

Special strength and agility and their relationship to the accuracy of some offensive performances in fencing

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Abstract

The nature of performance in the sport of fencing, which is represented by changing direction or deception and trying to get rid of the defender, and thus this change requires agility in movements in order to achieve good performance. Accordingly, employing special strength and agility in skill performance is one of the important requirements in performing in the sport of fencing in attack or defense. The importance lies in Research into identifying the role of special strength and agility in some offensive skills in the sport of fencing, and is there a good correlation between them among students of the third stage in the sport of fencing, in order to raise the level of students, as they are the basic rule when learning and training beginners in clubs or youth centers. As for the problem of research, it is During the researcher's observation, as she was one of the students of the fourth stage and practiced in the first and third stages and was interested in the game, there was a weakness in the level of performance in some offensive skills, including the complex skills of the attack (circular and numerical) and the simple indirect attack (attack by change), and that the level of performance during these skills was weak. Failure to complete the attack and touch may be due to the weak relationship between special strength and agility in the offensive skills of third-year fencing students. As for the objectives of the research, to identify the relationship between special strength and accuracy of performance of some offensive skills in fencing among third-year fencing students. And identifying the relationship between agility and accuracy of offensive performance among third-year students. The research population and sample are third-year students in the College of Physical Education and Sports Sciences at the University of Babylon, who numbered (200). The female students, who numbered (41), were excluded. As for the research sample, section (B) was chosen and was chosen randomly from among the three sections, numbering (72), from which it was Choosing the research sample. The size of the test sample was (20) laboratory students, and therefore the percentage of the sample amounted to (10%) of the population. Then, he chose from scientific sources the appropriate tests and presented them to the experts, and then carried out the main experiment on the research sample on Tuesday and Wednesday, corresponding to (18/ 1/2022), and after completion, the statistical data was processed, then the results were presented, analyzed and discussed. After discussing the results, the researcher reached a number of conclusions, the most important of which is ,there is a positive relationship between the variables of special strength (explosive strength, strength characterized by speed, strength endurance) of the legs and the arm carrying the weapon and the accuracy of the offensive performance among third-year fencing students.

Keywords: Special strength ,agility , and fencing.

Introduction

Fencing is one of the individual and team games that occupy a good place in the lessons of colleges and departments of physical education and sports sciences. These institutions have increased their interest in developing their graduate cadres by providing them with physical and skill competencies and good scientific knowledge, as well as using effective methods appropriate to the level of the learner and trainee in order to accelerate the learning process. In order to create a good base in the sport of fencing.

Since fencing is one of the games that is characterized by variable movement performance, not a short time per match, and the difficulty of its requirements, it requires physical and motor ability to ensure a rapid transition from defense to attack and vice versa, in addition to requiring a level of agility, compatibility, and speed of all kinds, which appear in different playing situations, and therefore it is It requires the player to put in effort and continuous work during training and competition. Special strength is one of the physical qualities that are included in the physical requirements of the game in fencing, which distinguishes the game of fencing in the various movements and in overcoming various resistances during the performance when clashing between competitors, and the player must possess special physical qualities that make his performance of the various skills during the time of the match effective and achieve the goal. Also, the nature of the performance in fencing, which is represented by changing direction or deception and trying to get rid of the defender to attack the opponent, and thus this change requires agility in movement in order to achieve good performance.¹

Therefore, the addition of special strength and agility in skill performance is an important factor in the effectiveness of performance in fencing. Through the above, the importance of research can be seen in identifying the role of special strength and agility in accurately performing complex and simple attacking in fencing. Is there a good relationship between them among third-year fencing students in order to raise the level of students, as they are the basic rule when learning and training beginners in training centers and clubs?

Research problem

Fencing is one of the individual and team games that takes up space in the lessons of colleges and physical education departments, as the student or learner in the school years relies on acquiring the physical and skill aspect of the game for the purpose of learning and mastering it.

Through the observation of the researcher, who specializes in training, teaching, and teaching this sport, it was noted that there is fluctuation in the performance of offensive skills, as well as loss of ability during the performance of these skills and failure of touch after stabbing towards the opponent's body and within the specified target according to the defensive conditions, and one of its causes may be the weak relationship between personal strength and agility. The complex offensive skills of third-year fencing students.

Research objectives

1. Identifying through the relationship between the special strength (explosive strength, strength characterized by speed, endurance strength) of the legs and the arm carrying the weapon and the accuracy of the complex offensive performance.
2. Identifying through the relationship between agility and accuracy of complex offensive performance (number attack - circular attack).

Research hypotheses

1. There is a statistically significant correlation between the results of special strength tests (explosive strength, strength characterized by speed, strength endurance) of the legs and the arm carrying the weapon and the accuracy of the combined attack performance.
2. There is a statistically significant correlation between the results of the agility test and the accuracy of the complex offensive performance among third-year fencing students.

Research field

- Human field: A sample of third-year students in the College of Physical Education and Sports Sciences - University of Babylon - for the academic year 2022 AD
- Time frame: period from 2/2/2022 to 4/5/2022
- Spatial field: Fencing Hall in the College of Physical Education and Sports Sciences, University of Babylon.

Research Methodology

Use the descriptive approach in a correlational manner appropriate to the nature of the research problem.

The research community and its sample

The goals set by the researcher and the procedures used in the research are what determine the nature of the sample that he chooses. The research population was determined from third-year students in the College of Physical Education and Sports Sciences / University of Babylon, amounting to (200) students. As for the research sample, it was chosen randomly (b) With (20) students, the sample percentage of the research population reached (10%). Below is Table (1) with the sample specifications. It shows the specifications of the research sample in terms of mass, length, and chronological age.

Variables	mean	STD.EV.	median	skewness
Mass	56.49	5.91	75.55	0.34
Length	1.65	0.13	1.68	1.61
Age	23.57	1.89	22.9	1.06

It is noted from Table (1) that the values of the skewness coefficient were less than (3), which indicates the homogeneity of the sample in the variables indicated in the table, which are within the normal curve of the distribution.

Means of collecting information, devices and tools used in research

- Reference sources used.
- Personal interviews.
- International information network (Internet).
- Observation and experiment.
- Tests and measurement.
- Fencing weapons.
- Measuring tape.
- Fencing court.
- Stopwatch.
- Questionnaire form.
- Information collection form.
- Colored tape.
- Whistle.
- Chalk.
- Measuring tape.

Field research procedures

Determine physical and skill tests

After reviewing the sources, reviewing and studies, the researcher determined some physical tests and a skill test for the research, as in Table (2).

Table 2. Shows the selected physical and skill tests and the percentage of expert agreement

Variables	Test name	Target of	Agreement rate
Explosive force	For both men, Sargent's vertical jump test	The explosive power of the legs	96%
	Arms throw the ball in motion the furthest distance	Explosive strength of the arms	90%
The distinctive strength of the two men is speed	Partridge test for the furthest distance with the right and left leg (10 seconds)	Strength characterized by the speed of the legs	90%
	Arms throw and receive the ball on the wall in 30 seconds	Distinctive strength and speed in the arms	95%
Endurance strength	Both men jump from a squat in the same place for 45 seconds	Measuring leg muscle endurance	85%
	Bend the arms and extend the	Measuring arm	90%

	arms until exhausted	muscle endurance	
Agility test	Zigzag running test (2 x 15) back and forth	Measuring agility	85%

Tests used in research

1. Sargent's vertical jump test²

- Purpose of the test: to measure the explosive power of the legs
- Tools: a ruler or tape - a wall - a piece of chalk
- Description of performance:
 - Fix the ruler or tape measure on the wall to measure the distance of the vertical jump between two marks.
 - The experimenter stands sideways next to the wall, barefoot, holding a piece of chalk (one inch long) in the hand next to the wall.
 - He spreads his hands as wide as possible to make a mark on the wall with chalk.
 - The laboratory bends the knees while keeping the arms above the head and the back in one straight line.
 - The laboratory begins to jump vertically as high as possible to place the chalk mark at the highest point it reaches.

2. Test of throwing the ball as far as possible³

- Purpose of the test: to measure aiming power.
- Tools used: two balls, a measuring tape - An area of flat land no less than 40 meters long.
- Procedures: The player stands on the starting line of the shooting field without touching the line, with his feet at the same level, holding the ball with both hands. At the start signal, the tester moves the ball to the throwing arm and holds it with one hand (the same way as holding fencing), while taking a step with the opposite foot and throwing the ball to the farthest distance. It is possible in the field of throwing, provided that the shot is aimed at a line of width (4 meters) away from the player's focal point while performing the throw.
- Calculating scores: The throwing distance is calculated to the nearest 10 cm, and the laboratory gives two attempts, the highest of which is counted, provided that the ball falls within the specified throwing range.

3. Partridge test for the maximum distance in (10 seconds)⁴

- The purpose of the test: to measure the strength and speed of the leg muscles.
- Tools and facilities: playground, measuring tape, chalk, stopwatch.
- Description of the performance: Standing on one leg of the horse for the maximum distance on a line drawn on the ground with any part of the body other than the foot of the horse. The test is performed once on the right leg, then the left leg.
- For evaluation: the distance in a time of (10) seconds. The test is repeated on the other foot, the level and dimensions of the test are measured twice, and the best attempt is taken.

4. Test of throwing and receiving the ball against the wall in 30 seconds⁵

- The aim of the test: to measure the coordination of the arms and eyes. Tools: a handball, a stop watch, a flat wall.
- Performance Specifications:
 - The player stands behind the line drawn on the ground at a distance of (3) meters so that he does not touch it while performing the test.
 - The player passes a ball to the wall, receives it, and continues passing and receiving as many times as possible in the specified time.
 - Calculating scores: The number of passes and receptions is counted within 30 seconds.

5. Jumping test from squatting in place for (45) seconds⁶

- The purpose of the selection is to measure the strength and speed endurance of the arms.
- Performance description: From the prone position, bend and extend the arms as many times as possible within 30 seconds.
- Necessary tools: stopwatch, whistle.
- Conditions:
 - Take the body and demonstrate the correct oblique prone position.
 - Take into account the touch of the chest to the ground while bending the arms and then extending them fully. Calculating grades/recording for the laboratory the number of times the bend and entrance are performed for 30 seconds.

6. Barrow's zigzag running test⁷

- Purpose of the test: to measure agility
- Tools: Draw a rectangle on the ground with a length of (4.75) m and a width of (3). We fix four posts, four posts on the ground in the four corners of the rectangle, and fix the fifth post in the middle, noting that the length of the post must not be less than (30) cm. A stopwatch. . Layout of the test area as shown in Figure No. (1)
- Method of performance and measurement.
 - The tester stands behind the starting line in a ready position to start running from a standing position (global start position).
 - Upon signal, the tester runs between the five lists until he completes the third cycle.
 - Give the time taken to the nearest 1.100 of a second.

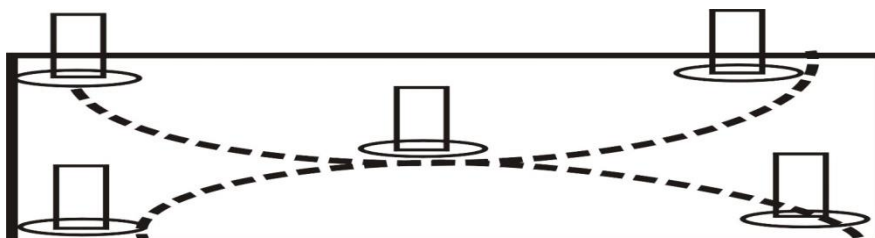


Figure 1. Shows the Yarrow winding running test

The level of performance of some offensive skills in the sport of epee fencing was evaluated by three arbitrators, by giving a score out of (10) for each attempt and taking the best score from the three attempts by three evaluators. The evaluation was done by

videotaping the tests and evaluating all the skills according to the special form prepared for that.

Exploratory experience

The researcher conducted a reconnaissance experiment on 2/6/2022 on a random sample of third-year students in the College of Physical Education / University of Babylon, who were not the research sample. The purpose of this experiment was to: identify all obstacles and overcome them for the laboratory, as well as to implement the tests and ensure their implementation. It matches the level of the sample investigated.

Main experience

Tests are one of the important means of evaluating the level an athlete has reached. The research tests were conducted on a sample of (20) students from Section (B) of the third stage. The tests were conducted between February 7 and 10, 2022 at ten in the morning:

- All tests were conducted in the fencing hall.
- Before starting to implement the tests, the researcher, in the presence of the subject professor, gave a detailed explanation of each test and clarified the importance of the tests and the necessity for the tested student to exert his best efforts and to implement them with the greatest strength and speed possible.
- The testers were warmed up, the sequence of tests was as follows:
 - ❖ First: Physical tests were conducted, which are (explosive strength of the legs and armed arm, a test of strength characterized by speed for the legs and arms, and force endurance of the arms and legs) on 2/7-8/2022.
 - ❖ Second: Agility tests and skill tests were conducted (the Barrow zigzag running test and the offensive performance test). Coinciding with 9-10/2/2022. The researcher took care to give an appropriate rest period between tests so that the sample could obtain the best results. The data was recorded on special forms for the purpose of analyzing it to extract results.

Display and analyze the results of the means and standard deviations for the research variables.

Table 3. Shows the values of the means and standard deviations for the research variables

Variables	Units	Test name	mean	Std.EV.
Explosive force	Cm	Sargent's vertical jump test	26.5	7.66
	Meter	Throwing the ball in motion is the farthest distance	12.88	1.11
Power distinguished by speed	Meter	Partridge for the furthest distance with the right and left leg (10 seconds)	24.17	3.86
	Number	Throwing and receiving the ball at the wall in 30 seconds	25.23	4.73

Endurance strength	Sec.	Jump from a squat in the same place for (45) seconds	38.11	5.29
	Sec.	Bend and extend the arms until the effort runs out	25.52	4.53
Agility	Sec.	Zigzag running (2×15) back and forth	29.41	5.65
Combination attack	Sec.	Numerical attack	35.76	4.14
		Ring attack	40.12	4.43

The mean of the explosive power variable of the legs (Sargent's vertical jump test) was (26.5) cm with a standard deviation of (7.66), while the mean of the explosive power variable of the armed arm (the farthest distance ball throw test) was (12.88) meters with a standard deviation of (1.11). While we have the mean of the variable of force characterized by speed for the leading leg of the pole for the farthest distance with the right and left leg (10 seconds) amounting to (24.17) meters with a standard deviation of (3.86), and we have appeared the mean of the variable of force characterized by speed of the armed arm (throwing and receiving the ball against the wall in 30 seconds). It reached (25.23) degrees with a standard deviation of (4.73), while the mean for the force endurance variable for the legs was (38.11) seconds with a standard deviation of (5.29). The mean for the force endurance variable for the arms reached (25.52) seconds with a standard deviation of (4.53). The agility variable (the zigzag running test (2 The standard deviation was (4.43).

Table 4. Shows the correlation coefficient between the specific strength and the accuracy of the combined attack performance for research sample

Variables	Units	The value (r) calculated with the accuracy of the offensive performance	Tabular (r) value (*)	Statistical significance
Sargent's vertical jump test	Cm	0.598	0,412	Sig.
Throwing the ball in motion is the farthest distance	Number	0.677		Sig.
Partridge for the furthest distance with the right and left leg (10 seconds)	Sec.	0.628		Sig.
Throwing and receiving the ball at the wall in 30 seconds	Sec.	0.718		Sig.

Jump from a squat in the same place for (45) seconds	Sec.	0.584		Sig.
Bend and extend the arms until the effort runs out	Sec.	0.686		Sig.

(*) Tabulated (r) value at degree of freedom (18) with significance level $\leq (0.05) = 0.412$

In the variable of explosive power of the legs and arms, there is a significant correlation between the results of the test (Sargent’s vertical jump) and (throwing the ball in motion the furthest distance) and the accuracy of the composite offensive performance, as the calculated value of (R) reached (0.598) and (0.677), which is the largest. From the tabulated (R) value of (0.412), this means that the degree of the correlation coefficient between the two variables was significant, and the researcher attributes the significance of the correlation to the importance of the explosive power of the legs and the throwing arm in the offensive performance in fencing, especially in the skill of the time attack of stabbing, and also the development occurring in the characteristic of strength. The explosiveness of the muscles of the arms and the muscles of the armed arm resulting from the use of various strength exercises, which had a positive effect in improving the level of the sample, as the exercises that the students took in the various practical lessons and in the fencing lessons were various jumping exercises, as well as the explosive strength exercises of the armed arm, whose movement paths were similar to the paths. The kinetics of the attack skill in fencing, which contributed to reducing the duration of muscle contraction and increasing the speed of performance, and then obtaining the maximum contraction and the highest force appeared in the form of jumping upwards and throwing the medicine ball the farthest distance. This is consistent with pointed out, that “the shorter the periods of muscle contraction, the greater the force. Conversely, the longer the period of muscle contraction, the amount of force does not remain constant, but rather changes” .⁸

In the variable of strength characterized by speed for the legs and arms, it was found that there is a significant correlation between the results of the test (scooping for the furthest distance with the right and left leg (10 seconds)) and (throwing and receiving the ball against the wall in 30 seconds) and the accuracy of the combined offensive performance in fencing, as the value of (r) calculated on... Respectively (0.628) and (0.718), which is greater than the tabulated (r) value of (0.412). This means that the degree of correlation coefficient between the two variables was significant. The researcher attributes the significance of the correlation to the variable of strength characterized by speed (quick strength) of the muscles of the left and right legs to the type of exercises. Which is used within the academic educational curriculum and for various games, including fencing, which improves the level of female students, as the strength characterized by speed is linked to skill performance. The better the strength characterized by speed that the students possess, the better the skill performance, as this type of ability is necessary in the sport of fencing and in a way. It is continuous in defense and attack movements and the jumping skill in particular. Therefore, we note that it occupies a large percentage of the time allocated for training, because it is linked to the degree of mastery of skill performance” ,⁹ that this ability has special importance in the role

in which It is played in performing the skill during competition and during the acquisition of the skill ,¹⁰ and vertical and horizontal jumping exercises, which were emphasized through the use of functional ability exercises (strength and balance) and quickly, which included, the training units that helped in this clear development, “Strength training requires high speed during exercises to obtain better motor performance during competitions .¹¹ In the variable of strength endurance for the legs and arms, Table (4) shows that there is a significant correlation between the results of the test (jumping from a squat in the same place for a period of time). (45 seconds) and (bending and extending the arms until the effort is exhausted) and the accuracy of the combined offensive performance in fencing, as the calculated (r) value reached (0.584) and (0.686) respectively, which is greater than the tabulated (r) value of (0.412). This means The degree of correlation coefficient between the two variables was significant.

The researcher attributes the significant correlation to the exercises carried out by the students in various sporting events, which gave them strength endurance in the legs and armed arm, as well as the presence of suspense, excitement, and enthusiasm in the skill of attack and touch, because the basic goal of every male and female player and team is to master all the other basic skills, and without touch, it becomes useless if it is not It ends with an achieved touch of the legal target on the body of the fencer, and this comes through good training in this important skill, and one must focus and take care of the strength and accuracy that work together in shooting.

Table 5. Shows the value of the correlation coefficient between agility and accuracy of the complex offensive performance in fencing among the research sample

Variables	Units	The value (r) calculated with the accuracy of the offensive performance	Tabular (r) value (*)	Statistical significance
Zigzag running (2×15) back and forth	Sec.	0.645	0.412	Sig.

(*) Tabular (t) value at degree of freedom (15) with significance level $\leq (0,05) = 0.412$

From Table (5) it is clear that: There is a significant correlation between the choice of agility and the accuracy of the complex offensive performance in the sport of fencing, as the value reached The calculated (r) is (0.645), which is smaller than the tabulated (r) value of (0.412). This means that the degree of the correlation coefficient between the two variables was significant, and the researcher attributes the significance of the correlation to the harmony between motor and physical abilities and internal systems. Agility in movements, whether offensive or defensive, is one of the basic qualities that plays a major role in moving on the field with changing direction in the movement of weapons as well. Foot movements are also among the basic skills in defense and attack.¹² In defense, they must be trained and mastered so that the player or student can move. Easily reach the opponent or take the right place and the right time to carry out the attack. As for defense, the player can use foot

movements to escape from the opponent and then surprise the attacker by reaching the goal and taking the right time to attack and touch, in addition to the importance of agility of movement in deception. All maneuvers, changes in the speed of advance, and changes in leg movements lead to and contribute to deceiving the opponent. Foot movements have a major role in concealing the movement and executing the attack that is intended to be carried out.¹³

Conclusions

1. There is a positive relationship between the variables of special strength (explosive strength, strength characterized by speed, strength endurance) of the legs and armed arm and the accuracy of the complex offensive performance of the fourth-year fencing student.
2. There is a positive relationship between agility and accuracy of complex offensive performance in fencing
3. Special strength and agility have a positive role in improving the offensive motor performance of the shooting skill among the research sample, and this is what the moral correlations showed in the research.

Recommendations

1. Emphasizing interest in developing special strength and agility for its role in developing all offensive skills in fencing.
2. Emphasis on the use of tests that are close to the conditions of play and competition when measuring the physical, motor and skill characteristics of fencing players.
3. Emphasizing the method of comprehensive physical and skill training in fencing and replacing the old methods of fencing training, which call for separating physical development and motor skill qualities from one another.
4. Conducting research and studies similar to the rest of the skills in fencing, including defensive skills.
5. The need to conduct similar research for other sporting events.

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