

# THE EFFECT OF AN ACCELERATED REHABILITATION METHOD BY USING THE AQUEOUS MEDIUM TO REHABILITATE WORKING MUSCLES ON THE KNEE JOINT AS A RESULT OF INJURY TO THE ATHLETIC CRUCIATE LIGAMENT

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## ABSTRACT

*The importance of the research lies in preparing an accelerated rehabilitation method using the aqueous medium to rehabilitate the muscles working on the knee joint as a result of an anterior cruciate ligament injury through the use of a device developed by the researcher simulating muscle vibration and the mechanism of his work with accelerated protocols and the aqueous medium in the possibility of rehabilitation in periods of periods less than Commonly recognized as traditional. The research aimed at preparing an accelerated rehabilitation approach using the aqueous medium to rehabilitate the muscles working on the knee joint as a result of the cruciate ligament injury, and to identify the effect of the curriculum on the rehabilitation of the scalar range, strength and surroundings of the muscles working on the affected knee joint and to identify the effect of the curriculum on rehabilitation of a stable balance The mobile for the injured man The experimental method was used in a one-group method with pre- and post-testing. After collecting and statistically processing the information, the researchers concluded that the rehabilitation method developed the affected man's circumference in a positive way, reaching the near-normal condition. H.an approach developed man angle rehabilitative positively affected access to the case of semi-natural.*

**Keywords:** *The aqueous medium .*

## INTRODUCTION

The occurrence of any injury to the joint and any of the other anatomical structures will lead to limiting the natural movement of the knee joint, and thus limiting the

movement of the muscles working on the joint, which leads to the loss of the muscle's natural size as a result of restricting its movement when the injury, so the importance of research lies in preparing a method An accelerated rehabilitation using the aqueous medium to

rehabilitate the muscles working on the knee joint as a result of an anterior cruciate ligament injury through the use of a device developed by the researcher simulating muscle vibration and the mechanism of his work with accelerated protocols and the aqueous medium in the possibility of rehabilitation with less periods of time than a It is not known traditionally. The use of the aqueous medium that works to rehabilitate the muscles operating on the knee joint as a result of an injury to the cruciate ligament is one of the things that "met with great controversy, especially regarding the possibility of using accelerated anterior ligament rehabilitation programs as there are a large number of specialists, coaches and athletes who hold a traditional view and program Conservative rehabilitation, but in recent years a lot of specialists have moved towards more intensive rehabilitation programs towards the cruciate ligament after the reconfiguration process, based on a number of studies that have proven the effectiveness of this type of program (Accelerated protocols) Acceleration, and through the field researchers 'vision of being a teacher, he participated in many training and qualification courses that gave a broader and more accurate view regarding the rehabilitation process, noting that the process of stimulation used in treating the muscles working on the knee joint is randomized and depends on experience and the absence of the approved existence in stimulating the muscles after depositing in randomness and experience. For the muscles working on the affected knee joint with the aim of comprehensive rehabilitation after the injury. The research aimed at preparing an accelerated rehabilitation approach using the aqueous medium to rehabilitate the muscles working on the knee joint as a result of the cruciate ligament injury, and to identify the effect of the curriculum on the rehabilitation of the scalar range, strength and circumference of the muscles working on the affected knee joint and to identify the effect of the curriculum on rehabilitation of a stable balance And the moving of the affected man. The researchers assumed that there were statistically significant differences between the pre and post tests in the rehabilitation of the muscles working on the affected knee joint using exercises and the aqueous medium. In this field, several studies were conducted, including the study of Muhammad Al-Najjar Tawfiq Othman Muhammad (2013), which concluded that the qualification program showed a significant improvement in the research variables, which are the

dynamic range, muscle strength, muscle surroundings, and balance.

## MATERIALS AND METHODS:

Study place: Sports Medicine Laboratory.

Study design: The two researchers used the experimental approach to its suitability to the nature of the problem to be solved by designing the one group with pre, inter and post test. The two researchers conducted the exploratory experiment from (3/20/2019) until (3/22/2019). On two of the healthy people, the aim of which was to identify the safety of the devices used in research, calculate the work time on the devices, and train the auxiliary work team. The pre-test was conducted one day after the operation, and each individual was injured if the measurements related to the oceans, motor range, strength, speed, balance, and planning were taken Electromyography (EMG) in this period. The researcher considered that the tests should be in one day and under medical supervision in the Arab Hospital for Physical Therapy. T as in Alchtbara tribal and both on an end to the injured and the same place and under medical supervision was conducted posttest after the end of the curriculum accelerated after four months of pre-test and each infected separately and was taking measurements as in the pre-test and under the same conditions and at the same place and a medical under the supervision.

Physical tests for research and measurements were determined based on scientific sources and some of those with scientific experience in the field of rehabilitation of sports injuries, therapists and gentlemen members of the scientific committee. Among the most important tests:

First: Femoral muscle circumference measurements. Measurement was done immediately after the injury after the operation.

The goal of the measurement: to measure the circumference of the thigh.

Tools: tape measure, data logging form, pen

How to measure: It is done by placing markers from the top of the upper edge of the patellar bone at the following distance (12) inches, as the person standing observes the lack of muscle tension (Farhat, 2012, 67).

Registration: The reading is taken by means of the tape measure of the circumference of the quadriceps muscle and the unit of measurement in centimeters.

Second: Measurement of the dynamic range (fold – duration)

The pre-operative measurement was done immediately after the injury as well

)Measurement of the dynamic range in the case of the tide. (Benwan, 2018, 66

The purpose of the measurement: The test aims to measure the kinetic range of the knee joint in the case of tide.

The tools used: the machine. Recumbent sofa.

Description of the measurement method: The person standing by the measurement stands at the side of the laboratory (the injured) and is in a state of lying on the bench. The gnometer is placed on one side of the affected knee area, the lateral or medial side. For the affected man, the other remains fixed in its first position, and reads the angle between the arms of the gnometer and represents the tidal angle of the knee joint.

Registration: The gnometer indicator indicates the kinetic extent of the knee joint in degrees.

Third: Measuring the dynamic range in the case of folding. (Benwan, 2018, 67)

The tribal measurement was done immediately after the injury

Purpose of measurement: to measure the kinetic range of the affected knee joint in the case of flexion.

The tools used: the device for the sofa recliner.

-Description of the measurement: The measurement stand stands next to the laboratory while it is lying on the sofa, and then we ask the injured to bend the affected leg inward to the maximum degree that we can take the measurement by the fixed, moving arm, which indicates the range of motion of the joint as shown in the picture.

Registration: It makes three attempts and takes the best reading and is taken in grades.

Instruments used: developed electrical stimulation device. Anti-gravity belt device made by Alter G Company for measuring (speed). The instrumentation device for measuring the range of motion of the joint (degree). The device for measuring the weight (kg) and the total length of the body (cm). The elasticity is varied. The Palestine Meridian Hotel pool and the Al-Mashreq Club pool - in Baghdad governorate. Bags of snow. Small stairs in the pool. Tape measure of the circumference of the muscles. Balance balls. Knee support. Weight devices.

**Statistical means**

The SPSS statistic bag was used to process research data.

**RESULT AND DISCUSSION:**

Presentation and analysis of results for the groin circumference:

Table (1)

The mean, standard deviation and calculated (F) value of thigh circumference are shown in pre-, inter- and post-test

Kind of difference	Sig	Calculated P value	Variable error	Average squares between tests	standard deviation	Arithmetic mean	Variables
moral	.0000	35.412	.5670	20.067	.836660	37.8000	test before
					.894430	39.6000	Interoperability testing
					.836660	41.8000	test after

Significant <(0.05) at the degree of freedom (24: 2) and below the significance level (0.05).

Table (2)

Shows the size of the influence of Mosley to the angle of the affected man

Sig	Degree of freedom	Mosley Factory	Influence within the tests
.6690	2	.7040	Thigh circumference of the affected leg

Moral <(0.05)

In order to know the differences between the tests, a Bonferroni test was used.

Table (3)

The median and moral difference shows the Benferrone test of the thigh circumference of the affected leg

Sig	Sd	Media teams	the exams
.1100	.5830	1.800	Test before - Interoperability testing
.0060	.5480	4.000	Interoperability testing– test after
.0010	.2000	2.200	Test before - test after

Moral <(0.05)

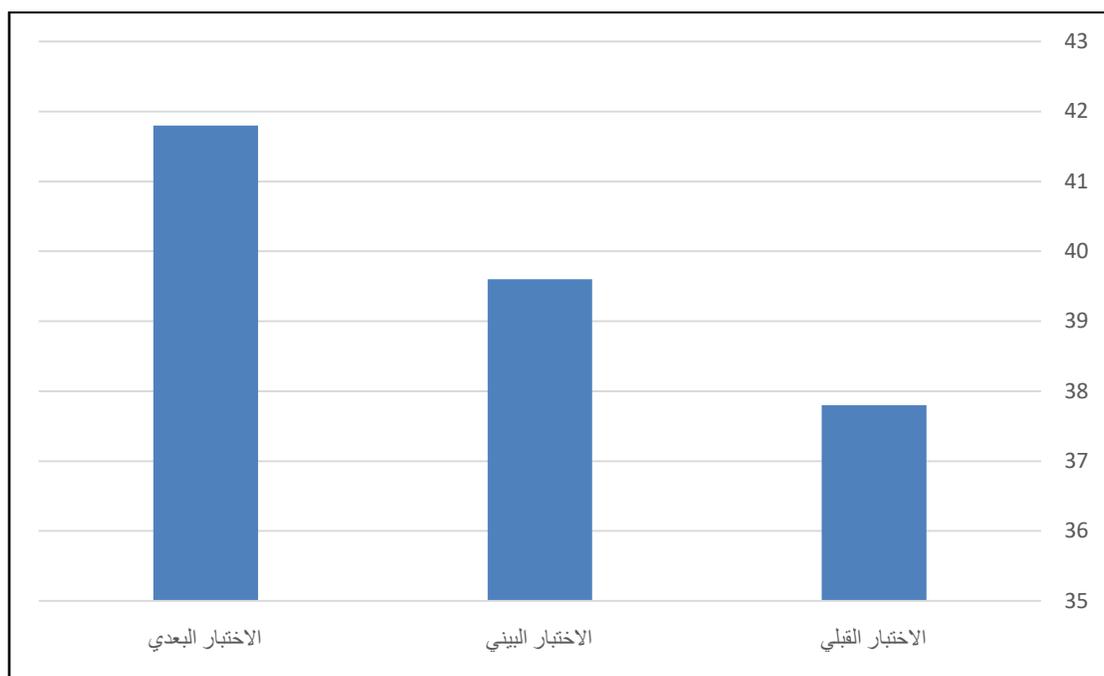


Figure (1)

Shows the arithmetic mean of tribal, intra- and posttest tests of thigh circumference

Discuss the results

Through table (1), we find that the arithmetic middle increases with the progress of the rehabilitation period and increases closer to the arithmetic mean for the healthy man, which is at a value of (42) cm. Before injury, rehabilitative exercises reproduce the muscle tone in a manner that ensures good harmony in the production of strength, as it improves the muscle tone and smoothly and is compatible when shrinking, and this leads to improved strength production, and hence the lack of work that leads

to muscle weakness (1972.p253 Neilson), as well The training curriculum and its contents Physical exercises and appropriate repetitions were closely related to the physical aspects of the injured, as they were consistent with the physical and mental ability of the player and varied based on the basis of balance between the strength of the working muscles, because "if the training curriculum is built on a scientific basis and programmed with appropriate and progressive intensity, observing individual differences and using the optimum repetitions

and rest period Intervention under the supervision of specialized trainers under good training conditions in terms of space, time and tools used "(Ismail, 1996,98), as the qualification curriculum with all its vocabulary depends on a balanced repetition in giving various exercises and after these exercises Where lengthening exercises are given to achieve the greatest benefit from strength exercises, so progress is fast in gaining growing strength and this positively returns to the muscles and gives them the ability to build better in small muscle contraction units. Stretching and strength exercises are an essential part of any flexibility development program Or maintain it "(Abdel-Fattah, 1993, 91), and this must take into account" the linking of stretching exercises with strength exercises to ensure work on the balanced development of the musculoskeletal system and avoiding the development of only one side "(Ali and others, 1997, 23). The rehabilitation method is concerned with the gradual process in giving the rehabilitation exercises and the gradual increase in the different resistors and this

leads to a gradual increase in strength, which is offset by a gradual increase in the muscle circumference and this is due to the building of the systolic units that are clearly reflected on the muscle circumference and is a criterion for progress in the strength of the muscle and this The injured person can withstand the rehabilitation exercises and develop them and increase his ability to control the movements of the parts related to the muscle better as "if you want to develop strength, use exercises with upward resistance, and this means that the more muscle strength the player is able to To control the movements performed "(Jamil et al., 1995, 111). After discussing the results, the two researchers concluded that the rehabilitation method had developed the affected man's circumference in a positive way to reach the semi-natural condition. The rehabilitation method had developed the angle of the affected man positively, reaching the semi-natural condition. The rehabilitation method developed the acute angle of the affected knee joint positively to the near normal state.

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