REHABILITATION PROGRAM FOR SOFT TISSUE INJURY TO THE SHOULDER BLADE AND ITS EFFECT ON THE CONCENTRATION OF ALDOLASE ENZYME AND STRENGTH ENDURANCE FOR ATHLETES

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Abstract

The sports environment is a fertile field for various injuries, as injuries multiply during the exercise of sports activities, and this is a phenomenon that requires the attention of all workers in this field, as it is one of the most important factors that force the player to stay away from sports competitions, as no field of sports is devoid of the possibility of injuries and Therefore, sports injuries have received great attention from the sports communities, as they are considered a pathological condition that must be known, identified and analyzed for their types and causes of their occurrence in order to reach the most appropriate ways to prevent them and how to treat them. As the number of sports injuries has increased significantly and significantly in recent times; As a result of the high effort in sports activities that require the performance of sports movements with high and medium stresses, and as a result of neglecting warm-up such as flexibility exercises, or the correct preparation of muscles to face the effort because the sudden stress of a specific part of the body, which may be more than the endurance of tissues, is what leads to injury. Excessive physical pressure is a cause of injury, and it may happen at a sudden moment, usually as a result of a mistake in application or an unexpected accident, or it may arise as a result of repeated injury to the same place or as a result of weakness in muscle strength, and therefore injuries occur, due to the technique in some activities that require Before entering competitions or training, the player must reach a high degree of warm-up.

Introduction

As many players are exposed to injuries, especially the muscles of the shoulder blade, because it is one of the synovial joints that enjoy a wide range of motion in various directions, as the movement is closely linked to the integrity of the ligaments and muscles around the joint, and as a result, the interest of scientists and researchers in the field of sports has increased for a short time. Immunology, as it deals with the different means by which the athlete's body can protect itself against various diseases during training or competitions, through periodic examination of sports injuries by examining immune cells, as the blood and the immune bodies it contains reach the components of the cell, and are linked The subject of immunity is closely related to the field of training and preparation for competitions, as the pre-competition stage is one of the most important and sensitive stages during the training season due to the diversity of its purposes between high loading to increase adaptation, then direct preparation to

participate in the competition to reach the level of special preparation to the maximum extent possible during the season. Sports", in addition to maintaining the level of form and equipping the athlete to face all the conditions that he is exposed to during the tournament, especially the phenomenon of excessive training and the accompanying weakness in the immune system, which may be a major cause of injuries. There are many chemical changes that give an indication of sports injury, which is considered one of the most important things related to the affected muscle tissues of the shoulder joint. By studying them, it is possible to determine the speed of their return to their condition before the injury, the faster return of the player to practice exercises and play optimally, and the extent to which the player's condition improves. After the injury is healed, in addition to the nature and degree of the pain associated with the injury, and through this, the range of motion of the shoulder joint will be at the best level, and thus the speed of the athlete's return to practicing his sports activity.Hence the importance of research in developing a proposed rehabilitative approach for soft tissue injury in the shoulder joint, because these muscles are important in helping athletes in performance, since the effectiveness depends on the movement of the upper limb mainly on the safety and effectiveness of these muscles in terms of range of motion and chemical and physical variables.

Research problem

Taking development in all fields means studying the smallest details, to develop and raise the required level in all sporting events in order to reach the player to the highest level to achieve high achievements, and for this reason the researcher decided to delve into this study by answering the following questions:

1. What is the reality of the changes that occur in the concentration of the aldolase enzyme as a result of injury?
2. What is the reality of the physical changes that occur in bearing strength as a result of injury?
3. Does the rehabilitation program have a role in rehabilitating the soft tissue injury of the shoulder muscles?
4. Does the rehabilitation program have a role in affecting the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles?
5. What are the changes that occur on the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after four weeks of applying the rehabilitation program?
6. What are the changes that occur on the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after eight weeks of applying the rehabilitation program?

Research Objectives

1. Preparing a program to rehabilitate a soft tissue injury in the shoulder for athletes.
2. To identify the effect of the rehabilitation program on the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles.
3. To identify the changes that occur in the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after 4 weeks of applying the rehabilitation program for athletes with soft tissue injuries in the shoulder.

4. To identify the changes that occur in the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after 8 weeks of applying the rehabilitation program for athletes with soft tissue injuries in the shoulder.

Research Hypotheses

1. The rehabilitation program has a positive effect on the rehabilitation of the soft tissue injury of the shoulder joint.
2. The rehabilitation program has a positive effect on the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles.
3. There are differences in the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after 4 weeks of applying the rehabilitation program for athletes with soft tissue injuries in the shoulder.
4. There are differences in the concentration of the aldolase enzyme and the force tolerance of the shoulder blade muscles after 8 weeks of applying the rehabilitation program for athletes with soft tissue injuries in the shoulder.

Areas Of Research

- Human Field: Athletes with soft tissue injuries in the shoulder joint.
- Time range: 2/11/2022 to 28/3/2023 AD.
- Spatial field: Al-Zuhur Hall in Al-Muthanna Governorate, Al-Jawadin Laboratory.

Research methodology and field procedures

Research methodology

The experimental approach is the closest research approach to solving problems in the scientific way, as it is an attempt to control all the variables and basic factors except for one or more variables that the researcher changes in order to determine and measure its scientific impact ( ), and because the nature of the research needs knowledge of (a specific) effect, so the researcher used the experimental approach by designing (one group with a time series) as this design consists of three tests (pre, medial, and post) and
the figure shows that

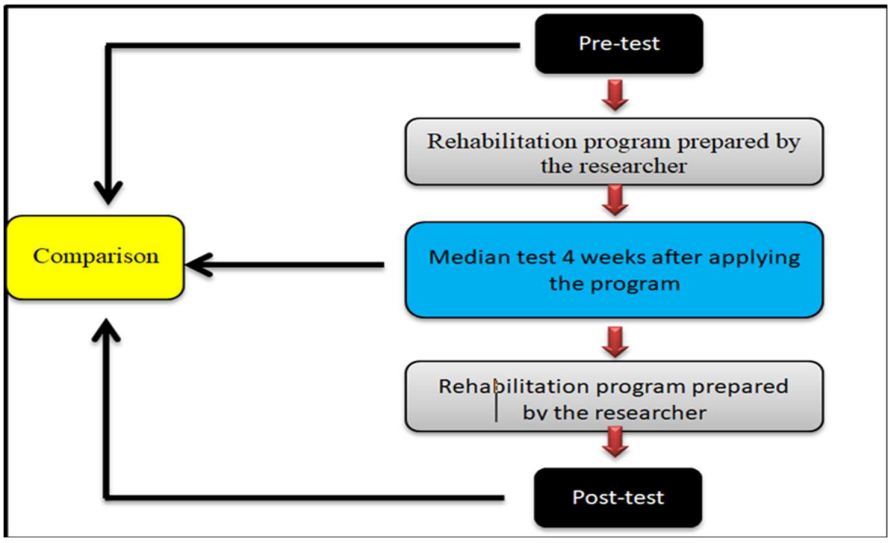

Figure 1 shows the experimental design

Research Community

The researcher identified her research community represented by the athletes with soft tissues in the shoulder blades of the sports clubs in the governorate of (Al-Muthanna), who numbered (5) players.

Research tools and devices used

What is meant by the method or method that the researcher can solve her problem, whatever it is, such as tools, data, samples, or devices, and for this he used many of them in order to reach that:

Data collection methods

- Arab and foreign sources.
- Tests and measurement.
- Registration Form.

Tools and devices used in the research

- Stopwatch.
- Sterile plastic syringes volume (10) milliliters.
- Medical alcohol.
- Cotton and sterile materials.
- Tubes size (10) milliliters to separate the blood inside the blood separation device.
- Bottles containing anticoagulant.
- Centrifuge (separation of blood)
- Electronic calculator (lenovo)
- Weights of different weights.

Research Procedures

Diagnosis Of Injury

At the beginning of the injury, a magnetic resonance imaging device (A.R.M) is used, as well as after recovery, because it is sufficient to detect the type of damage and the rate of recovery in the soft tissue injury in the shoulder joint. One of the most important reasons for using magnetic resonance imaging is that such an injury may lead to The area of origin was ruptured,

so (A.R.M) rays are taken, as they have an effective role in the process of accurate diagnosis. Through clinical examination and magnetic resonance imaging, the type of injury was determined, which is of the (moderate) type.

Determine the research variables and their tests

The researcher conducted a survey study on a number of scientific sources and previous studies, and in the opinion of the supervisor, the following research variables were agreed upon:

First - chemical variables

- Aldolis.
- Withstand strength.

Description of research tests

Characterization of the aldolase concentration test

- The aim of the test: to extract the aldolase concentration.
- Tools used: sterile plastic syringes size (10) milliliters, medical alcohol, cotton and sterile materials, tubes size (10) milliliters for separating blood inside the blood separation device, vials containing anticoagulant, Genex Count60 (Hematology analyzer)
- Method of conducting the test:

a sample of the player's blood is taken directly from one of the veins of the hands, where the player takes a sitting position to rest and extends the arm from which the blood will be drawn, as the place of withdrawal is sterilized by applying sterile alcohol, then the blood is drawn from the vein by inserting the needle needle horizontally with the vein and withdrawing (6me) of blood, then take out the needle and put a medical tape on the place of withdrawal to prevent blood and contamination from coming out. It is placed in a medical tube (SSTs) and sealed, and then placed in a centrifuge for a period of (5 minutes). temperature (37) and was placed in special tubes so that it can be analyzed in the laboratory to obtain measurements of physiological variables, as blood samples are entered into the centrifuge (centrifuge), which in turn works by separating blood components to obtain the serum, as the serum is transferred to the spectrophotometer analysis device) after It is fed with the variables to be analyzed through the electronic calculator linked to the device, as blood samples are placed in special places, and then three robots inside the device take over to complete the work. After the end of the analysis process, the device gives a special signal through a light stimulus, then the competent person works to give a directive through the calculator to show the results.

Figure (2) Method of drawing blood and the device used to extract the concentration of aldolase

The test of raising and lowering the outstretched arm to the side (30 seconds)

- The purpose of the test: measuring the force tolerance of the deltoid muscle.
- Equipment and tools: 50 cm high bench, electronic stopwatch. , Dumbbells weight 1.5 kg.

- Performance specifications:

Sitting on a bench with the torso upright and the injured arm hanging down next to the body and the fingers of the hand pointing towards the body, holding a 1.5 kg dumbbell. Raising the arm to the side of the body, that is, when the upper arm becomes in a horizontal position and forms a 90-degree angle with the body at the shoulder joint, and the arm returns to the bottom fully extended Repeat the performance as many times as possible.

Test conditions

It is not allowed to stop while performing the test.Notice the straightening of the torso during the stages of performance.Correct attempts are only when the arm reaches a horizontal position and forms a 90-degree angle with the body at the shoulder joint.

Recording: The tester records the number of correct attempts made within 30 seconds.

Exploratory experience

Scientific research experts recommend conducting exploratory experiments for the tests used in research in order to obtain the necessary reliable results and information, to benefit from them when conducting the main experiment, as well as in order to reach the best way to conduct the selected tests. The sequence of human thinking, which helps analysis, linkage, accurate scientific interpretation, avoiding negatives, and adding scientific knowledge to new pillars when implementing the main experiment in the research. This experiment took place in the Flower Hall in Al-Muthanna Governorate on Monday 11/14/2022 AD in the Flower Hall at three o'clock in the afternoon, as the players were tested with the variables of the efficiency of the shoulder blade muscles.The aim of conducting the exploratory experiment is based on several points.Ensuring the validity of the tests and the possibility of applying them to the elected sample and the extent of their response to the implementation of the tests.Pointing out errors and obstacles in order to overcome them.Training the members of the assistant work team to carry out the implementation of the tests, and to make them master the validity of the tests and write down the results to ensure the success of the educational process.The availability of the required capabilities in terms of the appropriateness of the specific places to conduct the tests on them, as well as the availability of appropriate tools for the tests.Knowing the researcher's ability to conduct the special tests, and knowing the time taken to conduct the tests.Preparing the requirements to maintain the health and safety of the testers.Finding the scientific weight of the candidate tests in terms of stability, honesty and objectivity.This experiment served its purpose

Scientific bases for test results

The validity of the test results

It means that the test actually measures the ability, trait, attitude, or willingness that the test was set to measure. That is, it actually measures what it intends to measure One of the basic concepts related to the validity or validity of the test is its ability to distinguish between the two sides of the ability that it measures, meaning To distinguish between healthy athletes and injured athletes. If the test scores were close, this indicates poor validity because the test did not carry out the main task in the measurement process, which is to show individual differences among the sample members. Accordingly, the researcher verified the validity of the tests used in the current research by comparing the scores of the healthy with the scores of the injured in the tests, that is, she used the method of discrimination - which is one of the methods of experimental validity - and the comparison is done by calculating the statistical significance

between the average scores (the healthy and the injured). There was a statistically significant difference between the two means that the tests could be said to be valid. The results were compared between the two groups for each test using the (t) statistic for two independent samples, and Table (1) shows that.

Table (1)The validity of the test results

Statistical significance	significance level	value t	healthy people		injured		measruing unit	variants
			p	s	p	s		
moral	0.000	6,174	2,122	23,500	3,536	5,400	kg	bear force

The table (1) shows that the values of the level of significance for the value of (t) for the independent samples and for all variables were less than the error percentage (0.05), and this indicates the presence of significant differences between healthy and injured athletes, which indicates the validity of the tests.

Test stability

The constant means "that the test gives the same results or close results if it is repeated more than once on the same group and in the same conditions" As the stability of the test was calculated using the (test and re-application of the test) method for shoulder blade muscle aptitude tests, as the researcher repeated the tests on the sample of the same exploratory experiment and under the same conditions and context, three days after conducting the exploratory experiment, and it was on 11/17/2022 AD, The stability coefficient between the two tests was extracted by the correlation coefficient law (Pearson), and Table (2) shows that

Table (2)The validity of the test results

Statistical significance	significance level	person value	The second test		The first test		measruing unit	variants
			p	s	p	s		
moral	0.000	0.998	3,763	5,300	3,536	5,400	kg	bear force

The table (2) shows that the values of the significance level of the Pearson correlation coefficient and for all variables were smaller than the error rate (0.05), and this indicates that there is a correlation between the first and second tests, which indicates the stability of the tests.

Objectivity of the test

Objectivity means "the independence of the results from self-judgment" and that the results of the tests are not affected by the change of arbitrators) (4) "The objectivity of the tests was taken in the presence of two arbitrators *, and it was found that there were no differences between the results of the two arbitrators".

Main Experiment

Pre-tests

Tribal tests were conducted for the research sample in Al-Muthanna Governorate, as they were conducted on different dates, due to the lack of availability of the sample in groups, but they were coming successively one after the other, because the sample with soft tissues of the shoulder blade muscles is not easy to obtain in one go, yet the researcher proved all the

conditions related to time And the place, for the purpose of benefiting from and applying them during the pre-test period, as well as to provide the same conditions in the intermediate and post-tests, as the pre-tests were conducted as on the dates shown in Table (3)

Table (3)Shows the dates of the pre-examinations for the injured

Fifth	Fourth	Third	Second	First	Injured
2023/14/1	2023/1/7	2022/12/3	2022/26/11	2022/26/11	test date

The second reconnaissance experiment

The researcher conducted a second exploratory experiment on 11/21/2022 at three o'clock in the afternoon, as all stomach exercises were applied by the researcher, and the aim of conducting the experiment is:

- Extracting the maximum intensity for each exercise used.
- In order to know the appropriateness of the exercises for the players.
- Knowing the time of each exercise.
- Knowing the appropriate rest period to do the repetitions.
- Ensure the availability of the necessary tools for the exercises.
- Knowing the number of exercises that will be applied during one training unit.

Qualifying Program (First Division)

The rehabilitation exercises prepared by the researcher were applied to the players with soft tissues in the shoulder joint, with different dates, because the recovery of the injured players was not in one period, as the rehabilitation exercises were applied in Al-Zuhur Hall in Al-Muthanna Governorate. The researcher included the following when developing the exercises:

- The duration of applying the qualifying exercises, the first section, was (4) weeks.
- The number of rehabilitative units reached (12) rehabilitative units, at a rate of 3 units per week.
- Rehabilitation exercises were applied on the days (Saturday, Monday, Wednesday) of each week.
- The researcher took into account the ripple in the distribution of intensity between weeks, units and rehabilitative exercises, as the ripple was (1:1) in order not to cause side complications affecting the affected area.
- The researcher took into account the gradual progression from easy to difficult in the exercises, with careful focus during the performance of the exercises, because such an injury requires concentration in its performance. The aim of this is to return the injury area to its normal position in terms of (strength + motor range) "where the necessity of giving rehabilitative exercises that strengthen the muscles and not to use long exercises.
- At the beginning of the training units, exercises were applied with body weight, then weights were added to ensure the correct technique in the exercise.
- The first week contained static strength exercises with static negative stretching exercises without tools, for the purpose of strengthening the affected deltoid muscle and the ligaments surrounding the shoulder joint. The second week of the first section of the main experiment also included different exercises, where the researcher used resistance exercises with the weight of part of the body in combination with the stretching exercises The movement to develop the motor range of the joint, and the

rehabilitation exercises prepared by the researcher contained internal and external movements of the shoulder joint. For the third and fourth weeks, the researcher used strength exercises using graduated resistances (which is one of the rehabilitation methods for developing strength for the injured muscles through gradient intensity, adding resistances by moving to each session, which gives Appropriate support for the muscle by increasing strength without the occurrence of stress and injury in the joint or muscle, as the intensity used represents (30-60)% with positive stretching exercises and according to the ability of the injured person to perform the exercises, and it is suitable with the ability of the injured person to perform the exercises.

Intermediate Tests

After the completion of four weeks for each patient, the researcher conducted the intermediate tests under the same conditions and capabilities as the pre-tests, that is, in a consistent manner as in the pre-tests. The tests were applied in Al-Zuhur Hall in Al-Muthanna Governorate at three o'clock in the afternoon, and the purpose of this test is to ascertain the extent of improvement and response of the injured players to the rehabilitation program prepared to determine the optimal time period for impacting soft tissues, as well as standing and the level of improvement of community members in the degree and level of improvement of those Injury, and knowing the changes that occurred in the chemical and physical variables and the motor range during this period, as the researcher was keen to fix all the variables related to the test such as place, time, method of implementation, and the sequence of tests in the pre-tests and fix them as much as possible in order to control the creation of the same and similar conditions when conducting the post-tests The intermediate tests were conducted as per the dates shown in table (4)

Table (4) Shows the dates of the intermediate exams

Fifth	Fourth	Third	Second	First	Injured
2023/1/10	2023/1/30	2022/30/12	2022/23/12	2022/23/12	test date

Qualifying Program (Section Two)

The qualifying exercises, the second section, were applied after the intermediate tests, and they included the following:

- The duration of applying the rehabilitation exercises, the second section, was (4) weeks, as the rehabilitation exercises were applied on the days (Saturday, Monday, Wednesday) of each week, and thus the number of rehabilitation units is (12) units, at a rate of 3 units per week.
- The researcher took into account the ripple in the distribution of intensity between weeks, units and rehabilitative exercises, as the ripple was (1:1) in order not to cause side complications affecting the affected area.
- The second section included resistance exercises only. This method is very effective for developing muscle endurance if the patient lacks muscle endurance, by increasing the number of repetitions when moving from one session to another. It is appropriate with the ability and ability of the patient to perform without injury, as it represents The intensity used is (60-100%) for the injured person.

Post-test

After the completion of four weeks of the application of the second section for each patient,

the researcher conducted the post-tests under the same conditions and capabilities as the pre-tests, that is, in a consistent manner as in the pre-tests, and they were examined by the specialist doctor and a clinical examination was conducted. To provide the same conditions in terms of place, time, tools, and the auxiliary team as in the pre-test, as the tests were applied in Al-Zuhur Hall in Al-Muthanna Governorate at three o'clock in the afternoon, as the post-tests were conducted as on the dates shown in Table (5)

Table (5)Shows the dates of post exams

Fifth	Fourth	Third	Second	First	Injured
2023/10/3	2023/3/3	2022/27/1	2022/20/1	2022/20/1	test date

Statistical Methods

The researcher used the statistical program (SPSS 27) for statistical processing, as well as the program (EXCEL), and she used the following means:

1. Arithmetic mean.
2. Standard deviation.
3. Levene value.
4. The simple correlation coefficient (Pearson)
5. The value of (t) for the independent samples.
6. The value of analysis of variance (F) for repeated measurements.
7. Size Effect Eta.
8. Least significant difference L.S.D

Presentation, analysis and discussion of results

View the results of the search variables

Table (6)Shows the statistical characterization of the data in the pre, intermediate and post tests of the research variables

Dimensional tests		Intermediate tests		Pre-tests		measruing unit	variants
p	s	p	s	p	s		
4,087	356.8	6,580	313.6	8,916	251.0	U\L	aldolize
1,304	23.8	1,924	13.8	2,302	5.6	kg	bear force

Table (6) presents the descriptive statistics (mean and standard deviation values) for each of the pre, median and post tests for the research variables

Before starting the analysis, it is important to verify the hypothesis of homogeneity of variances using Levene's test.

Table (7)The value of (Levine's) test and its level of significance for the research variables

level indication	degree Freedom		LEVENE	variants
0.093	12	2	2,911	aldolize
0.605	12	2	0.524	bear force

Table (7) presents (Levene's test) for each variable of the repeated measurements, which indicates that the variances are homogeneous for all levels of the variables of the repeated measurements (because all significance values are greater than 0.05)

Table (8)Results of Mauchly's test to assess sphericity for the three tests of chemical variables

for repeated measurements in the model

Corrections			level indication	DF	Square Kay	Mauchly's W	variants
Lower bound	Huynh-feldt	Greenhouse-Geisser					
0.500	1,000	0.907	0.851	2	0.323	0.898	aldolize
0.500	0.819	0.644	0.299	2	2,412	0.448	bear force

Table (8) presents the results of the Mauchly test (*) for sphericity for each of the three tests of repeated measurements in the model. The variables did not violate the hypothesis of sphericity because the value of the significance level is greater than (0.05), so we can count sphericity when looking at the F statistics. Accordingly, F will be used The F ratio is usually used, and Table (9) shows that

table (9) Analysis of variance between the three tests in chemical variables

effect size	level indication	value(F)	middle variance	degree Freedom	sum variance	source variance	
0.990	0.000	401,007	14,148,867	2	28,297.73	Sphericity Assumed	aldolize
			35,283	12	282,267	Sphericity Assumed	The error
0.958	0.000	90,964	415,400	2	830,800	Sphericity Assumed	bear force
			4,567	12	36,533	Sphericity Assumed	The error

The table shows that the significance ratio values for the (F) test for repeated measurements were smaller than the error rate (0.05), and this indicates the presence of significant differences between the three tests (pre-intermediate-post), as well as the effect size value (Eta) that there are significant differences Between the three tests, and to find out the direction of the difference in favor of any group, the researcher used the value of the least significant difference (L.S.D) between the three tests in the search variables.

Table (10) (L.S.D) test for comparisons of the three tests

Statistical significance	significance level	standard error	media difference	computational circles		comparisons	
moral	0.000	3,108	62,600-	313.6	251	middle	tribal
moral	0.000	4,116	105,800-	356.8	251	remote	tribal
moral	0.000	3,967	43.200-	356.8	313.6	remote	middle

The above table shows that there are significant differences between the three tests and in favor

of the post tests, and to give a clear idea of the differences between the tests, the researcher used the chart (3)

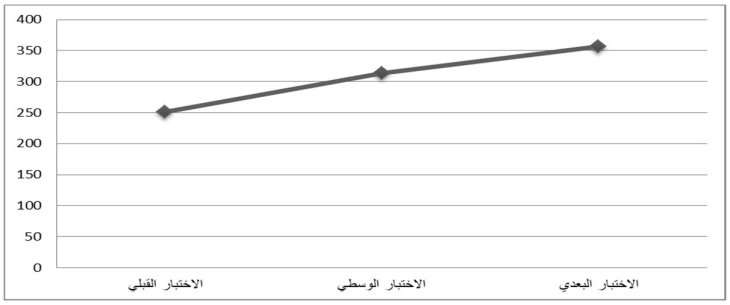

Figure (3)It shows the percentage of aldolase during the three test periods

The researcher interprets the graph that the decrease in the percentage of aldolese in the pre-tests, the fact that the patient was at the beginning of the injury and as a result of soft tissue laceration led to a decrease in aldolese in the body. The percentage of aldolease indicates that the program prepared by the researcher has a positive role in rehabilitating the injury and that the muscle is in the role of the recovery stage.

Table (11) (L.S.D) test for comparisons in force bearing for the three tests

Statistical significance	significance level	standard error	media difference	computational circles		comparisons	
moral	0.000	1,158	13,800-	13.8	5.6	middle	tribal
moral	0.000	1,871	23,000-	23.8	5.6	remote	tribal
moral	0.004	1,594	9.200-	23.8	13.8	remote	middle

The above table shows that there are significant differences between the three tests and in favor of the post tests, and to give a clear idea of the differences between the tests, the researcher used the chart (4)

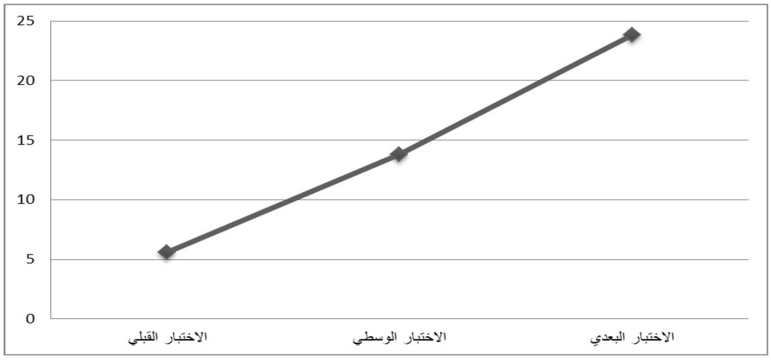

Figure (4) It shows force tolerance during the three test periods

The researcher interprets the graph, that the decrease in force tolerance in the pre-test, as a result of the soft tissue laceration within the muscle, being the injured person at the beginning of the injury, while in the intermediate test the researcher believes that the increase in the maximum force indicates that the program prepared by the researcher has a positive role in rehabilitating the injury and that The injured person is in the recovery stage, but in the post-

tests, the researcher explains that the strength is high, and this is evidence that the muscle has complied with recovery.

Discuss the results

The results reached by the researcher indicate that there are significant differences between the pre, intermediate and post tests and in favor of the post tests. The researcher attributes these differences to the effectiveness of the qualifying program prepared and based on the regularity of programmed training according to the scientific foundations, which brings about a set of responses, changes and biochemical adaptations to the body's various organs and organs and what the program contained. From gradation in physical loads and following the load formations in a manner consistent with the rules and principles of sports training such as ease, gradualness, harmony, adaptation, privacy and diversification, leading to the return of the injured athlete to the normal state.Enzymes are involved in the processes of demolition and construction, and they do not create reactions, but rather speed them up. On this basis, their work towards sports work almost coincides with the athlete's need for energy, especially if we know that the energy stored in the muscles is in the form of chemical compounds, and this is what is known as the representation of energy that is liberated in a way More quickly when the athlete is subjected to regular training programs and for regular periods that make them perform the requirements of training better "This is confirmed by (Qasim Hassan Hussain, 1990) that "because of training, the activity of enzymes that act as auxiliary factors in non-oxygen metabolism and in glycolysis processes increases "The researcher believes that the differences that occurred on the aldolese enzyme in the post-test, as the increase in this enzyme is evidence of an increase in muscle activity, and thus its level inside the body increases in a high way when subjected to physical efforts, regulated repetitions, and gradual stresses, and this is what the researcher did during her methodology and what It is confirmed by many researchers when studying this important enzyme, as they stated, "The enzyme increases after exposure to physical effort, especially if this effort lasts for long periods and the athlete's body is in harmony with it, and thus an increase in energy production occurs" This is confirmed by (Tolan et al., 1987) "The aldolase enzyme plays an important role in the production of energy for the body, especially when subjected to continuous physical efforts and consistent with the individual's ability "The researcher believes that the aldolase enzyme is one of the important enzymes, as it has a major role in converting sugar into energy in the form of (ATP), and its increase is an inevitable result of the physical exercises that the athlete is exposed to, and this was confirmed by most researchers and scholars in the field of enzymes, as "the increase in aldolase enzyme A (aldolase enzyme A) in the blood serum is associated with the breakdown and destruction of muscle membranes or an increase in membrane permeability, and as a result of exercise performance, the destruction of cell membranes of muscle tissues will increase, and the fact that the aldolase enzyme is present in abundance in skeletal muscles, thus the permeability of the membrane increases, and thus the enzyme (A) in the serum increases This came in agreement with what was mentioned by several experts, as they confirmed that "there are several studies that confirmed that the percentage of the aldolase enzyme increases (three times) in the blood serum after applying the training curriculum than before starting the curriculum" Because aldolase breaks down fructose diphosphate molecules, and this was confirmed by most researchers in the field of biochemistry in skeletal muscles, as the percentage of aldolase (A) increases, the effectiveness of this enzyme towards breaking down

fructose diphosphate molecules is 50 times more than its ability to form it, and thus helps the muscle In obtaining energy from its glucose molecule, which accelerates the enzyme's action and effectiveness, as this reaction is one of the important reactions in anaerobic glycolysis " The researcher believes that during the implementation of the program with various rehabilitative methods, on the basis and principles of sports training, taking into account the gradient in the components of the training load, through therapeutic methods applied in the prepared rehabilitative program, as these methods were characterized by the gradual intensity used, as well as an increase in repetitions during one training unit for the third and fourth weeks. And great importance in developing the maximum strength of the deltoid muscle, where the application was with gradual stresses from top to bottom, and it is a very appropriate method for developing strength by paying attention to muscular strength exercises, where the muscles fixing the shoulder blade and the rotary muscles were strengthened as they are the muscles working on the shoulder joint, and that n It is necessary that the muscle tone and strength of the affected limb be somewhat close to the level of muscle tone and strength of the corresponding limb. Therefore, the program included a variety of rehabilitative exercises aimed at developing the strength of the working muscle groups. in the movement of the joint, as well as exercises to strengthen the deltoid muscle itself, and to include the rehabilitation program On some resistance exercises using weights and without weights, and others, and flexibility and stretching, works to strengthen the joint and increase its strength and flexibility, and helps in recovery and thus an increase in the muscular strength of the deltoid muscle, and this is consistent with the study of (Walid Muhammad Al-Damrad Ash 2006) that rehabilitative movement exercises and the use of various means of rehabilitation It contributes to increasing the muscle strength of the injured part to be as close as possible to the healthy limb.Here, the researcher emphasizes the role of rehabilitative exercises and their performance in a variety of ways that played a positive role in the rehabilitation of the deltoid muscle. Partially ruptured, which are therapeutic exercises that played a positive role in restoring the level of that muscle to its normal state of strength, endurance, and wide range of motion)The correlation between static negative force exercises and moving force with body weight with negative stretching exercises and stretching exercises has achieved high results in the percentage of improvement, which gives evidence of the importance of using them in rehabilitative programs and creating many exercises that are appropriate for each injury and its severity, which provides a lot of Time and effort in the process of restoring the injured part to its normal position. And this is confirmed by (Abu El-Ela Abdel-Fattah) (and relying on the work of sensory receptors is of great importance in increasing the range of motion of the joint, as it raises the level of compatibility of the muscular work of the muscle groups working on it, and accordingly, increasing the range of motion using exercises that depend mainly on the work of Sensory receptors work to take advantage of the different physical capabilities in developing the speed, strength and coordination required by physical performance.

This is consistent with what was stated by (Muhannad Al-Bashtawy and Ahmed Al-Khoja 2010) (that it is necessary to link stretching exercises with strength exercises to ensure balanced development of the locomotor and muscular system and to avoid developing only one side

The researcher believes that it is necessary to link rehabilitative exercises with the use of different resistances during sports rehabilitation, and the work must be linked to the different movements of the injured part gradually and in appropriate ranges. All muscular work, except

that the amount of muscle tension varies according to angles, due to the number of muscle fibers involved. Also, the greater the resistance, the greater the resistance. There is an increase in muscle tension resulting from the participation of the largest number of muscle fibers. Continuing training generates neurological adaptations, and these adaptations in the beginning are neuromuscular compatibility, i.e. The regulation of nerve impulses may develop after a while to become cellular adaptations that lead to an increase in the size of the motor unit, and this is what makes the functional ability of the motor unit to innervate the largest number of muscle fibers or the possibility of recruiting the largest number of motor units, which results in an increase in strength

Conclusions and recommendations

Conclusions

1. The program prepared by the researcher has a positive effect in rehabilitating the soft tissue injury of the shoulder joint in athletes.
2. The program prepared by the researcher has a positive effect on improving the focus of the dulcis and strength endurance for patients with soft tissues of the shoulder joint.
3. The period of (8 weeks) is the optimal period of time to obtain the best results for the rehabilitation of the injuries of the soft tissues of the shoulder joint.

Recommendations

1. The researcher recommends the use of the previously prepared program because of its positive effect in rehabilitating the soft tissue injury of the shoulder joint in athletes.
2. The researcher recommends the need to detect the injury, its location, size and complications, by using magnetic resonance imaging (MRI) to develop direct and necessary solutions to the injury and reduce time and effective work.
3. The researcher recommends the necessity of rehabilitation for an appropriate period and the continuation of rehabilitation until the return of the injured part to work and optimal functional performance.
4. The researcher recommends the adoption of biochemical variables and range of motion as a means of diagnosing cases of muscular injury, as it is one of the important and accurate diagnostic methods.
5. The researcher recommends conducting intermediate rehabilitation tests to identify the response of the injured to the exercises prepared in the curriculum and standing, and the level of improvement of the community members in the degree and level of improvement of that injury.
6. Conducting research by applying the same program prepared by the researcher accompanied by a nutritional supplement that contains all the vitamins and minerals that the body needs.

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