

36 - IMPORTANCE OF THE PROFESSIONAL OF PHYSICAL EDUCATION IN THE RECOVERY AFTER TREATMENT OF THE LESSON OF THE PREVIOUS CROSS LINK (LCA)

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1. INTRODUCTION.

The knee is formed by the femur, tibia and patella which constitute a complex joint constantly subject to the action of body weight whose stability depends on the relationship between "bone anatomy, muscle and ligament activity" (TEMPONI, et al, 2015, p.45). The bones are connected by ligaments, four of which are the main function of which is to keep the bones together and the knee stable

The lesion of the anterior cruciate ligament (ACL) is the subject matter although the ACL rupture is common due to the function of stabilizing the knee joint, it is very serious because the ligament has the function of keeping the tibia back in relation to the femur and when it breaks, it moves forward (ARLIANI, et al, 2012).

In the last decades several studies have been focused on the early diagnosis of the ACL lesion and indication of the most appropriate treatment. For this, the characteristics of the following groups of patients are observed: (1) copers: those who can resume routine and recreation and sports activities without surgery; (2) adapters modify or decrease the level of activity to avoid surgery; and (3) noncopers that require surgical intervention due to the common occurrence of knee distress episodes (ALMEIDA, et al, 2014).

The discussion about ACL injury is related to physical education, since generally after the 4th month of surgical intervention (when necessary) the patient should seek a gym to start the rehabilitation process, having access to a proprioceptive training; between the 5th and 6th month, you will be able to carry out strengthening exercises, the training of the sports gesture that allow the gradual recovery of the sport, among others. It is expected that the patient will be fully rehabilitated by the 8th month. It is worth mentioning that some patients choose to do all this process in their home (OLIVEIRA, OLIVEIRA, 2009).

The motivations that led to the choice of the theme related to the ACL injury result from the high rate of patients who present it and have sought the help of trained physical educators to define a strengthening program, especially when they are professional athletes.

Therefore, the object of analysis of this article was the lesion of the ACL, its forms of occurrence, treatments and, the importance of the participation of the physical trainer in the rehabilitation process of this patient.

1.1 Front Cross Ligament Injury.

The knee is composed of bone structure and soft tissues, and is surrounded by four main ligaments: the anterior cruciate ligament (ACL) is located inside it, which does not allow anterior displacement of the tibia in relation to the femur, and posterior cruciate ligament (LCP) that makes it impossible for the tibia to move posteriorly over the femur. The lateral collateral ligament (LCL) and medial collateral ligament (LCM) are used to prevent excessive lateral-lateral movements (TEMPONI, et al, 2015). Anatomy of the knee is presented in figure 01 (SOBOTTA, 2013).

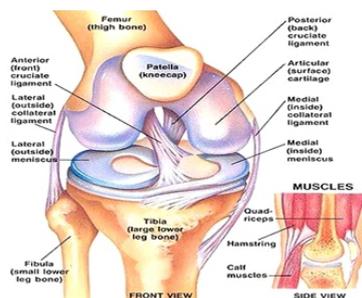


Figure 01 - Anatomy of the Human Knee.

Source: Sobotta, 2013.

The anterior cruciate ligament (ACL) integrates the knee joint, located in the central part of the joint capsule, outside the synovial cavity.

The ACL lesion consists of rupture of this ligament completely when it covers its two bands or partial when one of the bands remains intact and the other ruptured. According to Freitas and Noria (2010, p.01) the ACL lesions are classified as:

[...] partial or total depending on movement, strength and stretching, your trauma can be direct or indirect. Almost always the injury is given by a twisting maneuver, and sudden deceleration usually followed by cracking and hemarthroses present within a few hours, or even abduction with external rotation and hyperextension.

As a result of ACL injury, the knee loses the performance of this ligament and there is an instability that may require the performance of different procedures for recovery, whether surgical or non-surgical, depending on the severity of each case and the daily activities performed by the patient. Chronic instability resulting from ACL rupture if not treated may evolve into meniscal injury, joint degeneration and arthritic changes (THIELE, et al, 2009, p.504).

Among the situations that can cause ACL injury, Paiva et al (2007, p.1113) cites:

Almost always the injury occurs by a limitation of joint mobility, especially twisting maneuver, and sudden deceleration due to pain and spasm, muscle weakness, usually followed by crackling and hemarthroses stiffness, contracture and joint blockage. Present in a few hours, or even Pain can be intense and lasting, minimal abduction with external rotation and hyperextension. The classic mechanism of ACL is a torsion with the foot fixed in the ground, when the tibia moves anteriorly to the femur. The type of gait, such as pronation or mark with the everted forefoot, may be a predisposing factor in several knee injuries. Additional factors include posture, genu recurvatum, knee flexed abnormally, flat and foot caved.

They occur due to a twisting of the knee, hyperextension of the joint, such as when there are common "kicks in the air" in soccer that causes the greatest number of ACL injuries, as well as direct contact or collision between players, sprains in the home environment, at work, during the practice of physical activities in moments of leisure, play, school, rapid changes of direction, drastic reduction of speed in races, etc. (MOREIRA, 2007).

1.1 Diagnosis and treatment of patients with frontal cruciate ligament injury.

The diagnosis of the ACL lesion is performed in two ways: by clinical analysis that allows the evaluation of the patient's history and also by physical examinations composed by magnetic resonance that will allow the identification of associated lesions in other ligaments, meniscus or cartilage; partial lesions and the need for reconstruction of the ligaments. Radiographs are also requested to verify if the lesion is associated with other fractures (PINHEIRO, 2015).

The surgical treatment is performed in cases where there is instability, the patient is a professional athlete or wants to practice sports that require movements of rotation on the knee or lateral displacements. Thus, it is commonly performed in Brazil, an intervention in which a patellar tendon is used for ACL reconstruction and, consequently, recovery of stability. This intervention is explained by Thiele et al. (2009, p.504) as follows:

In this surgical technique the ruptured ligament is replaced by the middle 1/3 of the patellar tendon, being fixed at its extremities by two screws of interference. The revascularization of this neoligamento starts at the 2nd week and the process of "ligamento" (prolongation) lasts up to two years postoperatively.

Usually after surgery patients report a loss of muscular strength that limits their return to sports activities and / or daily routine, so after the 2nd week the rehabilitation protocol should be started, accompanied by a physiotherapist in order to avoid post- for complete recovery of functional status. After the 4th month, the work of the physical educator begins (THIELE, et al, 2009).

Conservative treatment, ie without surgery, may be indicated for patients without instability who do not seek to become athletes or engage in activities involving knee risks, since the integrity of the ligament is restored, but not its function.

1.2 The physical trainer and the rehabilitation of patients with damage to the front cruciate ligament.

The physical trainer can act preventively or in the rehabilitation process of people who have lesions of different severity in the knee, regardless of whether or not they needed surgical intervention. In the school context, for example, preventive actions should be carried out through "appropriate exercises and pre-competitive conditioning programs" (PAIVA, et al., 2007, p.1112). In rehabilitation centers and / or schools, he / she can develop knee proprioceptive re-education that consists of the development and / or improvement of joint protection through conditioning and reflexive training.

In order to achieve this, it develops a training program based on the "strengthening of adjacent structures, mainly muscle, stretching, proprioceptive exercises and also prevention of injuries of this important and more complex articulation of the human body" (PAIVA et al., 2007, p.1112).

Muscle strengthening begins after the acute phase aiming to increase the strength and strength of muscle groups that cross the knee. Forehead cruciate ligament rehabilitation requires more work on the "[...] posterior thigh muscles (hamstrings and gastrocnemius), and the injured knee should be transformed into a dominant hamstring." Open and closed kinetic chain exercises are also important because they increase the strength and strength of the posterior muscles (FREITAS & NOIRA, 2010, p.02).

The unilateral resilient treatment can also be performed, since the load deficit between the operated limb and the non-operated limb is common. It will enable balance between the strength of both limbs, especially when the asymmetry is wide (RODRIGUES, et al, 2014). These same authors warn of proper compliance with the training protocols, allowing athletes to return to their sports practice within approximately six months. To do this, factors such as the muscular strength achieved, range of knee movement, ability to perform the specific movements of the sport practiced and healing of the ligament should be continuously evaluated.

2.METHODOLOGY.

The bibliographical research, also named as a literature review, was based on theories presented in books, articles, specialized journals, journals, doctoral theses, master's dissertations and other references that discuss the Anterior Cruciate Ligament the role of the Physical Education professional in the process of patient rehabilitation.

For Moresi (2013, p.09) this type of study is:

[...] developed based on material published in books, magazines, newspapers, electronic networks, that is, material accessible to the general public. It provides analytical tools for any other type of research, but it can also run out on its own.

The conceptual framework will be guided by the hypothetical-deductive method by an interpretative bibliographic analysis with a qualitative character, that is, it does not aim to quantify the information collected, but to undertake a formal and systematic process of interpretation on the subject previously reported.

Theoretical basis was elaborated with reference to articles, periodicals, complete texts, dissertations and theses searched in the platforms of Scientific Electronic Library Online (SciELO), Lilacse Google Scholar. The keywords or descriptors were: Lesion of the cruciate ligament of the front, prevention , proprioceptive exercises, treatment, rehabilitation, physical educator.

In addition, books and specialized magazines that could contribute to the reflections previously proposed were also searched in the library of the IESFI of Foz do Iguaçu.

The criteria for inclusion of the texts will be: bibliographical articles and / or field research published at most 10 years ago, dissertations or theses approved in Brazilian universities and in Portugal that discuss the front cruciate ligament and the role of the physical trainer for the recovery.

3.DISCUSSION OF RESULTS.

According to data collection, studies on the prospects and trends in the treatment and rehabilitation of patients with anterior cruciate ligament injury were found in the literature.

Table 01 presents the treatment used in the ACL, according to the researches of the articles found from 2007 to 2015.

Autor/Ano	Tema	Tipo de estudo	Amostra	Tratamento
ALMEIDA, G. P. L.	Physiotherapy in conservative treatment of anterior cruciate ligament.	Case study.	A 28-year-old female practitioner of muay-thai and handball .	Conservative treatment with quadriceps and hamstrings strengthening, trunk stabilization, plyometry, sensory-motor training and, in the end, training to return to sports.
FREITAS, T.	Treatment and rehabilitation, perspectives and current trends.	Field research.	226 Brazilian knee surgeons.	Proprioception and strengthening exercises with a sports gesture.
ARLIANI, G. G.	Anterior cruciate ligament.	Literature review.	7 authors.	Conservative treatment with ice, compression, exercises of flexion-extension of the knee without anteriorization of the tibia, muscular work, training of proprioception, orthoses and sports reeducation.
MOREIRA, M. A.	Anterior cruciate ligament in sports activity.	Literature review.	24 authors.	The exercises of balance and proprioception are considered important to facilitate the return of the patient to his normal gait and also to perform his activities of daily living.
OLIVEIRA, R. S.	Restoration of thigh muscle strength in the postoperative reconstruction of anterior cruciate ligament.	Literature review.	After the cross -referencing of two reviewers, 41 scientific articles were read, of which 16 were included in this review, according to the inclusion and exclusion criteria established.	Strengthening at home were effective.
THIELE, S. C.	Knee prevention and rehabilitation.	Applied nature research with descriptive technique.	25 articles.	Postural conducts and practice of lower limb muscle strengthening exercises.

Table 01 - Table 01 - Treatment used in the treatment of the front cruciate ligament

Table 1 shows the most commonly used treatments in ACL. As Almeida (2014) verified in his case study, he used conservative treatment, strengthening the quadriceps muscles and ischiotíbias. Already Arliani (2012) used the rehabilitation process, between 5th and 6th month to perform strengthening exercises. For Freitas (2010) he used conservative treatment, but included in the treatment the use of bracing and sports re-education. But Moreira (2007) has already shown that in balance training exercises and proprioception are considered important to facilitate the patient's return to normal gait and also to perform their daily life activities.

Oliveira (2009) shows that home strengthening programs have shown to be effective, and an advance of studies on the strengthening of quadriceps muscles in the anterior cruciate ligament postoperative period is necessary. However, Paiva (2012) affirms that it is the physical educator's responsibility to promote prophylactic guidance and rehabilitation regarding meniscus and ligament injuries. Pinheiro (2012) has observed that the physical education professional must be up to date on the recommendations contained in the main protocols and rehabilitation of these patients.

Studies by Rodrigues (2014) report that there are several types of protocols with recommendations and treatment involving physical exercises. However, Temponi (2015) argues that the surgical indication, preservation of the remaining fibers is a fundamental part, in order to preserve the mechanical, vascular and propceptiva capacity of the knee. But for Thiele (2009) he comments that hydrotherapy was included after the removal of the stitches and complete healing of the tissues, in the third month bodybuilding was started with anglo articular and controlled loads.

4.CONCLUSION

From the bibliographical analyzes carried out referring to the topic of this article, it is concluded that the study demonstrates that there are clear trends in the evolution and treatment of the anterior cruciate ligament in Brazil.

Anterior cruciate ligament (ACL) injury is the subject matter although ACL rupture is common due to the function of stabilizing the knee joint. Rehabilitation programs are constantly evaluated and updated to minimize morbidity and allow a return to daily living or sports activities safely.

Due to the high incidence of reconstruction of the anterior cruciate ligament, adequate rehabilitation was sought so that the individual's normal function and activities were recovered, aiming a quick return to his daily routines activities. The physical educator can act preventively or in the rehabilitation process of people with lesions of different severity in the knee, regardless of whether or not they needed surgical intervention.

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ABSTRACT

In the last decades several studies have been focused on the early diagnosis of the ACL lesion and indication of the most appropriate treatment. The knee is formed by the femur, tibia and patella that constitute a complex joint constantly subject to the action of the corporal weight whose stability depends on the relation between the bony anatomy, the muscular activity and ligamentar. The bones are connected by ligaments, four of which are the main function of which is to keep the bones together and the knee stable. The lesion of the anterior cruciate ligament is very serious because the ligament has the function of keeping the tibia back in relation to the femur and, when it breaks, it moves forward. The objective of this research was the anterior cruciate ligament injury, its forms of occurrence, treatments and, the importance of the physical trainer's participation in the rehabilitation process of this patient. The theoretical basis was elaborated using articles, periodicals, complete texts, dissertations and theses searched in the Scientific Electronic Library Online (Scielo), Lilacse Google Scholar and CESUFOZ library platforms. The keywords or descriptors were: Anterior cruciate ligament injury (ACL), prevention, proprioceptive exercises, treatment, rehabilitation, physical trainer. The results showed that the most used treatments were conservative with strengthening of the quadriceps and posterior of the thigh, with the aid of bracing, proprioception works and hydrotherapy. It was concluded that the physical trainer should act in a preventive way and in the process of rehabilitation of the lesions of the anterior cruciate ligament of the knee, being the work of strengthening, proprioception and hydrotherapy with emphasis on the lower limbs the most used.

Key Words: Anatomy; knee; lesion.

SOMMAIRE

Au cours des dernières décennies, plusieurs études ont porté sur le diagnostic précoce de la lésion ACL et l'indication du traitement le plus approprié. Le genou est formé par le fémur, le tibia et la rotule qui constituent une articulation complexe constamment soumise à l'action du poids corporel dont la stabilité dépend de la relation entre l'anatomie osseuse, l'activité musculaire et ligamentaire. Les os sont reliés par des ligaments, dont quatre ont pour fonction principale de garder les os ensemble et le genou stable. La lésion du ligament croisé antérieur est très grave car le ligament a pour fonction de maintenir le tibia par rapport au fémur et, lorsqu'il se casse, il avance. L'objectif de cette recherche était la lésion du ligament croisé antérieur, ses formes d'apparition, les traitements et l'importance de la participation du formateur physique au processus de rééducation de ce patient. La base théorique a été élaborée en utilisant des articles, des périodiques, des textes complets, des thèses et des thèses recherchés dans les plates-formes de bibliothèque électronique scientifique (Scielo), Lilacse Google Scholar et CESUFOZ. Les mots-clés ou descripteurs ont été: Lésion du ligament croisé antérieur (LCA), prévention, exercices proprioceptifs, traitement, rééducation, entraîneur physique. Les résultats ont montré que les traitements les plus utilisés étaient conservateurs avec renforcement des quadriceps et postérieurs de la cuisse, à l'aide de contreventements, de travaux de proprioception et d'hydrothérapie. Il a été conclu que l'entraîneur physique devrait agir de manière préventive et dans le processus de réhabilitation des lésions du ligament croisé antérieur du genou, étant le travail de renforcement, de proprioception et d'hydrothérapie en mettant l'accent sur les membres inférieurs les plus utilisés.

Mots clés: Anatomie; genou; blessure.

RESUMEN

En las últimas décadas diversos estudios se dirigieron al diagnóstico precoz de la lesión del LCA e indicación del tratamiento más adecuado. La rodilla está formada por el fémur, la tibia y la patela que constituyen una articulación compleja sometida constantemente a la acción del peso corporal cuya estabilidad depende de la relación entre la anatomía ósea, la actividad muscular y el ligamento. Los huesos se conectan por medio de ligamentos, siendo cuatro principales cuya función es mantener los huesos unidos y la rodilla estable. La lesión del ligamento cruzado anterior es muy seria porque el ligamento tiene la función de mantener la tibia hacia atrás en relación al fémur y, al romperse se desplaza hacia adelante. El objetivo de esta investigación fue la lesión del ligamento cruzado anterior, sus formas de ocurrencia, tratamientos y, la importancia de la participación del preparador físico en el proceso de rehabilitación de ese paciente. La fundamentación teórica fue elaborada teniendo como referencia artículos, periódicos, textos completos, disertaciones y tesis buscadas en las plataformas de datos Scientific Electronic Library Online (Scielo), Lilacse Google Académico y biblioteca del CESUFOZ. Las palabras clave o descriptores fueron: Lesión del ligamento cruzado anterior (LCA), prevención, ejercicios propioceptivos, tratamiento,

rehabilitación, preparador físico. Los resultados mostraron que los tratamientos más utilizados fueron el conservador con fortalecimiento del cuádriceps y posteriores del muslo, con auxilio de órtesis, trabajos de propiocepción e hidroterapia. Se concluye que el preparador físico debe actuar de manera preventiva y en el proceso de rehabilitación de las lesiones del ligamento cruzado anterior de la rodilla, siendo el trabajo de fortalecimiento, propiocepción e hidroterapia con énfasis en los miembros inferiores los más utilizados.

Palabras claves: Anatomía; rodilla; lesiones.

RESUMO

Nas últimas décadas diversos estudos foram voltados ao diagnóstico precoce da lesão do LCA e indicação do tratamento mais adequado. O joelho é formado pelo o fêmur, a tíbia e a patela que constituem uma articulação complexa submetida constantemente à ação do peso corporal cuja estabilidade depende da relação entre a anatomia óssea, a atividade muscular e ligamentar. Os ossos se conectam por meio de ligamentos, sendo quatro principais cuja função é manter os ossos unidos e o joelho estável. A lesão do ligamento cruzado anterior é muito séria porque o ligamento tem a função de manter a tíbia para trás em relação ao fêmur e, ao se romper ela se desloca para frente. Objetivo desta pesquisa foi a lesão do ligamento cruzado anterior, suas formas de ocorrência, tratamentos e, a importância da participação do preparador físico no processo de reabilitação desse paciente. A fundamentação teórica foi elaborada tendo como referência artigos, periódicos, textos completos, dissertações e teses buscadas nas plataformas de dados Scientific Electronic Library Online (SciELO), Lilacse Google Acadêmico e biblioteca do CESUFOZ. As palavras chave ou descritores foram: Lesão do ligamento cruzado anterior (LCA), prevenção, exercícios proprioceptivos, tratamento, reabilitação, preparador físico. Os resultados apresentaram que os tratamentos mais utilizados foram o conservador com fortalecimento do quadríceps e posteriores da coxa, com auxílio de órtese, trabalhos de propriocepção e hidroterapia. Conclui-se que o preparador físico deve atuar de maneira preventiva e no processo de reabilitação das lesões do ligamento cruzado anterior do joelho, sendo o trabalho de fortalecimento, propriocepção e hidroterapia com ênfase nos membros inferiores os mais utilizados.

Palavras Chaves: Anatomia; joelho; lesão.

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