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THE EFFECT OF AN EDUCATIONAL CURRICULUM ACCORDING TO THE DISTRIBUTED EXERCISE METHOD ON THE STABBING AND ARROW SKILLS OF FENCING SWORD PLAYERS AGED 11-14 YEARS

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ABSTRACT

The study challenge revolves around the necessity for players to choose a supplementary strategy that is in line with their constraints. Hence, the proposition is to employ and exploit the distributed exercise approach in order to improve skill performance and achieve a level of expertise that is either ideal or very near to it. The concept of employing and exploiting this approach, together with its component steps that assist in the acquisition of the abilities being studied, arose. The research evaluator included the determination of the exercise technique used for the practice of stabbing and arrow skills. The researchers see significant differences between the pre- and post-tests for both research groups, with a clear advantage for the experimental group. The study utilised an experimental design consisting of two equivalent groups - an experimental group and a control group. Both groups underwent pre- and post-tests. The research sample comprised 22 participants who were members of fencing clubs in Misan Governorate. The participants were deliberately chosen for the sporting season (2023-2024). The participants were assigned to groups in a random manner. The control group consisted of 10 gamers, the experimental group had 10 players, and the exploratory experiment included 2 players. The results were obtained via the statistical software SPSS. The study's findings led to the formulation of many conclusions. Initially, the cohort who adhered to the distributed exercise approach showed notable enhancement in their proficiency in stabbing and arrow skills. This approach was determined to be exceedingly efficacious and well-suited for improving performance. The researchers highly advocate for the use of this method to acquire essential fencing skills, namely in stabbing and arrow tactics, as it harmonises effectively with the players' strengths and aptitudes.

Keywords: Educational Curriculum, Distributed Exercise Method, Stabbing, Arrow, Fencing.

INTRODUCTION

The current scientific advancements have greatly contributed to the overall improvement of the educational system and specifically in the field of sports (Lee, & Lee, 2021). This is evident through the development and implementation of updated learning methods, resulting in increased achievement rates and enhanced skill performance (Al Aina & Atan, 2020). Furthermore, these advancements have also led to the establishment of numerous world records in various sports (Pourazad, Stocchi & Pare, 2020). Extensive research and studies conducted by experts and specialists in the field of education have reached a consensus that learners do not have a uniform response to the learning process (Kliethermes et al., 2019). Therefore, it is imperative to employ a diverse range of efficient educational approaches to enhance and cultivate their motor and skill abilities (Mitchell, Oslin & Griffin, 2020). While we do not claim that one method is inherently superior to others, certain methods excel in specific aspects of learning (Siedentop, Hastie & Van der Mars, 2019). One such method is the distributed method, which is widely used. In this method, the group leader assigns educational tasks to group members to facilitate the acquisition and mastery of the targeted skill (Mitchell, Oslin & Griffin, 2020). This approach is distinguished by complete collaboration within a small group, fostering a sense of accountability and expertise in each group member regarding the educational tasks assigned during the practical phase (Michaelsen, Knight & Fink, 2023). Consequently, this method can be effectively employed in the sport of fencing. This sport requires a high level of skill mastery, which is necessary to execute the complex movements involved. The main objective is to achieve a high level of performance and accurately direct the player's sword during stabbing and arrow movements, in order to successfully score a touch. Therefore, the importance of research lies in applying an educational approach that utilises effective learning methods as a means to enhance the technical execution of these movements.

The Problem of the Study

To achieve optimal proficiency in stabbing and arrow movements, it is necessary to employ various instructional techniques that enhance mastery (Jiang et al., 2022). This can be accomplished through the guidance of knowledgeable researchers who specialise in the sport of fencing (Witkowski et al., 2020). It is important to consistently prioritise and focus on developing the skills of stabbing and arrow during educational units (Yenawine, 2013). Therefore, the concept of utilising the distributor method through an educational curriculum is proposed to enhance the proficiency of these two skills, aiming to achieve a higher level of performance or come close to the ideal. Consequently, the researchers intentionally investigate the utilisation of this technique, which relies on repetition and familiarity, as a scientific endeavour to acquire players a substantial repertoire of motor programmes that are stored to respond to the diverse stimuli encountered during the actual execution of these two skills.

The Objectives of the Study

1. Preparing an educational curriculum according to the method of exercise distributed on the skills of stabbing and arrow for fencing sword players aged 11-14 years.
2. Identify the effect of the educational curriculum according to the method of exercise distributed on the skills of stabbing and arrow for fencing sword players aged 11-14 years.

The Hypothesis of the Study

1. The existence of statistically significant differences between the results of the pre- and post-tests and in favor of the post-tests (for the experimental and control groups).
2. The existence of statistically significant differences between the two research groups (experimental and control) in the post-test and in favor of the experimental group.

The Fields of study

Human Area: Fencing sword players for Misan governorate clubs, ages 11-14 years.
Time Area: For the period from 1/5/2023 to 10/11/2023.
Spatial Area: Fencing hall in Al-Hussein Youth Forum in Misan Governorate.

METHODOLOGY

Research Methodology

The choice of research methodology is determined by the subject of the study; hence the experimental method was selected using the method of two equivalent groups (experimental control). An experimental control is implemented to manipulate all significant variables except for one variable that is under the control of the researcher. This controlled variable is altered in a specific manner in order to observe the impact on the independent or dependent variables (Mohajan, 2020).

Research community and sample

The researchers identified a group of 22 players from the Maysan team in the age range of 11 to 14 years to participate in the study. The players were randomly divided into two equal groups: a control group consisting of 10 players who followed the educational curriculum, and an experimental group consisting of 10 players who followed a distributed exercise method. Additionally, 2 players were selected for an exploratory experiment.

Homogeneity of the research sample

Prior to implementing the researchers' educational curriculum, it is crucial to address any potential factors that could impact the experiment's outcomes. This involves adjusting all variables that influence the performance of the research sample. To ensure consistency, a process of homogeneity was conducted for variables such as (Height, Weight, Training Age, Arm Length, Leg Length, and Trunk Length). The results of this process are presented in Table (1).

Table 1: Shows the homogeneity of the research sample (control and experimental)

Variables	Unit of measurement	M	SD	Median	Torsion coefficient
Length	CM	151.8	4.2	152	0.04
Weight	Kg	43.10	3.8	42.7	0.123
Age	Year	12.7	2.11	12	0.07
Training Age	Year	2.07	0.09	2.04	0.06
Arm Length	CM	65.7	2.21	66	0.014
Leg Length	CM	80.53	3.90	82.76	0.321
Trunk Length	CM	49.83	2.54	50.86	0.102

Equivalence of the research sample:

The research involved comparing the two research groups in terms of their motor abilities and touch accuracy capabilities, namely in stabbing, arrow, and accuracy. The results are shown in Table (2).

Table 2: Shows the equivalence of the sample

Variables	Unit of Measurement	Experimental		Control		T	Sig
		M	SD	M	SD		
Stabbing Skill	Degree	3.40	0.843	3.50	0.972	-0.246	0.809
Arrow Skill	Degree	2.90	0.994	2.80	0.632	0.268	0.791

Means of Collecting Information

The following means were used:

- International Information Network (Internet).
- Arab and foreign sources.
- Observation.
- Interview.
- Auxiliary staff.
- Form for data registration and transcription (questionnaire).

Research Tests

Tests used in research.

1. **Stabbing Skill Test** (Ahmed & Zaki, 2023):

Objective of the test: to measure the accuracy of the injury by the stabbing movement in the fencing.

Necessary tools: a wall mounted sign representing the legal target, a fencing device, a connecting wire, a weapon (10) tight.

Performance Description: The laboratory stands in the standby position in front of the sign after tying the full equipment and marks are placed on the ground to determine the position of the feet in the standby position The laboratory stands in front of the sign at an appropriate distance to perform the appeal, as the arbitrator gives a signal to apply the test, provided that the laboratory is applied as soon as possible, the player is given (10) attempts.

Registration: Only successful attempts are recorded, which are determined by the conformity of the instruction (by the arbitrator requesting the performance of the motion of appeal on a particular number) with the place where the touch was obtained as well as the lighting of the device.

2. **Arrow Skill Test** (Sowerby, 2014):

Objective of the test: Measurement of the accuracy of aiming by the movement of the arrow.

Necessary tools: A sign (puppet) representing the legal target of the fencing sword, a fencing device, a fencing sword (10).

Performance Description: The laboratory stands in the standby position in front of the sign after tying the equipment and a mark is placed on the ground to determine the position of the feet in the standby position The laboratory stands at an appropriate distance to perform the arrow

skill, so the arbitrator gives the signal to perform the movement of the arrow in a specific place, provided that the response is not delayed and the player is given (10) attempts.

Registration: Only successful attempts are recorded, which are determined by the instruction match (by the arbitrator who requests the performance of the arrow movement on the place specified on the puppet).

Exploratory Experience

The exploratory experiment was conducted on two of the randomly selected players and by lottery, on 22/6/2023, at ten o'clock in the morning in the fencing hall of the Al-Hussein Youth Center, and in order to reach the following:

1. Knowing the obstacles encountered by the researcher when conducting the main experiment .
2. The extent to which the research sample understands the tests used.
3. Determine the accuracy and validity of measurements and tests for research .
4. Install the tasks of the assistant team.
5. Ensure the suitability of the tools and the suitability of the place to carry out the tests .
6. Overcoming the mistakes that occur in the main experience.

Pre-Tests:

The pre-tests were administered to the players from Misan Governorate, consisting of 20 players divided into control and experimental groups. The tests took place on Sunday, 1/7/2023, at four o'clock in the evening in the fencing hall of the Al-Hussein neighbourhood youth forum. Prior to the tests, the players were given a concise explanation on how to perform them. The players' attempts were documented through photography, and the resulting data and information were entered into a dedicated form. Subsequently, statistical analysis was conducted to derive the test results.

Training Curriculum

An educational curriculum was designed based on the exercises of the rapid learning method to assess its impact on the two selected skills in the study. The curriculum was implemented over a period of 6 weeks, with two units covered per week, resulting in a total of 12 educational units. The application of the curriculum took into consideration the steps of the method and its vocabulary. The curriculum was implemented from February 7, 2023, to August 17, 2023.

Post-Tests

Upon finishing the implementation of the planned curriculum, post-tests were administered to the research sample consisting of 20 players from both groups on 17/8/2023. The researchers made sure to conduct the tests and video recordings of the studied skills under identical conditions, including the same weather and location, as well as using the same tools as in the pre-tests.

Statistical Means

In order to achieve the objective of the study, the researchers used the statistical bag (SPSS):

- ❖ Percentage law.
- ❖ Arithmetic mean and median.
- ❖ Standard deviation.
- ❖ Law (v) for symmetrical samples).

RESULTS

Presentation, analysis and discussion of results:

Presentation of the results of the pre- and post-tests of the stabbing and arrow skills of the control group:

Table 3: Shows the results of the pre- and post-tests of the stabbing and arrow skills of the control group.

Variables	Unit of Measurement	Pre-Test		Post-Test		T	Sig
		M	SD	M	SD		
Stabbing Skill	Degree	3.50	0.972	5.00	0.667	9.00	0.000
Arrow Skill	Degree	2.80	0.632	4.00	0.942	6.00	0.000

**Tabular value (T) (1.833) at degree of freedom (9) and level of significance (0.05).*

Table (3) displays the challenge skill test pre-test had an arithmetic mean of 3.50 and a standard deviation of 0.972. In contrast, the post-test had an arithmetic mean of 5.00 and a standard deviation of 0.667. After calculating the value of T, which was 9.00, it was found to be greater than the tabular value of T (1.83) at a significance level of 5.00 and with 9 degrees of freedom. This indicates that there are statistically significant differences between the pre- and post-tests of the control group, favouring the post-test. The arrow skill test yielded the results pre-test arithmetic mean was (2.80) with a standard deviation of (0.632), whereas the post-test arithmetic mean was (4.00) with a standard deviation of (0.943). Upon calculating the value of (T) (6.00), which exceeds the tabular value of (T) (1.83) at the 0.05 level of significance and with 9 degrees of freedom, it was determined that statistically significant differences exist between the two assessments. Table (3) clearly demonstrates the statistical indicators of the pre- and post-tests for variables, including the skills of stabbing and the movement of the arrow that the control group members underwent. The results indicate that the arithmetic mean values were higher in the post-test compared to the pre-test. There was a significant improvement between the two tests, favouring the post-test. This was confirmed by the levels of significance obtained using the statistical law (T) for correlated samples. All tests yielded values lower than the significance level (0.05), indicating significant differences between the two tests.

Presentation of the results of the pre- and post-tests of the stabbing and arrow skills of the experimental group:

Table 4: Shows the results of the pre- and post-tests of the stabbing and arrow skills of the experimental group.

Variables	Unit of Measurement	Pre-Test		Post-Test		T	Sig
		M	SD	M	SD		
Stabbing Skill	Degree	3.40	0.843	7.50	1.17	17.57	0.000
Arrow Skill	Degree	2.90	0.994	6.30	0.674	12.75	0.000

**Tabular value (T) (1.833) at degree of freedom (9) and level of significance (0.05).*

Based on Table (5), the Stabbing skill test shows clear results average score in the pre-test was 3.40with a standard deviation of 0.843, while the average score in the post-test was 7.50 with a standard deviation of 1.17. After calculating the value of T, which is 17.57, it is found to be greater than the tabular value of T (1.83) at a significance level of 0.05 and with 9 degrees of freedom. This indicates that there are statistically significant differences between the two tests, before and after the experimental group, in favour of the post-test. In the Arrow skill test, the average score in the pre-test was 2.90 with a standard deviation of 0.994. In the post-test, the average score was 6.30 with a standard deviation of 0.674. After calculating the value of T, which was 12.75, it was found to be greater than the tabular value of T (1.83) at a significance level of 0.05 and with 9 degrees of freedom. This indicates that there are statistically significant differences between the two tests, favouring the post-test over the pre-test in the experimental group. Table (4) clearly demonstrates that the statistical indicators of the pre- and post-tests for the variables of stabbing skills and arrow movement indicate that the control group members experienced a significant improvement. The arithmetic mean values in the post-test were higher than in the pre-test, indicating a significant development between the two tests in favour of the post-test. This was confirmed by the levels of significance obtained through the use of the laboratory statistical law (T) for correlated samples, where all tests were below the significance level of 0.05. This suggests that there are significant differences between the two tests.

Presentation and analysis of the results of the differences between the control and experimental groups in the two tests of appeal and movement of the arrow in the post-test:

Table 5: shows the values of the arithmetic means, standard deviations, calculated (t) value and the level of morale of the two tests for the skills of stabbing and the movement of the arrow between the control and experimental groups in the post-tests.

Variables	Unit of Measurement	Experimental		Control		T	Sig
Stabbing Skill	Degree	7.50	1.17	5.00	0.667	5.83	0.000
Arrow Skill	Degree	6.30	0.674	4.00	0.942	6.27	0.000

**Tabular value (T) (1.734) at a degree of freedom (18) and a level of significance (0.05).*

The results from Table (5) indicate that in the Stabbing skill test, the post-test results for the control group had an arithmetic mean of 5.00 with a standard deviation of 0.667. On the other hand, the experimental group had an arithmetic mean of 7.50 degrees with a standard deviation of 1.17. The level of morale was found to be 0.000, which is lower than the significance level of 0.05. This suggests a significant difference between the two groups, favouring the experimental group. The results of the Arrow skill test indicated that the post-test arithmetic mean for the control group was 4.00 with a standard deviation of 0.943. In contrast, the experimental group had an arithmetic mean of 6.30 degrees with a standard deviation of 0.675. The level of significance was 0.000, which is lower than the significance level of 0.05. This suggests a significant difference between the two groups, favouring the experimental group. Table (5) presents the statistical indicators of the post-test results for stabbing and arrow movement skills. These tests were conducted on individuals from both the control and experimental groups. The purpose was to identify any differences in the post-test results. The analysis was done using the independent samples t-test. The results indicated that the moral levels of all abilities were below the significance level of 0.05. This suggests that there are significant differences between the two groups, with the experimental group performing better in the post-test.

DISCUSSION OF THE RESULTS

Discussing the results of the pre- and post-tests of the control and experimental groups to test the skills of stabbing and arrow movement:

The analysis of the data collected from the pre- and post-tests of the arithmetic media, including the skilled stabbing and arrow skill, revealed significant differences between the two tests. This was supported by the results of the standard deviations, t-values, and significance levels presented in tables 3 and 4 for both the control and experimental groups. The findings indicate that the post-tests performed better than the pre-tests, thus confirming the first hypothesis. The post-test results for the control and experimental groups were analysed in Table (5) to determine the arithmetic means, standard deviations, t-values, and significance levels. The table also presented the rates of development, which indicated significant differences between the control and experimental groups in favour of the experimental group. This supports the second hypothesis. The researchers attribute the significant differences in post-tests and the clear development of the control and experimental groups to the following reasons, which also explain the superiority of the experimental group in terms of the amount of development over the control group:

First: When observing the test results of the control group pre- and post the research study, significant differences were observed in the skills of stabbing and arrow. This improvement in the post-test results of the control group can be attributed to the implementation of an effective educational curriculum, which focused on mastering vocabulary application. The curriculum was designed and implemented by the game coach throughout the study period. The researchers concluded that this improvement was a result of the exercises related to the skills being studied, which helped enhance the skills and yielded positive outcomes.

Secondly: The superiority of the experimental group can be observed by comparing the moral differences between the pre- and post-tests. The post-tests show a higher level of moral

understanding in this group compared to the control group. This superiority can also be seen in the effectiveness of the educational curriculum, which was designed using the distributed exercise method. This method involves using multiple techniques within one educational unit, such as various and overlapping exercises that are tailored to the players' level. An effective strategy, such as teaching groups with immediate feedback, was employed, including homework assignments and interactive video technology with kinetic models. The advanced and modern research methods have created an environment that fosters suspense and a desire for players to enhance their individual skills. This, in turn, has accelerated the learning and development of skills during educational units. Skinner's theory suggests that the use of various educational methods can effectively address individual differences among learners (Zhou & Brown, 2015). This can result in the organisation and persistence of ideas formed by the learner, as well as the modification of behaviour and the development of new patterns. According to Skinner, when an organism's behaviour or response is reinforced, it becomes more likely to be repeated. Therefore, trends that are reinforced have a higher probability of occurring compared to trends that are not reinforced (Crozier, 2013). Alternatively, it can be argued that the researcher's repeated use of qualitative activities is a contributing component to the development and acquisition of learning abilities. According to Karasievych et al. (2021), physical exercises with a specific objective refer to exercises designed to enhance and develop specific motor skills required for different sports activities. These exercises serve as a supplementary factor in preparing athletes and improving their performance in their specialised sport. The researcher's objective in incorporating overlap and diversification in the exercises is to enhance the learner's proficiency and proficiency in motor skills. This is achieved by employing effective approaches that closely resemble genuine gameplay in the sport. Li and Greenwood (2004) emphasised the advantages of incorporating a variety of exercises within a unit to achieve multiple objectives. This approach enhances performance diversity, improves adaptability, meets educational requirements, and accelerates the learning process by investing time and effort over a specific period of education. The researchers attributes the differences in favour of post-tests and the increase in development rates of the experimental group to the effective use of peer learning methods. Specifically, the method of peer learning when applying skills has had a positive impact. This method involves the application of players' skills through distributed exercises, which has a clear influence on excitement and the development of creative thinking. The presence of elements of suspense and excitement during their interaction and desire to apply within the groups has contributed to increased motivation among players. This, in turn, has led to faster learning and development of the two studied skills. The feedback given by players to their peers, along with continuous follow-up by the coach, has played a significant role in this process. The notion of suspense and excitement is a contributing component to motor learning, as demonstrated by Knobloch-Westerwick et al. (2009). Furthermore, it is imperative that any task undertaken by an individual may only be truly perfected when accompanied with a sense of enthusiasm or a strong inclination to engage in the activity (Weinberg & Gould, 2023). The researchers attributes the increased development in the performance of the skills under research for the experimental group, compared to the control group, to the provision of immediate and direct feedback through the method of peer education. The group supervisor utilised assignment papers to correct errors and provide feedback for each skill separately,

including the preparatory stage. In contrast, the control group followed traditional learning methods where learners had to wait for feedback from the trainer after a certain period of time. Siedentop, Hastie, and Van der Mars (2019) emphasise the importance of feedback as a fundamental requirement in the learning process. Oppici, Dix, and Narciss (2021) substantiated that certain forms of learning, particularly motor abilities, cannot be attained without knowledge of the outcomes or feedback. Immediate feedback is crucial in the early stages of learning, as it allows for continuous improvement in performance. This feedback is most effective when provided within small cooperative groups, where peers can offer guidance and correct errors. The assignment paper serves as a valuable source of feedback, providing information on performance, including the extent of errors. It also helps to direct learners towards specific goals or standards. In addition to enhancing the connection between the stimulus and the motor response, it also serves to promote suitable motor responses for repeated performance, as the act of encouragement effectively demonstrates to the learner what is expected of them. Otte et al., (2020) states that direct feedback encompasses all the information acquired by an individual during or after their performance of a response. This feedback can be categorised as either intrinsic feedback, which is derived from the individual's internal perception of the performance outcome, or augmented feedback, which is external and essential. Augmented feedback can be provided by a coach or colleague, and it serves as private information.

CONCLUSIONS

The researchers derived the following conclusions from the research findings:

1. The distributed exercise method helped in learning the skills of stabbing and arrow and linking them to each other in the experimental research sample.
2. Learning according to the distributed exercise method worked to attract the attention of the players, and increased their demand towards learning and made them find the right solutions for performance and thus the kinetic paths of the skill perform well.
3. The smoothness and ease of applying the educational curriculum directly contributed to the stabbing and arrow skills of fencing sword players.

RECOMMENDATIONS

Based on the results of the research, the researchers recommended the following:

1. Adopting the method of exercise distributed during the educational units for its active and great role on the basic skills of the fencing sword, especially stabbing and arrow.
2. The necessity to implement change and variety in educational methodologies is of paramount significance in enhancing the process of acquiring knowledge.
3. There is a necessity to embrace contemporary approaches that deviate from conventional methods to the greatest extent possible. Additionally, it is crucial to prioritise the learner as the central figure in the educational process, particularly in terms of critical thinking and discussion.
4. It is important to highlight the need of conducting comparable research utilising the distributed exercise method, focusing on various team or individual games and different age groups.

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