

The effect of ability training in developing some bio-motor abilities and the speed of counter-response performance in epee among fencing players at the College of Education and Sports Sciences

Dr.Isam Talib Abbas

University of Babylon / College of Physical Education and Sports Sciences/Iraq

Corresponding Author: Phy.isam.t@uobabylon.edu.iq

Abstract

The research study aims to: establish jump rope ability training for fencing players and to identify the effect of ability training on some of the bio-motor abilities and speed of counter-reaction of fencing players. The research assumed that there was an effect of ability training on some of the bio-motor abilities and speed of counter-reaction of fencing players. As for the methodology The research used the experimental approach with two equal groups. The experimental group used endurance exercises (see Appendix 1) for (6) weeks, each week with four training units, while the control group used exercises prepared by the coach, while the research community was represented by fencing players from the College of Physical Education and Science. Sports University of Babylon for the 2021-2022 academic season. The population of (20) players was selected and they were divided equally into two groups, control and experimental. The researcher used the statistical program (SPSS) to extract his results. The most important conclusions reached by the researcher are:

1. There is a clear development in bio-motor capabilities, such as the explosive ability of the legs and the speed characteristic of the legs and the armed arm (weapon carrier).
2. Increase the speed of the counter response (circular - response by change) for fencing players.

In light of the conclusions obtained, the researcher recommends the following.

- The necessity of using ability training to develop the bio-motor capabilities of counterattack in fencers.

Keywords: Ability , bio-motor , counter-response and performance.

Introduction

Sport has a major role in various aspects of life, whether humanitarian, social, or educational. This importance has become evident in recent years through the development of the lives of nations and peoples. Anyone who follows the course of the sports movement will notice the prominent and clear change as it is part of the state of comprehensive advancement of various aspects of life, measured by what has arrived. To our athletes at the Arab and international level, fencing is one of the ancient and ancient sports, with its roots dating back to our great fathers and grandfathers thousands of years ago. The importance of individual or team fights for survival has emerged, and through the historical progression of this ancient game, it has reached its current state of development, as it is a game of the past. Mixed with

the present, and this game, which was associated with courage and courage, still has not yet appeared at a level consistent with its originality and roots.¹

Fencing, like other sports, depends in performance on several functional and motor competencies, as any motor activity is closely linked to a motor response that may be defensive, quickly reacting to block, respond, or return, and this is closely linked to a counter-attack by the opponent. Therefore, you see... The athlete strives to achieve high level of adaptation with his functional and physical equipment, as this reflects positively on the speed of the motor response in general, which leads to the correct absorption of the counter-response, the correct work of defense and blocking, and thus reaching the desired level.²

Therefore, the importance of the researcher lies in studying the ability training and developing some of the bio-kinetic abilities and speed of the indirect type of counter response and the circular response in the sport of fencing among the research sample.

Research problem

The sport of fencing requires a lot of physical, motor, and skill abilities, and each game has its own characteristics in those abilities. As for the sport of fencing, it constantly requires many bio-kinetic abilities, which are often used during play, through the movements of the opponent and the correct timing of the speed of timing, blocking, and response to perform. The counter-response is by indirect change, from the upper lines, and the circular response. Most of the touches in the match depend on the correct timing of the performance by both competitors. The trained player who possesses a speed of motor response, explosive ability, motor speed, and strength characterized by speed is strong and fast, his performance and timing are correct, and from this the two researchers noted. Most college players have a weakness when performing a counter response, which is attributed to this weakness in the studied abilities because most of the movements in the counter attack depend on the opponent's movement, which means the first stimulus, which similarly executes the correct timing for the block and response in the stop shot and the timed counter attack, which are two types of counter attacks.

Research objectives:

1. Preparing ability exercises to develop some of the bio-motor abilities of epee fencing players.
2. Identifying the effect of ability training on bio-motor abilities and speed of counterattack (indirect counterattack with Al-Maghira and circular counterattack) with the epee weapon.

Research hypothesis

- There is a positive effect of ability training in developing the bio-motor capabilities and speed of counter-reactions of both types for fencing players.

Research field

- Human field: National team players, College of Physical Education and Sports Sciences/University of Babylon.
- Time frame: From 10/22/2021 to 1/5/2022.
- Spatial field: Fencing Hall of the College of Physical Education and Sports Sciences/University of Babylon.

Research Methodology

The researcher used the experimental method to suit the research problem studied.

Research population and sample

The research community was identified as fencing players in the College of Physical Education and Sports Sciences, third stage, University of Babylon/male, and the total number was (20) players, distributed equally in control and experimental groups in a random manner.

Methods, devices and tools used in the research

- Note.
- Metrics tests.
- Sources and the Internet.
- 10 dueling weapons.
- Head mask 10.
- Stopwatch 3.
- Sony camera 1.
- 10 jump ropes.

Field research procedures

Tests used

Testing the explosive ability of the legs³

- **Objective of the test:** Measuring the explosive ability of the legs.
- **Test specifications:** From a standing position facing the wall, the tester marks on the numbered wall the height of the arm using a whiteboard marker. The tester then performs the vertical stroke and marks the maximum point. The tester is also allowed to swing the arm twice.
- **Registration method:** The difference between the first and second points is calculated. Each tester is given three attempts, and the best attempt is counted.

Testing the strength characterized by speed for the legs⁴

- **The test :** Perform three forward jumps together from the ready position.
- **Purpose of the test:** Measuring the strength and speed of the legs from the ready position.
- **Tools :** Duel stadium.

1. A measuring tape fixed on the ground with a transparent tape or on one of its sides draws the starting line
2. Shish weapon.

Performance specifications:

1. The player stands in a ready position with the feet forming a right angle, the front foot facing forward and the other facing to the side, and the distance between them is (1.5) feet.
2. The knees are slightly bent, the front arm is formed at an angle with the weapon, and the forearm with the weapon is a line parallel to the ground, and the front of the weapon is facing forward, while the back arm is raised above the head.
3. From the aforementioned position, the player extends his legs forcefully and pushes the ground with his feet to jump forward and for three consecutive jumps as far as possible while remaining in the ready position.
 - **Register** : The distance is measured from the inner edge of the starting line until the last trace left by the player from the starting line (when the back foot touches the ground). Only one attempt is given and the distance is recorded.

Testing the strength and speed of the armed arm ⁵

- **The goal of the test:** to test the speed-specific strength of the fencing arm within (10) seconds
- **Purpose of the test:** Measuring the force and speed of the armed fencing arm.
- **Tools :**
 1. A legal shish weapon.
 2. A sign (a circle with a diameter of 20 cm was placed on it).
 3. Electronic stopwatch
- **Performance description:** The tester stands in a ready position and at an appropriate distance from the target so that he can touch the target (the circle drawn on the sign hanging on the wall) and only through the elbow joint of the armed arm, taking into account changing the height of the tester and the length of the tester, so that the center of the drawn circle is level with the tester's chest level, which is In the ready position, in addition to the referee placing the palm of his hand behind the elbow of the tester's arm, provided that it is not adjacent to the player's waist, this is to confirm that the armed arm is bent correctly after touching the target for the purpose of repeating attempts.
- **Register** : The number of attempts in which the referee is touched correctly is counted. The touch or attempt is considered a failure if it is outside the circle. It is also considered a failure if the referee's palm is not touched by the elbow of the tested player.

Performance evaluation

The speed of performing the counter-response (indirect response by change - and the circular response) was evaluated by installing a high-resolution recording camera type

(Sony), and the speed of performing the counter-response was calculated for the skill of responding by change and the skill of the circular counter-reply. The time was set for them through a form prepared for them.

Pretests

The researcher conducted the pre-tests for the research sample on Tuesday, October 25, 2021, at ten in the morning in the fencing hall in the College of Physical Education and Sports Sciences at the University of Babylon.

Equivalence and homogeneity of the research sample

Table 1. Shows the Levene value, the calculated T value, and the significance level of the research variables

Variables	Control group		Experimental group		(t) value	Sig.	Levene value	Sig.	Indication
	mean	STDEV	mean	STDEV					
The explosive ability of the legs	3.05	0.28	3.02	0.43	0.23	0.81	2.27	0.14	Non Sig.
The strength and speed of the legs	47.2	5.6	49.7	7	0.94	0.35	0.36	0.55	Non Sig.
The strength and speed of the armed arm	5.7	0.84	5.4	0.96	0.49	0.62	0.34	0.56	Non Sig.
Speed of performing indirect counter-response with Al-Maghira	0.54	0.31	0.53	0.37	0.26	0.08	0.62	0.6	Non Sig.
Speed of performing the circular counterattack	0.46	0.47	0.44	0.45	0.65	0.51	0.58	0.45	Non Sig.

Main experience

The researcher carried out endurance exercises and jumping rope to develop the explosive ability of the legs, as well as strength characterized by speed, and with an intensity ranging from 70-95% of the athlete’s level. The athlete was given endurance exercises with a rope with a variety of exercises, with intensities and times that were compatible with the prevailing energy system, and at a rate of four units per week. See Appendix (2) and all A unit containing four jumping exercises at different intensities, and each week an increase in the number of power jumps. This leads to an increase in training volume and maintaining the gradualness and fluctuation in training, as the number of power jumps ranged from (300-510) jumps for a period of 6 weeks. The control group used the same method used by the trainer.

Post-tests

The researcher conducted the post-tests for the research sample members on Tuesday (12/29/2021) in the fencing hall also in the same manner as the pre-tests.

Statistical methods used in the research

The researcher used the statistical program (SPSS).

Results and discussion

- **Presentation and analysis of the differences between the pre- and post-tests for the control group**

Table 2. Shows the differences between the pre- and post-tests in the variables investigated for the control group

Variables	Pretest		Posttest		(t) value*	Sig.	Indication
	mean	STDE V	mean	STDE V			
The explosive ability of the legs	3.01	0.43	4.1	0.73	3.1	0.01	Sig.
The strength and speed of the legs	49.8	7	59.7	6.8	4.7	0.01	Sig.
The strength and speed of the armed arm	5.4	0.96	7.5	1.58	3.84	0.04	Sig.
Speed of performing indirect counter-response with Al-Maghira	0.54	0.32	0.47	0.24	4.73	0.01	Sig.
Speed of performing the circular counterattack	0.45	0.44	0.41	0.33	6.19	0.00	Sig.

*At a significance level of (0.05).

After presenting the results of the pre- and post-tests to the control group, it appeared that there were statistically significant differences between the pre- and post-tests for all tests, and this means that the trainer’s method and style is proceeding with a good level of performance.

- **Presentation and analysis of the differences between the pre- and post-tests of the experimental group**

Table 3. Shows the differences between the pre- and post-tests of the variables studied for the experimental group

Variables	Pretest		Posttest		(t) value*	Sig.	Indication
	mean	STDEV	mean	STDEV			
The explosive ability of the legs	3.5	0.29	4.9	0.37	7.70	0.00	Sig.
The strength and speed of the legs	47.1	5.7	68.5	7.4	5.49	0.00	Sig.
The strength and speed of the armed arm	5.6	0.84	8	1.49	3.88	0.04	Sig.
Speed of performing indirect counter-response with Al-Maghira	0.54	0.37	0.44	0.28	5.37	0.02	Sig.
Speed of performing the circular counterattack	0.47	0.5	0.32	0.4	5.02	0.00	Sig.

*At a significance level of (0.05).

It was shown in Table (3) after presenting the results of the pre- and post-tests for the experimental group that there were statistically significant differences between the pre- and post-tests for all the variables investigated, as the value of the significance level (sig) is less than the significance level (0.05), which indicates There is a significant difference, in favor of the post-tests, in the variable of the explosive power of the legs, the force characterized by speed of the legs, the force characterized by speed of the arm carrying the weapon, the speed of performing the counter/retaliation by indirect change from the upper lines of the legal target, and the speed of performing the circular counterattack.

- **Presentation and analysis of the differences between the post-tests of the control and experimental groups**

Table 4. Shows the differences between the post-tests of the investigated variables for the experimental and control groups

Variables	Control group		Experimental group		(t) value*	Sig.	Indication
	mean	STDEV	mean	STDEV			
The explosive ability of the legs	4.90	0.73	4.10	0.73	2.42	0.02	Sig.
The strength and speed of the legs	68.5	7.44	59.7	6.88	2.74	0.04	Sig.
The strength and speed of the armed arm	8	1.49	7.5	1.58	0.72	0.04	Sig.
Speed of performing indirect counter-response with Al-Maghira	0.44	0.28	0.47	0.44	2.28	0.03	Sig.
Speed of performing the circular counterattack	0.34	0.40	0.41	0.33	4.23	0.00	Sig.

* At a significance level of (0.05) and a degree of freedom of 2.

It was shown from Table (4) that the value of the significance level (sig) for the post-test between the control and experimental groups is less than the significance level (0.05) for all research variables, and this indicates that the experimental group achieved better progress in the level of the studied variables than the control group, and this indicates that Ability training developed bio-motor capabilities,⁶ and these capabilities have a major role in developing the speed of counter-response performance for fencing players, because the sport of fencing requires high capabilities, speed, and strength in performance, and these training exercises have achieved changes and adaptations that have significantly contributed to the development of the variables investigated through training with various exercises.⁷

It is different with rope and ability training, and the development in the level of bio-kinetic capabilities includes explosive ability and the strength distinguished by speed of the legs and motor speed of the armed arm, all of which contribute to the development of the player to perform the skill,⁸ and it is the counter-response, which is one of the requirements

of the player to be integrated in his physical capabilities and movement, and for what the sport of fencing needs him to do.⁹ The proximity of the opponent to him and the speed and strength in performing the movement and executing the attack,¹⁰ the player needs a high explosive ability with a speed of reaction to return to the original position he was in before performing the attack, and this indicates that the player must train according to correct and accurate scientific foundations, and this is what was implemented in the program. Facility through the gradual and undulating training load and increasing the training volume, increasing the volume in training, development of the players, diversity in training, change in speed and technique,¹¹ as well as in rest periods, and all of this led to the achievement of the results and their development of the research variables studied.¹² In addition, the proposed exercises contributed significantly to the development of several basic elements, the most important of which is the development of the players' bio-motor capabilities and are relevant to the players' skill performance because they are close or similar to the motor path, and this is what Hamdi and Yasser pointed out: "The exercises serve to direct the integration of the fitness level of a particular element." As well as compatibility and a technical or tactical element, linking it to building the quality of character and psychological qualities of competition."¹³

Conclusions

1. A clear increase in the amounts of bio-kinetic abilities, which are the explosive ability of the legs, the strength characterized by speed of the legs, and the strength characterized by speed in the armed arm (carrying the epee weapon).
2. A clear development in the speed of the counter-response, the counter-response attack with change, and the circular counter-attack.
3. Training and training units are components of the training load that have a clear impact on the development of all the research variables that were studied.

Recommendations

1. The necessity of using ability exercises similar to performance in training the explosive ability and speed of the legs.
2. Focus on counter-response training because of its importance in surprising the opposing player.
3. Paying attention to the counter-attack and other types of response because they are of great importance in the sport of fencing in the epee and sword weapons.
4. Applying this program of training units and jumping exercises to other physical or movement variables in fencing and other games.

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