
Ali Khayun Tarish Hamidi¹, Assistant Prof. Dr. Qusay Saleh Mal Allah Al-Mousawi²
¹,²College of Physical Education and Sports Sciences, Basra University, Iraq

ABSTRACT

The importance of the research is summarized in the importance of rehabilitation, its role and its importance in treating a partial tear in the medial ligament of the knee joint and reducing the chance of these injuries through preventive approaches and rehabilitating the injured physically, psychologically and mentally, and the research problem arises in that the knee joint as the only joint that performs two opposite movements are stability through Carrying body weight and movement through bending, stretching and jumping, as a result of these two opposite characteristics, it consists of several complex structures such as ligaments, cartilages, fibrous and synovial capsules, which made it more susceptible to injury as the rate of injury in this joint is a large proportion through the tears that challenged the ligaments and cartilage, and The objectives of this research is to prepare a curriculum that includes rehabilitative exercises for the partial rupture of the medial ligament of the knee joint, as well as measuring the physical and biochemical variables of the internal environment surrounding muscles and cartilage, and measuring the Enkephalin, which is one of the indicators of pain relief before and after the qualifying curriculum for football players. The two researchers used the experimental approach to give objective implications that are far from self-evaluation, and the research community consists of players from the Premier League football clubs for the football season (2020-2021). 4) Players because they have other injuries in addition to a partial rupture of the medial ligament of the knee joint. This affects the results of the research, and the researchers concluded that the rehabilitative curriculum has a major role in treating the injury that has occurred and a great role also in avoiding the occurrence of such injuries to players in the future, as for the most important recommendations The researcher is using rehabilitative exercises with special devices for physical therapy and relying on the indicators of the internal environment surrounding muscles and cartilage to know the level of injury and the extent of its similarity to healing.

I. DEFINITION OF RESEARCH

Introduction and the importance of research

The rapid progress in the field of training and its methods and the high intensity of training loads as well as the inappropriateness of some used stadiums and their ground that lead to strong collision between the player's body and the hard floor and collision between them, which led to high rates of sports injuries and complications resulting from them, and what we care about is how to get rid of Injury as soon as possible and return to exercise in the type of sports activity practiced, so the trend towards rehabilitation and its role and importance in treating injury and reducing sports injuries through preventive approaches and rehabilitation of the injured began physically, psychologically and mentally. Pain may play a fundamental and important role in a person’s life at the moment of the injury by measuring one of the pain relieving indicators in the human body and its ability to control the degree of pain, which is considered an important warning sign of the existence of a problem that must be addressed early, as well as the biochemical variables that reflect the internal environment of the human body. And the changes that happen to it at the moment of the injury, as for the physical side that is affected by the injury as well, which leads to a drop in the physical level of the injured player, and due to the ability of rehabilitative exercises to have an effect on these variables, which increases the speed of recovery and return the injured part to its normal position before the injury until the player becomes so able to return to practicing sports and to give more in the type of sports activity practiced with high efficiency.
Research problem

Many researchers and physicians specializing in the field of sports medicine have dealt with in their studies the subject of preparing rehabilitation programs for injured people, as they differed in views in terms of the period of the rehabilitation program and the methods of using rehabilitative exercises according to the severity and severity of the injury, as there are still many issues that the treating physicians did not address. In the use of some scientific foundations related to the design of rehabilitation programs, which are important in the formation of the components of the rehabilitation program, such as the adoption of some biochemical and physical indicators in the formulation of these components, the researchers decided, in addition to what was mentioned, the dependence on chemical indicators in the internal environment of the muscles and the affected joint, especially the ability and ability. The rehabilitative approach is to reach the level of recovery by controlling the phenomenon of pain occurring in the joint, which is considered as the true indicator of the presence of a defect and the various effects it causes on the mechanism of movement by measuring one of the pain relieving indicators (Enkephalin), which reveals to us the injured athlete despite the performance of the tests. Main indicators. Therefore, the researchers decided to prepare a rehabilitation program to rehabilitate the partial tear injury of the Lord The medial lateral extension of the knee joint relying on some biochemical and physical indicators and trying through the expertise and modest experience of experts and their reliance on some specialized scientific sources to qualify such a common injury to return the injured to training in the shortest time possible to reach the level of competition in matches and competitions. Whereas, there is no substitute for knowing the effect of rehabilitative exercises and what they have caused from the return of the injured part to safety through knowing the internal environment of the athlete’s body that gives the real response to the extent of the return of the injured part to its normal position by giving objective connotations away from self-evaluation and stopping the pain effects that play an important and fundamental role In the life of the human body in addition to the physical tests that are measured for the injured before the curriculum and after the curriculum.

Research aims

1. Preparing and codifying a rehabilitation course for patients with a partial tear of the medial collateral ligament of the knee joint.
2. Measuring some physical and biochemical variables before the curriculum and after the curriculum.
3. Measuring one of the ankylosing pain indicators before the curriculum and after the curriculum.
4. Identify the differences in pre and post tests of physical variables.
5. Identifying the differences in the post and posterior measurements of the Enkephalin analgesia index and some biochemical variables.

Research areas

1. The human field: is represented by the club players participating in the Iraqi Football Premier League.
3. Spatial domain: the physical therapy hall in the College of Physical Education and Sports Sciences / University of Basra.

II. THEORETICAL STUDY

The concept of qualification

The practice of sport is always accompanied by certain possibilities for the occurrence of injury, as there is no training method with which there is no chance of injury, it is important to research methods and methods that help reduce the incidence of injury in the stadiums and attention must be given to the factors that reduce the incidence of injuries with the same interest in sports training. To prepare for tournaments, here it must be emphasized that they cannot be avoided altogether, but at least to reduce the chances of their occurrence to the least possible extent. Therefore, workers in the sports field must be careful to provide security and safety factors to the maximum extent for participants in competitions and protect them from the risk of injury. Therefore, the trend began with precision to rehabilitation and its role and importance in treating injury and the speed of the player's return to the stadiums.
Rehabilitation is defined as "the process of restoring a natural anatomical physiological tissue after injury by using various therapeutic means with the aim of returning the athlete to his activity after being injured and protecting the affected area from recurring injury".

It can also be defined as "the process of using various therapeutic means to restore the athlete to his activity after being injured and protect the affected area from recurring injury".

As for (Michael 1995), rehabilitation is defined as "the process of using therapeutic exercises, physical therapy, and modern methods of treatment to restore the injured athlete to sporting activity".

(James 1973) also defined it as "the process of restoring the natural and functional shape of the affected area and returning the injured athlete to the high functional level that he had before the injury and in the shortest time possible.

Also (Munther Al-Khatib and Abdullah Al-Mashhadani 1989) indicate that rehabilitation "is a process that preserves the health, vitality and consistency of the body with its various organs and attempts to restore the normal state after being exposed to an emergency, by using therapeutic kinetic exercises aimed at maintaining the correct posture and correcting movements based on common mistakes.". Some studies and research also indicate (that when you start the rehabilitation process early, the recovery will be more rapid).

**Physiological benefits of rehabilitation:**
1. To restore flexibility of joints, muscles and tendons.
2. To restore the elasticity of the fibrous connective tissues to the tendons and muscles to the maximum possible capacity.
3. Increase the strength of muscle and tendon connections.
4. Improving harmony and sense together.

**Rehabilitation goals:**
1. Restore the structure of damaged and damaged tissues.
2. Restore damaged functions in the affected tissue.
3. Restore the fitness of the cardiovascular system, circulation and physical abilities, especially (elongation and speed), motor and psychological skills, that is, the restoration of the components of achievement.

**The importance of sports rehabilitation:**
In 1992, a group of doctors at a hospital in California, America, studied the importance of sports rehabilitation when common sports injuries, and the study showed the following:

- That when the joint injury occurs, weakness and atrophy occur in the muscles surrounding this joint, and this factor is a catalyst for the recurrence of the injury.
- The results showed that the use of sports rehabilitation results in an increase in the size and strength of the muscles surrounding the injured joint as well as an increase in the range of motion and the conclusions of the study are that sports rehabilitation works on prevention From recurring injuries in the future.

**Variables under study**

**Enkephalin**
It is an endogenous opioid pentapeptide produced mainly in the central nervous system, the core of the adrenal gland, and other peripheral tissues. There are two structurally different types of Enkephalinpeptides: meth-Enkephalin(YGGFM) and leu-enkephalin (YGGFL). It is produced from a precursor of a protein called proenkephalin by cleavage protein cleavage.

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In mammals, proenkephalin contains seven sequences, six copies of Met-enkephalin and one copy of Leu-enkephalin, thus the activity of the proenkephalin gene is amplified by the production of several Enkephalin peptides. Of the three conventional opioid receptors (opioid receptor, beta-opioid receptor, and opioid receptor), enkephalin peptides preferentially bind to the beta-opioid receptor.

The physiological role of entcalene

Entcalene is found mainly in local circuits or internal neurons in the central nervous system, and after release, it has an inhibitory effect on other cells that express opioid receptors. Autogenous opioids also modify secretion of the gonads from the pituitary gland. When naloxone, an opioid receptor antagonist, is given to normal people, the plasma concentrations of LH and stimulating hormone (this is because naloxone releases hypothalamic neurons from an endogenous opioid stimulant). One might also expect naloxone to lower the pain response threshold if autogenous opioids were modifying pain, but administration of naloxone to normal human volunteers did not affect pain thresholds at rest or response to experimental pain stimuli. However, naloxone has been reported to attenuate the sedating effects after administration of the drug after minor surgery and to be very painful in humans after major surgery. From these findings and others, two clinically important physiological roles of endogenous opioids are revealed. Opioid autoimmune regimens are usually calm, but they work to reduce pain when there is significant injury or stress. Endogenous opioid activity also underlies the placebo-reversible response to reversing naloxone which reduces pain perception (i.e., elicits analgesia).

III. RESEARCH METHODOLOGY AND FIELD PROCEDURES:

Research Methodology

The researcher used the experimental method for its suitability and the nature of the problem to be researched. Empirical research means "a deliberate or controlled change of the specific conditions for an accident and the observation and interpretation of the resulting changes in the event itself".

Community and Sample Research:

The research community is represented by athletes with a partial tear of the medial ligament of the knee joint and their condition does not require surgery, and for ages (18-25) years for the (10) football players (excellent) in Basra Governorate, where (4) of them were excluded due to the presence of Other injuries with an injury to the medial collateral ligament, from which the researcher chose to represent him as "the part that represents the community of origin or the model in which the researcher conducts the whole and the focus of his work." The researcher chose a sample of it deliberately because of the possibility of controlling its research variables more precisely than the rest of the samples, as the research sample consisted of (6) players with a partial tear of the medial ligament of the knee joint, so the research sample was 60%. That in order to control the research variables accompanying the conduct of the research experiment and to identify the validity of the sample and moderately distribute the values of its variables, the researcher found homogeneity for the research sample in terms of length, weight, age, and training age using the torsion factor. The results showed that the individuals of the research sample were distributed naturally in the variables. Research, and hence the absence of outliers; As the values of the torsion coefficient were confined between (± 1), which indicates the normal distribution of the sample, as shown in Table (1).

<table>
<thead>
<tr>
<th>No</th>
<th>Variables</th>
<th>measuring unit</th>
<th>Arithmetic mean</th>
<th>standard deviation</th>
<th>Coefficient of variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Length</td>
<td>cm</td>
<td>173.000</td>
<td>4.939</td>
<td>2.855</td>
</tr>
<tr>
<td>2</td>
<td>the weight</td>
<td>Kg</td>
<td>71.833</td>
<td>4.445</td>
<td>6.188</td>
</tr>
<tr>
<td>3</td>
<td>Biological age</td>
<td>Year</td>
<td>21.000</td>
<td>1.095</td>
<td>5.214</td>
</tr>
<tr>
<td>4</td>
<td>Age of training</td>
<td>Year</td>
<td>7.500</td>
<td>1.048</td>
<td>13.973</td>
</tr>
</tbody>
</table>

Means of collecting information, equipment and tools used in the research:
4. Arab and foreign references and sources.
5. Information network (internet).
6. Standardized tests for some physical characteristics and the normal range of motion of the knee joint.
7. Players information form and recording results of tests of physical variables, normal range of motion, and biochemical variables of the knee joint.
8. A questionnaire form for the opinions of experts and specialists in the field of (sports medicine, rehabilitation, and training courses) about the proposed rehabilitative approach.
10. Height and weight measuring device, count (1).
11. Goniometry device, to measure the range of motion of the joints of the body, count (1)
13. Pads to measure the Alkvalene pain reliever.
15. ESR blood meter.
16. One (SONY) photographic camera.
17. Medical balls, count (6), with weights (3 - 5) kg.
19. Two (2) beds, 50 cm high.
20. 12Ice bags (8).
21. A cooler box to keep ice bags.
22. EMG device.
23. Rubber bands.
26. Cry therapy
27. Electrotherapy - EMS (Tens)
28. Electrotherapy device - EMS (Faradic)

Special measurements and tests in research

Anthropometrics (morphology)

Height Measurement:
The laboratory stands upright, barefoot, in front of the centimeter-scale ruler attached to the wall, and then we try to touch the highest point of the facing ruler from the highest part of the head and calculate the height to the nearest centimeter.

Measurement of body mass (weight):
The weight is measured using a medical scale, where the (laboratory) stands upright on the scale without wearing sports shoes, and then the reading given by the indicator is taken to the nearest kilogram.

**Description of the metrics used in the research:**

**Measuring the circumference of the thigh muscle:**

The purpose of the measurement: to find out the size of the thigh muscles of the affected limb in their transverse circumference.

Measurement procedures: The patient lies on the bench with the legs stretched out and with a tape measure, the distance is calculated from the top of the patellar bone and in the middle and 10 cm is calculated and to the top of the thigh bone and a mark is placed with a pen and the measurement is done by wrapping the tape on the thigh muscle and the mark that has been determined, and then in the same way the muscle is measured. The thigh is for the uninjured knee and the difference in the circumference between them indicates atrophy in the thigh muscle in the affected knee. If the difference is (1) cm, then the atrophy will be slight, but if it is (2) cm then the atrophy is moderate and if it is (3) cm it is high.

Scoring: The injured player shall record the circumference of the thigh in centimeters.

**Measuring the circumference of the calf muscle:**

The purpose of the measurement: to find out the size of the calf muscles of the affected limb in their transverse circumference.

Measurement procedures: The patient lies on the bench with the legs stretched out and with a tape measure, the distance is calculated from the top of the patellar bone and in the middle and the distance is calculated (5) cm towards the lower leg of the leg bone and a mark is placed with an ink pen. The calf is for the uninjured knee and the difference in the circumference between them indicates atrophy in the leg muscle in the affected knee. If the difference is (1) cm, then the atrophy will be slight, but if it is (2) cm, then the atrophy is moderate, and if it is (3) cm, it is high.

Scoring: The injured player records the circumference of the calf muscle in centimeters.

**Exploratory experiments**

It means "a preliminary experimental study that the researcher conducts on a small sample before conducting his research with the aim of choosing research methods and tools".

**The first exploratory experience**

In order to identify the positive and negative aspects that may appear in the future and for the purpose of avoiding them and developing, deleting or modifying some research steps and to ensure the suitability of the proposed period of time for the rehabilitative unit and for the purpose of ensuring the safety of the work of devices and tools and identifying the validity of the measurements used in the research and the ability of the researcher and the work team to Its performance and implementation, the researcher conducted an exploratory experiment on a sample of (2) injured athletes on (Sunday) 11/15/2020.

**The second exploratory experiment**

The researcher conducted the second exploratory experiment related to the rehabilitative curriculum, which was conducted on (Thursday) corresponding to 11/19/2020 and at 3:30 pm to find out the exercises used in the rehabilitative curriculum on (2) patients from the research sample with a partial tear of the medial ligament, who are Of the individuals of the research sample who are subject to the qualifying curriculum

**Field research procedures**

**The pretest**

After the members of the research sample were identified from the athletes with a partial tear of the medial ligament of the knee joint, the researcher conducted pre-tests on the research sample of (6) and gave the researcher a brief explanation of how the measurements were performed and their sequence, and the researcher proved all the circumstances of the measurements from (Time, place, and climate) to be able to create similar or approximate conditions when conducting dimensional tests.
The qualifying curriculum used

The researcher has prepared a proposed rehabilitative approach to develop some physical characteristics and abilities and movement determinants of the knee joint affected by the partial tear of the medial ligament of the knee joint depending on the sources, references, research and studies as well as the opinions of experts and specialists as a result of the personal interviews conducted by the researcher with them, and after obtaining the research sample from the injured, and through their examination by the clinically competent physician as well as by means of magnetic resonance imaging, where the researcher implemented the proposed rehabilitative approach and applied it to the experimental research sample (one group) after the pre-test, as the implementation of the rehabilitative approach took a period of (10) weeks and the rehabilitation curriculum included (30) A rehabilitation unit, with three rehabilitative units per week, and the duration of each rehabilitative unit ranges between (40-60) minutes, as the rehabilitation curriculum contained physical therapy devices such as cooling, stimulation and heat devices, as well as a different and varied group of exercises that are commensurate with each stage of rehabilitation Where the researcher personally supervised the follow-up of the curriculum with the sample, and made sure that they applied the exercises, knowing that the start of the implementation of the rehabilitation curriculum After two days of taking the pre-exams, the time period for applying the qualifying exercises is from Tuesday 1/12/2020 until Monday 2/15/2021.

Dimensional tests

After completing the implementation of the qualifying curriculum, the post-tests were conducted on the research sample on Wednesday 17/2/2021 at exactly nine o'clock in the morning in the Physical Therapy Hall of the College of Physical Education and Sports Sciences / University of Basra.

Presenting, analyzing and discussing results

For the purpose of reaching the research objectives and verifying the validity of the hypotheses, the researcher presented the results of the research in the form of tables and graphs, and then the researcher analyzed the results and discussed them, as it is an illustrative means for the results of the research. Error in later stages of research and strengthens scientific evidence.

Presentation, analysis and discussion of the results of the pain variable:

Table (2) shows the arithmetic mean, the standard deviation, and the value (t) calculated in the pain variable (Alkkhalin) for the research sample in the searched variables.

<table>
<thead>
<tr>
<th>indicatio n</th>
<th>Calculate d T value</th>
<th>Standa r d devi ation</th>
<th>Post test Arithmeti c mean</th>
<th>The pretest Arithmeti c mean</th>
<th>The measure g unit</th>
<th>Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>moral</td>
<td>0.000</td>
<td>16.135</td>
<td>0.341</td>
<td>0.245</td>
<td>0.805</td>
<td>0.918</td>
</tr>
</tbody>
</table>

The above table shows the significance of the differences between the pre and post tests for the test for measuring the variant of pain (Invaline) for the research sample group and in favor of the test after the curriculum, as the arithmetic mean of the pre-test for the measurement of Invalene reached (6.321) with a standard deviation of (0.918) and the arithmetic mean of the post test for measuring Invaline (0.805). With a standard deviation of (0.245), and the value of T calculated for the Invalin measurement test reached (16.135), with a standard error of (0.341) and at a level of significance (0.000), which is smaller than the level of statistical significance (0.05). For the pain variable measurement test (87.26%).

Table (2) shows us the results of the significant differences in the arithmetic meanings of the two tests before the curriculum and after the curriculum for the pain variable (ankvalin), which were in favor of the post-curricular test, as it becomes clear to us that the test after the curriculum was the best when measuring the retinopathy in the individuals of the sample afflicted with a partial tear of the ligament. Medial to the knee joint, where we notice that the pain variable (Alkkhalin) begins to decrease when the level of pain decreases, and this is considered an effective indicator of what was brought about by the rehabilitation curriculum proposed by the researcher to bring the injured athletes to the nearest stage of recovery.
The researcher believes that rehabilitative therapeutic exercises have a great effect on the degree and severity of pain, as it makes the affected joint more flexible and stronger in structure, and (Patrika 2013) mentions, "Ankephalin plays a role in nerve transmission and pain modification." This is in line with the measurements made by the researcher (before the curriculum and after the curriculum), as this reflects for us the state of adaptation reached by the members of the affected sample and also the ability of the adrenal gland to control the secretion of painkiller (Alkvalin) by controlling the amount of secretion in accordance with the nature of the injury And recovery from it, and this is confirmed by (Robert 2017), "Self-opioids work to reduce pain when there is a major injury or stress," as this came in line with the measurements made after the application of the rehabilitative curriculum.

IV. CONCLUSIONS AND RECOMMENDATIONS:

Conclusions:

1. A preference was found in the results of tests and measurements in the biochemical and analgesic variables (Alkvalin) after the qualifying curriculum over the pre-tests and measurements.

2. There are no differences between the injured and the healthy athletes after implementing the rehabilitation curriculum in the level of concentration of painkiller (Alkkalin).

3. A preference was found in results of tests and measurements in some physical characteristics, the circumference of the thigh muscles, the range of motion of the affected joint and the pain reliever (Alkkalin) after the qualifying curriculum over the pre-tests and measurements.

Recommendations:

1. The researcher recommends the use of pain reliever (alkephalin) in other rehabilitative therapeutic approaches, in order to detect the level of pain as a tracer state for the injured.

2. The possibility of using the results of healthy people in pain reliever (Alkkalin) as an indicator to healthy people.

3. Emphasis on measuring and testing enzyme or hormonal concentrations or chemical compounds when conducting research in injuries and sports rehabilitation that indicates the state of the internal environment of the injured and not relying on the variable of physical character only.

REFERENCES


17. (.TM Sandres and CM Bloo: Effects of Endurance Exercise on serum enzyme activities in the dog-big-man, Experiment Biology and Medicine, USA, 1997, P. 150.

