

THE EFFECT OF THE REHABILITATION APPROACH ON THE INDICATORS OF PAIN AND SOME PHYSICAL VARIABLES AFTER PARTIAL RESECTION OF MENIS- CUS CARTILAGE OF THE KNEE JOINT

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Abstract

The knee joint considered one of the important and large joints in the human body and a percentage of injury in this joint (70%) of sports injuries, so it has become necessary to maintain the integrity of this joint, where the things that called for the researcher to choose the problem discussed although there are studies around is that the selection of the injured sample after doing the procedure by endoscopic way. The study aimed to identify the impact of rehabilitative approach proposed by the researcher for the rehabilitation of the injured (injury medial meniscus) of the knee joint. Identify differences in painkiller and physical variables and range of motion before and after the endoscopic operation and after the rehabilitative curriculum, it is found the presence of differences between the physical variables and determinants of movement before and after the endoscopic operation and after rehabilitative curriculum and in favor of tests and measurements after the rehabilitative curriculum. There are differences in one of the indicators of pain before and after the endoscopic operation and after rehabilitative curriculum, tests and measurements after the rehabilitative curriculum. The researcher used the experimental method to fit the research problem and the selection of the sample by intentional way which included patients with partial rupture in meniscus cartilage and was numbered (8). Researcher begun his rehabilitation curriculum after endoscopic operation by (four weeks). and after the application of the curriculum, tests should be done and then do as before withdrawing blood and after obtaining the data, Statistical processor have been done and the most important conclusions is that the rehabilitative curriculum has the impact of re-motor run of the knee joint and get rid of muscle atrophy of femoral muscle and the development of some of the physical variables and disposal of pain. the most important Recommendation of the researcher is using the endoscopic processes instead of surgical procedures because of their active role in the limitation of time and effort to return the patient to practice in the sports activity, and an emphasis on the use of the curriculum prepared by the researcher because of its role in the returning the individuals of the sample to a level as close as possible to their natural pre-injury.

KEYWORDS: REHABILITATION. PHYSICAL. PARTIAL. CARTILAGE. KNEE

1. INTRODUCTION AND IMPORTANCE OF THE RESEARCH

The rehabilitation of sports injury became worried for specialists in therapeutic and sports medicine, and how to return the injured people with less time and effort into an area of sports competitions and although both have his process of treatment methods but remains rehabilitative curriculum is the borderline in the healing of the players and their return to their level of natural. knee joint considered one of the important and large joints in the human body, whether in the practice of everyday business and sports activity, in particular, the percentage of injury at this juncture (70%) of the injuries (6: 2010) sports that affect athletes so it has become necessary to maintain the integrity of this joint in various sport activities, where injury to any part of it cause stop athletes from participating in the games and to drop their level because of the presence of pain in the area of injury which lead to lower their technical level depending on the type and degree of injury, and since this joint considered an animate part of the human body so it needs to diet and movement as flexion and extension and the accompanying contraction and relaxation of the surrounding muscles as the basis for its ability to give more and more, therefore its necessary to focus on the therapeutic curriculum for this joint with the type of injury and the way of Opening of knee either endoscopic or surgical, the indicators that can be inferred by the level of the change in the body of the patient are biochemical variables and physical characteristics and the range of motion

2. RESEARCH OBJECTIVES

- 1- preparation a rehabilitative approach for the rehabilitation of the injured (injury medial meniscus) of the knee joint to identify the differences between the physical variables and range of motion before and after the endoscopic operation and after rehabilitative approach
- 2- Understand the differences between chemical indicators before and after the endoscopic operation and after rehabilitative approach

3. RESEARCH HYPOTHESES

- 1- The existence of differences between the physical variables and range of motion before and after the endoscopic operation and after rehabilitative approach and in favor of tests and measurements after rehabilitative approach
- 2- There are differences between the chemical indicators before and after the endoscopic operation and after rehabilitative approach

4. RESEARCH METHODOLOGY

The researcher used the experimental method to solve the problem of his research and it is the nearest for solving problems by intentional way so the researcher and before doing the study should choose an experimental design to test the validity of the results derived from his hypothesis (2: 1973, p 256)

5. RESEARCH SAMPLE

In order to access to accurate search results, the researcher must choose the sample by the intentional way. The number of injured athletes with medial meniscus during that period (8) mathematically, where the researcher rule out a number of respondents who have other injuries in addition to the meniscus injury. The sample ranged in age between (18-25) years

For the diagnosis of injury, the researcher prepare a preliminary form contains a set of preliminary information gives the initial idea to bring a sample of the patient and make some initial measurements (height and weight). In order to verify that the sample was distributed normally in some of the variables related to the topic of research

and that have a clear impact on the validity and accuracy of the results, the researcher conducting homogeneity of the sample and, as shown in table (1).

Table 1 shows the mean, standard deviation and coefficient of variation and coefficient of torsion of the research sample

Sequence	variables	Unit of measurement	The arithmetic mean	Standard deviation	coefficient of variation	coefficient of torsion
1	length	cm	174.500	5.15475	2.953	0.801
2	weight	kg	70.000	6.54654	9.351	0.000
3	Training age	year	6.8750	0.99103	14.414	0.862-
4	Flexion of knee	degree	129.125	3.226	2.498	0.361
5	Extension of knee	degree	162.500	2.878	1.771	0.479
6	The rapid force - belly	The number of times	7.125	1.356	19.031	0.294-
7	The rapid force -half debna	The number of times	8.250	1.488	18.036	1.217-
8	The rapid force – complete debna	The number of times	7.125	1.246	17.487	0.304-
9	Endurance force- belly	The number of times	23.250	4.920	21.161	0.270
10	Endurance force – half debna	The number of times	29.125	3.181	10.921	0.187-
11	Endurance force – complete debna	The number of times	25.375	3.502	13.800	0.089
12	Pain killer- beta endorphin	mili-ter/pikogram	221.375	34.574	15.617	1.986

In order to ensure that the research sample was distributed normally, the researcher conducting homogeneity of the sample (meniscus cartilage) as in Table 2

Table (2) Shows arithmetic means and standard deviations and the values of the coefficient of variation and coefficient of torsion of a sample (meniscus cartilage) after the endoscopic procedure in research variables

Sequence	variables	Unit of measurement	The arithmetic mean	Standard deviation	coefficient of variation	coefficient of torsion
1	Flexion of knee	Degree	133.750	2.549	1.905	0.733
2	Extension of knee	degree	170.125	4.0155	2.360	0.069
3	The rapid force - belly	Number of times	8.375	1.505	17.970	0.518
4	The rapid force – half debna	Number of times	10.625	1.060	9.976	0.045

5	The rapid force – complete debna	Number of times	9.125	1.552	17.008	1.188
6	Endurance force- belly	Number of times	28.375	5.262	18.544	0.156
7	Endurance force- half debna	Number of times	35.875	3.399	9.474	0.411
8	Endurance force – complete debna	Number of times	34.750	4.166	11.988	0.219
9	Pain killer- beta endorphins	mili- ter/pikogram		198.500	21.132	10.645

It was used the coefficient of variation and coefficient of sprains as a means of statistical processing for treating the physical variables and range of motion and atrophy of femoral muscle working on the affected knee and pain killer after the endoscopic procedure, and Due to the coefficient of variation not exceed of class (30), and also coefficient of torsion, which is limited to a value between (+ - 3), which reflects the homogeneity the sample in those variables and it is distributed normally

6. THE SUGGESTED REHABILITATIVE CURRICULUM

The researcher prepared rehabilitative curriculum to develop some physical characters and range of motion, pain-killer and for rehabilitation athletes injured with knee joint after the eradication of the medial meniscus. Where the researcher did the application of the curriculum (for the injured meniscus medial) of the injured athletes, between the day and the last, and the rehabilitative curriculum of the cartilage include on (24) rehabilitative unit , and the duration of each unit (50-90 minutes), with the knowledge that the roll-out curriculum begins after four weeks of the operation, after injured athlete finished the initial phase initial after the endoscopic operation which are at the center of the martyr Qais Abdul Majeed for medical rehabilitation and physical therapy through the use of exercises of isometric and isotonic and with little weights and resistances through physiotherapist specialist for the rehabilitation of injured athletes at this stage. the researcher Has taken into account within the curriculum easy to difficult and simple to complex with the gradual increase weight, also taking into account the principle of gradient in the training load , also the researcher took into account the intensities of exercises used as well as the severity of the rehabilitative unit completely , the researcher also used in his curriculum the pressing bands to prevent swelling (bloody effusion) in the knee joint and allow the tissue in the area of operation of the rapid healing . As a researcher used in his curriculum the stretch and at two periods before the start of the rehabilitative unit At the end of the unit , as well as the use of refresher warm-up exercises and abdominal exercises as well as the use of exercises (winding running) and it is a good test for the movement of the cartilage inside the joint and use the exercises typical in the warm-up as well as the use of the bar and sticks and Dumbbells and light weights before the start of the unit to prepare the injured for the performance of the rehabilitative unit and the ability to lift weights in the rehabilitative unit, as the researcher using the bags and ice bottles after the end of each unit in the curriculum for each injured.

7. PRESENTATION AND DISCUSSION THE RESULTS

Presentation and discussion of analysis of variance (F) of the physical and biochemical variables (before and after the operation and after the curriculum) of the medial meniscus

Table (3) shows the results of analysis of variance (F) between the measurements and tests of physical and biochemical variables and determinants of movement (before and after the operation and after the curriculum)

sequence	Variables	Sources of variation	Sum of squares	The degree of freedom	Average squares	The calculated value of (F)	Statistical significance
1	The range motion of the knee-flexion	Between groups	351.583	2	175.792	26.678	significant
		Inside groups	138.375	21	6.589		
2	Range of motion of the knee - extension	Between groups	870.583	2	435.292	36.804	significant
		Inside group	248.375	21	11.827		
3	Rapid force of belly	Between groups	146.333	2	73.167	27.622	significant
		Inside group	55.625	21	2.649		
4	Rapid force – half debna	between groups	85.583	2	42.792	29.707	significant
		Inside group	30.250	21	1.44		
5	Rapid force – complete debna	Between groups	96.083	2	48.042	28.220	significant
		Inside group	35.750	21	1.702		
6	Endurance force - belly	Between groups	883.583	2	416.792	15.591	significant
		Inside group	561.375	21	26.732		
7	Endurance force – half debna	Between groups	1463.583	2	731.792	25.623	significant
		Inside group	599.750	21	28.560		
8	Endurance force – complete debna	Between groups	1706.250	2	853.125	41.531	significant
		Inside group	431.375	21	20.542		
9	Beta endorphins	Between groups	190458.3	2	95229.125	162.546	significant
		Inside group	12303.030	21	585.859		

Tabulated f under the level of significance 0.05 and degree of freedom (2-21) = 3.47

Through the table (3) shows the results of the values of calculated F to measure the range of motion of the knee (flexion - extension) Report (26.678 to 36.804), which is the more than the Tabulated value of F, the level of significance (0.05) and the degree of freedom (2-21), demonstrating the presence of significant differences between the results of tests of motion range of the knee (flexion - extension) (before and after the operation and after the curriculum). While the results of calculated F in tests of physical variables of rapid Endurance

(of the abdomen - the two legs – half dbna , full Dbna), respectively (27,622 - 29.707 to 28.220), which is more than the tabulated values of F

Under the level of significance (0.05) and the degree of freedom (2-21), demonstrating the presence of significant differences between the results of rapid Endurance

Tests (of the abdomen - the two legs dbna , Dbna full) (before and after the process and after the curriculum), have reached results F) . the results of calculated F in variable physical tests For Endurance force (of the abdomen - the two legs half dbna, Dbna full), respectively (15,591 - 25.623 to 41.531), which is more than the values of tabulated F under the level of significance (0.05) and the degree of freedom (2-21) which means that there are significant differences between the results of stretch force tests (of the abdomen - the two legs half dbna, Dbna full) (before and after the process and after the curriculum) while the value of calculated (F) for the painkiller beta endorphins (162.546), which is greater than the value of Tabulated (F) below the level of significance (0.05) and the degree of freedom (2 - 21), demonstrating the presence of significant differences between the results of measurements of painkiller beta endorphins (before and after the operation and after the curriculum) for a medial meniscus.

In order to find out which tests are better than the other, the researcher used the test with less significant difference (LSD) which is shown in Table 4.

sequence	variables	groups	Deferens between means	Results of differences	Value of L.S.D		Statistical significance
2	Motion range of knee – flexion	G1-G2	129.125-133.750	4.625	3.231	2.208	significant
		G1-G3	129.125-138.500	9.375			significant
		G2-G3	133.750-138.500	4.75			significant
3	Motion range of knee – extension	G1-G2	162.500-170.125	7.625	4.329	2.958	Not significant
		G1-G3	162.500-177.250	14.75			significant
		G2-G3	170.125-177.250	7.125			significant
4	Rapid force of belly	G1-G2	7.125-8.375	1.250	2.048	1.400	significant
		G1-G3	7.125-12.875	5.74			significant
		G2-G3	8.375-10.625	4.49			significant
5	Rapid force of legs – half dbna	G1-G2	8.250-10.625	2.375	1.510	1.032	significant
		G1-G3	8.25-12.875	4.625			significant
		G2-G3	10.625-12.875	2.25			significant
6	Rapid force of legs – complete dbna	G1-G2	7.135-9.125	1.99	1.642	1.122	Not significant
		G1-G3	7.135- 12	4.865			significant
		G2-G3	9.125- 12	2.875			significant
7	Endurance force- belly	G1-G2	23.250-28.375	5.125	6.508	4.448	significant

		G1-G3	23.250-37.500	14.25			significant
		G2-G3	28.375-37.500	9.125			significant
8	Endurance force for legs – half dbna	G1-G2	29.125-35.875	6.75	6.727	4.597	significant
		G1-G3	29.125-48.000	18.875			significant
		G2-G3	35.875-48.000	12.125			significant
9	Endurance force – full dbna	G1-G2	25.375-34.7500	9.375	5.705	3.899	significant
		G1-G3	25.375-46.000	20.625			significant
		G2-G3	34.7500-46.000	11.25			significant
10	Beta endorphins	G1-G2	221.375-157	64.375	30.468	20.824	significant
		G1-G3	221.375-625.8	212.75			significant
		G2-G3	157-8.625	148.375			significant

Through the presentation of the variables in Table 4 note the development is clear in muscle power (speed-strength) and in favor of the test after the curriculum and researcher attribute the reason for this development to the nature of the curriculum and the therapeutic units in a scientific images of and how to manipulate with the severity, size, and time where researcher began fixing time (30 seconds) when you get to the severity (75%) and they arrived to the intensity of (100%), where the increase in weight and duplications which reach to (15) recurrence and this led to a state of adaptation of the nervous system and the flexibility of the motor nerves as a result of duplications performed by the injured athlete which transfer nervous stimulations and the occurrence of the process of muscle contraction of the muscle as well as acts of reflectivity and what the muscle contain of spindles to reach the brain the limits of contraction and thereby increasing in the speed of muscle contraction as a result of an increase greater number of muscle fibers by progression and overload .

the progression (or overload) states that the adjustment of output and hence the increase in the potential functional ability are equal to the size of the load while the second gradient base dictate to the practitioner to increase the training load gradually, so as to ensure occurrence of adaptation in the muscle itself, and thus training exercise of muscle strength done at high speeds, in order to simulate what happens in most sports movements on the ground, which helps the occurrence of required neuromuscular adjustment .

As a rule known in regular training leads to prior nervous adaptation then muscular adaptation and this was confirmed (5: 192) that the nervous system responds by type of contraction (0.3: 2012 'pp. 97-98) and through the display and analysis of stretch force ,noticed the preference of tests after the curriculum and this is due to the nature of the curriculum and its contents of therapeutic units and how to climb the duration of time of therapeutic units, starting from (58 minutes to 91 minutes) which lead to the development of endurance strength as well as the increase in the number of groups and duplicates the content of the exercises in the therapeutic unit and that led to physiological changes in muscle and its ability to withstand fatigue as well as the evolution in the circulatory and respiratory systems as it is "when you use a motor contraction must take muscle range of full motion, which led to secure full nerves of muscle, and thus muscular contraction by shortening and elongation work positively to stimulate and improve the functioning of the circulatory system and muscular system in the direction of endurance

for the understanding of factors that are complementary to each other. (4: 199 'p. 122), and when analyzing the results (LSD) to identify significant differences in arithmetic means for the variable of painkiller (beta endorphin) offered by the table (9), showing that the results of the differences between tests before and after the process was (64.375), which is greater than the value of LSD under the level of significance (0.01) and adult (30.468), which indicates the presence of significant differences between the two tests before and after the process and in favor of the test after the operation

It turns out that the results of the differences between the two tests before the operation and after the curriculum was (212.750), which is greater than the value of LSD under the level of significance (0.01) and adult (30.468), which indicates the presence of significant differences between the two tests before the operation and after the curriculum and in favor of the test after the curriculum, and show that the results of the differences between the two tests after the operation and after the curriculum was (148.375), which is greater than the value of LSD under the level of significance (0.01) and adult (30.468), which indicates the presence of significant differences between the two tests after the operation and after the curriculum and in favor of the test after the curriculum, and also noted from this that the test after the curriculum to the variable painkiller (beta-endorphin) was the best. the researcher Attributed this development which happened to members of injured athletes by detecting the extent of their arrival to the healing phase or the closest to heal by the pain expressed by the painkiller (beta endorphins) which the pituitary gland responsible of it, where secreted when there is pain in the body in order to try to curb this pain when excreted significantly demonstrates the presence of pain and this is what we have observed in measurements before and after the operation and after the curriculum where it began after the curriculum secrete a few amounts which demonstrates the arrival of injured athletes to the stage of healing By strengthening the muscles and ligaments surrounding them and increase their efficiency and thus stopping pain and decrease secretion of endorphins. (8: 2009, p 130)

8. CONCLUSIONS

- 1- rehabilitative approach has effect in returning the motion range of knee joint and get rid of muscular atrophy of femurs and reduce pain
- 2- There are differences between the physical variables addressed by the research between the three tests (before the operation and after the operation and after the curriculum) and in the favor of after the curriculum which demonstrates the improved neural signal and increase the number of operating motor units
- 3- There are differences between the range of motion in the three measurements (before the operation and after the operation and after the curriculum) and in the favor of the after curriculum and it refers to the return of the safety of the affected joint and remove the motor range
- 4- The results of some of the physical variables and range of motion refers to some evolution after the endoscopic operation (meniscus cartilage) resulting from the therapeutic curriculum
- 5- drop out of training before the endoscopic procedure due to injury showed the results of weakness and atrophy of muscle groups working on the knee joint as well as to determine the Identification of the joint

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