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The effect of rehabilitation exercises in improving the muscle strength of those with a partial tear in the posterior thigh muscle for Karbala football club players

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Abstract

Sports rehabilitation is the important factor in rehabilitating function, motor performance, and normal appearance after injury. It helps the injured person to regain functional ability in the shortest possible time and to the highest functional level and protects the injured organ from recurrence of the injury. The importance of the research lies in the fact that these exercises have a positive effect in restoring the functions of the organ by improving muscle strength and reducing the degree of pain, as partial tear injury occurs in most athletes because they are more susceptible to friction. The researchers found, during the field tour in the physical therapy centers, that the injured there are subjected to methods treatment does not serve the injured, and the exercises used are repetitive and traditional, so the researchers prepared rehabilitative exercises to rehabilitate those with partial tear in the posterior femoral muscle and to identify the effect of rehabilitative exercises in improving muscle strength and reducing the degree of pain for the injured players. The researchers used a one-group experimental design with two pre- and post-tests. The appropriate sample and the nature of the problem were chosen in terms of goals and hypotheses. A sample of players with partial ruptures was chosen. The researchers prepared rehabilitation exercises that were presented to experts and specialists in the field of sports medicine. The pre-test was conducted, then apply rehabilitation exercises to achieve the desired goal. The number of rehabilitation units was (3) per week on (Sunday, Tuesday, Thursday) for a period of (6) weeks, and then the post-test was conducted, as the researchers concluded that the rehabilitation exercises prepared by the researchers had a positive effect in improving muscle strength and reducing the degree of pain in people. Members of the research sample, and this achieves one of the sustainable development goals of the United Nations in Iraq which is (Good Health). The researchers recommended conducting similar research on other injuries and other samples, and adopting rehabilitative exercises in treatment centers.

Keywords | **Rehabilitation exercises, partial tear.**

Introduction:

The successes of rehabilitation programs do not lie only in the rapid return to the competition field, but they are deeply focused on preventing the recurrence of the injury and ensuring the best performance for the player, as the treatment of sports injuries is no longer merely rehabilitation or work for the concerned or sports specialist, but has become a science based on scientific foundations and principles, and this science has grown until it has a cognitive structure that justifies its emergence as an independent science under the umbrella of physical education sciences. This science did not stop at this point, but rather went to analysis and scrutiny in order to diagnose the causes and find optimal solutions for sports injuries and thus achieve achievement

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in all individual and team sports. The game of football is one of the games characterized by high intensity of competition, so it has become one of the games that has a higher rate of sports injuries. Sports injuries occur in the muscles, ligaments, tendons, bones and articular surfaces, but the area where injuries occur most is the muscles, as they constitute about 35% of the injuries. % of all injuries in football, and 55% of these injuries affect the thigh, 37% of which affect the posterior thigh muscles, which consist of three muscles that occupy the back of the thigh, which are the biceps muscle, the semitendinosus muscle, and the semimembranosus muscle, and most injuries occur The posterior thigh muscle is in the biceps muscle (long head), followed by the semitendinosus muscle, and finally the semimembranosus muscle, respectively. The risk of hamstring muscle injuries increases 11 times during matches, and injuries are distributed equally between the two halves of the match, and injuries that occur during the match cause more absence than injuries that occur during training, while 52% of injuries are related to speed, and 16 % as a result of overload, in addition to the fact that 96% of injuries to the hamstring muscles occur without contact, that is: indirect injuries. It is believed that high intensity in performance is the main cause of injuries to the hamstring muscles. In addition to that, neuromuscular fatigue and the advancing age of the athlete are considered weak muscle strength and poor flexibility of the posterior thigh muscles are among the most important factors causing injuries to the posterior thigh muscles. Also, the presence of a history of previous injury, the size of the muscle tear, and shortening of the long head muscle fascicles of the biceps femoris muscle are among the most important causes of recurrence of injury to the same muscle. The importance of the research lies in preparing a program that takes into account the specificity and function of each of these muscles. To rehabilitate it in a scientific way to ensure that the injury heals as quickly as possible, and to reduce the possibility of it recurring in the future for players of Karbala Governorate football clubs, and by retrieving some scientific sources and previous studies conducted by experts in the field of injuries to the posterior thigh muscles, the researchers prepared a program to rehabilitate injuries of partial tear of the thigh muscles. Background: To ensure recovery as quickly as possible, and by following up on the players in most of the clubs in Karbala Governorate, the researchers decided to study this case and develop appropriate solutions for it, as the recent trend was to focus on the individual overcoming such obstacles that hinder him from practicing his sporting activity normally and overcoming the negative effects. Therefore, the researchers used a rehabilitation program that included: Rehabilitation exercises are far from those used in these centers and hospitals. The aim is to improve sample variables (degree of pain and muscle strength) for those with partial tear of the bilateral posterior thigh muscles in order to speed up recovery and return to normal condition. In light of the research problem, the researchers identified two goals: preparing rehabilitation exercises to rehabilitate those with partial tears in the posterior thigh muscle, and identifying the effect of rehabilitation exercises in improving muscle strength and reducing the degree of pain for those with partial tears in the posterior thigh muscle. As for the research hypothesis, there are significant differences between the pre- and post-tests of the research sample. The researchers used the experimental method with a design with one experimental group to suit the nature of the research. The research areas included the human field, the advanced football players in Karbala Governorate, and the spatial field, the physical therapy center at Imam Hassan Al-Mujtaba (P) Hospital. And the time period is for the period from 1/20/2023 until 3/10/2023. As for defining the terms, partial rupture is defined, which is cell damage to the muscle and is accompanied by internal bleeding in the muscle and swelling and causes a change in the structure of the muscle cells and their rupture. Muscle rupture is known

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as damage to muscle cells. The contractile part of the muscle, with damage to the adjacent blood vessels and local blood bleeding in the non-contractile part of the muscle, and the occurrence of muscle tear is due to external or indirect force, even due to a sudden wrong movement, and this is what more than one expert has often indicated that muscle tear occurs in the muscle fibers. Its length, or it is a stretch or tear of the muscles or muscle tendons, and rehabilitative exercises are rehabilitative therapeutic methods that include exercises used in the rehabilitation process.

Method and procedures:

The researchers adopted the experimental approach with one experimental group with two pre- and post-tests due to its suitability and the nature of the problem, in order to serve the research in obtaining the most accurate and true results. To achieve the goals of their research, the researchers developed exercises that were new and modern in performance. The research sample was Karbala Governorate football club players, numbering (5).

Research tools and means of collecting information for the research: - through which the researcher can collect data and solve problems to achieve the research objectives. Arab and foreign references and sources, the international information network, the Internet, a form to survey the opinions of experts and specialists in determining the exercises used, the supporting work team, etc. The devices are a dynamometer to measure muscle strength, a Sony camera, and a Lenovo computer.

The exploratory experiment:

It is a mini-experiment of the main experiment in the research, and when it is conducted, it must have the same conditions and conditions that the main experiment will have in order for its results to be taken into account. The exploratory experiment was conducted on (1/4/2023) with the help of the assistant work team. The purpose of the exploratory experiment is to know the time of performing each exercise and the time of the rehabilitation unit, and to ensure the suitability of the exercises prepared by the researchers and the efficiency of the assistant work team. The exploratory experiment was conducted on players outside the research sample.

The main experiment:

It was conducted on (1/6/2023) and included conducting the pre- and post-tests on the research sample and then applying the prepared rehabilitation program. The pre-tests were conducted on (1/8/2023) until (1/13/2023) in Exactly at 9 a.m. in the physical therapy hall of Imam Hassan Al-Mujtaba and Zain Al-Abidin Hospital (peace be upon them), and a muscular strength test was conducted for the bilateral posterior thigh muscle of the research sample using a dynamometer device as explained by (Ali). From the prone position, the patient pulls the wire in the device with his leg. The injured person is moved forward with extension and bending, and the number of kilograms that the injured person can pull is read and the number of kilograms that appear on the device in each position is recorded (13). As for the test, it is a Skeleton examination to measure the degree of pain. The aim of the test is to measure the degree of pain of the back thigh muscles. The tools used are a bed, a knee brace, fixation belts, a pain scale, and the examination is done with the player lying on his back with the other leg and his torso secured with a belt. The first examination is that the examiner raises the affected leg slowly towards the maximum flexion of the hip joint. The second examination is if the patient does not feel pain during the examination. First, the examiner asks the injured person to raise the leg straight three consecutive lifts as quickly as possible to the top, and then the prepared rehabilitative curriculum was applied, which includes the rehabilitative exercises prepared by the researchers, which were prepared after reviewing many theoretical and previous studies and Arab and foreign references related to rehabilitation. Taking the opinions of experts and specialists, the

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aim of which was to rehabilitate those with a partial tear in the posterior thigh muscle, for a period of 6 weeks, at the rate of three units per week, from (1/20/2023) to (3/10/2023), as the researchers took into account in preparing the curriculum the progression of repetitions and time. Performance and comfort during performance, and the curriculum included flexibility exercises and gradation in exercises from difficult to easy, and then conducted post-tests for the sample on 3/20/2023 until 3/23/2023, and under the same conditions when conducting the pre-test, the researchers used statistical methods, arithmetic mean - standard deviation and T. -Test for symmetrical and percentage samples.

Presentation, analysis and discussion of the results of the pre- and post-tests of the variables of muscle strength and pain degree for the research sample

The table showing the results of the pre- and post-tests for muscle strength and the degree of pain for the back leg muscles.

Variables	Pre test		Post test		A M D	DD	Calculated T	Error level	Statistic significance
Testing the muscular strength of the back leg muscles	6.710	3.052	38.909	6.528	32.199	7.081	11.139	0.000	Sign
Pain score test	6.667	1,966	0.000	0.000	6.667	1,967	8.305	0.000	Sign

Discussion:

Through the table above, it was revealed that significant differences appeared between the pre- and post-tests, in favor of the post-test, in the variables of muscle strength and degree of pain. The researchers attribute the emergence of significant differences to the nature of the exercises prepared by them, which were in accordance with scientific foundations and modern scientific programs that clearly contribute to this improvement. Then, the data was processed statistically to achieve the objectives of the research and to verify its hypothesis, as (Hamid, Fatima) stated (that the occurrence of muscle tears is the result of an external or indirect influence as a result of an incorrect movement outside the boundaries of the muscles and joints) (5) and (Ezzat) indicates (However, muscle tearing occurs in the muscle fibers themselves or in the body or belly of the muscle (12) and also, quoting (Medhat) (that muscle tearing may occur in the tendon of the muscle or near the site of fusion during its sudden or intense violent contraction without Its length is shortened, so it

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cannot bear it, and this tear occurs (17) and Iqbal (Iqbal) knew (a muscle tear is a stretch or tear of the muscles, muscle tendons, or the sac that covers the muscles, and it may be a complete or incomplete tear in the body of the muscle itself or its connection with the tendon or in The tendon itself or in the connection of the tendon to the bone, where it originates and integrates (1). Muscle injuries occur in team games as a result of multiple sudden tensions and contractions, including the game of football. It is known that it is one of the games that is characterized by varying effort exerted and it is also a game of variable conditions. The milestones depend on the position the player plays in, as well as the amount of duties that fall on each player's shoulders. Both Firas and Hatem mentioned that the game of football is a game with changing circumstances and features, and it contains many surprises that the player may encounter (16). Also, quoting Mounir Abdel-Sahib, "Football is one of the popular games that has... There is increasing international interest because it is one of the most popular games in the world" (21) as confirmed by (Rand, Suhad) "It is one of the sports that has received great and widespread attention from peoples and countries, as it represents the number one sport in the world" (8) Also, as mentioned by (Nassar, Walid) (the game of football requires motor awareness and high physical and skill abilities to face different playing conditions) (20). After the researchers chose (5) players from the Karbala Governorate football clubs as a sample for their research, the treatments were discussed. The statistics contained in the test values for the research sample must be interpreted and supported by scientific sources, and this is consistent with what (Anaam) mentioned in that the muscular strength test (is the ability or tension that a muscle or muscle group is able to produce against resistance in one maximum voluntary contraction) (2). And also with what (Zahhad, Mawahib) mentioned: "Using various exercises based on the level of physical characteristics through direct influence on functional adaptations and the extent of the response occurring within the body" (10), especially rehabilitative exercises, as their goal is to improve muscle strength and reduce the degree of pain. (Rana, Warda) indicated (the use of therapeutic and rehabilitative means is important in improving the level of health of the injured, because they contribute greatly and in various types of injuries to accelerating the process of treatment and rehabilitation of the injured) (6) (Athraa, Soaad) indicate (that exercises lead to revitalizing the injury area and then stimulating blood circulation in the injury site, which leads to its recovery and a decrease in the degree of pain) (11) And also, as mentioned by (Rua'a,, Abeer) (rehabilitation exercises have a role However, it is one of the important means of returning the affected part to its normal state without any surgical intervention or chemical drugs, as it regulates any body movement (7) and many sports rehabilitation experts have agreed that using the rehabilitation approach in the correct scientific manner It can lead to a noticeable development in an individual's physical capabilities. It is clear from the values of the pre- and post-tests that there are statistically significant differences between the pre- and post-tests in the muscular strength variable and in favor of the post-tests. The researchers attribute the emergence of these results to the prepared rehabilitation program that contains strength and stretching exercises, as these exercises were extremely important in developing the strength characteristic. During the rehabilitation process for players with partial rupture of the posterior thigh muscles, Brain points out that strength exercises are a method of performance that has had an effective impact in rehabilitating the affected part of the posterior thigh muscles and trying to return it closer to the healthy state before the injury and retaining the muscle's ability to protect the muscles. Same (3) The goal of this method of performance was to load the posterior thigh muscles at their maximum lengthening during work, and this is consistent with the study of the Swedish expert on injuries

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to the posterior thigh muscles, Asklunk, who prepared two approaches and compared them in the time of injury recovery and its recurrence after the completion of the operation. Rehabilitation, and it became clear from the results that the approach used by the researchers had a significant impact on the players' return time to competition and the absence of recurrence of injury, better than the approach used in treatment previously. The therapeutic rehabilitation program must include exercises aimed at improving muscle strength and endurance, and this is what the researchers worked on when developing and applying the exercises, taking into account the specificity of the game played by the eye. As for the variable of the degree of pain, it is clear from the results of the test of the degree of pain that there is a significant difference. It was evident in the variable degree of pain and in favor of the post-test. The researchers attribute this to the use of the prepared rehabilitation program that included strength and stretching exercises, as it had an effective effect in alleviating and removing pain during the rehabilitation stages, and this is what enabled the injured to achieve these moral levels. As well as the correct performance of the exercises and the direct supervision of the researchers gave these results, and this was confirmed by (Fadel Sultan Sharida) that "the muscles that are exercised under the supervision of a specialist develop more than others" (15) and (Millon) states that "the ability of the muscles and tendons to move decreases." When you are exposed to an injury, the pain causes an obstruction in the functional work of the muscles, and therefore they are exposed to shortening and limited movement, and flexibility exercises must begin as soon as the pain is controlled." (18) Therefore, the researchers emphasized the importance of strength and stretching exercises in relieving pain and remove it, This is what Bahaa El-Din Salman indicated (that flexibility and agility exercises complement the rehabilitation program, as they make the athlete feel comfortable and relieve much of the pain he suffers from) (4) and as Fox knew it, (strength exercises were of other importance in reducing pain. And removing it (14) and it was emphasized by (Zaki Muhammad) (Resistance exercises are part of any rehabilitation curriculum to improve health and physical fitness, which depends on the number of times these exercises are performed in the curriculum, which ranges from once to three times a week) (9) Therefore The researchers focused on using rehabilitative therapeutic exercises, represented by strength and stretching, with the aim of reducing and eliminating pain, and returning players with partial tears in the hamstring muscles to the field in the shortest possible time. This is consistent with (Muhammad Abd al-Rahman Abu Shabana), who pointed out that (therapeutic exercises have the greatest value). It is important, if not all important, to rehabilitate muscle tears and return players to the field again (19). This is evident from the results of the pre- and post-tests and in favor of the post-tests for the variables of degree of pain and muscle strength.

Conclusion:

In light of the results obtained, the researchers concluded that the rehabilitation exercises prepared by the researchers had a positive effect in improving muscle strength and reducing the degree of pain in the research sample. The rehabilitation exercises helped in the rehabilitation process, and had an impact in rehabilitating the injury of partial tear of the posterior thigh muscle. In light of the conclusions drawn, the researchers recommend the necessity of adopting the rehabilitation exercises prepared by the researchers to rehabilitate other injuries and conduct research on other injuries.

Author's declaration:

Conflicts of interest: None

We confirm that all tables and figures in this article are ours and written by the researchers themselves.

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Ethical-Clearance: this manuscript approved by local ethical committee of physical education and sport sciences college for women on (July /2023)

Author's contributions:

All contributions of this study were done by the researchers (S.B. and S.H.) who get the main idea and work on writing and concluding also with number of experts, Hasan Al Hussein (Physical Education and Sport Sciences College/ Karbalaa Universoty) in Statistics, Maurizio Bertollo in revision, Nour Riadh in translating, Stuart Biddle in proofreading

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Appendix (1)

Rehabilitation exercises used in the rehabilitation curriculum

1-: Heel stretching and pressing exercises at different angles

Starting position: lying on the back .

Performance method: The player is asked to bend the affected knee at an angle of (90)degrees. The player presses the heel of the foot on the ground for (5) seconds and at three different angles. The exercise is performed in both directions

Second: The dam or bridge exercise .

Starting position: lying on the back.

Performance method: The player is asked to raise the hip so that the hip position is completely horizontal

During the movement, the hip, shoulders and knees must form a straight line during performance.

Third: The exercise of pushing the therapist's hand.

Starting position: lying on your stomach with the affected leg bent.

Performance method: The player is asked to push the therapist's hand on the heel of the foot, then the therapist resists bending the knee at different angles. Conversely, the therapist pushes the injured person's heel and the injured person resists.

Fourth: Leg bending and extending exercise

Starting position: lying on the stomach and bending the leg of the affected leg.

Method of performance: The injured person bends the affected knee until the heel touches the buttocks, then slowly extends the knee to return to the straight position again.

Fifth: Material exercise.

Starting position: From the lying position on the back, pull the thigh towards the chest.

Performance method: Slowly bend and extend the knee.

Sixth: One-leg bridge

Starting position: Lie on the floor, arms extended and knees bent.

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Method of performance: The injured person is asked to raise the injured leg and fix the other on the ground. The injured person raises the hip so that it forms a straight line with the shoulders and knee, hold for (2) seconds and descend to the ground.

Seventh: Pelvic muscle control exercise (center)

Starting position: Lie on the floor and extend legs

Method of performance: The injured person is asked to bend the hip joint using the abductor .muscle, i.e(pushing the pelvis forward)This . exercise leads to the origin of the posterior thigh muscles(the hip tuberosity)moving away, and .this will lead to the definition of these muscles

Eighth: Control of the pelvic muscles (center)

Starting position: lying on your back/kneeling on your hands and feet

.Exercise No (8) Controlling the pelvic muscles (center).

Performance method: The therapist pushes the player's body with the ball, and the player resists to maintain balance using the muscles of the lumbar area.

Ninth: The exercise of sliding from lying down

Starting position: The injured person sits with his knees bent.

Method of performance: The injured person is asked to perform a sliding movement with the affected leg until he feels pain.

Tenth: Slider exercise

Starting position: Stand on the injured leg, open the feet at chest level, bend the knee at an angle of (10-20) degrees while holding the bar.

How to perform: Make a backward sliding movement with the other (uninjured) leg and stop the movement when you feel pain. When returning to the starting point, the movement must be performed with the help of the arms and .not by pressure on the injured leg

.Eleventh: Diver exercise

Starting position: The player stands on the affected leg, bends the knee at an angle of (10-20) degrees, then bends the other leg backward .

Performance method: The player is asked to bend the hip, extend the leg backwards, and the arms forward, and try to extend the hip to the maximum.

Twelfth: resistance exercise for the back thigh muscles.

Starting position: Lying on the strength machine, and the length of the machine's arm must be equal to the length of the leg.

Method of performance: The injured person slowly bends the healthy knee and extends the leg of the affected leg only.

The load should be appropriate and without pain, repeat the exercise.

Thirteenth: Nordic exercise.

Starting position: The athlete sits on his knees, with his ankles fixed and supported by the therapist. Performance method: The injured person is asked to fall forward and resist falling to the ground for as long as possible using the back thigh muscles

Starting position: sitting tall.

Exercise No. (14) Stretching using a towel

Method of performance: The injured person places a towel around his foot on the affected limb, with the legs extended, then works to pull the towel gently until the heel of the foot becomes adjacent to the seat, then returns to the gently extended position, which is the starting position.

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Fifteenth: Heel sliding exercise on the wall.

Starting position: Lying on your back with the affected leg extended against the wall.

How to perform: Slowly slide your heel onto the wall. This increases the bend in your knee until the heel reaches the bench, then work on extending your leg and returning to the extended position.

Sixteenth: Stretching while lying on your back.

Starting position: Lie on your back.

How to perform: Pull one of your legs straight towards your chest and hold until you feel pain.

Seventeenth: Stretching over the platform

Starting position: Extend one leg on the bench without bending forward in the lumbar region and keep your back straight.

Method of performance: The injured person is asked to push the pelvis forward and to the maximum extent allowed by the knee seconds and remain stable or until he feels pain.

Eighteenth: Stretching over the bar

Starting position: Stand and raise one of your legs straight over the table, chair, sofa, or anything stable to place the leg on.

How to perform: Bend your chest towards your outstretched leg and keep your back straight without bending in the lumbar area and hold for a period of time or until you feel pain. The knee must not be bent in the (extended) legs and rest on it.

Nineteenth: Stretching by bending the torso

Starting position: Extend one of your legs forward, then bend your torso with your hands touching the ground.

How to perform: Bend your torso forward and hold still for a while, or until you feel pain.

Twenty: Stretching by raising the legs

Starting position: Sitting tall, holding the therapist's leg from behind.

Method of performance: The therapist holds the injured person’s leg and pulls it toward the chest. The hip must be kept from moving forward by holding the therapist’s leg from behind, and holding still for a period of time or until pain is felt.

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تـأثـيـر تـمـريـنـات تـأهـيـلـيـة فـي تـحـسـيـن الـقـوة الـعـضـلـيـة للمصابين بالتمزق الجزئي في العضلة الفخذية الخلفية للاعبي أندية كربلاء بكرة القدم

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3 الجامعة الاردنية / كلية علوم الرياضة - الاردن

مستخلص البحث

يعد التأهيل الرياضي العامل المهم في اعادة تأهيل كل من الوظيفة والاداء الحركي والشكل الطبيعي بعد الاصابة , وهو مساعدة المصاب لاستعادة القدرة الوظيفية في اقل وقت ممكن ولأعلى مستوى وظيفي وحماية العضو المصاب من تكرار الاصابة وتكمن اهمية البحث في كون هذه التمرينات لها التأثير الايجابي في استعادة الوظائف للعضو من تحسين للقوة العضلية وتخفيف درجة الالم , اذ ان اصابة التمزق الجزئي تحدث عند اغلب الرياضيين لكونهم اكثر عرضة للاحتكاك ووجد الباحثون وفي اثناء الجولة الميدانية في مراكز العلاج الطبيعي ان المصابين هناك يخضعون لطرق علاج لا تخدم المصابين والتمرينات المستخدمة متكررة وتقليدية لذا اعد الباحثون تمرينات تأهيلية لتأهيل المصابين بالتمزق الجزئي في العضلة الخلفية الفخذية والتعرف على تأثير التمرينات التأهيلية في تحسين القوة العضلية وتخفيف درجة الالم للاعبين المصابين واستخدم الباحثون التصميم التجريبي ذو المجموعة الواحدة ذات الاختبارين القبلي والبعدي , وتم اختيار العينة الملائمة وطبيعة المشكلة من حيث الاهداف والفروض اذ تم اختيار عينة من اللاعبين المصابين بالتمزق الجزئي واعد الباحثون تمرينات تأهيلية تم عرضها على الخبراء والمختصين في مجال الطب الرياضي وتم اجراء الاختبار القبلي من بعدها تطبيق التمرينات التأهيلية تحقيقاً للهدف المطلوب, وكانت عدد الوحدات (3) وحدات تأهيلية في اسبوعيا في ايام(أحد, ثلاثاء, خميس) ولمدة(6) اسابيع ومن ثم اجراء الاختبار البعدي اذ استنتج الباحثون ان التمرينات التأهيلية المعدة من قبل الباحثون ذات تأثير ايجابي في تحسين القوة العضلية وتخفيف درجة الالم لدى افراد عينة البحث, وهذا ما يحقق احد اهداف التنمية المستدامة للامم المتحدة في العراق (الصحة الجيدة). واوصى الباحثون بـإجراء بحوث مشابهه على اصابات اخرى وعينات اخرى واعتماد التمرينات التأهيلية في مراكز العلاج

الكلمات المفتاحية | **تمارين تأهيلية، تمزق جزئي**