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Dr. Mustafa Ibrahim Abdel Karim Saleh
Lecturer, General Directorate of Physical Education and School Activity, Ministry of Education, Iraq

Corresponding Author:
Dr. Mustafa Ibrahim Abdel Karim Saleh
Lecturer, General Directorate of Physical Education and School Activity, Ministry of Education, Iraq

The effect of strength and flexibility exercises on the rehabilitation of wrestling players with shoulder joint injuries

Dr. Mustafa Ibrahim Abdel Karim Saleh

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Abstract

The current study aims to prepare strength and flexibility exercises and Determine the impact of strength and flexibility workouts for wrestling athletes recovering from injuries to their shoulder joints. The research's issue is that wrestling is regarded as one of the strong sports that demands a great level of physical power, and many wrestlers are susceptible to shoulder joint problems. The researcher employed a one-group experimental design with pre- and post-tests after suffering an injury during the battle. The selection of the research sample was deliberate and they are wrestling players in Diyala Governorate with shoulder joint injuries. After completing a medical assessment and diagnosis, the nature and extent of the damage was identified, and they numbered (3) players. Strength and flexibility exercises were applied to the research sample in three rehabilitation units in the Trauma Rehabilitation Center in Baqubah General Hospital. Significant differences were seen between the post-test findings, favoring the post-test. The most crucial factor in the rehabilitation of wrestlers with injuries to their shoulder joints was the efficacy of strength and flexibility training, the study determined. Suggestions: Use strength and flexibility exercises prepared by the researcher in rehabilitation centers to prove their effectiveness in rehabilitating players with shoulder joint injuries.

Keywords: Shoulder joint injury, strength and flexibility exercises

Introduction

A sports injury is one of the worst negative things that a player faces in his sporting career. It sometimes leads to a player burning out while he is at his peak. The injury has causes and causes, including tactical mistakes, high effort, and the wrong training load given to the player, or the player's lack of readiness, whether psychologically. Alternatively, his internal organs before exercise or competition. Sports injury is not limited to a specific category or level, but rather occurs at all levels, and the rates of this injury vary, simple, moderate, or strong. Strong collisions in the game of wrestling, such as pulling, pulling, and strong falls, expose people to many injuries, including Injury to the shoulder joint resulting from fatigue or poor performance, and the best way to rehabilitate a sports injury is through strength and flexibility exercises, as he believes (Fadel Kamel Mathkour and Amer Fakher Shaghati; 2008) ^[2] "When muscular strength is trained in accordance with scientific foundations and principles, it produces moral and functional benefits and also improves General health and general appearance, as well as increasing the strength and durability of bones, muscles, ligaments and tendons, developing cardiac function while reducing high cholesterol levels, as well as improving joint function while reducing the risk of injury. Flexibility exercises are also among the most important elements for rehabilitating a sports injury because they are the ability to move the joint within the range of motion. What is required for this sport and the lack of flexibility limits movement, reduces speed, and increases the chance of muscle tear," (World Council in Sports Medicine Course, 2015) ^[6] and This is where research becomes crucial in understanding how rehabilitation exercises help wrestlers in Diyala heal injuries to their shoulder joints.

Research problem

Injury is considered one of the psychological and physical problems that an athlete is exposed to, because some of it leads to the loss of the player if the type of injury is not paid

attention to and taken care of through rehabilitation through rehabilitative exercises. Sports injury occurs in the sports field due to the pressure that is placed on the body's systems and ligaments. And the joints of the body during the practice of sports activity, and since boxing is considered one of the strength games in which a lot of energy is expended and requires strength in performance, it is natural to be exposed to injury, whether the reason is a lack of preparation or a mistake in the performance, and among these injuries are in the body's shoulder joint. The curiosity of the researcher in this topic prompted him to delve into it and learn about its causes, seriousness, and how it occurs, through which he wanted to find a solution to rehabilitate injured players and come up with appropriate solutions to treat such sports injuries, by preparing strength and flexibility exercises in the rehabilitation of wrestling players with shoulder joint injuries.

Research objectives

- Preparing strength and flexibility exercises for the rehabilitation of wrestling players with shoulder joint injuries in Diyala governorship.

- Finding the best rehabilitation exercises for Diyala Governorate wrestling athletes who have suffered a partial rupture to their shoulder muscle.

Research hypotheses

There exist statistically significant variations in the study variables between the pre- and post-tests, with a tendency towards the post-tests.

Research fields

- **Human field:** A few wounded wrestlers from the Diyala match.
- **Time column:** (18/11/2023) to (8/1/2024)
- **Geographical domain:** Medical Rehabilitation Center in Baqubah Hospital

Fieldwork techniques and research methodology

Methodology of research

Given the nature of the study challenge, the researcher used an experimental strategy with a one-group design and two tests (A pre- and post-test).

Table 1: Shows the design of the experimental group with pre-test and post-test

Groups		Number of sample members	Steps			
			First	Second	Third	Fourth
Sample	Group Experimental	3	Pre-test	Rehabilitation exercises (Strength and flexibility)	Post-test	Difference between pre-test and post-test

Research population and sample

The research population was represented by wrestling players in Diyala Governorate, who numbered (5) injured players. As for the sample, they were players with a tear of the joint of the shoulder. The type of damage was identified by doing a medical examination and diagnosis. Three injured athletes were included in the research sample since they were specifically selected for the study. The treating physician's clinical examination revealed that the injury was a partial rupture of the shoulder.

Tools, equipment, and techniques employed in the study:

Techniques for gathering data

- Arabic and international references and sources.
- Individual interviews.
- Measurements and tests.
- Particular forms for pupils to report their exam results on.

Instruments and apparatus utilized

- One laptop-style electronic calculator.
- Siren identification (1).
- Tape adhesive.
- Documentation forms for test outcomes.
- A goniometer.

Methods used in field research

Assessing the shoulder joint's range of motion

- An instrument called a goniometer was used to measure the shoulder joint's range of motion.
- The upward bending motion

Arm explosive strength test: The test consists of throwing a 3-kg medicine ball from a standing posture while covering your head with your hands.

- **Purpose of the test:** To measure the explosive strength of the arms.
- **Tools used:** Medicine ball (3 kg), measuring tape.
- **Performance description:** The tester throws the medicine ball as far as he can without moving forward while standing behind a line and holding it over his head. Every examinee is given three chances, with the best effort being recorded for them.
- **Scoring methodology:** The distance is measured from the ball's closest position on the ground to the front edge of the feet (Behind the line).

Exploratory experience

On November 18, 2023, the researcher carried out an exploratory experiment using a sample of (2) people who weren't part of the research sample to see if the tests were appropriate and how to apply them, as well as the method of measurement, identifying the difficulties they face, and ensuring the validity of the tools used.

Pretests

Pre-tests were carried out by the researcher on Thursday, November 21, 2024, at 9:00 a.m. in the rehabilitation facility of a general hospital in Baqubah. The research sample consisted of three players who had damaged their shoulders.

Principal encounter

After conducting numerous in-person interviews with experts in the fields of sports rehabilitation and wrestling, the researcher used a variety of scientific resources to prepare and arrange the rehabilitation exercises based on her own experience. She then started "applying the appropriate rehabilitation exercises, which included strength and flexibility exercises, as well as on members of the

experimental group on November 25, 2023. Up until April 1, 2024, at the rate of three rehabilitation units per week for a period of six weeks, until the total number of rehabilitation units reached eighteen (18) units. The researcher determined the foundations for developing the exercises, which were represented by the following points: intensity, rest, and number of repetitions; in addition, the gradation in the exercises from easy to difficult to achieve the goals for which they were set; and

- Choose shoulder-specific flexibility exercises based on the joint's anatomical features and the direction of its muscle movement.
- Repetition in steps.
- Variety in the workouts.
- Confidentiality.
- The qualification curriculum's adaptability and appropriateness for real-world use
- In terms of repetition and total rest intervals, the severity of rehabilitation is directly correlated with the shoulder joint's degree of flexibility.

- The injured players in the research sample are intended to be qualified by the rehabilitation activities to resume training and competition.
If the athlete becomes weary or disinterested, stop performing the rehabilitation unit.
- Consider security and safety considerations.

Tests after the test

Following the completion of the "implementation of the qualifying exercises," the experimental group had post-tests on Monday, January 8, 2024, at nine in the morning, in the same location and with the same parameters as the pre-measurement.

Statistical techniques: The Statistical Package for the Social Sciences (SPSS) was used to process the search data.

Discussing the results of the study

Presentation and discussion of the study's findings with reference to the variables looked into

Table 2: Shows the arithmetic means and standard deviations between the test (pre-post) show the explosive strength of the research sample

No.	Statistical methods Variables	Sample number	Measuring unit	Arithmetic means		Standard deviation		Standard error	
				Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	Assessing the weapons' explosive power	3	Meter	4.33	5.50	0.523	0.906	0.213	0.370

Table (2) shows the relationship between the pre- and post-test arithmetic means and standard deviations of the statistical parameters for the research sample. In the strength test, the arithmetic mean in the pre-test was 4.33, with a

standard deviation of 0.523 and a standard error of 0.213. In the post-test, the arithmetic mean was 5.50, with a standard deviation of 0.523 and a standard error of 0.213.

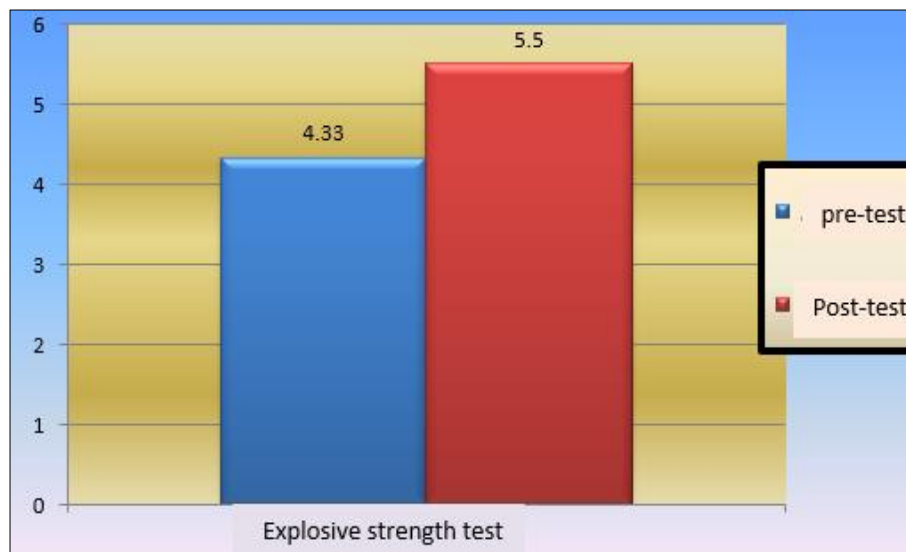


Fig 1: Shows the statistical differences between the explosive strength test's pre- and post-testing

Table 3: Statistical parameters and the computed and tabulated T-value for the study sample's explosive strength test pre- and post-tests

No.	Statistical methods Variables	Measuring unit	Arithmetic mean of difference	Standard deviation of differences	T value calculated	Level Sig	Type Sig
1	Explosive strength test	Meter	-1.166	0.458	6.226	0.002	Sig

Significant at error rates less than 0.05

The average differences, their standard deviations, and the value of (t) computed between the pre and post measurements for the research sample are displayed in Table (3). The computed t-value was (6.226), with an error rate of (0.002), which is less than the error rate (0.05). The

average differences in strength between the pre- and post-test were (-1.166), with a deviation of the strength differences (0.458). This indicates that the pre- and post-tests differed significantly from one another. For the posttest, please.

Table 4: The arithmetic means and standard deviations between the test (Pre-post) and research sample are displayed in Table 4

No.	Statistical methods Variables	Sample number	Measuring unit	Arithmetic means		Standard deviation		Standard error	
				Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
1	A test Raise the affected arm in front of me	3	Goniometer (Degree)	142.33	159.16	10.51	3.44	4.29	1.40

The arithmetic means of the flexibility test's statistical parameters for the study sample's pre- and post-tests are displayed in Table (4). The arithmetic mean in the pre-test of flexibility of the arm was (142.33), conversely, the

standard error was (4.82) and the standard deviation was (10.51). In the arm flexibility post-test, the arithmetic mean was 158.33, with a standard deviation of 4.41 and a standard error of 1.80.

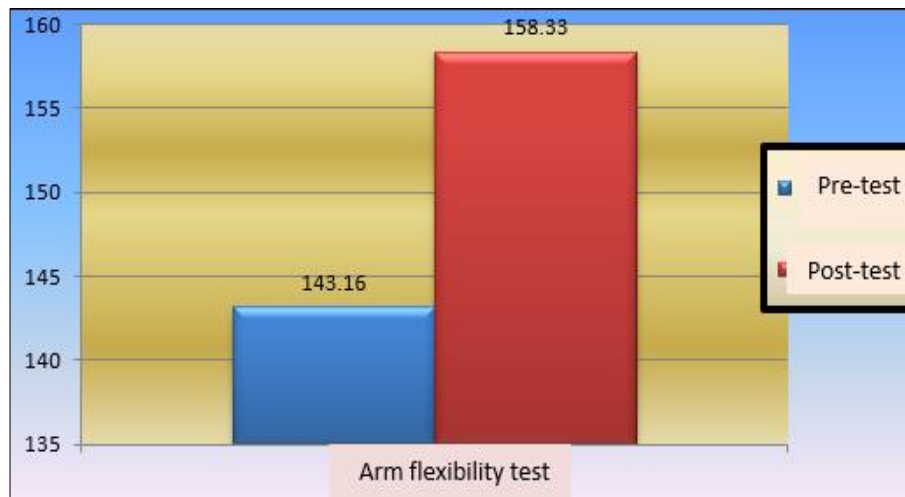


Fig 2: Shows the statistical variations in the flexibility test's pre- and post-test results

Table 5: The study sample's pre- and post-test results for the frontal arm lift test are displayed in Table (5) along with the statistical parameters and computed and tabulated T-value

No.	Statistical methods Variables	Measuring unit	Arithmetic mean of difference	Standard deviation of differences	T value calculated	Level Sig	Type Sig
1	A test Raise the affected arm in front of me	Goniometer (degree)	-16.83	9.410	4.381	0.007	Sig

Significant when error rate < (0.05)

The average differences, their standard deviations, and the T value computed between the research sample's pre- and post-measurements of strength are displayed in Table (5). The mean variations between the pre- and post-measurements of the flexibility of the arm appeared to be (-16.83), and the deviation of the differences was (9.410). The calculated T-value was (4.381) with an error percentage of (0.007), which is less than the 0.05 error percentage. This indicates that the variances are substantial both in the post-test's favor and between the pre-test and the post-test.

Discussing the Results

The study's findings make it evident that there has been a notable improvement, which the researcher credits to the workouts that were developed and focused on flexibility significantly during the period of implementation of the rehabilitation units, as obtaining a sufficient amount of flexibility for the muscles, tendons and ligaments of a specific joint or group of joints in a specific movement or sporting event depends. On the amount and intensity of exercises performed in a wide range of motion, as indicated by (Muhammad Ibrahim Shehata, Muhammad Jaber Bariqa'; 2000) [3]: "The goal of the exercise is to lengthen the muscles and move slowly until you feel a slight pain. Then, hold that position for a maximum of five to ten seconds." Improvement and enhanced flexibility result from relaxing the muscles and from carrying out the activity to

extend the muscles and muscular tissue following a time of stability. Demonstrates that damage to the muscles, ligaments, and cartilage is reduced when flexibility is present. (Othman, Muhammad, 2018) [4] (Abdullah Hussein Al-Lami: 2010.) [1].

As well as the strength variable, the researcher believes that the researcher's designed workouts are the cause of this improvement overall, which were developed scientifically by reviewing many scientific sources and taking the opinion of experts with experience and specialization, whether in the medical or sports field, and which relied on the idea of ranking activities from simple to Differences in the research's findings emerged as a consequence of the challenge and suitable repetitions.

as strength exercises were developed during the period of implementation of the program, as obtaining a sufficient amount of strength leads to an increase in muscle fibres, and this is what (Nabila Ahmed Abdel Rahman and others; 2011) [5] indicated, "The strength of muscle fibers can be obtained." During muscular work," as the researcher believes that developing muscle strength is an essential and important element in the rehabilitation program, and this is what the International Council indicated in the Sports Medicine course, "The use of exercises with gradual resistance is the most common training method in increasing muscle strength and rehabilitating muscles after injury".

Conclusion and Suggestions

Conclusion

- The research sample's shoulder joint's range of motion has improved thanks to the application of rehabilitation activities.
- The researcher's provided workouts, ranging in difficulty from simple to challenging, were found to be efficient in the rehabilitation of shoulder joint injuries in wrestlers.

Recommendations

- Awareness must be spread among segments of society and educated on practicing rehabilitative exercises, as they are of great benefit to healthy physiques.
- Emphasizing the necessity of spreading these exercises to people with shoulder arthritis.

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