



Effect Of A Physical Program On Certain Physiological Abilities And Skill Performance (Defensive And Offensive) Of Foil

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Abstract

Given multitude and diversity of sporting events across various disciplines, physical aspect of training varies from one event or sport to another, depending on individual's performance level and capabilities. Physical development can be achieved through numerous exercises within training programs designed to help athletes reach their desired level. This process involves significant timeframes and requires dedicated work within specialized physical training programs to develop these abilities. This research aims to develop a physical training program for fencers and observe its impact on their performance. Physical abilities, physiological capabilities, and defensive and offensive skills. Research hypotheses there are statistically significant hypotheses in pre- and post-tests of physical program regarding physiological and skill-related abilities of foil. The most important conclusions were that physical program applied to foil was effective, based on the research results and percentage of change. The program had a physical impact on foil, and it also had a physiological impact on them. The impact of physical training program on skill development of foil. Among the most important research recommendations generalizing the current research findings to coaches and players of foil discipline, conducting similar studies in various sports, and need to work on developing physical training programs to reach required level.

Keywords: Fencing, Physiological Abilities, Skill Performance, Defense and Offense, Foil.

Introduction

High levels of athleticism require the individual to use physical abilities as well as physiological abilities, especially a high level of skill performance in activities in the athletic field and working on them.

Given the multiplicity and diversity of sporting activities across various sports, the use of physical conditioning varies from one activity or sport to another, depending on the performance requirements of each field and the individual's ability to perform. It is possible

to work on and develop the physical aspect through numerous exercises within training programs that help the athlete reach their desired level. This involves time-consuming changes, which are not simple and require dedicated work within specialized physical training programs to develop these abilities. **(Al-Ramli: 132)**

Many athletes, each according to the type of sporting activity, are slow to reach the required level in terms of physical fitness, and this may continue for a period of time. The reasons for this are the lack of standardization of training programs and familiarity with them by coaches in terms of physical development. Therefore, it can be said that accelerating the development of the physical aspect depends on standardized training programs and working on specific physical exercises for each activity according to what the player needs, or necessarily moving to these programs in a way that suits the abilities of the individual or player.

It is known that every sporting activity has a system for producing energy, which affects the individual's physiological aspects, oxygenation within the blood, and functional systems, which determines the amount of muscular work that the player performs when carrying out physical exertion.

As Bahaa El-Din Salama (76) pointed out, fencing players perform short activities distributed between walking, sudden movement, quick reaction in particular, and agility of movement from a skill-based perspective (defensive - offensive). This requires efficiency in the anaerobic system, which the player needs under the conditions of the skill itself. Also, players can be distinguished in the same activity in terms of the level of performance (weak - average - high). That is, sometimes the levels of the players determine the player's need to perform any physical work in terms of the level of anaerobic and oxygen capabilities and the player's aerobic capacity.

All sports activities that require more than one skill in competitions, meaning (defense - attack), differ in determining their physical and physiological capabilities when changing system of skill and moving with it. One skill may require specific physical elements, and when changing to another skill, other physical elements are required to accomplish work of skill. For example, moving from simple direct defense to direct attack.

Importance of research in preparing special exercises for speed and agility of player to work on their effect on physiological aspects and circulatory and respiratory system, through which they metaphorically affect defensive and offensive skills of foil player at different levels.

Through the researcher's knowledge as a fencing instructor and coach of the Al-Kut University College team for this sport, as well as a former player in Al-Hay Sports Club for fencing, it was observed that many physical programs have little effect on individual's physiological and skill condition. It can also be said that there is a clear deficiency in regulation and implementation of physical training programs that can affect individual's condition in aforementioned aspect. Reason for this is due to two aspects: either clear deficiency of coaches in not working in required manner to develop training programs that specifically affect player's condition, or deficiency of player in not adhering to what is given to in training unit by coach. The researcher prepared a physical training program and was keen to implement and work with it to observe its effect on player's condition physically, physiologically, and skillfully.

Research objectives are the research aims to develop a physical training program for foil fencers and observe its effect on physical abilities, physiological capabilities, and offensive

skills. Research hypotheses there are statistically significant hypotheses in pre- and post -test measurements of physical program on physiological and skill capabilities of foil players.

Research Methodology

The researcher used experimental method. The research sample was chosen purposively from players of Wasit University - Al-Kut University College fencing team, numbering (20) players, and they were divided into (5) players on whom exploratory experiment was applied and (15) players on whom physical program was applied.

Table 1. Distribution of the research sample

Sample of exploratory experiment	Wasit University players	Al-Kut University College players
5	8	7

Table 2. Results of t-test for the research group

Variables	Measurement unit	Mean	Standard deviation	Calculated (t) value	Sig. level
Age	year	19,22	0.86	1.01	0.29
Height	cm.	16.82	7.92	0.35	0.68
Mass	Kg.	64.16	7.99	0.48	0.46

Tabular t-value is 2.04 at 0.05 level.

It is clear from the table above that all values of (t) test for the research group under study were less than the tabulated (t) value, and this indicates that there is equivalence between group of individuals in the research sample under study.

Data collection tools

- Data collection form for the research sample tests.
- A measuring tape for measuring length.
- A medical scale for measuring weight.
- A dueling arena.
- Signposts – cones – whistle.

Training program

By reviewing scientific studies in field of training, a physical training program was prepared that includes exercises for speed, flexibility, oxygen endurance, and exercises to develop defensive and offensive skills of foil players, with aim of developing physical, physiological, and skill aspects of players.

Research-specific tests

First: Physical Tests

- Speed test – 30m sprint to measure maximum speed.
- Agility test – shuttle run.

Second: Physiological tests

- Anaerobic (phosphagen) capacity test.
- Anaerobic (lactic) capacity test.

Third: Skills tests

- Simple direct attack
- Direct defense

Exploratory experiment

The experiment was conducted on a pooled sample of 5 players from outside the research sample from 4/9/2024 to 6/9/2024 with the aim of understanding the scientific parameters of measurements and tests. Training the support staff on the nature of the work. Training on the accuracy of recording information during testing. The suitability of the equipment and tools required for the tests. Knowing how much time is needed to conduct the tests.

Study application

Pre-measurement: The researcher conducted pre-tests on the research sample from 7/9/2024 to 11/9/2024 according to the following application:

- Day 1 – Physical Tests
- Day Two – Physiological Tests.
- Day Three – Skills Tests (Defensive – Offensive).

Program application: The program was applied to the study sample from 12/9/2024 until 12/11/2024.

Post measurement: After the program was completed and for a period of (8) weeks, post-tests were conducted for the study sample from 11/13/2024 to 11/16/2024. Statistical analyses were performed (mean - standard deviation - t-test for pairs between pre-test and post-test measurements).

Results and Discussion

Table 3. Results of (t) test for significance of differences between pre-test and post-test of physical and physiological variables under study for the research sample (n = 15)

Variables	Measur ement unit	Pre-measurement		Post-measurement		Calcul ated (t) value	Sig. level	Change rate
		Mean	St.d	Mean	St.d			
Speed	Sec.	4.85	0.38	5.32	0.31	0.98	0.0001*	-10.34
Fitness	Sec.	5.38	0.81	4.43	0.54	0.41	0.0001*	-7.56

Anaerobic ability	Kg.m/s	36.52	6.98	39.87	7.12	0.76	0.0001*	15.65
Anaerobic capacity	Kg.m/s	35.94	6.82	40.11	11.65	0.93	0.0001*	16,34
Simple direct attack	Degree	24,28	4.58	30.23	3.34	0.86	0.0001*	17,23
Direct defense	Degree	8.37	1.98	13,13	1.22	0.97	0.0001*	16.45

*Statistically significant at significance level (0.05), tabulated t-value is (2.19)

Table (3) shows that physical program has an effect on all study variables with a statistical significance between the two measurements (pre- and post-tests) in favor of the post-test, as follows: Speed (-10.34), Agility (-7.56), Anaerobic Power (15.65), Anaerobic Capacity (16.34), As for the simple direct attack (17.23) and direct defense (16.45).

It has been shown that the physical program applied to foil fencing players positively affects physical elements such as speed and agility, due to the exercises it contains that help raise physical capabilities and its direct effect on the muscular system. This is confirmed by the study (Ibrahim Walid: 102).

It was found that there was a clear change in the physiological aspect of the foil fencing players in the research sample, as the effect of the physical program prepared by the researcher on the functional systems, which in turn positively affects the circulatory and respiratory system and increases the percentage of blood supply of oxygen to the muscular systems that work to perform physical efforts effectively. This is confirmed by the study (Malham: 128).

From a skill-based perspective, a significant change was observed when the physical program was implemented, due to the physical and physiological impact, the player's increased skill knowledge, and the potential for motor skills and ease of skill application.

Conclusions

Effectiveness of the physical program applied to foil fencers in light of research results and percentage of change. Effect of physical program on foil fencers from a physical standpoint. Physiological effect of physical program on foil fencers. Effect of physical program on foil fencers in terms of skill.

Recommendations

Generalizing the current research findings to coaches and players of foil fencing discipline. Conducting similar studies in different games. Need to work on developing physical training programs to reach required level.

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Appendix

Physiological tests

Anaerobic capacity test

The step test, lasting (10) seconds, is calculated using an equation after converting the height of the box surface from (40 cm) to (0.4 m) in order to standardize the units. The player places one leg on the box while the other is on the ground and extended with the back straight, so that it is not used to swing upwards, and continues for 10 seconds (up and down), after which each up and down is counted as one step . (Sayed: 162)

$$\text{Player's weight (kg)} \times 0.4\text{m} \times \text{number of steps in (10 seconds)}$$

$$\text{Oxygen capacity} = 1.33 \times \frac{\text{Player's weight (kg)} \times 0.4\text{m} \times \text{number of steps in (10 seconds)}}{\text{Time (10 seconds)}}$$

(Sayyid: 127)

Anaerobic capacity test

The test step lasts 30 seconds and is calculated according to the following equation.

$$\text{Player's weight (kg)} \times 0.4\text{m} \times \text{number of steps during (30) second)}$$

$$\text{Oxygen capacity} = 1.33 \times \frac{\text{Player's weight (kg)} \times 0.4\text{m} \times \text{number of steps during (30) second)}}{\text{Time (30 seconds)}}$$

(Sayyid: 127)

Physical tests

Speed test (30-meter sprint)

The purpose of the test: to measure maximum speed. Performance description: A 30-meter area is designated, then the player stands behind the starting line and prepares to start. The timekeeper then gives the starting signal to the player, who runs at maximum speed. The best

two attempts for each player, with a rest period of 2-5 minutes between attempts. (Al-Basati: 243)

Agility test

Shuttle running

The purpose of the test to measure agility. Performance description: The player runs a zigzag around four fixed posts. The first post is 3.60 m from the starting line, and the distance between the posts is 2.50 m. The player tries to avoid touching any of the four posts. The time is calculated from the moment of departure from the starting line until the return to it. (Al-Basati: 232)

Training Unit Model

	Exercise	Performance time	Set	Rep.	Load	Rest
Sunday	Light, zigzagging run	7 min.	1	3	30%	1 min.
First week	Speed exercises (30m)	—	3	3	60%	1 min.
	Regular walking with a change of direction (holding breath)	1 min.	3	3	50%	30 sec.
	Running with a change of direction	10 min.	3	3	60%	30 sec.