

The Effect of Therapeutic Exercises of Degree and Severity of Tear Tendon Muscle Tendon Rupture and Some Physical and Functional Variables for Athletes

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Abstract

The research problem included in the injury of the rotator cuff tendon rupture and the study aimed at - the number of therapeutic exercises severely and the degree of injury to qualify for the injury of the rotator cuff tendon rupture and some physical and functional variables for athletes - knowledge of the effect of therapeutic exercises severely and the degree of injury to qualify for injury to the rotator cuff tendon rupture and some variables. As for the research method, the researcher used the experimental method and by designing the experimental group with one pre-measured, middle, and dimensional measurement for its suitability and the nature of the problem.

Keywords: *Therapeutic exercises, muscle, rupture, physical and functional variables, athletes*

Introduction

The therapeutic exercises are one of the most effective means of physical therapy if used in an orderly¹, accurate and consistent way with the functional condition of the body, as all the aspects of sports rehabilitation depend mainly on the neuromuscular compatibility of all the body & systems, and recent years have witnessed a great development and diversity in the methods and techniques used in physical therapy, and Here we see the positive role of therapeutic exercises², which is one of the most important of these means at this stage, appears because of its positive effect, the researcher noticed that the tendons are more likely to be wounded severely on young players ;due to the excessive use of these muscles and the neglect to to maintaining it or strengthening it, whether by warming up and associated with total muscle prolongation or by using inappropriate weights during training, the importance of research lies in an attempt to prepare therapeutic exercises according to the degree and severity of the injury to treat a muscle tendon injury³.

Materials & Methods

Research Methodology:

The researcher used the experimental method in

designing the single experimental group with pre, middle and dimensional measurements.

Research Society

The researcher defined the research community in an intentional way, as the community included the players with tendons working on the shoulder joint (rotator cuff) in the clubs of the provinces of the southern region, ages (18_19) years, for some games, which included (3 handball - 1 weight - 3 aircraft - 1 foot (Goalkeeper) 2 gymnastics - 2 basketball), who accounted for 100%, as there were 12 injured players, the researcher Excluding 2 members of the sample, according to the opinion of the doctor who specializes in the occurrence of complications in the injury site, so the total of the research community was 10 injured players.

And For the purpose of ascertaining the site of the injury and its severity, a magnetic resonance examination was carried out at Al-Hussein Learning Hospital. Through the resonance report and the specialist doctor, the location, proportion and severity of the injury were determined.

Means and tools used in the research:

Data collection methods

Personal Interview2- Tests and measurements.3- Observation.

Data collection tools and devices:

- Manual computer number .
- A Chinese laptop computer type.
- Camcorder, number (1) type (Sony).
- Medical preparations of Dettol, Cotton, Gauze, and Adhesive Tapes to install the Pickup on the Body with Shaving Blades to remove the Hair from the place of the Pickups.
- EMG of USA Company.
- Dynamometer to measure muscle strength measured (in kilograms)

Field Research Procedures:

Defining the search variables:

Was selected Physical research variables (strength - and muscle endurance) and functional (the top of the electrical activity of the muscles - the area of electrical activity of the muscles through scientific sources and the opinions of experts with expertise .

Choice of tests and research metrics:

After the researcher was acquainted with many scientific sources and references for the purpose of choosing the appropriate tests and measures for the study variables, they were determined through scientific sources and in agreement with a number of experts and specialists to demonstrate their validity.

Exploratory Experiences:

The researcher carried out several exploratory experiments on 10/21/2019, regarding the first exploratory experiment, and it was conducted at nine o'clock on a sample of 3 players and in the physiology lab of the Faculty of Physical Education and Sports Science - Dhi Qar University, and they conducted a second exploratory experiment after 7 days passed And when conducting exploratory experiments, the researcher is keen to establish the same conditions and conditions in which the main experiment is, as much as

possible so that its results can be taken.

The first and second exploratory experience:

Their purpose: -

1. Ensure the validity and configuration of the devices and tools used in the tests
2. Ensuring the appropriateness of the tests prepared in the curriculum prepared by the researcher.
3. Learn about the work of the electrical activity in all its details.
4. Knowing the assistant work cadre and their number³ *.
5. Knowing the length of time required to take the tests.
6. Training on how to register.
7. to identify the difficulties facing the researcher.

Tribal tests for the research community:

The researcher used the tests that include the maximum force and the bearing strength of the research sample on 10/29/2019 at 9:30 am on Sunday in the halls of the College of Physical Education and Sports Science - University of Dhi Qar and coincided with the tests (maximum strength and bearing strength,) tests The electrical signal of the rotator cuff muscles, as the test was attended by all members of the sample as well as the auxiliary team:

The main experiment (first section):

As the first part of the main experiment included See Three weeks by three rehabilitative units for each week, as the first week contained fixed strength exercises with negative fixed stretching exercises without tools (as shown later in the program description).

Interlayer Tests:

The researchers conducted the interstitial tests four weeks after the application of the rehabilitation program on 12/1/2019 and according to the details mentioned in the description of the therapeutic exercises mentioned later to ensure the extent of the improvement and

response of the community to the exercises in the deltoid muscle affected by partial tear.

main experience (section two):

As the second section of the main experiment included four weeks with three different qualification units in the exercises applied for each week using therapeutic exercises with different intensity in where they were where the exercises were characterized by using mobile force and positive moving body weight that aims to increase the muscle strength and kinetic range of the joint as well as The development of muscle action by the occurrence of neuromuscular adaptation, which works to cause an increase in muscle strength as a result of the regulation of the work of muscle fibers and the regulation of the occurrence of nerve impulses.

Dimensional tests of the research sample:

The researcher carried out the post-tests of the research sample after completing the application of the vocabulary of the therapeutic exercises prepared by the researcher to the experimental group for the days, 1/2/2020.

Description of the measurements and tests used in the research: -

The researcher chose a number of tests and measurements, which were determined by taking the opinions of experts in the field of sports medicine and rehabilitation to demonstrate their suitability, which included the maximum strength tests and muscle strength and EMG (peak-area) test, and these tests are as follows:.

First: The name of the test: _ (Measuring the maximum strength of the shoulder muscles :) (4)

Purpose of the test:

Measurement of the constant maximum force of the affected arm, "maximum effort that can be produced to perform a single voluntary muscle contraction", As shown in Figure 1.

Test description:

The laboratory sits on a chair attached to the

dynamometer device so that the laboratory& stem is elongated and looking forward and its arm is stretched down and held with a fist attached to the device through the metal chain, then the laboratory is required by the agreed signal to keep the affected arm away from the stem and with maximum force

Test instrumentation:

The dynamometer.- Chair attached to the dynamometer.- Hollow tubular iron grip.- Metal chain

Registration method:

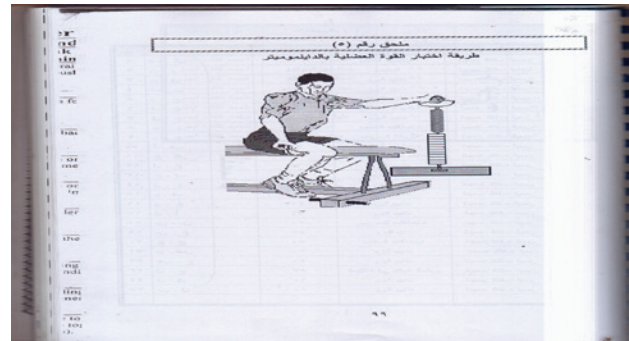


Figure 1. Shows the force test method for the dynamometer

Second: Test the strength tolerance of the affected arm :

Test name: _ Arm extended and lower side test (30 seconds).

The purpose of the test Measurement of strength tolerance of the deltoid muscle.

Devices and tools:

1- Mastaba height (50 cm).2- An electronic stopwatch.3- Dumbbell weighing 1.5 kg.

Performance specifications:

Sitting on a mastaba, straightly on the trunk and the affected arm hanging down to the side of the body and the fingers of the hand pointing towards the body, carrying a 1.5 kg dimple lifting the arm to the side of the body, i.e. when the humerus is in a horizontal position and has a 90-degree angle with the body at the shoulder joint and the arm back down fully extended , Repeats the performance as many times as possible.

How to record performance: It counts the number of correct times within 30 seconds.

□ **Registration:** The laboratory records the number of correct attempts made within 30 seconds. As shown in Figure (2)



Figure 2: Shows how to perform the test

Third: a test: measuring the electrical signal (vertex - area) of the affected deltoid muscle.

□ **How the device works:**

That the modern EMG device is a device with a weight of no more than 390 grams that connects around the waist of the player via a belt and this device sends Bluetooth signals (Bluetooth) about muscle activity to be received by another device known as the receiver for a Bluetooth signal connected to a personal computer (Lap Top), The advantage of the modern EMG device is to allow the player to perform all kinds of movements, bouncing, spinning, and running quickly 40 meters from the location of the receiver for the signal to record and store the EMG signal that represents the start and end time of the muscle activity and the electric amplitude of the muscle with the working space of the muscles working in the movement.



Figure (3) shows how to place the pickup during testing for one of the research sample members

Statistical Analysis

The researcher used the statistical package (SPSS) to analyze the results of the pre, intermediate and posttest tests using unscientific statistics due to the small size of the research community and the heterogeneity of its members in the mentioned variables, which included.

Results & Discussion

In order for the researcher to be able to know the objectives of his research and test his hypotheses in knowing the effect of prepared therapeutic exercises as the researcher presented the results of the tests in the pre, middle and post measurement of the affected experimental group as follows:

Physical and functional tests in the pre, middle and dimensional measurement of the maximum force and the force tolerance of the muscle muscle activity during the maximum force and the endurance of force ..

The EMG electrical activity tests of the muscle muscle activity during the maximum force and the force tolerance in the pre, mid, and dimensional measurements and the Friedman value.

Table 1. Shows Arithmetic circles, standard deviations, lowest value, and highest EMG electrical activity in pre, mid, and dimensional measurements

highest value	less value	Standard deviation	Arithmetic mean	Measurement	Measurement Unit	Processors Testing
1200.0	650.00	153.31	855.55	Kebili	MicroVault	Top EMG electrical activity for extreme strength
677.0	318.00	104.91	531.05	Middle finger		
282.0	165.00	40.87	218.86	*-dimensional		
128.0	62.0	17.516	82.82	Kebili	MicroV / s	EMG electrical activity space for maximum power
80.0	51.00	8.202	65.13	Middle finger		
58.30	30.20	8.161	42.53	*-dimensional		

1200.0	760.0	131.88	941.60	Kebili	MicroVault	Top EMG electrical activity to withstand strength
880.0	580.0	94.09	651.50	Middle finger		
340.0	119.0	81.10	232.70	*-dimensional		
	73.10	21.924	96.76	Kebili	MicroV / s	EMG electrical activity space to withstand forces
95.80	60.20	14.734	77.11	Middle finger		
63.30	42.10	8.058	52.76	*-dimensional		

Table 2. Shows Average ranks and Friedman value of EMG electrical activity test results in the pre-, mid-, and dimensional measurement of maximum strength and strength endurance.

Type of indication	Significance level	The value of Friedman Calculated	FS-3 Average level	Measurement	Measurement Unit	Processors Testing
corporate	0,000	17.00	3.00	Kebili	MicroVault	Top EMG electrical activity for extreme strength
			2.00	Middle finger		
			1.00	*-dimensional		
corporate	0,000	20.00	3.00	Kebili	MicroVault / a second	Activity space Electromagnet EMG for maximum power
			2.00	Middle finger		
			1.00	*-dimensional		
corporate	0,000	15.00	3.00	Kebili	MicroVault	Top EMG electrical activity to withstand strength
			2.00	Middle finger		
			1.00	*-dimensional		
corporate	0,000	19.00	3.00	Kebili	MicroV / s	EMG electrical activity space to withstand forces
			2.00	Middle finger		
			1.00	*-dimensional		

Sample size = 10

Significance level

EMG electrical activity tests in the pre, mid, and dimension measurements and Friedman& value.

Cont... Table 2. Shows Average ranks and Friedman value of EMG electrical activity test results in the pre-, mid-, and dimensional measurement of maximum strength and strength endurance.

Through our observation of the results of the average rank and the calculated Friedman value, which appeared in Table (2). **In EMG electrical activity test (peak-area) for maximum strength :**

We note that there is a noticeable decrease in the ratio of the electrical signal to the deltoid muscle between the pre and mid and post tests, and in favor of the post test in each of the peak variable. **EMG** And the area of electrical activity of the muscle. The researcher attributes that development to the peak variable of the electrical signal **EMG** For the deltoid muscle:

The therapeutic exercises and the type of exercises applied and are based on scientific foundations It has led to the significant ⁶ differences between the three measurements, by organizing and programming the training process and using the optimum stresses and repetitions through the rehabilitative exercises that are commensurate with the possibility of the injured through the tests that were conducted at the beginning of each rehabilitative unit with the codification ⁷ of the intermission times between each exercise and the other, which had a positive impact In developing strength for the deltoid muscle and its associated muscles through the repetitions and stresses used in the rehabilitation process⁸. Here, the researcher sees that the muscle has become more exciting to the motor units through the improvement of the functional work of the muscle and the economy in the effort, and this is what the researcher observed through Significant improvement in muscle activity Electrophoresis It is required in order to reach a certain level of muscle contraction ⁹⁻¹¹. The researcher sees that the area under the curve varies according to the time period for performance, as the work is extreme or extends for a longer period and it is directly proportional to the peak of the electrical signal in the muscle concerned with the work and according to the type of work, as he indicated (Muhammad Majeed) the greater the time period the greater the area What is below the curve, because it is caused by two main variables: the height of the peak of electrical activity and the time of this peak.

Conclusions

According to the research objectives and hypotheses, within the limits of the research community, field research procedures, and the results of statistical

treatments of data collected in the pre-intermediate and post-tests of the variables under discussion, the following conclusions have been reached: Therapeutic exercises have a positive effect in rehabilitating the injury of the rotator cuff muscles. The therapeutic exercises have a positive effect in developing the strength and endurance of the muscles working on the shoulder joint, and thus reflected on the improvement of the electrical signal (EMG) For the variables (summit and area).

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Department of Applied Sciences and all experiments were carried out in accordance with approved guidelines.

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