passing	13.70	22.20	Negative	0.00	0	0.00	2.844	*0.004
			Positive	55.00	10	5.50		
Shooting	10.00	21.40	Negative	0.00	0	0.00	2.829	*0.005
			Positive	55.00	10	5.50		
Dribbling	11.37	9.10	Negative	55.00	0	5.50	2.805	*0.005
			Positive	0.00	10	0.00		

The results of Table 7 showed that there are statistically significant differences between the pre and post-measurements in these skills and in favor of the post-measurement ($p < 0.05$).

The experimental group members' progress, according to the researcher, was brought about by their implementation of a set of exercises employing small-sided games. This enables them to practice handball's basic skills numerous times. Another example of the playing phenomena is small-sided games, through which learners exercise different models to perform the basic skills while repeating them again without getting bored of performing the exercise. Moreover, the potential for interactivity provided by the small-sided games boosts students' motivation to learn and acquire basic skills in handball. This is in line with findings from Al-Saih & Hussein (2006) that small-sided games increase learners' activity during the performance, as well as findings from Al-Basati & Kishk (2006), which stated that the competition method or small-sided games are some of the best methods to stimulate student activity and raise motivation towards learning. Indeed, this motivates learners to exert their best effort when doing the fundamental movements and skills that are being taught continuously.

The results of this study are consistent with those of a previous study by Bounshada (2016) which indicated that small-sided games used as practice exercises similar to real playing situations during competitions enhance learners' levels and demonstrate their basic skills in the game being taught.

Due to the advantage of these small-sided games in saving time and effort in the educational process and increasing the activity and vitality of learners towards learning as a result of the excitement and competition during the application of those games, the researcher believes that learning using competition-like exercises in a simplified and interesting way has become the secret of the success of many trainers in the field of teaching various sports, and handball in particular.

In addition, the results of this study are consistent with those of a previous study (Jadu, 2005) which indicated that focusing on the performance of training games and small-sided games gave a positive effect on the physical and skill level.

As for the third hypothesis, which states: "there are statistically significant differences at the level ($\alpha \leq 0.05$) in the post-measurement among members of the control and experimental groups in teaching basic skills (passing, shooting, and dribbling) using small-sided games in handball and in favor of the experimental measurement", Table 8 shows the results of the Mann-Whitney test.

Table 8. The differences between the two groups in the post-measurement in teaching basic skills (passing, shooting and dribbling).

Basic Skills	Arithmetic Mean (Post-Measurement)		Mann-Whitney Test Results					
	Experimental Group	Control Group	Group	Total Ranks	No.	Average of Ranks	Z-Value	p value
Passing	22.20	19.10	Experimental	146.00	10	14.60	-3.131	*0.001
			Control	64.00	10	6.40		
Shooting	21.40	19.00	Experimental	133.50	10	13.35	-2.175	*0.029
			Control	76.50	10	7.65		
Dribbling	9.10	9.69	Experimental	78.00	10	7.80	-2.042	*0.043
			Control	132.00	10	13.20		

There are statistically significant differences between the two groups in these skills and for each skill the difference was in favor of the experimental group compared to control group ($p < 0.05$).

The researcher attributes this result to the effectiveness of the proposed educational program for small-sided games applied to the members of the experimental group, as well as to the educational units included in it, that contributed to the superiority of the members of this group. Furthermore, the researcher believes that the proposed educational program for small-sided games gave an opportunity for learners to apply basic skills in handball in the same atmosphere that is used

during competitions and matches, as these games gave an opportunity for learners to implement those skills in conditions similar to competition conditions. This is consistent with the study of Al-Lami, (2015) which indicated that the more the training conditions are close to the competition conditions, the more useful these exercises are.

These exercises are applied within a specific area and with a certain number of learners, which gives the learners the opportunity to contact the ball for a longer period and repeat the training and touch the ball significantly. This in turn develops the self-confidence of the learners. However, the process of teacher development for these games and their conditions will eliminate the boring routine that may occur during the traditional method of teaching basic skills, which is consistent with what El-Din & Samir (2021) indicated that small-sided games are important in developing basic skills and raising the level of technical performance of learners. This is because the learner is in contact with the ball throughout the training time and the fewer people trained in the small-sided games, the greater the chance of the learner coming into contact with the ball. It also agrees with what Gad (2005) pointed out that training using exercises similar to competition positively affects the performance of these skills used in those skills.

The results of this study were consistent with those of the Gnawi (2021), whose results indicated the superiority of the experimental group that used small-sided games over the control group that used the traditional method in teaching the skill of shooting in handball

4. CONCLUSIONS

Using small-sided games in teaching basic skills in handball three times per week for a period of eight weeks has a positive impact on improving the level of performance of learners. Also, the traditional method has a positive impact on improving the performance level of learners of basic skills in handball. We recommend to use small-sided games to teach basic skills in handball and to conduct further studies on other sports skills.

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CONFLICTS OF INTEREST

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