

# The impact of a rehabilitation program for injured ligaments and shoulder muscles and their relationship to the level of achievement of air weapons players with special needs

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## **Abstract**

*The importance of research has crystallized in the development of a rehabilitation program consisting of rehabilitation exercises as well as a natural remedy (infrared) for the treatment of ligament tears and the rehabilitation of muscles working on the shoulder joint, as well as obtaining some of the necessary motor abilities such as muscle strength, accuracy, flexibility and the appropriate motor range of the joint as it was before the injury in order to achieve the highest possible achievement and able to make it perform optimally and return the movement of the joint naturally and in a short period of time. Relatively as much as possible, the movement of the upper limb depends mainly on the safety and effectiveness of this joint as well as the dependence of the archers mainly on it for what the effectiveness requires, either the goal of the research was in the preparation of a qualifying program and to recognize its effect using infrared and therapeutic exercises of ligaments and muscles working on the shoulder joint in the players of air weapons with special needs. The sample included (4) air-weapon gunmen 10 pistols and a 10-meter rifle from the players of and province Baghdad with the unilateral and bilateral amputation of the lower limbs and their number (4 shooters) the category of applicants and applied the research vocabulary on the sample of the research of the shooters category emerging with air weapons (10 meters) of special needs, concluded the researcher that the rehabilitation method has an effect in improving the level of physical abilities and the level of achievement either recommendations are the need to pay attention to the provision of modern physiotherapy methods to remedy the injury immediately after the occurrence or the use of preventive and therapeutic means to avoid injury as much as possible.*

**Keywords:** Rehabilitation of injuries, disabled, air weapons

## **I. Search definition**

### **1.1 Introduction and importance of research:**

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Exercise is a relatively high pressure on the joints, muscle tendons and spine in general, which may cause chronic injuries, especially in many sports, which focus on one muscle group alone, making them vulnerable to various injuries unlike other muscle groups and the injuries of the joint tendons are the most common injuries in the sports field since the most joints are responsible for the basic movement In the body and not the bones and shoulder joint is one of the joints that depend on it mainly in all sports, especially those that focus on the muscle group of the shoulder belt without other muscle groups, including the effectiveness of shooting, and that physical therapy works to restore the muscle tone of the injured muscles and the range of movement of the joint and the level of muscle strength that it was before the injury and relieve pain and inflammation

Despite scientific progress in various medical and scientific sciences and follow modern methods in the treatment and provision of devices and specialists, sports injuries are still increasing and in various games and activities and sports injuries occur often during competitions and increase as the intensity of sports competition increases, especially injuries of the motor system, because of the stress exerted during the exertion on the joints, ligaments, muscles, tendons and vertebrae of the spine, which may cause severe or chronic injuries in them, it is worth noting that the injuries may also occur in Recreational sports, school sports programs and sports with special needs, and the percentage of injuries increases if sports training is done in an unscientific manner or using sports tools not suitable for the athlete, including injuries shoulder joint injuries where this joint enjoys multiple axes of movement in different directions and wide tides, which at the same time makes it more vulnerable to injuries and a high percentage compared to other joints of the body because of the heavy pressure on the muscles, tendons and ligaments surrounding the joint.

As for the cases of disability are many and varied and occur for a number of reasons, including what is a birth, some of which are acquired and accordingly the person with special needs chooses the game or special sports event that is consistent with his injuries and his physical, mental and functional abilities because of the important role of these sports in their rehabilitation as well as having an effective social dimension to re-engage positively with society.

Physical therapy and rehabilitation exercises play an important and key role in completing the treatment of the archer after injury or surgical intervention and therapeutic exercises are one of the main means in the field of integrated treatment of sports injuries as sports therapy plays an important role in the recovery of the injured player and his return to the stadiums quickly as it works to increase the rate of muscle healing, and the speed of elimination of groupings and blood accumulations, As well as the speed of recovery of injured muscles and joints to their functions in the least possible time, the importance of research lies in the preparation of a treatment program aimed at rehabilitating the ligaments of the shoulder muscles affected by the rupture of the middle degree and improving the functional efficiency of the muscles working on the shoulder joint as well as improving some of the motor abilities of players with special needs To help the therapists in preparing the rehabilitation curriculum, as well as the lack or lack of rehabilitation programs, which led the researcher to delve into this subject and benefit from the results of this study and use the results of this study to serve the process of rehabilitation of sports injuries, especially for players with special needs.

### **1.2 search problem:**

Injuries are one of the most important problems facing the athlete and hinder his progress if it does not take its optimal way to heal to the negative impact on the results of athletes in the future because of its negative effects and negative dimensions on it that the occurrence of any injury in the shoulder joint will in turn lead to injuries and tears in the ligaments and muscles surrounding the joint and thus affect his movement and may lead to damage of ligaments and atrophy of muscles in the joint and high level of pain in the injury area if not treated early.

Rehabilitation is an important process to return the goal of the activity that he exercises before the injury occurs so that it can return to the level he was at before or close to the injury and that the shoulder joint injury is one of the most common injuries because of the direct importance of this joint in the actual participation in many of the movements performed by the body,

As for the methods of re-qualifying for the joint, these injuries differ edifying, including therapeutic exercises, which vary from time to time, intensity and repeat, depending on the type of injuries, the general health status of the injured, the severity of the pain caused by the injury, the injury of the shoulder joint, the dislocation of the shoulder, the muscle tension, and these injuries are located with the components of the shoulder joint of bones, tendons, ligaments, nerves, veins and veins that these parts are vulnerable to injuries, damage and damage in the case of the shoulder joint. People with special needs do not make progress at the level due to the tears in the muscle ligaments working on the shoulder joint, and due to the fact of excessive effort on this joint and the muscular imbalance between the muscle groups working in the injury area, attention must be paid to the treatment of injury and return to the field in the least time possible and the need to pay attention to rehabilitation and speed up the healing process using an appropriate rehabilitation method help in shortening the time limit for healing of the injury and thus improving the level of motor abilities and muscle efficiency of the muscles in which the disease occurred, which reflected negatively on those motor abilities to prevent exacerbation of the incidence of the disease. Secondary injury and speeding up the return of the injured to the same degree of physical and motor level before the injury or a level close to him to prevent muscular dystrophy and decrease the level of fitness of the player and through the observation of the researcher found that there are shooters suffering from injuries in the upper limbs and did not find sufficient attention to them and for the purpose of identifying these injuries and trying to find the rehabilitation methods complementary to the stage of clinical treatment was the reason for doing the research in order to upgrade more of these shooters

### **1.3 search goals:**

- 1- Preparation of an infrared qualifying program and therapeutic exercises of ligaments and muscles working on the shoulder joint in air weapons players with special needs
- 2- To identify the impact of the infrared and therapeutic exercise program in the treatment of ligament tears and strengthening of shoulder joint muscles in air weapons players with special needs
- 3- Identify differences between the results of motor abilities tests such as muscle strength, accuracy, flexibility, motor range and their relationship to the level of achievement with the air weapons of players with special needs

#### 1.4 Research hypotheses

1- The existence of statistically significant differences between the results of the physical abilities tests and the level of achievement of the Pre-and Post- tests of the research group and in favor of the Post- tests.

2- There are statistically significant differences between measurements (tribalandPost-) in the pain level of the shoulder joint and in favor ofPost- measurement.

#### 1.5 Research areas

1.5.1 Human field: 4(10m pistol) and 10m air rifle sorrel salvo shooters withspecial needs for their clubs in Baghdad province.

1-5-2 Time Domain:1/7/2018 to25/8/2019

1-5-3 Spatial Area: Ibn al-Qaf Hospital for Spinal Cord Injuries andSpecialized School in BaghdadProvince.

## II. Research methodology and field procedures

### 2.1 Research methodology

Each research has a scientific approach in light of which can reach the best way to solve the problem that makes up the research, so the researcher has chosen the experimental method to find out the problem of research and its objectives, as it represents the design of the same group with two Pre-and Post- tests.

### 2.2 The research community and its appointed:

A community of gun and air rifle players is identified 10 meters of andendeplayers in Baghdad province with unilateral and bilateral amputation of the lower limbs and suffering from ligament tears of the muscles working on the shoulder joint and who were selected in the deliberate way as the number of members of the sample (4) injured shootings who had a recent injury.

Table (1) Shows search sample

T	Community	Number	Percentage of the parent community
1	Research Community	12	100%
2	Sample search	4	33.33 %

### 2.3 Search tools and information collection tools:

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

1- Arab and foreign scientific sources and references.

- 2- International Information Network (Internet)
3. Tests and measurements
4. Observation and experimentation
5. Interview
- 6- Kleenic examination
- 7- The registration form of the data and the results of each rami.
- 8-Japanese-made Casiohand calculator
- 9- Five tennis balls
- 10-stick inserted (40) cm
- 1-Genome device to save the shoulder joint when far away, rounding, excessive tide and lifting.
- 12-Iron bar with different weights
- 13-weight, whistle
- 14- The treated staff

## **2.4 Identify the tests used in the search:**

### **2.4.1 muscle strength test:**

**The purpose of the test: measuring the muscle strength of the** shoulder joint do we need the joint joint and forearm because the shooter has a joint injury.

**Tools used:** The devicegrowsmeter.

**Description** of performance: From the position of standing, the injured person holds the handle attached to the chain of the device by the affected arm and pulls it according to the following cases:

- 1- To the front of the body, and the number of kilograms that the injured person can perform is read.
- 2- Then pull the handle to the side and read the number of kilograms that the injured person can perform
- 3- Then pull the handle back and read the number of kilograms that the injured person can perform

**Registration:** The number of kilograms shown on the dymometer obtained in each of the three cases is recorded from the drag mode to the front, back and side.

### **2.4.2 Flexibility test:**

**The purpose of the test:** measuring flexibility

**Tools:** Stick inserted (40) cm in length

**Description of the performance:** The detainee lies longitudinally on his chest and one of the assistants holds his leg from behind and then the laboratory holds the stick and raises both his arms up to remain with his head at the bottom and then the arbitrator measures the vertical distance from the top of the stick to the ground

**Registration:** The arbitrator measures the distance from the top of the stick to the ground and gives each laboratory three attempts and calculates the best attempt.

#### **2.4.3 Dynamic range measurement test mediated by the Kinova program in the following situations**

**The purpose of the test:** to identify and measure angles by situation, bending, d, rotation of the wild side.

**Tools used:** camera for photography, paper, pen, phosphor marks for the purpose of visa.

**Description of performance:** The first phosphorous points are placed in the area of the shoulder separation and the second in the area of the attachment is separated and the third in the area of the wrist separated and from the position of standing the injured:

- 1- Lift the arm up to the level it can reach and the body is photographed
- 2- Lift the arm back to the level it can reach and the imaging is done by the body
3. Lift the arm to the side and are photographed by the body
- 4- The arm rotates in front of the body to the wild side to the level to which it can reach and the imaging is done in front of the body.

**Recording:** Scoring angle, scoring the maximum range he can reach in both positions, bending and extending, turning to the wild side.

#### **2.4.4The test of the shootingbyTheS.S.A.D.A.andA10M.(Theminutesofthe**

Thepurposeoftesting: accuracy of correctiontothee-dv

No, no, no,

Description ofnodisease: The archer stands up tothe line of the t-line, Dave, who has affixed rudder, who carries the sand, anddoesallthe workofabat.

No, no

- Conditionsnottested.

As defined by the LawoftheGame

. - For each play I give 10 throws.

- The correct throws were recorded and the throwing was deleted.

- Registration from the outer edge ofacircle according tointernational law.

## 2.5 Exploratory experiment: -

The researcher conducted a reconnaissance experiment on 28/6/2018 on a sample of the archers with special needs (2 shooters) and on tests (muscle strength, level of achievement, flexibility, motor range)

## 2.6 Pre- Tests

The researcher conducted Pre-tests before starting the qualifying curriculum and included tests (muscle strength, achievement level, flexibility, motor range) on 30/6/2018 at the specialized school in Baghdad province.

## 2.7 Proposed rehabilitation program:

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

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

3. The qualifying curriculum was implemented by the assistant team and under direct supervision by the researcher.

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

5. The method of training stations was used in the application of the vocabulary of the qualifying curriculum.

6. The application of the curriculum was (6) rehabilitation units per week and for a period of (6) weeks, thus bringing the total number of rehabilitation units (30) rehabilitation units.

7. Gradualness in the intensity of exercises through weights used in the curriculum.

Number of exercises in the first week	Performance time for each exercise	Repetitions at stations	Repeat exercises	Comfort between repetitions	Rest between stations
	15 Sec	5	15 – 20	6 0 Sec	2-3 minutes

## 2.8 Post- tests:

The researcher conducted the after tests of their research sample on Wednesday, 25/8/2018 and they followed the same method they did in Pre-tests after completing the scheduled duration of the experiment, which lasted 6 weeks, and the researcher was keen to find all the conditions for Pre-tests and their requirements when conducting Post- tests in terms of time, place and means of testing.

## 2.9 Statistical means:

To process the results, the researcher used the statistical bag spss.

## III. Presentation, analysis and discussion of the results.

### 3.1 View and analyze the results of the Pre-and Post- test for the research group tests

Table 2 shows the computational medium and standard deviation of search variables in Pre-and Post-tests

Variables	Measurement	Pre-Test		Post-Test		Differences	Differences STD	Sig	Sign
		A	STD	A	STD				
Muscular strength	D	3.400	0.516	4.800	0.421	1.400	0.163	0.031	Sign
Motor range	D	130.5	3.808	145.8	1.317	15.3	1.136	0.024	Sign
Flexibility	CM	3.75	1.58	11.25	1.48	7.50	2.13	0.009	Sign
Shooting with an air pistol	D	58	3.954	73	2.011	15	4.813	0.013	Sign

**Morale when (Sig)(0.05), Degree of Freedom (N-1) = >4-1 = 3, Indication Level (0.05)**

### 3.2 Discussion of results

From the results that appeared to be the existence of moral differences between the Pre-and Post-measurement and the researcher attributed this result to the adoption of the use of the arm in the e-pistol, which adopts the use of motor disease to use one arm freely and without installation which increases the ability of the archer to control and control the stability of the pistol through the table (2) of the variable of the motor range we note the moral differences between the Pre-and dimension measurement in the motor range of the arm as the results indicated a gradual increase in the motor range during the weeks of the rehabilitation curriculum and towards reaching the full motor range of the arm in all movements.

The researcher attributed this to the improvement in joints and muscles as a result of the rehabilitation program, which included exercises in a way that facilitates the functioning of neuromuscular receptors, as the susceptibility of the joint means the possibility of movement of the joint more freely, and that by the development of the muscle's elongation, this will increase the motor range of the joint to the limits of the normal tides specified due to the shape, type and function of the joint. Rehabilitation exercises are essential in



rehabilitation programmes because of their importance, and in this regard Victoria et al 2013 is a valuable part of all rehabilitation programmes.

The choice to use qualifying exercises is a step in the right direction to rehabilitate sports injuries and increase the motor range, as he mentions (Jamal Sabri 2018) that muscle rehabilitation exercises contribute effectively to the speed of recovery from injury in the rehabilitation curriculum if the therapist uses the right type of prolongation during the rehabilitation process.

The researcher attributes this to the commitment of the research sample to apply rehabilitation exercises over the duration of the rehabilitation program and to the effectiveness of these exercises in the development of muscle strength because of the maximum contraction of muscles against fixed or mobile resistances and the method of work of fixed and moving muscle work, as the constant or moving muscle contraction works on the development of muscle strength in different proportions, with the possibility of muscle work by a different work which would develop the amount of muscle force, when using The constant tension occurs in the muscle without changing its length, i.e. without a change in the angle of the joint, and the development in this case depends on the amount of contraction obtained and the duration which was appropriate for the research sample, while the constriction of the central and decentralized types requires shortening or lengthening (i.e. a change in the angle of the joint) in the muscle and respectively, which also works on the development of muscle strength and that the development of strength in this method of contraction is greater than the constant muscle contraction. It is mentioned that In constant contraction, the muscle is working with a different tension and the amount of muscle tension varies by different angles due to the number of muscle fibers involved and the greater the resistance there is an increase in muscle tension resulting from the participation of a larger number of muscle fibers.

The use of rehabilitation exercises leads to increased muscle strength and in this regard, it is mentioned that these exercises work as a form of rehabilitation and accordingly they will be very effective, they are excellent for targeting special muscle groups, in addition to increasing flexibility (motor range) they contribute to the development of muscle strength.

## **IV. Conclusions and recommendations**

### **4.1 Conclusions: -**

- 1- The positive impact of the program on the treatment of injury and improvement of motor range, shoulder flexibility, muscle strength, and level of achievement.
- 2- Therapeutic exercises prepared within the program have had a positive impact on the functioning of the affected muscles.
- 3- Improved ratios for the research sample members in the variables in question

### **4.2 Recommendations: -**

- 1- The need to take care of the segment of people with special needs as they are an important national wealth as they represent Iraq in international forums and provide the means of physical therapy to remedy the injury immediately after the occurrence" or use modern means to avoid injury

2- Giving importance to such studies that are specific to the segment of people with special needs and taking into account the findings they have reached to avoid injuries as much as possible

3- Guided by the rehabilitation program under study when rehabilitating the injured shoulder joint for its effective effect in the treatment of injury as well as improving their motor abilities

4- Emphasizing the use of physical means when preparing therapeutic approaches aimed at improving physical and motor abilities

5. Preparing similar programs that adopt other treatments to treat such injuries

6. Circulating the program designed to treat the infection to rehabilitation and physiotherapy centers to benefit from it

7- The need to start with natural means that help relieve pain and inflammation before starting rehabilitation exercises

8- The need to gradually gradually qualify ing from easy to hard and complex with a focus on performing rehabilitation exercises for the exercise of exercise to return to the motor range and muscle strength before injury with optimal motor quality and efficiency

9- Consider that the rehabilitation program is applied individually

10- Conduct further studies, research, seminars and meetings on various shoulder injuries and their relationship to sports practice activities.

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