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The effect of a rehabilitation program for the injured supraspinatus muscle and the injured small rotator in improving some kinematic variables for air weapons players 10m with special needs

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Abstract:

In recent times, physical education in its various branches, especially in developed countries, has become an intertwining element and perhaps essential with the rest of the other medical, educational and social sciences to take care of the disabled, rehabilitate them and develop their mobility and physical abilities to integrate them into society and make them productive individuals in it. Physical therapists, a sports trainer who specializes in rehabilitating and training the disabled, a social researcher, a psychological expert and a professional expert. These are all those who deliver the handicapped to safety so that he can face the burdens of his life naturally and depend on himself in achieving his requirements.

Keywords: *Physical therapists, rehabilitation, physical abilities*

I. Introduction

In general, injury is one of the main problems facing a person, as it stands as a major obstacle to the progress and development of his level and works to limit the giving and the capabilities that the disabled possesses, who in turn wants to employ these capabilities during the exercise of his daily activities, whether it is at home, the street or in his workplace On this basis, the concept of injury has become the subject of interest of many researchers, experts and specialists in the medical field, as they turned to study and research in order to find scientific methods based on the correct and sound foundations to reduce these injuries and find adequate solutions to them as much as

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possible in order to reveal their causes or reduce their occurrence Also, treating and rehabilitating the injury as soon as possible is a very important purpose in order for the injured person to return to his normal state

The semi-natural state so that he can return to his place in life, exercise his right in it, and take his place among other people through various therapeutic and rehabilitative means based on scientific foundations

Hence the importance of research in clarifying the role of therapeutic sports represented in preparing a treatment program to contribute to the treatment and rehabilitation of the muscles of the upper limbs injured as a result of overexertion when practicing archery and to improve the most important variables length of strength, flexibility and range of motion for archers with special needs.

And achieve a speedy recovery from injury and return to the stadiums with high physical efficiency.

Research problem:

The various games have high requirements in physical, functional and skill preparation and these requirements must be taken into consideration and attention to them as a prerequisite, especially the activities for disabled players and as a result of the physical, skill and technical requirements, which include a large training load, repetitions and rest between the different repetitions and groups, this requires the use of modern hospital and therapeutic methods Programmed to be at the level of developing the training curriculum, which contributes to preparing the player's ability to ensure his return as soon as possible to the stadiums. The handicapped in Iraq are among the categories that have proven their worth in obtaining gold medals and in all games and levels, and that attention to these athletes rests with the specialists and those interested in what they represent of the national wealth and It is noticeable that there are injuries that occur to them as a result of competitions and tournaments. If it does not take its optimal way of recovery, then it will. Negatively in the results of athletes in the future, and through the research of the researchers, I found that there are many athletes suffering from injuries in the upper limbs and did not find enough attention to them and for the purpose of identifying these injuries and trying to find the rehabilitation means complementary to the clinical treatment phase with the aim of speeding up access to complete recovery and trying to improve the aspects in length Strength and flexibility was the reason behind conducting research in order to further advance these players, and we should at least be concerned with them from the side, the length of strength, flexibility and range of motion, especially after the establishment of tournaments and matches, after which the disabled players are exposed to various physical and psychological pressures, and this is what prompted the researcher to use rehabilitative exercises With a therapeutic method to rehabilitate the supraspinatus muscle and the small rotator muscle affected by intermediate-degree tears and improve some strength, flexibility and range of motion for the disabled.

Research objectives:

1- Preparing a program that includes the use of short-wave therapy and rehabilitative exercises for the supraspinatus muscle and the injured small rotator in air weapons players with special needs

2- Identify the effect of the program of using short wave therapy and therapeutic exercises in improving strength, flexibility and range of motion of air weapon players with special needs.

Hypotheses:-

1- The proposed qualification program has a statistically significant effect between the pre and post- test for the experimental group and for the post-selection interest in the tests, elongation of strength, flexibility and range of motion

2- There are statistically significant differences between the pre and post- test in favor of the post -test over some variables, strength, flexibility and range of motion

Research fields: -

The human field: the sample included players from Diyala club with air weapons, a pistol and a 10-meter air rifle, with special needs from the injured in the supraspinatus and small rotator muscles.

The temporal domain: for the period from 1/2/2019 to 4/15/2019

Spatial domain: the physiotherapy room / men's section at the Medical Rehabilitation and Joint Diseases Center at the chest of the canal and Alrami Square in Diyala governorate.

II. Research methodology and field procedures:

Research Methodology:

In the field of scientific research, the experiment depends mainly in trying to study the problem and adjusts all the variables except for one variable called the experimental variable, which the researcher is working to adapt to know its effect in the research (1), so the researcher adopted the experimental method in the one group with the two pre and post -tests in order to suit it to the objectives of the research .

Research community and sample:

The good selection of the sample will reduce the sampling errors, which enhances the data and its accuracy conveyed to the research community. The sample was chosen by the deliberate method (which is freely chosen on the basis that it fulfills the objectives of the study carried out by the researcher (2). As the sample included players of pistols and air rifles. 10 meters from Diyala club players with unilateral paralysis of the lower extremities and who suffer from moderate muscle tear in the supraspinatus muscle and small rotator muscle with special needs and who were chosen by the deliberate method as the number of the sample members (6) injured players who had a recent injury. The program was applied to them, represented by therapeutic exercises with electrical stimulation, and they represent a proportion of the total research community, whose number is (12) players, as shown in the following table.

Table (1) shows the research sample

T	the community	the	The proportion of the parent community

		number	
1	research community	12	%100
2	The research sample	6	% 50

In order for the sample to be homogeneous, the following principles have been adopted to achieve this:

Uniformity in the severity of injury: - All members of the sample are afflicted (torn muscle above the spinal cord and small rotator muscle)

Homogeneity in Naturalization: All members of the sample are male shooters and those with special needs. (The sample is mixed; does it increase the homogeneity of naturalization)

Homogeneity: History of infection: All members of the sample are newly infected.

Research tools and information gathering methods:

The researcher used the following devices and tools that helped complete the research:

1- Scientific sources and references.

2- The International Information Network (Internet).

3- Tests and measurements.

4- Observation and experimentation.

5- A form for recording data and results for each swimmer.

6- A Japanese-made casio manual calculator.

7- Samsung electronics calculator, iron bar of different weights.

8- Weight, firing whistle.

9- A dynamo meter, a 40 cm graduated stick, a chair, a measuring tape (Vita), a small rope.

Determine the tests used in the research:

After that, a questionnaire form (Appendix 1) was presented to determine the appropriate tests to measure the strength, flexibility and range of motion of the subject of the research to the specialized experts and their number was (5). The tests that obtained a percentage of (70) and above were nominated as shown in Table (2) .

Table (2) shows the percentages for selecting experts for the tests under study			
Research Variables	Tests	Repetition	percentage
Strength elongation	Test pressure iron bar hands up until the exhaustion of energy	**4**	**80**
	Front Push-ups until power is depleted	**1**	**20**
Flexibility	Flexibility of Shoulders	**5**	**100**
	Flexibility of Belly	**1**	**20**
Range of motion	Retraction and rounding of the arms and shoulders	**4**	**80**
	Rotate in	**1**	**20**

First: The tensile strength test

Test name: iron bar presses up with two hands

The purpose of the test: to measure the muscle strength endurance of the muscles of the arms

Tools and measures taken:

1- Iron bar with different weights, weights, seat, firing whistle, recorder, assistants

2- Determine the bar weights and weights in light of the maximum strength of the laboratory

3- The assistant fixes the tester to the seat

4- Another assistant prepares the bar and weights for the lab

5- The laboratory gives an experimental attempt as a warm-up and an adaptation to the performance.

The method of performance: The laboratory lies on his back above the bench and then holds the iron bar in front of the chest with the hands and when the start signal is given, he extends and bends the arms as many times as possible until fatigue so that the bending is up to the chest and the extension is until the arms are fully extended and the laboratory gives one attempt.

Scoring method: The correct number of times per attempt is counted.

Second: The name of the test: The shoulder flexibility test.

The purpose of the test: to measure the flexibility of the shoulders

The tools used: - A graduated stick is (40) cm long.

- Description of the performance: - The laboratory lies in a linear fashion on its chest, and one of the assistants grasps his leg from behind, then the laboratory holds the stick and raises both arms to the top to keep his head at the bottom, then the arbitrator measures the vertical distance from the top of the stick to the ground.

Recording: The arbitrator measures the distance from the top of the stick to the ground and gives each laboratory three attempts and the best attempt is calculated for him.

Third: Test the range of motion of the shoulder joint - extension and adduction of the arms and shoulders.

The purpose of the test: - To measure the range of motion of the shoulder joint

- Description of the performance: - The person is in a standing position with the arm on both sides down in a vertical position adjacent to the body the left or right part is on the side of the wall so that the shoulder is touching the wall and the fist of the left or right hand is clenched so that the face of the hand is forward and the thumb finger of the fist is touching the thigh and the part The counter from the fist is touching the wall, and the feet are touching each other, and the knees and elbows are straight. Plumb as far as possible. The meter is turned off, the person relaxes, and the reading is taken.

Recording: The degree of calculation shall be in the unit of measure of the angle degree of the shoulder joint

Exploratory experience: -

The two researchers conducted an exploratory experiment on Saturday 2/2/2019 on a sample of shooters with special needs (3 shooters) and on tests (strength, flexibility, range of motion)

Pre-tests:

The two researchers conducted the pre-tests before starting the rehabilitative curriculum, which included the tests (strength, flexibility, range of motion) on Wednesday at 10 am on 6/2/2019 at Al Ramy Square in Diyala Governorate.

Proposed Rehabilitation Program:

1. The researcher took into account the principle of a gradual increase in the training load, from easy to difficult, by using passive exercises at the beginning of the curriculum (the first week), and then gradually increasing the difficulty of exercises in the following weeks by using self-resistance exercises (weight and body parts) in external resistance exercises.

2. The researcher took into account the diversification and change in the rehabilitative exercises used in terms of the type of exercises, their basic conditions, and the tools used.

3. The rehabilitation curriculum was implemented by the assistant work team and under the direct supervision of the two researchers.

4. Instruct members of the research sample not to expose the affected area to any external stress or trauma to avoid complications from the injury.

5. The stations training method was used to apply the vocabulary of the qualifying curriculum.

6. The application of the curriculum was at the rate of (6) rehabilitative units per week for a period of (6) weeks. Thus, the total number of rehabilitative units reached (30) rehabilitative units.

7. Graduation in the intensity of exercises, through the weights used in the curriculum.

Table (3) a model for the rehabilitative unit

The number of exercises in the first week	Performance time for each exercise	Repetition of Stations	Repetition of Exercises	Rest between repetitions	Rest between stations
5	60-55 s	5	60 s	20-15	3-2 minutes

Post- tests:

The two researchers conducted the dimensional tests of their research sample on Monday 8/4/2019 and they followed the same method that they followed in the pre-tests, after completing the prescribed period for the experiment, which lasted 6 weeks, and the researcher was keen to find all the conditions for the pre-tests and their requirements when conducting the post-tests In terms of time, place and means of testing.

Statistical methods: (1)

To treat the results, the two researchers used the statistical bag spss

III. Presentation, analysis and discussion of results:

Presentation and analysis of the results of the pre and post tests for the experimental group and discuss them

The researcher applied the tests on the main research sample for the experimental research group consisting of (6) air weapons shooters with special needs

Table (4) shows the results of the pre and post tests for the experimental group in the three tests

Statistical transactions / Name of the test	measuring unit	Pre		Post		Value (T) calculated	The probability value	Significance
		A	STD	A	STD			
Strength elongation	The number of times	14,33	3,01	30,17	4,07	**8,81**	**0,01**	Sign
Flexibility of Shoulders	Cm	12,50	2,07	**23,00**	**1,90**	**10,59**	**0,01**	Sign
The range of motion of the shoulder joint	Degree	**7,50**	**1,05**	3,33	1,21	**10,38**	**0,01**	Sign

Degree of freedom (n -1) (6 - 1 = 5) and level of significance (0.05), tabular value (t) = (2.57)

By looking at Table (4), which shows the results of the pre and post- test of the experimental group in the test of strength elongation, it becomes clear to us that the arithmetic mean of the pre-test reached (14.33), with a standard deviation (3.01), while the arithmetic mean in the post test reached (30,17), and a standard deviation (4.07).

When using the law of (T-Test) for correlated samples, the calculated value (T) appeared (8,81) and the probability value (0,01), which indicates its significance at a level of significance (0.05) and with a degree of freedom (5), and thus the difference is statistically significant and in favor of Post- test.

In the test of flexibility of the shoulders, it becomes clear to us that the arithmetic mean of the pre-test reached (12.50), and with a standard deviation (2,07), while the arithmetic mean in the post test was (23.00), and with a standard deviation (1.90).

When using the law of (T-Test) for correlated samples, the calculated value of (T) appeared (10,59) and the probability value (0.01), which indicates its significance at a level of significance (0.05) and with a degree of freedom (5), thus the difference is statistically significant and in favor of Post -test.

In the test, the range of motion of the shoulder joint, it is clear to us that the arithmetic mean of the pre-test reached (7.50), with a standard deviation (1.05), while the arithmetic mean in the post test was (3.33), and with a standard deviation (1.21).

When using the law of (T-Test) for correlated samples, the calculated value of (T) appeared (10.38) and the probability value (0.01), which indicates its significance at a level of significance (0.05) and with a degree of freedom (5), thus the difference is statistically significant and in favor of Post- test.

Discussing the results:

Through an analysis in Table (4) it was found that the best tests are the post-test, and the researchers attribute this development to the fact that the prepared approach led to the development of the kinematic range of the area under study in a satisfactory manner as the results showed the significant differences in all the variables under consideration and in favor of the post- test (length of force, Flexibility, range of motion)

The two researchers see this improvement in the approach prepared for player rehabilitation and rehabilitation, which is the process of renewing health and the ability to work. By means of means that can obtain the maximum physical-psychological-social potential for healing or maintaining disease in a chronic manner, and here the proper performance that is practiced continuously and in an organized form has a positive effect for life A pain-free daily as a result of the judicious use of a modified and qualified human and physical machine.

Rehabilitative exercises are: (specific movements for different disease cases whose purpose is a preventive treatment to restore the body to a normal or rehabilitative state).

And for this, it is preferable to use different modes of daily work, as they use assistive exercise, and there are special institutions for rehabilitation.

The researcher attributes this development to (that the increase in muscle strength, which is one of the important elements that affect endurance and increased strength, will result in an increase in muscle endurance, and that muscular endurance depends mainly on muscle strength and the safety of cooperation between them and the nervous system)

And that is that the post test of the variable length of strength indicates that the exercises focused on the muscular belt working on the shoulder joint, and this is really what the study under study aimed at and it achieves part of the second assignment.

The two researchers attribute this development to the nature of the rehabilitative curriculum and the accurate scientific foundations it contained, and it is evident that there is a remarkable development in measuring the test (approximation and distant). Muscle, its compression, how to develop its capabilities and the effect of exercises on strength elongation and flexibility, and is due to the effect of the proposed rehabilitative approach and to the therapeutic exercises used that have a clear effect.

IV. Conclusions and recommendations:

Conclusions:

1- The rehabilitative curriculum has an effect on improving the level of tests, the length of strength, flexibility and the range of motion between the pre-tests and the post-tests, and in favor of the post-tests.

2- The practice of therapeutic exercises prepared within the program has a positive effect on the work of the affected muscles

Recommendations:

1- It is preferable to adopt the implemented approach to improve the level of strength, flexibility and range of motion, and in achieving the qualification for swimmers with special needs

2- Preparing similar programs that adopt other treatment methods to treat such injuries and on individual and team games.

3- The need to pay attention to the provision of modern physical therapy methods to remedy the injury immediately after its occurrence, or to use the means to avoid the injury

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