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Rehabilitation Program for Injury to The Shoulder Joint Muscles and Its Effect On Some Athletes

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Abstract: This research is concerned with the design of a proposed hydrothermal rehabilitation program in an aqueous medium to reduce the severity of symptoms and pain associated with revolving tendonitis and the resulting muscle compression, anatomical and functional effects of the shoulder joint and attention to strengthening the scapular and pectoral muscles of the scapula and not only the focus on strengthening the revolving muscles (RC). The researcher has chosen the research sample intentionally from athletes with inflammation in the shoulder joint, where the sample size (8) individuals, and the size of the core sample (6) were injured while the size of the exploratory sample (2) injured were chosen from within the research community and from outside The basic sample of the research in light of the results reached by the researcher and based on the conclusions, the researcher recommends the following: The hydrological rehabilitation program prepared by the researcher in the Therapeutic Rehabilitation Department of the Specialized Sports Medicine Center is preferred and is used to treat and rehabilitate those with shoulder joint injuries. The need to emphasize the interest in warm-up exercises and their duration to avoid shoulder muscle injuries. The need to adhere to the progressive application of water exercises from easy to difficult to avoid injuries.

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Keyword: Shoulder joint, Habilitation, Hydrotherapy program, athletes

1. Research introduction and problem:

Recent years have witnessed a growing interest in practice and physical activity not only with the aim of competition and heroism but for the purpose of improving the level and developing the efficiency of physical performance and increasing production and enjoyment of life and adjusting the individual lifestyle for the better. Therefore, sports practice for all members of society is a necessity to face the negative effects and health damages resulting from scientific and technological progress and the accompanying diseases of lack of movement.

Sports injuries are considered one of the biggest problems that hinder training programs and impede the player to continue to implement them to the required degree. Injury means moving away even if temporarily from practice and thus landing at the general level of the player, whether physical or skill, because the injury often occurs suddenly, which makes predicting its location and time Their occurrence is very difficult and accordingly, the role of the sports educator is present during the occurrence of the injury, because it is difficult to provide medical assistance on the field most of the time during the training process.

The shoulder joint is one of the largest joints of the body prone to injury, because it is one of the broader joints, so it is exposed to the movement pressure resulting from the frequent performance of the artistic sports movements constantly at the highest horizontal level of the shoulder, especially the throwing and slinging movements, in addition to the formation of the shoulder joint, which consists of four separate joints. They work together at the same time, namely the glenohumera L, the acromoacular joint, the Sternochavicular joint, and the scapulotoracic joint, as well as the lack of the shoulder joint to support the lower muscular head, which facilitates the removal of the head of the humerus from the lower direction.

Where the shoulder joint depends on its main muscle, the deltoid it is aided by four small but important muscles that together make up the rotating muscles (rotator cuff). Three of the posterior muscles are the Supraspinatus muscle, the Infra Supraspinatus muscle, the Teresa Minor muscle, and the front one muscle, the Subs Capillaries muscle. These muscles play an important and major role in the stability and stability of the shoulder.

"Rehabilitation exercises" are considered one of the most effective natural methods of treatment,

which aim to quickly restore the affected part to its physical and functional capabilities, as these exercises contribute to the speed of removing blood clusters as well as the speed of muscle and joint restoration of its functions. The importance of rehabilitation exercises is due to two main goals, namely prevention various sports injuries and the return of the injured player to sports performance with the same functional and physical efficiency that the player had before the injury and as soon as possible.

Research objectives:

The research aims to design a proposed aqueous rehabilitation program in an aqueous medium and its effect on the injury of shoulder joint muscles by identifying:

1. The effect of the proposed aqueous rehabilitation program on the motility of the shoulder joint after infection of the muscles of the shoulder joint in some athletes.
2. The effect of the proposed aqueous rehabilitation program on the muscular strength of the shoulder joint after the infection of the shoulder joint muscle in some athletes.
3. The effect of the proposed aqueous rehabilitation program on determining the degree of shoulder joint pain after infection of the shoulder joint muscle in some athletes.

Research hypotheses:

1. There are statistically significant differences between the tribal and the dimensional measurements of the kinematic range (flexion - stretch - angles) of the shoulder joints in favor of the telemetry.
2. There are statistically significant differences between the pre and post dimensional measurements of the articular muscular forces of the shoulders in favor of the post dimension.
3. There are statistically significant differences between the pre and post measurements of the pain degree measurements of the shoulder joint in favor of the post measurements.

Used key words:

1. Shoulder joint:

It is a synovial joint of the spherical type (a ball and a dome), so the movements in it are done freely in all directions, and it is a joint between the head of the joint and the cavity of the shoulder blade bone. The cavity surrounded the anatomical neck of the joint bone.

2. Habilitation:

It is the continuous organized process that aims to deliver the disabled person to the medical, psychological, social, educational and economic levels possible that you can reach, as the steps in this process overlap.

3. Hydrotherapy program:

A set of kinetic activities (exercises with and without tools, competitive promotional recreational games) codified with positive effectiveness to achieve its goal and commensurate with the capabilities and preparations of practitioners to achieve improvement in some of the fitness elements of the mentally handicapped "procedural definition."

Procedures:

Curriculum:

The researcher used the experimental approach to its suitability of the research nature with experimental design for one group, while using pre and post measurement, due to its relevance to the nature of the research.

Sample:

The sample of the study consisted of (10) with shoulder joint inflammation, (7) are males and (3) are females and their injuries are of various causes. The research sample was chosen intentionally and it consists of (10) injured.

Data collecting tools and devices:

The researcher relied on collecting information and data related to the research variables that achieve its goal as follows:

First: tools and devices used in the research:

1. Medical ball weight (1 – 2 – 5) kg.
2. Weightlifting with different weights.
3. Ropes of rubber resistors.
4. Selected tests form for the experts.
5. The dynamometer.
6. Goniometer.
7. Swimming pool (1.5 meters depth).
8. Stopwatch.

Second: The proposed water rehabilitation program:

In order to develop a rehabilitation program using water exercises to qualify for shoulder joint muscle inflammation in some athletes, the researcher reviewed several scientific references and related studies that dealt with developing a water rehabilitation program and practical experience for the researcher, the program content was composed of water exercises, according to expert opinions And the number of them (5), then the program developed in its water image and tables No. (3 - 4 - 5) clarify the scientific transactions for the rehabilitation program.

2. Results explanation and discussion

First: results explanation:

Explain the first hypothesis which is:

There are statistically significant differences between the tribal and the dimensional measurements of the kinematic range (flexion - stretch - angles) measurements of the shoulder joint in favor of the dimensional measurement.

Table 1: An indication of the differences between the mean scores of the pre and post measurements in the kinematic range (fold - tide - angles) of the shoulder joint using the Wilcoxon barometric method (n = 8)

Error possibility	Z value	direction	Total rank	Post measurement		Pre measurement		Measurement unit	variables	
				± H	M	± H	M			
0.002	3.05	- zero +10 = zero	zero 55.00	19.77	144.2	32.32	110.6	degree	bending	Kinetic range of the shoulder joint
0.005	2.80	- 10 + zero = zero	55.00 zero	7.63	40.45	8.33	31.39	degree	stretch	
0.003	2.97	- 10 + zero = zero	55.00 zero	22.44	136.6	27.12	99.38	degree	angles	

Z value 0.05 = 1.96

Table (1) clarifies the following:

There are statistically significant differences between the degrees of the pre and post measurements in the variable the kinematic range (flexion - stretch - angles) of the shoulder joint under consideration as all error probability values are indicative at the significance level of 5... and the value: calculated more than the value of the tabular z and in the direction Telemetry.

Table 2: The improvement rate for the tests pre and post of the dynamic range variable (Flexion - stretch - angles) of the shoulder joint

Improvement percentage %	Post measurement		Pre measurement		Measurement unit	variables	
	± H	M	± H	M			
30.35%	19.77	144.2	32.32	110.6	degree	bending	Kinetic range of the shoulder joint
28.86%	7.63	40.45	8.33	31.39	degree	stretch	
37.45%	22.44	136.6	27.12	99.38	degree	angles	

Table (2) clarifies the following:

There are differences in the percentages of the percentage improvement ratios for the degrees of distance measurements from the tribal measurements in the dynamic range variable (flexion - stretching - angles) of the shoulder joint in question and in the direction of the dimensional measurement.

Explain the second hypothesis which is:

There are statistically significant differences between the pre and post dimensional measurements of the muscle strength of the shoulder joint in favor of the post dimension.

Table 3: Significance of differences between the mean levels of the pre and post measurements in the muscle strength of the shoulder joint using the well-known Lautrec metric method (n =8)

Error possibility	Z value	direction	Total rank	Post measurement		Pre measurement		Measurement unit	variables
				± H	M	± H	M		
0.002	2.57	- zero +10 = zero	zero 55.00	2.14	7.63	1.53	3.95	degree	Muscular strength

Z value 0.05 = 1.96

Table (3) clarifies the following:

There are statistically significant differences between the degrees of the pre and post measurements in the variable muscle strength of the shoulder joint under consideration where all error probability values are at the significance level 0.05 and the calculated z value is more than the tabular z value and in the direction of the dimensional measurement.

Table 4: Significance differences between the mean scores of the pre and post measurements in the degree of pain severity of the shoulder joint using the well-known La Barometric method (n = 8)

Error possibility	Z value	direction	Total rank	Post measurement		Pre measurement		Measurement unit	variables
				± H	M	± H	M		
0.005	2.45	- zero +10 = zero	zero 55.00	0.78	2.14	0.92	3.85	degree	Pain severity of shoulder joint

Z value 0.05 = 1.96

Table (4) clarifies the following:

There are statistically significant differences between the degrees of the pre and post measurements in the variable, the pain degree of the shoulder joint in question, as all error probability values are indicative at the significance level of 0.05, the calculated value of Z is more than the tabular value of Z and in the direction of the post measurement.

There are differences in the rates of the rates of spermatic improvement of the degrees of dimensional measurements from the tribal measurements in the variable of the pain degree of the shoulder joint in question and in the direction of the dimensional measurement.

Second: discussion:

Explaining the first hypothesis which is:

There are statistically significant differences between tribal and dimensional measurements of kinetic range (flexion - stretching - angles) shoulder joint in favor of dimensional measurement.

- **Measurement of the kinetic range of the shoulder joint when testing (flexion):**

According to our notes in Table (1), we find that the average pre-test for the variable of the dynamic range (flexion) is (110.6), with a deviation (23.32), and for the post-test (144.20) and with a deviation (19.77). The calculated value of T (3034) is greater than its tabular value (2.57) which means that the difference is significant.

Also, it appears from table (2) that there is an improvement rate between the pre and post measurement in the measure of the shoulder joint motor range when testing (flexion) of the sample in question, where the value of the improvement percentage reached 30.35%, as the average kinetic range in the pre-measurement was 110.6, where the average kinematic range of the shoulder joint when the (flexion) test after implementing the water training program increased to 144.2 degrees.

- **Measurement of the range of motion when testing (stretching):**

The mean for the pre-test for the tide test (31036) reached a standard deviation (8.33), the mean for the post test (40.45) and a standard deviation (7.63) while the calculated value of (t) was (3.04) which is greater than the tabular (2.57), which means that the difference is significant And in favor of the post test.

- **Measurement of the kinetic range of the shoulder joint when testing (angles):**

The mean for the pre-test for the angles test was (99.38), with a deviation (27.12), while the mean for the post-test (136.6) and the deviation (22.44) and the calculated (t) reached (7.83) which is greater than the tabular of (2.57), which means that the difference is significant.

The researcher sees the moral difference of this test between the pre and the post to the qualifying program used which includes several different qualifying methods that led to an increase in the ability of the number of muscles and ligaments and the ability of the joints to move (the flexibility of the joint) in all directions.

Explaining the second hypothesis which is:

There are statistically significant differences between the pre and post dimensional measurements of the shoulder joint muscle strength in favor of the post dimension. It is clear from Table (3) that there is an indication of differences in the muscle strength variable of the shoulder joint, where the arithmetic mean of the pre-test (3095) and the deviation of (1053), while the arithmetic mean of the post-test (7.63) and the standard deviation (2014) and the

calculated (t) computed (3.67) which is greater than the adult tabular (2057), which means that the difference is significant.

The researcher attributes this moral difference to the different training exercises and rehabilitative methods that the sample members applied on scientific and biomechanical foundations that have proven their effectiveness and their impact on the development of the muscle strength of the surrounding muscles, and with a similar path to skill and with different stresses and repeats that continued throughout the course of the curriculum, which led to an improvement in muscle strength and this is a result of increased The ability of the muscles to contract at a faster rate when performing successive movements.

This is consistent with what Mohamed Subhi Hassanein mentioned (2001). The training on continuous and intense repetition of exercises helps improve compatibility between the movements of the arms and the torso. And the two men and helps to improve the strength of the working muscle groups in a manner that serves the proper performance of the skill.

Explaining the third hypothesis which is:

There are statistically significant differences between the pre and post measurements of shoulder joint pain measurements in favor of the post measurements. It is clear from Table (5) that there is an indication of differences in the variable for determining the pain severity degree of the shoulder joint, where the arithmetic mean for the pre-test (3.85) and a deviation (0.92), while the arithmetic mean for the post-test (2014) and a standard deviation (0.78) and the calculated (t) (3.04) It is greater than the adult tabular (2.57) which means that the difference is significant.

The researcher attributes the differences between the two measurements in the degree of pain test to the design of the proposed hydrotherapy program and the appropriateness of the nature-injury exercises in terms of muscle direction, intensity, size and rest periods between the proposed rehabilitative exercises.

This is consistent with the study of Muhammad Al-Jayoushi (2013). Rehabilitation exercises and massages improve the level of pain level for the muscles and help in reaching the desired result, and this is in addition to hydrotherapy, returning the normal functions to its normal position again so the use of the therapeutic program led to an improvement in the level of pain level For the shoulder joint of the study sample that was conducted on the research, this showed noticeable progress in the measurements of the dimensions of all the search variables in the level of pain degree of the shoulder joint in favor of the post measurement.

First: conclusions:

In light of the research objectives and according to the scientific curriculum and the data collection tools and devices used by the researcher and due to the research procedures and also through data statistical analysis and its conclusions discussion, the researcher concludes the following:

1. The positive effect of the hydrotherapy program on infection of the shoulder joint muscles.
2. The emergence of a significant difference in the kinematic range of the shoulder joint (fold - tilt - angles) between the pre and post tests and in favor of the post tests.
3. The emergence of a significant difference in muscle strength between pre and post tribal tests, and in favor of post distant tests.
4. The effect of the aqueous rehabilitation program was positive on the decrease in the degree and severity of pain of shoulder joint muscular inflammation.

Second: recommendations:

In light of the results and data reached by the researcher and based on the findings, the researcher recommends the following:

1. The rehabilitation program prepared by the researcher in the Department of Therapeutic Rehabilitation in the Specialized Center for Sports Medicine and his use in the treatment and rehabilitation of people with shoulder joint injuries is preferred.
2. Approving the tests used to evaluate the work of the shoulder joint after the injury.
3. To alert the athletes and coaches of the necessity to carry out the procedures of water rehabilitation exercises on an ongoing basis for the purpose of strengthening the muscles of the shoulder joint because of this ease of injury and repetition.
4. The necessity to stress the interest in warm-up exercises and their duration to avoid shoulder muscle injuries.
5. The necessity to adhere to the progressive application of water exercises from easy to difficult to avoid injuries.
6. Using physical therapy methods and linking them in the rehabilitation process, as they have proven good results in treating this injury and relieving pain by a high rate.
7. Paying attention to the psychological aspect when implementing the program in a way that achieves the patients 'acceptance of treatment and interaction and adapting to it during the treatment stages, and this ensures the success of the rehabilitation process.

8. Conducting similar research by developing rehabilitation programs for people with pain in other areas of the body.

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