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The effect of rebound strength exercises to developing some physical abilities and the accuracy of stabbing by fencing weapons under 18 years

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Abstract
The research aims to identify the effect of rebound force exercises on some physical abilities and the accuracy of stabbing with fencing weapons for fencers under 18 years of age. The research community is determined by the players of the Kerbala governorate team for the 2022-2023 training season, whose number is (12) players, as the whole community was chosen to represent the study sample in a comprehensive enumeration method, as they were randomly divided into two groups (control and experimental), and each group had (6) fencers. The main experiment was applied to the experimental research sample for the period from 20/3/2022 to 25/5/2022. Noting that the training curriculum took a period of (6) weeks, with (3) training units per week, with a total of (18) training units, and the duration of the training unit ranges from (90) minutes, and the duration of the exercises suggested by the researchers ranges from (30-35) minutes from the time of the main section of the training unit. The repetitive training method (90-100%) of the maximum intensity was used, and the researchers used the time of the maximum exercise performance to determine the intensity of the rebound force exercises. The exercises were applied in the special preparation stage. One of the most important conclusions reached by the researchers is that the rebound force training caused a development in the explosive power, endurance of speed, and the force characteristic of speed for the experimental research group, and that the adoption of the repetitive method in performing the power training has a positive impact on the rebound force exercises.

Keywords: Rebound strength, physical abilities, stabbing accuracy

1. Introduction
In light of the developments taking place in the world, especially in the field of sports, there have been many methods and methods for developing the capabilities of the players, whether these abilities are skillful or specific to the practiced sport, such as the characteristics (strength, speed, strength distinguished by speed, and longevity of strength. etc.) which are needed by all players. According to his specialized sport. Fencing is one of the sports whose skillful performance style requires a quick attack towards the opponent in a sudden and surprising manner. The sport of fencing is one of these sports that require special skills and physical attributes. One of the most important of these qualities is muscular ability, since this feature combines strength and speed together, on which the fencer relies directly in performing most of his movements.
Achieving good results requires following the studied scientific training methods according to the work directed towards more knowledge of the properties of muscular strength, which is the basis in the practice of sports, and finding ways to develop the muscular ability of the individual, which is the common denominator for the performance of most skills in most sports.
Explosive power is one of the important compound motor capabilities in the sport of fencing, and it depends on two components: muscular strength and speed, and the combination of these two components together and expelling them explosively is evidence of the individual's possession of muscular ability. Strength or muscular power, or force distinguished by speed or explosive power. All these terms undoubtedly mean one meaning.
Accuracy is of great importance in most of the offensive skills in the sport of fencing, as it reflects the individual's ability to control complex motor coordination, and also means

reducing deviations or difference to the maximum possible extent from optimal performance. The accuracy of aiming at the opponent's chest, the results of a number of sports activities depend on the element of accuracy, including fencing. From this standpoint, accuracy is an important basis for learning and mastering sports motor skills in general and basic motor skills in the fencing game in particular. Developing muscular abilities that in turn affect the accuracy of stabbing with fencing weapons under 18 years.

1.1. Research problem
The skill of stabbing with fencing is one of the important skills in the sport of fencing, with direct decisiveness for special points, and sometimes it is decisive for the entire fight. Through the researchers' follow-up to most of the training units and local tournaments, and through conducting an interview with the specialist, it was noticed that the skill of contesting the fight does not rise to the required level, and this It may have several aspects, including the physical aspect, specifically the physical capabilities of the players, and from this standpoint. due to the lack of research in this field, especially in the sport of fencing, and the researchers' belief that scientific research is one of the most important means to find solutions to research problems. Therefore, this problem was delved into by preparing explosive power exercises and identifying their impact on muscular capabilities and the accuracy of stabbing with fencing weapons under 18 years.

1.2. Research objectives
- To identify the effect of rebound strength exercises on some physical abilities and the accuracy of stabbing with fencing weapons for fencers under 18 years of age.

1.3. Research hypothesis
- There is a positive effect of rebound strength exercises on some physical abilities and the accuracy of stabbing with fencing weapons for fencers under 18 years of age.

1.4. Research fields
The human field
Young players for the Kerbala governorate team for the 2022-2023 training season.

Time field
From 10-3-2022 to 25-5-2022.

Spatial field
Al-shaheed Muhammad Baqir Al-Hakim Hall in Kerbala Governorate.

2. Research methodology and field procedures
2.1. Research Methodology
The researchers used the experimental method in equal groups (experimental - control), with a pre and post-test, due to its suitability to the nature of the study.

2.2. Community and sample research
The research community was determined by the players of the Kerbala governorate team for the 2022-2023 training season, whose number is (12) players, as the whole community was chosen to represent the study sample in a comprehensive enumeration method, as they were randomly divided into two groups (control and experimental), and each group had (6) swordsmen.

2.3. Homogeneity and equivalence of the sample:
The researchers found homogeneity and equivalence in the primary variables and the dependent variables, using appropriate statistical methods, as shown in Tables (1, 2).

Table 1: Shows the homogeneity of the sample:

N	Variables	Measuring unit	Test value (Leven)		Sig type
			Calculated	Sig level	
1	Age	Year	1.333	0.555	Non sig
2	Training age	Month	0.898	0.321	Non sig
3	Mass	Kg	0.888	0.783	Non sig
4	Length	Cm	1.033	0.423	Non sig

Table 2: Shows the equivalence of the sample using the t-test for independent samples

Variables	Unit	Control group		Experimental group		t value calculated	Sig level	Sig type
		Mean	Std. deviation	Mean	Std. deviation			
Explosive power of legs	Cm	27.212	3.998	27.111	4.012	1.987	0.986	Non sig
Speed endurance	Second	6.787	1.887	5.776	1.568	2.201	0.825	Non sig
speed Distinctive strength	Second	27,221	4,674	27.121	4.092	1.996	0.098	Non sig
Accuracy of stabbing	Number	3.666	0.902	3.531	0.782	2.004	0.735	Non sig

2.3. Devices and tools used
- Notes.
- Testing and measurement.
- Metal tape measure.
- Test results registration form.
- Sony personal computers.
- Korean-made HP portable computer.
- Fencing weapons, number (6), foil.
- Colored adhesive tape.
- Whistle.
- Two (2) stopwatches.
- Indicators number (8).
- Weights of different weights.

2.4. Research Procedures
2.4.1. Determine the tests that express the variables of the study under study
Through studies, scientific research and multiple references that targeted and dealt with training programs in the sport of fencing for the purpose of developing physical abilities and basic skills Tests to measure physical abilities and basic skills under discussion. After polling experts and taking their opinions, all tests were chosen because they got a very high percentage:

2.4.1.1. The vertical jump test from stability (for Sargent)
(Allawi, Muhammad Hassan and Radwan, Muhammad Nasr al-Din, 1994, pp. 84-87) [9].

Purpose
To measure the explosive power of the muscles of the legs.

Tools
A smooth wall of suitable height, and a measuring tape.

Description of the performance
The player stands facing the wall and extends the arms as high as possible and makes a mark on the wall, noting that the heels are not lifted from the ground. He records the number that was marked in front of him from a standing position, the player swings the arms down and back with the torso bent forward and down with the knees bent in half (right angle). Then the player extends the knees and pushes the feet together to jump up, and with a swing of the arms, he moves forward and upward to reach them to the maximum possible height, and then places another mark until the highest point he reaches.

Test instructions
- The push should be done with the feet from a standing position.
- Before the player jumps up, he swings the arms forward and down to adjust the timing of the movement in order to reach the maximum possible height.
- Each player has two attempts to score the best of them.
- The number recorded by each player is announced to the next player to ensure the competition factor

Register
The degree of the tester is: the number of centimeters between the line he reaches from the standing position and the mark he reaches as a result of jumping upwards. Figure (6) shows the vertical jump test from stability.

2.4.1.2. Speed endurance test (30 m×5)
Purpose: To measure speed endurance.

Tools
A playground, a stopwatch, and a distance of 30 meters with two funnels.

Performance description
The tester runs the first distance (30 m), then rests (10 seconds), then returns to run the second distance (30 m), then rests (10 seconds), again, then runs for the third time, and so on, until he has run (5) times for a distance of (30 meters), with rest between them (10 seconds). Between each space and the other.

Register
The total running time is calculated as the player's average speed endurance.

2.4.1.3. Partridge test for the maximum distance in (10) seconds
(Ahmed, Qais Naji, Bastoissi, 1987, p. 345) [10].

Purpose
To measure the rapid muscle capacity of the two men separately.

Tools
Measuring tape, rope to draw lines on the ground, playground.

Description of the performance
(Standing on one foot) the partridge for the maximum distance on a line drawn on the ground in a time of (10) seconds, without stopping or touching the ground with any part of the body other than the foot of the partridge.

Register
The distance is register in a time of (10) seconds, an indicator of the muscular ability of the man. The test is repeated on the second foot, and the level is measured.

2.4.1.4. Testing the accuracy of the stabbing motion
(Al-Khaqani, Beian Ali, 1997. p.187) [11].

Purpose
To measure the accuracy of the stabbing movement.

Tools
1. A figure representing the legal target (a dummy) fixed on an iron base by means of an iron lube.
2. An electric vest that represents the legal target of the fencing weapon, wearing a personal dummy.
3. A German-made electrical device used in competition arbitration.
4. An Italian-made electric shutter weapon with a Belgian handle.
5. The hand thread is used to conduct electricity to the vest and weapon.
6. Electrical connectors to connect electricity from the main source to the device and then to the dummy (person) and the player with the weapon.
7. A wide colored adhesive tape, the width of the chest, on which 9 circles with a diameter of 5 cm are drawn. These circles are cut to show the legal target (the electrical network) behind them for the purpose of connecting the front (fly) of the weapon to the target to determine the accuracy of the touch.
8. A chair (bench) on which the laboratory sits.
9. A form for recording results. It records the number of correct touches within 15 seconds.

Description of the performance
The sign is placed on the court and then the electricity is connected to it, a line is drawn at a distance commensurate with the length of the player's stab, so that the player begins to perform the stab. The player begins to perform a direct, straight lunge in the direction of the target (the circles in the vest), and the tester gives ten attempts within fifteen seconds.

2.4.2. Exploratory experience
The researchers conducted the survey experiment on a sample of (4) players from the research community on 15/3/2022. Several objectives were achieved, including.
- The suitability of the test time.
- Adequate support staff.
- Legalizing stress on players and knowing the time of exercises.
- The validity of the devices and tools used in the main experiment.

2.5. Pre-test
The researchers conducted Pre-test on the research sample of 12 fencers in the closed hall of the Al shaheed

Muhammad Baqir al-Hakim at exactly 3:00 pm on 17/3/2022, and the data was emptied into a form and processed statistically.

2.6. The main experiment
The main experiment was applied to the experimental research sample for the period from 20/3/2022 to 25/5/2022. Noting that the training curriculum took a period of (6) weeks, with (3) training units per week, with a total of (18) training units, and it ranges The time of the training unit is (90) minutes, the duration of the exercises suggested by the researchers ranges from (30-35) minutes from the time of the main part of the training unit, and the repetitive training method was used (90-100%) of the maximum intensity of the supplementary player (2) and the researchers used the time The performance of the maximal exercise to determine the intensity of the rebound force exercises, and the exercises were applied in the special preparation stage.

2.7. Post-test
The post-test was conducted on (25/5/2022) under the same conditions in which the pre-test was conducted.

2.8. Statistical means
(Al-Yasiri, Muhammad Jassim, and Abdul-Majid, Marwan, (2001, pp. 144-167-203) [1].
Statistical treatment was done using spss system.
- Leven test
- Arithmetic mean.
- Standard deviation.
- T-test for correlated samples.

3. Presentation and discussion of the results
3.1. Presenting, analyzing and discussing the results of the experimental and control groups regarding the variables studied.
3.1.1. Presenting and analyzing the results of the differences between the pre and post-tests of the control group in the variables studied.

Table 3: The difference of the mean, its standard deviation, the value of (t) and the significance of the differences between the results of the pre and post-tests of the control group in the variables under study

Variables	Unit	Pre-test		Post-test		t value calculated	Sig level	Sig type
		Mean	Std. deviation	Mean	Std. deviation			
Explosive power of legs	Cm	27.212	3.998	29.423	4.887	11.232	0.000	Sig
Speed endurance	Second	6.787	1.887	6.212	1.333	7.121	0.023	Sig
speed Distinctive strength	Second	27,221	4,674	26.271	6.777	8.992	0.000	Sig
Accuracy of stabbing	Number	3.666	0.902	5.675	2.976	3.986	0.000	Sig

Table 4: The difference of the mean, its standard deviation, the value of (t) and the significance of the differences between the results of the pre and post-tests of the experimental group in the variables under study.

Variables	Unit	Pre-test		Post-test		t value calculated	Sig level	Sig type
		Mean	Std. deviation	Mean	Std. deviation			
Explosive power of legs	Cm	27.111	4.012	30.319	4.887	9.908	0.000	Sig
Speed endurance	Second	5.776	1.568	4.989	1.333	5.998	0.000	Sig
speed Distinctive strength	Second	27.121	4.092	25.271	6.777	6.782	0.000	Sig
Accuracy of stabbing	Number	3.531	0.782	7.987	2.976	4.012	0.000	Sig

3.2. Presentation the results of the differences between the two post-tests for the control and experimental groups in the variables studied.

Table 5: Shows the value of (t), the level of error, and the significance of the differences between the results of the post-test for the control and experimental groups in the variables under study.

Variables	Measuring unit	Control group		Experimental group		t value calculated	Sig level	Sig type
		Mean	Std. deviation	Mean	Std. deviation			
Explosive power of legs	Cm	30.319	4.887	29.423	4.887	6.887	0.007	Sig
Speed endurance	Second	4.989	1.333	6.212	1.333	7.978	0.000	Sig
speed Distinctive strength	Second	25.271	6.777	26.271	6.777	9.999	0.003	Sig
Accuracy of stabbing	Number	7.987	2.976	5.675	2.976	3.768	0.024	Sig

* Significant at the level of significance (0.05) if the error level is less than (0.05).

Table (5) shows that the error level ranged between (0.00 to 0.024) for all research variables, and it is smaller than (0.05), which indicates significant differences between post-tests at an error level (0.05) against a degree of freedom (12) in favor of the experimental group.

4. Discussing the results
By studying the results of tables (3, 4, 5), we find that there has been an improvement in the results of the researched tests for the control and experimental groups, in the post-measurement than in the pre-measurement, which indicates that the exercises prepared by the coach have positively affected the research variables for the fencing players. These exercises played a major role in improving the level of the players in the skill (accuracy of stabbing) through the development of an element (the explosive ability of the two legs - endurance of speed - strength distinguished by speed), and this means that "skillful characteristics can be developed and developed through other physical characteristics". (Mohsen, Saad, 1996. p. 162) [2].

It is clear from the foregoing that the experimental group members who underwent strength-rebound training have shown the results of the post-tests a significant progress through the significant differences in these tests. It has achieved good results in the studied research variables. (Mahdi Kazem Ali) asserts that increasing the ability to jump in general does not depend on maximum strength by lifting weights, but by jumping exercises with body weight (Ali, Mahdi Kazem, 1995, p. 338) [3]. Inad Zarzis believes that the moral development in the results of the vertical jump in the rebound force training works to develop the force, which in turn develops the explosive ability of that part, and this is reflected in the result of the vertical jump test, as well as the increase in the circumferences of the lower extremities resulting from the rebound force training, which worked on the development of strength for the lower extremities (Al-Sufi, Anaad Gerges, 1999, p. 50) [4]. Which positively affected the explosive ability of the muscles of the two legs.

And this is confirmed by (Behm, Sale 1993) [5] "that the development of muscular power and speed of performance can be done through exercises using rebound force, as it is of great importance in improving the level of performance of the nervous system and then leads to improving the speed of performance. Tolan states that strength has a prominent role in achieving good results when playing sports, especially with regard to producing force at the appropriate moment and speed, as the concentration of strength with increasing its speed is one of the distinguishing characteristics of good skillful performance (Tolan, Seddik, 1980, p. 30) [6].

The researchers agree with both (Muhammad Gamal El-Din, 1983) and (Ismail, 1996) that the physical exercises used (strength and speed) in the resistance exercises that were included in this method had a significant impact on developing the strength of the working muscles, which in turn worked to reduce the time of their performance. for testing, and the rebound force exercises had an effect on increasing the strength and speed of muscle contraction, as the exercises that were used had an effect on a greater number of muscle fibers participating in the performance, which was reflected positively on the test results (Jamal Al-Din, Muhammad, 1983, p. 87) [7].

The researchers attribute this to the impact of the rebound force exercises prepared by the researcher by adopting the method of high-intensity interval training and repetitive training and focusing on the development of speed endurance and strength, which is characterized by speed and explosive power mainly. The variables studied, which are considered one of the basics of fencing sport.

(Abu El-Ela) stresses that “training develops the ability of the muscular and nervous systems to overcome resistance that requires a high degree of speed of muscle contractions, which is an important factor in sports that require muscle contraction and relaxation in a short time” (Abu Al-Ela, Ahmed Abdel-Fattah, 2000, p. 99) [8] and this applies to the skill of challenging in fencing Being performed very quickly and in a short time to ensure obtaining a touch against the opponent on which the results of the fencing game depend.

5. Conclusions and recommendations

5.1. Conclusions

1. Rebound strength training resulted in the development of explosive power, speed endurance, and speed-specific strength for the experimental research group.
2. The adoption of the repetitive method in performing the strength exercises has a positive impact on the strength reflex exercises.
3. Rebound force training caused a clear improvement in the stabbing skill of the research sample.

5.2. Recommendations

1. The need for coaches to pay attention to developing explosive power, as it has a fundamental role in improving the physical and skill level of fencers.
2. Emphasis on conducting reflexive strength training due to its importance in developing the explosive power and the rapid ability of the torso, arms and legs.
3. The application of rebound force training has an effective effect in developing explosive power as well as its main goal is to develop rapid power

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Appendix (1)

Exercises prepared by the researchers and used in the research:

N	Exercises
1	Standing on the box by laying the foundation, then landing on the ground by placing the seated foundation, then jumping straight to the top and returning to the ready position. Then return to the box by stepping, not by jumping. The height of the box is from 20-50 cm.
2	From the standby position, advance three steps, advance normally, and perform the stabbing movement when the whistle is heard by the coach. Repeat the exercise for 15 seconds.
3	Standing on one foot. Pushing the leg on which the athlete is standing, jumping forward, and landing on the same leg.
4	Stand ready in front of the figure and stab the figure 3 stabs when the coach hits the player's armed arm and return to the original "ready" position. for 30 seconds
5	Stand on the left side of the agility ladder or any similar object that is more than 1-2 feet (30-60 cm) long. Push hard with both feet and land on the other side of the ladder.
6	From the lying position on the abdomen when the coach touches the weapon on the player's back, the player takes the ready position. For 30 seconds
7	The previous exercise is the same, but after taking the standby mode, the progress is (3) steps, the progress is normal. for 25 seconds
8	From the ready position push up and then try to pull the legs to the highest point close to the chest area. From the seated base position, jump to the highest point that can be reached with the extension of the leg during the jump, then descend to the seated base position itself
9	Throwing a medicine ball over the head weighing 2 kg
10	The player standing in front of the coach lays the foundation, and when the coach makes a movement with the palm of his hand, such as opening the hand and making the number five in front of the player’s face, the player quickly takes the ready position and returns to the foundation position. for 25 seconds
11	The previous exercise is the same, but making a movement with the hand of coach number five, then the player, after taking the uncharted position, takes 3 steps in reverse. for 20 seconds

Appendix (2)

A model for a training unit in the fourth week. The average intensity of the exercises used is (90%). The time allotted for the main part of the training unit ranges between (30-35) minutes.

Section	Exercises used	Intensity	Size	Rest between Repetition	Rest between groups
Main section	Exercise number 1	90%	2x3	90 second	2minutes
	Exercise number 5	85%	2x5	60 second	2minutes
	Exercise number 8	90%	2x3	90second	2minutes