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Effect of A rehabilitated motor physical program for Illiotatibial band syndrome in a long distance runner

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Abstract

Background: Illotibial band syndrome is one of the most common knee injuries, which appear in the form of pain in the lateral front of the knee, in runner caused by inflammation of the distant or lateral part of the illotibial ligament. illotibial band is the most common injury of the lateral side of the Knee in runners, with an incidence estimated to be between 5% and 14%. In Order to facilitate the evidence-based management of ITBS in runners, more

Needs to be learned about the etiology, diagnosis and treatment of this injury. The illotibial band syndrome results in great illness and thus disability. (144: 27)

Methods: The sample of the study included one experimental group consisting of (10) of the participants of the rehabilitation centers of sports and natural medicine and rehabilitation of the patients with Iliotibial band syndrome syndrome (20-30), The researcher is the experimental approach due to its relevance to the subject of the research

Objective: This article provides a systematic review of the literature on the

Etiology, diagnosis and treatment of ITBS in runners. Systematic reviews, clinical trials or observational studies involving adult runners (20 > years) that focused on the etiology, diagnosis And/or treatment of ITBS were included.

RESULTS: The proposed therapeutic program works on decline and disappearance of pain, restoration of motor range, restoration of patellar bone to normal, restoration of elastic and muscle strength. Cooling using ice (ice bag) affects the affected part of the pain relief and control of inflammation and improve the psychological state**.**

Recommendation: need rapid treatment of injury after the beginning of the sense of pain and after careful diagnosis to rapid treatment , rehabilitation , avoid the occurrence of complications. And take all

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preventive measures, over-training) (rationing of loads), (Stress on exercises, flexibility, lengthening) and strength of the thigh muscles.

Keywords : rehabilitated , motor physical program , Illiotatibial , band syndrome , distance runner .

Introduction : The iliotibial band is a flat ligament on the outside of the thigh extending from the pelvis to the bone of the trachea. If a person exercises a sport that requires an individual and flexion the knee frequently (such as running and biking for long distances), there may be repeated friction between the ligament and the prominent part of the lower thigh bone on the outside of the knee. This frequent friction results in tissue inflammation ligament.

Micheiie 2004, patella tendon is often injuried with inflammation from the sudden activity of the knee, such as running and jumping. Here we can, name this injury the jumper knee, patella laxity or pressure on the femur can lead to increased loading of the patellar tendon. At first, the pain is concentrated after the activity in the lower part of the patella but it also occurs when the patellar tendon enters the gullet and narrowness of the femur. As the progresses, the pain appears at the beginning of the activity and usually the individuals complain of excessive pain during the up and down stairs or after sitting for a long time.

Perlman 2014, illotibial band syndrome is one of the most common knee injuries, which appear in the form of pain in the lateral front of the knee, caused by inflammation of the distant or lateral part of the illotibial ligament. The illotibial ligament is a thick connective ligament that passes through the femoral joint the lateral flection of the knee joint causes irritation and inflammation of the, illotibial band resulting in the spread of pain on the lateral side of the knee. The illotibial band syndrome results in great illness and thus disability. Sports practice.

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Bortzman 2003 refers to the patellar bone of the knee joint. It provides a mechanical advantage for the frontal muscles of the knee joint. The joint is lined with a synovial membrane and four balances the joint strong ligaments from the front, back and sides. This unique anatomy of the knee
joint can balance the stability of weight bearing and rotational motion to change the direction as a pivot around the fixed foot, and there are several unique combinations that help to strengthen and absorb shocks. (208: 15)

knee joint may appear relatively simple in its composition, but in fact it is one of the largest and most complex joints of the body. The muscles and ligaments support this joint and protect it comprehensively without any osteo-stabilizers. This joint is exposed to severe stresses and emotions. Frequent pronoun making it the most frequent body joints recurrence (70%) of body injuries. (13)

ANATOMY:

Knee joint consists of three bones: the femur, the leg and the patella, which are linked together by a strong ligament, muscles and joint capsule. The bones are lined with a detachable cartilage to absorb the shock. Nothing in the form of the knee or patella bones prevents the knee from sliding forward or sideways. (13)

Femur is the longest and most powerful bone of the human body. The size of the two femoral nodes (inner) and lateral (external) nodes located on the lower extremity of the femur in the simple rotation of the femoral tibiofemoral are different. The human node appears more prominent in the lower part(Distal and larger), while the lateral node appears more prominent in the front and separated by the femoral cavity of the front and the femoral Notch in their distant areas and covering the two nodes with convex cartilage shape and helps both internal and external cartilage to increase to match Between the two femoral nodes and the height of the leg bone to the level of the oblique 10 degrees back and its main function to take the weight from the basic and move it across the knee joint to the bone of the leg. (15) (13)

Tibia cheekbone

Is a very thick bone associated with the stability of the knee joint and has a concave protrusion form (internal and external) and external protrusion is larger than its internal in order to facilitate the movement of the femoral node and the emergence of the pyramid shape between both internal and external intonation, which is used as a fulcrum of bone Thigh also works on knee stability in excessive stretching and the basic function is to transfer the body weight from the knee joint to the foot. (13))

Knee Cap Patella

Is the triangle bone of the salsamic bones designed to improve the mechanism of knee extension and the posterior articular surface of the patella in the femoral cavity and the surface of the patella of the posterior patina (two sides and three sides) with three or four concave surfaces and the inner side shows a large anatomical diversity The outer side is longer and is wider than the inside. It is concave in the inner and outer directions. There is also a ridge in the outer side section. The upper and lower sides are made to allow rotation. The patella moves in the shape of (C) from (7 to 8 cm) with the femur during both procedures. Rugs and drapes.

During extension operation of the knee joint, the patellofemoral is removed vertically at the knee extension. The lower side of the patella is damaged with the femoral upper thigh. The contact surface of the femur is smaller during the prosthesis during knee flexion. The patellofemoral joint descends below the knee flexion where the upper part of the patella with the lower groin of the femur and the contact surface of the patella is greater during the fold and this will maintain the control of the surrounding

muscles during movement. The primary function is to improve the mechanical advantage of quadriceps during the prosthetic and flexural movements. (13)(9-16)

Illiotibial tendon

Is a large, thick tendon attached to the muscle of the broad lateral fascia tensor fascia latae or is associated with the emergence of the highest lateral aspect of the bone of the trachea.

(319: 22)

Method :

According to the application of the conditions, the sample (10) subject were injured after exclusion (3) due to irregularity in the proposed program and the occurrence of injury in the other joint.

Sample was chosen according to the following conditions after doctor's chick up and the following procedures.

The researcher conducted the basic experiment in the period from 1/2/2017 to 27/6/2017 to perform the measurements for all the sample subject under the same circumstances.

The program was applied to the experimental group of (10) subject individually. The application of the program took (8) weeks per case. The program applies each case individually. The session begins with (45) minute at the beginning of the program and then extends to (90) minute for the session. At the end of the program for each individual infected.

TREATMENT

CLINICAL EXAMINATION

Several runners with lower extremity complaints and diagnosed as acases of ITBS. Subjectively, the patients described lateral knee pain associated with repetitive loading in a weight-bearing position. Functionally, the runners were able to perform activities such as a hop and squat without pain. This contrasts with the cases presented by Renne [6], in which military recruits in daily training exhibited a limp and straight leg gait pattern. Also noted that the symptoms were aggravated.

by running more than 2 miles more than10 miles. Sutker et al [39] confirmed the diagnosis of ITBS by the history and tenderness localized at the lateral epicondyle of the femur or less commonly at the Gerdy tubercle. Concurrently, the patients did not have symptoms at the lateral joint.

line or popliteal tendon, and did not have signs of intraarticular disorders. The subjective examination includes the clinical application of previous information on factors associated with ITBS Objectively; the Noble compression test may be used to provocate symptoms by compressing the iliotibial band at the lateral epicondyle with 30° knee flexion [9]. The patient is positioned with the knee at 90° flexion, and compression is is extended toward full extension. The 30° flexion is the applied just proximal to the lateral epicondyle as the knee impingement zone specific to the iliotibial band and lateral femoral

epicondyle as described in cadaver studies by both Orchard et al [10] and Fairclough et al [14]. Differentiating related structures uses this impingement zone concept as well as lack of other objective test findings for injury to the lateral meniscus, lateral retinaculum, popliteus and biceps femoris tendons, patellofemoral joint, and lateral collateral.

Treatment

Frederickson and Wolf [33] developed a useful format for stages of treatment (Table 1): acute, sub acute, and recovery strengthening. Treatment of ITBS is driven by the pathophysiology of inflammation and the biomechanics of iliotibial band strain [32,33]. The path to recovery involves correction of contributing factors such as weakness of the gluteus medius and excessive hip adduction and knee internal rotation, leg-length discrepancies, and excessive knee varus or valgus strain. Given the finding of soft-tissue thickening and fluid under the iliotibial band at the lateral epicondyle [8,40], the early use of anti-inflammatory medications, soft-tissue mobilization, and stretching are advised [7,8,33,39,50]. Ellis et al [1] performed a systematic review of conservative treatments for ITBS. By using the Physiotherapy Evidence Database criteria,

corticosteroid injection and nonsteroidal anti-inflammatory medications were moderately supported within the first 14 days and anti-inflammatory–analgesic after 14 days. If there is significant swelling or tenderness at the lateral epicondyle resistant to oral anti-inflammatory medication and physical therapy modalities, then a corticosteroid injection at the lateral epicondyle of the femur should be considered early in the treatment course [51]. Patient education is critical to success. Extrinsic factors have been described, including excessive weekly mileage, overtraining, hill training

, and other activities that place the iliotibial band in the impingement zone, for example, swimming. [5,26,29]

Sutker et al [39] reported on 48 cases of ITBS and found a trend in running 20-40 miles per week for more than 1 year. McNicol et al [26] reported on 52 cases of ITBS in athletes and found that 26 cases involved training-related issues Exercise approaches for ITBS have thus far supported strengthening of the gluteus medius (ie, side-lying hip abduction and hip hiking) [3,52]. Approaches to hip strengthening are rapidly increasing, especially targeted to the gluteus medius and maximus [53,54]. Some experts (ie, Fredericson, Geraci) have recommended innovative closed chain approaches

to treating ITBS, such as triplanar lunge and squat exercises [33,34]. EMG activation studies of the gluteal muscles provide

Phases of rehabilitation

Acute Phase (**recommended Reduce inflammation)**

1. Control extrinsic factors, such as rest from running and cycling

2. Avoid any activities with knee flexion-extension (swim using only their arms)

4. Oral, nonsteroidal anti-inflammatory medication is recommended

Up to 2 pain-free weeks before return to running or cycling in a graded progression

Subacute Phase

Goal: Achieve flexibility, strength in the iliotibial band as a foundation without pain

1. Iliotibial band stretching.

2. Soft tissue mobilization to reduce myofascial adhesions

Recovery Strengthening Phase

Goal: Strengthen the gluteus medius muscle including

multiplanar closed chain exercises

1. Exercises should be pain free

2. Repetitions and sets of exercises are (8-15) repetitions, 3 sets

3. Recommend the exercises of side lying hip abduction, single leg activities, pelvic drops, and multiplanar lunges.

Result:

Table (1)

Metical averages and standard deviations

and spacing of variables (age - height - weight) n = 10

variables	MEAN	SD	MEDIAN	COOFICIENT
age	22.9000	1.72884		.513
length	174.4000	10.43711		-2.357
weight	60.5000	5.12619		.844

It is clear from Table (1) that the values of the torsion coefficients in the variables under study in the research sample were limited to (± 3) indicating the moderation of the data in these variables.

Table (2)

The arithmetical averages, standard deviations, mean and spacing of the variables in question n = 10

variables	MEAN	SD	MEDIAN	COOFICIENT
PAIN SCALE	8.00	0.816	8.000	0.000
ROM	88.300	6.429	88.00	0.391

THIGH CERCOMFERENCE 3 INCH	40.05	4.651	38.500	1.212
THIGH CERCOMFERENCE 8 INCH	46.55	3.847	46.250	0.676
STRENHT	8.970	1.681	8.950	0.661
STERETCH	14.500	1.900	14.000	0.546
INCLINE ANGLE	23.900	5.896	24.000	-0.535
Q ANGLE	9.700	1.636	10.000	-0.350

Values of the torsion coefficients in the variables under study in the research sample were limited to (± 3) indicating the moderation of the data in these variables.

Table (5)

The percentages of improvement between the mean of the pre - POST measurement in the variables in question n = 10

variables	Average PRE measurement	Average POST measurement	Improvement rate
PAIN SCALE	8.0000	344.4	1.8000
ROM	88.3000	44.8	127.9000
THIGH CERCOMFERENCE 3 INCH	40.0500	1.1	44.5500
THIGH CERCOMFERENCE 8 INCH	46.5500	6.5	49.6000
STRENHT	8.9700	55.8	13.9800
STERETCH	14.5000	42.1	10.2000
INCLINE ANGLE	23.9000	27.1	30.4000
Q ANGLE	9.7000	21.6	7.6000

Table (5) shows that the improvement rates between the tribal and remote measurements in the variables under study in the research sample ranged between (1.1%), (344.4%),

Table (6)

Research using Korskal Wallace The significance of the differences between the three measures of PRE test - MEDDLE - POST variables

variables	Pre measurement	**post measurement**	**meddle measurement**	**Pre measurement**
PAIN SCALE	25.50	**5.50**		**25.50**
ROM	5.70	**24.95**	15.50	**5.70**
THIGH CERCOMFERENCE	13.55	**19.45**	15.70	**13.55**
3 INCH	10.30	**21.80**	17.50	**10.30**
THIGH CERCOMFERENCE	7.25	**22.90**	19.35	**7.25**
8 INCH	23.05	**8.75**	16.35	**23.05**
STRENHT	11.05	**21.70**	14.70	**11.05**
STERETCH	20.65	**10.22**	15.70	**20.65**

It is clear from Table (6) that there are statistically significant differences between the three measurements of the pre, interstitial and post measurements in the variables (pain scale, motor range, strength, muscle elasticity, femoral angle, 3 inch, thigh circumference, 8 inch Q angle

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Discussion

Based on the results of the statistical results and within the measurements that were made, and within the framework of the sample of the research, the extent of achievement of the objectives and the validity of the hypotheses will be discussed. The purpose of the study was to identify the effect of the difference between pre-measurement and post-measurement of a physical rehabilitation program .The pain has the ilotibial band syndrome, which includes training exercises to strengthen the muscles surrounding the knee joint through various variables, the degree of pain and the range of motion of the knee joint , the muscle strength of the muscles working on the knee joint , the measurement of muscle stretch , measurement of the angle of inclination, knee According to the results of this study, which included arithmetic mean and standard deviation and The coefficient of torsion and the improvement ratio between the pre measurements and the post in addition to the significance of the differences between the pre measurement and the telemetry method in Wilkson method and the significance of the differences between the three pre, Middle and post measurements under the study of Korsal and Wallace. Table (1)

Age, height, and weight. It is clear that the torsion factor is limited to ± 3 the data are distributed in a natural distribution, indicating the homogeneity of the sample.

It is clear from tables (2) that the values of the torsion coefficients in the variables under study in the research sample were limited to (± 3) indicating the moderation of the data in these variables. The mean, standard deviations, mean and torsion were in the range of the pain scale (.00), the motor range (0.391), the femoral circumference (3 inches) (0.212), the femoral circumference (8 inches) (0.676) was 0.661 and was a coefficient of spasticity of muscle elasticity (0.546) and angle of inclination (0.535). Finally, Q angle was (0.350)

Table (3) shows the mean, standard deviations of pre and post measurements in the search variables. The mean of the measurement of the pre measurement (8,000) and the mean of the measurement of the meddle of the pain scale (1.8000), indicating that the level of pain decreased due to the application of the rehabilitation program It is clear from the arithmetic average of the kinetic rom of the pre measurement (88.300), the meddle measurement (127.9000) and the femoral circumference (3 inch) were (40.0500) for the measurement of pre and (43.5500) for the measurement of meddle , and the circumference of the thigh (8 inches) was (46.5500) And (49.6000) for the measurement of the post Table (3), and for the measurement of muscle strength of the muscles of the two men You are in the measurement of post (8.9700) and the arithmetical mean for the measurement of the post of the pain scale (30.4000). Finally, the Q angle was in the tribal measurement 9.7000) and in the telemetry (7.6000),(23.9000)

The most important goals of the rehabilitation of sports should be achieved by the rehabilitation programs for various injuries is to restore the motor memory of the affected party as well as restore the speed of reflexive reaction and this is appropriate with Marwan Saad Morsy. (2014)

The improvement is due to the muscular, negative and positive stretching exercises as well as the constant strengthening exercises, the return to the normal state of the joint, the restoration of the full function, the full motor range, and the muscular strength without the negative effect or the stress during the rehabilitation procedures. The early performance of the rehabilitation exercises the rehabilitation exercises increase the elasticity of the joint and thus improve the range of motion and muscle strength and the affected force and the ocean and the right side and this is consistent with the findings of Ahmad Kasri and Sobhy Hassani. 1998

The proposed rehabilitation program showed significant improvement in the motor range of the affected knee joint compared to the intact knee. This is in line with Tariq Sadiq (2000) and Mohamed Adel Roshdy (1991)

Table (5) shows that the improvement rates between the tribal and the secondary measurements in the variables under study in the research sample ranged between (1.1%) and (344.4%). There are

statistically significant differences between the tribal measurements and the dimensional measurement of all the variables of the study the improvement rate of the variables was the highest improvement rate (1.1%) and the lowest percentage (344.4%) improved the variable of the circumference of the thigh muscles, indicating the effectiveness of the rehabilitation program. (researcher attributed the improvement between the pre and post.

Measurement in the pain variable for the application of rehabilitation therapy program and strengthening exercises in addition to the use of snow after sessions as this has the greatest impact in reducing the incidence of inflammation and reduce the sense of pain and this is consistent with both Hendrickson. m 2012, prenticea (2011), where studies confirm the low level of pain after the use of therapeutic exercises and supplements and this is consistent with that the proposed program has a positive and effective effect in the improvement and overcoming pain study by (Remero 2011) John M Martinez (2016)) And Portzman s wil (2003))

The researcher attributed the improvement teams between the tribal and remote measures in the pain variable to the training exercises and the positive effect of cooling after the end of the sessions, which had a great effect in preventing inflammation and reduce the feeling of pain and consistent with the study Hendrickson m 2012 and study perlman 2011, which confirms To improve the sense of pain in the knee joint and to achieve the minimum pain after the use of exercise and rehabilitation exercises and this is consistent with the exercise is useful and effective in overcoming the symptoms associated with inflammation, such as a sense of pain.

Researcher also attributed the improvement in the variable muscle circumference to the fixed and mobile exercises that had a positive effect on the increase in the normal size of the muscles working on the knee joint and agreed with Abu El-Ela Ahmed Abdel-Fattah (1998) that the development of muscle strength leads to increased muscle mass and Strengthen the connective tissue and the great body and improve the body composition. Also agrees with Ahmad Korsi (1998) that the training of muscle strength and rehabilitation exercises lead to the expansion of capillaries, which helps to increase arterial blood pressure in the working muscles and increase the size of muscle fiber.

It is clear from Table (6) that there are statistically significant differences between the three measurements of the pre, meddle and post measurements in the variables (pain scale, motor range, strength, muscle elasticity, femoral circumference, 3 inches, circumference of the thigh, 8 inches, angle of inclination, Q). Osama Riyad 1998 that the interest of modern sports medicine in the prevention of sports injuries by studying the nature of sports injuries to take preventive measures, and gave greater attention to treatment and rehabilitation of sports injuries so that the injured player can return after the integrated rehabilitation closest to the practice.

This is due to the rehabilitation program and the use of exercises based on the foundations and requirements in terms of suitability to the nature of muscle work and the start of contractions fixed and mobile tools and devices fixed and mobile and weight-scale, which works in a cycle to raise the efficiency and capacity of muscles and ligament where the performance of muscular contraction is accompanied by a remarkable activity in the blood circulation And metabolism and thus increase the oxygen contained in the injured part and this can strengthen the muscles and ligaments weakened by the injury. This is confirmed by the study of Osama Riyad (2001) and Hossam Sharara (1996), as confirmed by the study of Muhammad Qadri Bakri (2009)

Balanced and integrated physical therapy has a positive effect on strengthening the muscles, stimulating blood circulation, improving muscular tone, relieving pain and Returning the injured part to normal. Thus, the validity of all research hypotheses is confirmed and the researcher attributes the importance of the proposed physical

CONCLUSION

Reduced hip muscle performance and abnormal hip and knee mechanics during functional tasks may be primary contributors to ITBS. Addressing these underlying.

Factors is critical to the efficient management of patients with this condition. Although controversy exists regarding the mechanism of ITBS, controlling inflammation and

Symptoms during early phases and progressive strengthening in later phases is recommended

Recommendations

Pay attention to treatment of injury after the onset of pain and after careful diagnosis to rapid treatment, rehabilitation and avoid the occurrence of complications. In addition, Prophylactic, Emphasis on adherence to exercises flexibility, lengthening, and strength of the thigh muscles.

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