

Relationship between physical and mental abilities and the performance of the stabbing movement of fencing athletes

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ABSTRACT

The primary aim of this study was to recognize the most important physical and mental abilities of the skill performance of the fencing athletes and to find out the relationship between these physical and mental abilities and the performance of the stabbing movement of fencing athletes. The present study was conducted on the 12-13 years old fencing athletes of the clubs of Basra Governorate. The present study was conducted in the fencing halls and sports stadiums of Basra Province Clubs, which included: Aljinoob Sports Club, Al Ittihad Sports Club, Al Basra Sports Club and Al Menaa Sports Club. The research was carried out between December 2020 and May 2021. Based on the findings of the study, the researcher concluded that there is a significant correlation between physical and mental abilities and the performance of the stabbing movement of fencing athletes.

KEYWORDS

Physical abilities; Mental abilities; Performance; Fencing

1. INTRODUCTION

A lot of development has been observed over the past few decades generally in all the field of the life, and especially in the sports industry. Besides the technical advancement, great improvement has been found in the teaching and learning methods for the students in the sports organization. These organizations put more focus on the complete development of a player with respect to his/her technique, physical skills, mental skills, behavior in and out of the field etc. Similarly, the training coaches have also evolved themselves in accordance to the need of this era of technical advancements. This helps the players in to complete their training process in an integrated healthy physical and mental environment. This can be created by designing a special curriculum for the

players in order to help them in attaining highest level of achievements via their performance in the various games. There is strong need to upgrade their level of preparation that can be achieved by provision of good infrastructure equipped with advanced equipment's and efficient training coaches. The training coaches can help in increasing the performance level of players by working on the training schedule based on the individual characteristics of the players rather than just working on one training schedule for all the players. The process of choosing the players to exercise a particular sports activity is one of the most important and most important steps in the tournament's ladder for this activity. The impact of the training process in developing these individual capacities effectively to achieve continuous progress in sports activity. The importance of research is reflected in improving the performance of the fencing athletes by working on the physical and mental abilities simultaneously in order to specifically improve the stabbing movement.

The fencing is characterized by direct friction with the competitor which comes through the consistent training to develop physical and mental capacities as well as in the future and stand for the evolution of players from this point of view. The fencing of sports is treated with special physical characteristics and distinctive mental capabilities. Therefore, the accuracy of skill performance is significantly dependent on different physical and mental capacities, which affects the level of skill at general level. There is strong need for the trainers to choose appropriate training program according to the mental and physical deficits among the players which are directly affected by skeptical performance of the players. Hence, the primary aim of the study was to recognize the most important physical and mental abilities of the skill performance of the fencing athletes and to find out the relationship between physical and mental abilities and the skill performance of the fencing athletes.

2. METHODS

2.1. Participants

The present study was conducted on the 12-13 years old fencing athletes of the clubs of Basra Governorate. The present study was conducted in the fencing halls and sports stadiums of Basra Province Clubs, which included; Aljinoob Sports Club, Al Ittihad Sports Club, Al Basra Sports Club and Al Mena Sports Club. The study was conducted from December 2020 to May 2021. Initially the researcher adopted the descriptive approach in the form of a survey, as the first step of any study is the description of the phenomenon, studying and collecting the descriptions and accurate information. Wajih (2002) in their study stated that the goals set by the researcher for its research and the procedures used will determine the nature of the sample they choose. Sample selection for the

research is done in accordance to the nature of the research to be conducted, the primary aim and objectives of the research and the problem of the research in a deliberate manner (Wajih, 2001). In the present research, fencing athletes, falling within the age group of 13-14 years in the clubs of Basra province, were recruited as the sample for the study (Table 1).

Table 1. Description of the sample

Sports clubs	Number of players in the club	Number of players in the sample	Percentage in total sample
Al-Jinoob club	22	12	17.14%
Al Ittihad club	20	10	14.28%
Al-Basra club	16	10	14.28%
Al-Menaa club	12	8	11.42%
Total	70	40	57%

For the purpose of ensuring the adequacy of the sample, the researcher checked the homogeneity of the sample, finding that the values of difference were lower than 30%. Therefore, the homogeneity of the sample was confirmed (Table 2).

Table 2. Sample homogeneity for the performance of the stabbing movement of fencing athletes

Test	Measurement unit	Mean	SD	Difference
Composite Test for Straight Attack for Fencing athletes	Number of times	5.20	0.12	2.30%

2.2. Procedures and instruments

Prior to the start of the data collection for the present study extensive review of the existing literature was done by the researcher. The researcher conducted in depth review of references, and conducted personal interviews with the experts specialized in the field of physical education. Followed by this, various tests and measurements were conducted.

In the present study, many tools and devices were used for the purpose of data collection with the aim to achieve the objectives of the research. The various tools used in the present study included: Dual Electronic device designed by the researcher, spirometer, foil weapon, aluminum casual number, stopwatch, chair sitting on laboratory, medical ball weight (2 kg), 12 measurement tapes with transparent bars, projector and audio, pens, and an electronic device to measure the reaction speed.

The researchers conducted a first exploratory experiment on 8 players, who belonged to the same research community. The participants of the exploratory experiment were not included in the

primary experiment of the study. The first exploratory experiment was conducted with the aim to verify the validity of the tools used in terms of positive assistance, to verify the adequacy of the tests for the tester members and the ease of their application, to know the time required to conduct the tests, to verify the understanding and efficiency of the assistant work team in conducting measurements and tests and recording the results, and to know the difficulties that the researcher may encounter during the course of the study and provide appropriate solutions to them.

In the present study, the following tests were conducted by the researcher for testing the mental abilities, physical abilities and the level of skill performance of the players:

- *Skill Test, also designated as Composite Test for Straight Attack for Fencing athletes (Mohamed, 2014).* This test was intended to evaluate the accuracy of the straight attack and the distinctive force by speed and vital capacity on the young players in ages 17-20 years for the medieval and southern areas. In this test, the player leads with full performance in terms of references and progress and the performance of the challenge (straight attack) on the segment in continuation without stopping until the test is completed. Only one attempt was allowed for each participant with the rest arrival of pulse to 180. From standby mode (UNCAD), the player was asked to take a step for Imam and implement a forward stake to the electric bra on a factory, and then on back. The participant was asked to perform a stab once again and repeat this performance during the test duration. Degrees were recorded through five digital monitors allocated in the designer and received by the athlete during 10 seconds, as well as the number of times the attack was done and the failed attacks.
- *Test of motor speed for men (Biyani, 2007, 2009).* This test was intended to measure motor speed (motor frequency) for men and standby mode. In this test, a bar was placed at a height of ≥ 80 based on the height of the player. The test is conducted in a similar way as it was conducted the aforementioned test except one part. In this test, the bar is placed at a height of 80 or more, according to the height of the player. The same in which the player has stopped but in this case when the player raises his left arm will touch the left. The test is accomplished in 10 seconds. The researcher records the number of touches in the player (the player's knees) for the front and within the time, and then divides the number of touches by two.
- *Strength test of upper limbs from the sitting position.* This test was intended to measure the strength of the arms from the sitting position. Participants were asked to sit in a comfortable position holding a medicine ball in their hands. They were instructed to put the ball in front of their chest. Participants were asked to throw the ball forward at the farthest distance possible,

keeping the ball at the level of their chest. Each participant was provided with three attempts. The distance of the best attempt was documented by the researcher.

- *Attention test.* In light of the nominations made by experts and specialists, the researcher conducted a test to identify the attention ability among participants. This test was developed by Jawed Taha in the year 1971. This test was conducted to test five domains of attention including sharp, stability, distribution, focus, and focus conversion. This test consisted of 31 Arab numbers, arranged in groups. Each group consisted of 3-5 numbers. Thus each line consisted of 10 groups with 40 numbers. In the whole test, there were 1240 numbers arranged in a sequential and well organized manner (Naseem, 2002).
- *Test of attention and concentration.* This test was intended to measure the attention and concentration. The test was initiated after hearing the start signal. Participants were instructed to operate the device that gave 60 flash lights on accurate answers at intervals of 5 seconds. The device was kept at a distance of one meter. After hearing the stop sound the participants were asked to indicate the last number. The total test duration was one minute. The equation used to measure the focus of attention was: $U1 - U2$.
U1: Net labor productivity while measuring attention in the quiet condition, without exciting.
U2: Net labor productivity while measuring attention with audio and optical stimuli.
- *Test of reaction speed.* This test was intended to measure the reaction time of the participants. This test was developed by Naseem (2002). The test was conducted with the help of a device. The device consisted of two boxes. The first box had power and control. The second consisted of three lamps (red, green, and yellow). Participants were asked to sit on a chair by keeping the hand on the device. After hearing the start signal, they were asked to press the device. Each participant was provided with three attempts. They were also given enough opportunity to try the device before the measurement. The scoring was done based on the best of all the attempts made by the participants. The stability of this test is 0.871 and the objectivity was found to be 0.984.

The test measurements were completed by the researcher on all the participants of the clubs of Basra province for the season 2020-2021, within the timeframe of December 2020 to May 2021. All the test measurements were conducted in the sports hall of the clubs in the Basra Governorate. All the test measurements were done by the members of the research team on 40 participants. All the extraneous variables were taken into consideration for conducting these tests and for predicting the level of skill performance in terms of physical and mental levels for the research participants.

Initially, the tests were conducted one month after completion of the training. Later on, the tests were conducted after six months of completion of training.

2.3. Statistical analyses

After successfully completing the data collection, statistical analysis was done using the Statistical Package for the Social Sciences (SPSS) version 21. The analyses were carried out following the indications of Mohamed Abdel & Hassan Yassin (2008). The researcher calculated means, standard deviations and significant differences.

3. RESULTS AND DISCUSSION

Table 3 illustrated the results of the skill test (composite test) for the fencing athletes, with the arithmetic mean score of 7.33 and the standard deviation score of 0.67, and with r value of 0.853. The arithmetic mean and standard deviation of the physical test (the test for motor speed of legs) were 18 and 1.37, with r value of 0.713. The arithmetic mean and standard deviation of the strength test of upper limbs from the sitting position were 4.9 and 0.95, with r value of 0.713. The arithmetic mean and standard deviation of the attention test was 473.16 and 3.53, respectively. The arithmetic mean and standard deviation of the test of reaction speed were 3.896 and 0.094, respectively.

Table 3. Results of tests in the research sample

	Tests	Units	Mean	SD	Difference	r	Sig.
Skill Tests	Composite Test for Straight Attack for Fencing athletes	Number of times	7.33	0.67	9.14%	0.853	Sig.
Physical Tests	Test of motor speed for men	Number of times	18	1.37	7.61%	0.713	Sig.
	Strength test of upper limbs from the sitting position	Meter	4.9	0.95	19.38%	0.713	Sig.
Mental Tests	Attention test	Degree	473.16	3.53	0.47%	0.657	Sig.
	Test of reaction speed	Second	3.896	0.094	2.41%	0.792	Sig.

Table 4 illustrated the results of the tests in the six months of the study. In order to study the relationship between physical and mental abilities and the performance of the stabbing movement of fencing athletes, the time series was divided into two equal halves. The arithmetic mean of the first half (months 1-3) and the arithmetic mean of the second half (months 4-6) were calculated.

Regarding the composite test, the arithmetic mean of the composite test scores were 10, 8, 7, 6, 6, and 7 from the sixth to the first month, respectively. The combined mean scores for the last three months and first three months were 8.3 and 5.6. The arithmetic mean of the physical test for the motor speed of legs was 20, 19, 19, 17, 17, and 16 from the sixth to the first month, respectively. The combined mean scores for the last three months and the first three months were 19.3 and 16.6, respectively. The arithmetic mean of the attention test was 465.40, 469.41, 472.65, 474.82, 476.46, and 480.23 from the sixth to the first month, respectively. The combined mean scores for the last three months and first three months were 465.19 and 477.17, respectively. The arithmetic mean of the reaction speed was 4.015, 4.361, 4.501, 4.981, 5.146, 5.354 from the sixth to the first month, respectively. The combined mean scores for the last three months and the first three months were 4.292 and 5.166, respectively (Table 4).

Table 4. Results of the tests in the six months of the study

Tests	Units	Arithmetic Mean					
		First month	Second month	Third month	Forth month	Five month	Six month
Composite Test for Straight Attack for Fencing athletes	Number of times	7	6	6	7	8	10
		5.6			8.3		
Test of motor speed for men	Number of times	16	17	16	19	19	20
		16.6			19.3		
Strength test of upper limbs from the sitting position	Meter	4	4.2	4.8	5.5	6.1	6.5
		4.3			6.03		
Attention test	Degree	480.23	476.46	478.82	472.65	469.41	465.40
		477.17			465.19		
Test of reaction speed	Second	5.354	5.146	4.981	4.501	4.361	4.015
		5.166			4.292		

4. CONCLUSIONS

Based on the findings of the study, the researcher concluded that there is a significant correlation between physical and mental abilities and the performance of the stabbing movement of fencing athletes. The researcher recommends that fencing trainers use scientific and conventional tests for a better organization and planning of the training process. The researcher also recommends conducting similar studies in fencing athletes of different ages.

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AUTHOR CONTRIBUTIONS

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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