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The effect of therapeutic exercises in the rehabilitation of the cruciate ligament injury of the knee joint of futsal players

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Abstract

The study aimed to prepare a program using therapeutic exercises in rehabilitating the anterior cruciate ligament of soccer players, as well as knowing the effect of therapeutic activities in rehabilitating the anterior cruciate ligament and identifying the differences between the two tests (pre- and post-test) for injured soccer players, and the researcher used the experimental approach was done in the manner of equal groups. The research community was identified from the football players for the halls with the anterior cruciate ligament of the knee joint, who are reviewers of Sadaf Medical Center, who numbered (8). The intentional method chose the research sample, and (3) players were selected from the model to apply the exploratory experiment to them. Thus, the sample size under study was (5) injured players. Homogenisation was carried out for the group under investigation, and the results showed differences between the pre and post-tests in favour of the post-test.

Keywords*: therapeutic exercises, cruciate ligament of the knee joint.*

Introduction:

Sports injuries are among the main problems that hinder the player and disrupt training programs, which leads to negative returns that prevent the development of achievement for the player and his distance from practising sports activity. It has become one of the games with the highest percentage of sports injuries, as the knee joint bears many burdens due to the effort needed by the sports activity [1][2].

It is self-evident that players need periodic medical examinations that work to maintain their safety and security and that the player's return to play after injury without rehabilitation is a big mistake. Sports medicine must impose itself in all sports, especially futsal. Also, therapeutic exercises have become Mainly in the restoration of the injured, which helps to improve the health of the knee and restore its efficiency through activities to strengthen the muscles surrounding the knee and help to restore movement naturally. For the injured player to return the injured part to its normal position and restore its work functionally, the importance of research on the effect of therapeutic exercises on improving the knee joint lies [3][4].

Research problem:

The injury of the anterior cruciate ligament of the knee joint is more prevalent recently, as well as the pain while extending and bending the knee in any movement and hindering the player from motor performance. Hence, the researcher found a high percentage of this injury compared to the rest of the other damages. Therefore, the researcher sought to solve this problem by developing a rehabilitation program using therapeutic exercises in a studied and scientific way to strengthen the muscles surrounding the joint and the effect on relieving knee pain and returning the injured person to his normal condition [5][6].

Research aims:

1- Preparing a program using therapeutic exercises to rehabilitate the anterior cruciate ligament of soccer players.
2- Identifying the effect of therapeutic exercises in rehabilitating the anterior cruciate ligament of futsal players [7][8].
3- Identifying the differences between the two tests (pre- and post-test) for the injured futsal players.

practical part

The researcher used the experimental method in the manner of equal groups of futsal players with the anterior cruciate ligament of the knee joint, who are (8) reviewers of Sadaf Medical Center. The sample under study is (5) injured players. Homogenisation was performed for the group under investigation.

Table (1) shows the homogeneity of the sample

The variables	the unit of measurement	mean	standard deviation	skewness	significance
Weight	kg	74.50	8.346	0.537	Homogeneity
Length	cm	178.50	1.9148	-0.855	Homogeneity
old	year	24.250	2.2173	0.482	Homogeneity

Methods, devices and tools used in the research [9][10].

Means of collecting information:

1- Arabic and foreign references and sources, and the global Internet.
2- The interview.
3- Observation.
4- Tests and emptying form.

Equipment and tools used in the research:

1- (1) Dell computer.
2- A leather tape measure (5m) long
3- A geometer to measure the range of motion of the knee joint
4- A legal football field.
5- The balance bench (a board of wood).

Field procedures for research:

Information form to reveal the diagnosis of injury:

In the detection of the injured and their number, where the researcher designed a unique form filled by people with disabilities to reveal information about the wound to know what the most areas and joints that are damaged by football players in the halls and knowing the location of the injury are and it turns out that the most places and joints that are damaged are the knee joint, and after distributing the form to The injured are presented to the specialist doctor who examines the injured and diagnoses the type of injury [11][12].

Determine the measurements used in the research study:

First: measuring body mass

A scale measures the body weight, and the measurement process is done with minimal clothing and without shoes, and the scale is not placed on a soft floor (a sponge mattress) when taking the measurement [13][14].

Second: Measurement of the total length of the body:

The measurement is made to the nearest centimetre using the length scale. The process of measuring the size must be done without shoes, and if the examinee has thick hair on his head, pressure is placed on the head with the measuring plate [15].

Tests used in the research:

First: the balance test:

Purpose of the test: to measure static balance

The balance bench is a wooden board with a crossbar of (50) cm long and (18) cm wide installed in the middle, and an electronic whistle stopwatch, football field.

Performance specifications: The player with the injured leg stands above the edge of the crossbar so that his height is on the crossbar and the other portion is on the board. Upon hearing the start whistle, the injured player lifts the leg off the board so that it rests on the leg on the ground.

Second: Strength stretching test for the muscles of the two legs (from a standing position) within (60) seconds

Purpose of the test: This test aims to measure the stretching of the muscles of the two legs

Tools used: electronic clock, gymnasium, rug

Performance method: From standing, fully bend and extend the legs for 60 seconds.

Recording: Calculate the number of times flexion and extension of the legs within (60) seconds

Third: Knee joint range of motion test:

The angles of the knee joint are measured using a (goniometer).

The aim of the test: measuring the angles of the range of motion in the case of (extension) of the knee joint

Measurement Description: The injured person performs the test to measure the range of movement of the knee joint towards (tidal)

The injured person is in a state of recumbency, where the measuring device (goniometer) is fixed with adhesive tapes so that the angle of the leg joint with the thigh is at an angle of (90) degrees, after which the patient moves the joint towards (tide). The values of the tips are extracted.

Recording method: angles are recorded towards (tide)

Fourth: Measuring the range of motion in the case of (bending):

The purpose of the test is to measure the range of motion in the case of (flexion) of the knee joint

- The tools used are a geometer, a registration form, and a lying couch

Description of the measurement: The tester is lying on the sofa and stands next to the tester. The tester is asked to bend the injured leg to the maximum degree inward. We measure by the fixed and movable arm.

Recording: for the knee joint, where the laboratory makes one attempt, and the reading is taken in a unit of measure in degrees of angle.

Exploratory experience

The researcher conducted the exploratory experiment on Wednesday, 11-30-2022, at 10 am on a survey sample of players with the anterior cruciate ligament of the knee joint in Sadaf Center to get acquainted with the requirements of the experiment and the obstacles that the researcher could face. The purpose of conducting the exploratory investigation is to identify the following:

1- Determine the therapeutic exercises and the extent of the patient's ability to apply these exercises
2- Getting to know the auxiliary staff
3- The validity and ability of the sample to apply Chinese needles

Pre-test:

The researcher conducted the tribal tests on the research sample on 14-12-2022 on Saturday at the Abbas Hadi Five-a-side Football Stadium and Sadaf Center using the balance test, the strength stretching test for the muscles of the two legs and the range of motion for the angles of the knee joint, and then writing down the results of the tests to process them statistically.

The main experience:

The researcher prepared a rehabilitation program to rehabilitate the anterior cruciate ligament injury of the knee joint of futsal players, one of them using therapeutic exercises, based on some scientific sources and research on rehabilitation and some experts and specialists in Chinese medicine and rehabilitation.

The main experiment of the group under study began with therapeutic exercises, starting on Saturday (31-12-2022) until (8-2-2023) when the injured players came to the Sadaf Center. After that, the exercises prepared by the researcher were performed, as the researcher was keen to. The activities should be gradual, from easy to complex. The sample members completed it in a time of (14-29) minutes for each member of the sample, as the researcher relied on the feeling of fatigue the patient as an indicator to determine the intervals of rest for a period of 3 units per week, as the total duration of the program is (6) Weeks and the total number of rehabilitation units were (18) units for therapeutic exercises.

Post-tests:

The researcher conducted the post-tests on the research sample on Friday and Saturday (10-11/2/2023) at exactly (4) pm in the Abbas Hadi Five-a-side Football Stadium and Sadaf Center, where the researcher recorded the results of measuring the tests and the angles of movement.

Statistical means:

The statistical bag (SPSS) was used to extract the results and the following appropriate means:

the results:

View and analyse the results of the pre and post-tests for the group under study

Schedule (2)

It shows the pre and post-tests

variants	Pre-test		Post-test		(Z) Calculated	sig	Significance
	mean	Std.	mean	Std.			
Tide Movement	119.80	1.303	123	2.345	-2.070	0.038	significant
Bending movement	117.60	4.219	133.60	4.159	-2.032	0.042	significant
Balance	11.8	1.303	16	1	-2.121	0.034	significant
Leg extension	22	2.345	34.8	1.48	-2.070	0.038	significant

D value	less than 0.10	0.10-0.29	0.30-0.49	0.50 and above
Effect size	No effect	small	medium	large

Discuss the results of the differences between the pre and post-test in the research sample.

Table (2) show differences between the pre and post-tests of the group under study in the specific variables. Rehabilitation of the cruciate ligament and therapeutic exercises in developing sensory position receptors to stimulate the nervous system so that the athlete can restore the dynamic stability required in sports competitions.

Therapeutic exercises also have a role in the differences due to the flexibility in the knee joint, which had a significant role in restoring the natural function of the knee joint, which is flexion and extension. The flexibility of the muscles of a particular joint, its tendons, ligaments, or a group of joints in a specific movement or activity depends on the amount and intensity of the exercises performed in a wide range of actions and the degree of flexibility acquired by the individual.

(Moffet and others) (2004) agree that rehabilitation aims to restore the full function of the knee in terms of balance and stretching of the knee joint muscles. The physiological benefits of therapeutic exercises improve flexibility, elasticity, tendons, ligaments, and muscles, and this improvement contributes to reaching the normal range of motion or something close to it, with a significant degree of the natural movement of the knee joint.

It is clear from the good results obtained due to the variety of therapeutic exercises applied; the latter led to the restoration of joint strength and pain relief through correct use or proper performance to the extent that the injured person began to perform all his motor functions typically and on this

basis, the variety of therapeutic rehabilitation exercises applied by The sample had a clear impact on the emergence of this development.

Conclusions:

1- The results showed significant differences in favour of the post-test for the group under study.
2- The therapeutic exercises affected the group under study between the pre and post-tests.

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