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KEY POYNTS IN KNEE REHABILITATION

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Abstract

This paper try to present the role of kinetic rehabilitation programme pre and postoperator period at sportmen with ACL reconstruction.Our programme began with a good clinico-functional evaluation (including physical evaluation, muscle evaluation, joint evaluation) and also specific test like Lachman test. Our obiective evaluation has been made using Marshall score and D »Aubigne scale. The programme has been made for a period of 14-28 weeks, and included : posture, passive mobilisation, strength training, and stability training. In the end of the programme we try to introduce some sport specific elements of training for increase the joint stability requiers in sport.The results were good because all our subjects respect our recomandations and so we observed a good joint stability and mobility using Marshall score and D'Aubigne scale.

Key words: *knee, recovery, kinetotherapy, physical exercise, ACL.*

Introduction

In nearly 20 years I worked as a physical therapist, emphasizing changes in osteo-ARTHRO-muscular patients, I have accumulated a number of specific abilities and skills for each condition to ensure in most cases to provide the best patient chances of recovery. One of the first two cases of consultation in my professional practice was knee affection, which covers both conservative management and pre-and post-operative management.With the development and improvement of my technical and conceptual skills in this area, we could make a list of key points in the rehabilitation process of such a safe joint that will be useful for physiotherapy students.To that end I will rely on mye xpertise,colleagues and orthopedic doctors,athletes,n on sportsmen,but moreover to this,in a simple review of the literature for many years.

Pretending to be concrete and punctual on such a vast and vast subject,I will concentrate on the following conditions in order of frequency in my daily practice

1.Patellofemoral pain;
2.Removal and repair of the meniscus;
3.Rehabilitation of ligament lesions.

Methods

Key points in rehabilitation of patients with p atelofemoral diseases

The main objective should be thel extent of the femo ral rectus.

Substantiation

Patella is a sesamoid bone included in the extensor of the knee; Its role is to increase the efficiency of the quadriceps by designing its forward pulling force, is increasing the quadriceps tendon lever arm.(Arnoczky, 1988).

Under normal conditions, the fork does not move transversely, but just up and down. In fact, the strap is applied very strongly in its groove by the quadriceps, and the more so is the more the flexion is; at the end of the extension, this force decreases Compaction and in full extension, it even shows the trend of investment, ie to take off the wheel of the wheel. At this point, the patella tends to be rejected outward because the quadriceps tendon and the patellar tendon form a obtuse angle open outward.

The introduction of the quadriceps and its origin are linked to the patella, which is internal to both. When the quadriceps is contracted, the origin and the insert approach each other so that the patella moves laterally through a spring effect.

The shorter the quadriceps is, the greater the effect of the arc, the increase in the lateral patellar and the patello-femoral compression.

Therefore, the aim is to improve alignment and to reduce the patello-femoral compression forces (such

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as Hauser, Maquet, Roux-Elmslie-Trillat, Fulkerson osteotomies), surgical procedures are performed on the extensor mechanism and not on other muscle groups.

Leopold Busquet in his book MUSCLE LANCHES chapter on physiology of lower limb muscles wrote: "Quadriceps work has always given priority to developing its power. Although this muscle has a resilient physiology, its ability to stretch should also be evaluated. The eccentric work of this muscle will be of vital importance to preserve the fullness of physiology and the long-term safety of the knee. " Busquet insists on treatment with eccentric positions when he thinks that "the muscles tensed for several minutes constantly tired and abandon their excessive tension." The muscles can stretch from this moment and the muscle can recover its length.

Continuing with the intention to justify stretching the main objective of femoris rectus in patients with patellofemoral pain, took the concept on which the physiotherapy method called postural rehabilitation GLOBAL. The biomechanical Philippe Souchard, the creator of this method of physical therapy, said almost 30 years ago, "apparently unrelated problems such as osteoarthritis, tendinitis, hernias, genitals, scoliosis, valgus genu or varus, foot arc, or planes, contractions and some dizziness or headaches have a common denominator: static muscular rigidity. After 23 years of experience stretching the muscles, I saw that Souchard was right: The main cause of most musculoskeletal problems is a form of static muscle pain, that is, muscles that keep us standing when you fight against gravity. We can conclude that if not before the muscle "brakes", which literally crush the suppressedcartilage treatment to always be palliati ve, not causative.

I have become convinced that the fundamental shortage in patients with patellofemoral pain is not in muscle strength but muscle elasticity. Static masses do not allow themselves to be weak ... simply because we fall. Therefore, the idea of assigning more postural disturbances to muscular weakness should be abandoned because, in fact, the exact opposite occurs: excessive resistance and rigidity that cause problems. So when the diseased static, exhausted muscles show a pathology of high bloo d pressure, shortness and stiffness.

Cvadriceps components with these features is rectus femoris because this is the only biastic tonic predominant involvement.The other components of the quadriceps exhibit a predominance in their a ctivity. (Barber, 1994).

In conclusion, pointing out the spread of femoris rectus in patients with patellofemoral pain, we can reduce the compressive forces and the lateralisatio n of this joint with a high decrease in pain.

This statement does not imply the exclusion of traditional and useful procedures in physiotherapy intervention for this condition such as femoral stretching, tensor wide fascia - iliotibial band - lateral retinaculum, specific muscle building exercises, etc.

The quadriceps muscle is the only direct insertion on the bed, such withdrawal can produce lateralization (arc effect)and increased paltelofemural compression (coaptation resistance).

The extent of the femoral rectum should be at the expense of the hip, without forcing the knee flexion, to involve the biarticular component.

(Benedetto, 1993).

KEY POINTS IN REHABILITATION OF PATIENTS WITH MENUSCAL REFORMATION AND REPAIR

Initial postoperative administration after meniscal remodeling should not be intense. Start with physical ways to reduce pain and inflammation. At the same time, delicate isometric exercises such as straight leg lifting are incorporated.

Most patients usually recover their function through a simple, impact-less or low-impact exercise program, initially focused on exercise bikes. In cases of meniscal remodeling, fast recovery of the engine is the norm. Despite these observations, studies have shown that foot resistance is reduced after meniscal remodeling,mainly due to the initial involvement of the extensor function of the knee.

In fact, one study showed that functional recovery at preoperative levels is possible within 4 to 6 weeks, but the quadriceps function is not completed without physical therapy because it is weaker than contralateral for more than 12 weeks as a result of a meniscal remodeling. It has been shown that the knee extension muscles lose 20% to 40% of the power and the flexors approximately 20% every 3 weeks after remodeling.

The biggest problem with these defects is that, with only a residual defect of 10% in the extension and knee flexors, the risk of knee injury is increased.

Therefore, if there is no intensive and supervised physiotherapy program, patients who have undergone meniscal repair may pose a greater risk of injury both in the workplace and in sports activities. Then an intensive and supervised physiotherapy program should be performed if there is a significant shortage despite the achievement of the program.

The appearance that can make the most difficult rehabilitation process and which most influences the results of meniscal remodeling is the pre-existing degenerative change. The magnitude of chondral damage correlates with a worse prognosis.

The technique of partial meniscectomy is easier and faster and is usually chosen because meniscal repair is more complex and requires more time.

Similarly, the postoperative rehabilitation of meniscal repair is more elaborate, more complex, wider, and more conservative than postoperative remodeling o f the meniscus.

Most physiotherapists are not familiar with this type of procedure and do not know the proper management to advance a rehabilitation process without bio-negative effects on healing structures. For this reason, some orthopedic doctors do not trust the performance of the physiotherapist and prefer to postpone the remittance for later stages in which the menisc repair is not exposed.

In order to contribute to this safety and to guide the physiotherapist in connection with the procedure, the surgeon must record as much information as possible in the referral, taking into account special care (first of all what should not be done) and the proposed objectives. When the described procedure is not described, the physiotherapist may be confused and thinks it is a remodeling of the meniscus by not seeing the posterior incision when performing an all-in repair technique.

There are many different rehabilitation protocols for meniscal repair in the literature. There is a small difference between the different protocols and they are increasingly recommending programs more aggressive for surgeons than Shelbourne and the latter author Barber.showed that there were no statistically significant differences between a group where a meniscal repair was performed followed by a very conservative postoperative regimen, comparing it with a second group of patients who were allowed to join contact sports as soon as the fluid disappeared; complete expansion and at least 120° flexion was achieved.

The greatest difference between the postoperative period of a remodeling and a meniscal repair is care with support. (Brent, 2003).

Within our framework, it is preferable to follow a more conservative rehabilitation protocol consisting of four days of insubordination, followed by 2 weeks of partial loading until a maximum load is reached. Mobilization is immediately recommended. Some surgeons prefer to limit flexion to 90° for several weeks, believing that greater flexion can cause too much stress on horn repair. Arnoczky showed that the meniscus has very little mobility and suffers little str ess between 15º and 60º of mobility.

Deep adhesion and tibial rotation should be avoided for at least the first 12 weeks.

Improvement of the knee flexors should also be postponed for up to 4 weeks, especially in the repair of the medial meniscus, by inserting the semimembranous into this meniscus. The contraction of the said blade emphasizes the suture that produces an unwanted effect in the healing process. In addition to driving back the semi-membranous during flexion, the medial meniscus recoils less, almost half less than outward, making it more vulnerable to repeated flexion and overdrive extension, incomplete rebound and new overtakes. In this process, the internal meniscus can be surprised by the femoral condyles and causes a squeeze and stress on the suture. After 6 weeks, an aggressive closed chain exercise program is allowed. The race can start at five months and some sports at 6 months.(Bauer, 1999).

Biomechanically closed, partially progressive kinetic chain exercises are safer and more functional than open kinetic chain exercises.

For physiotherapists, it is very important to keep in mind that in the elderly, maximum or forced flexion of the knee (gluteus maximus) should not be performed because there is a possibility of the horn of

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the meniscus horn breaking. While young patients with healthy meniscal tissue usually require major knee trauma to compromise meniscal tissue, older patients will be more likely to suffer meniscal tears with normal exercise or simple activities. how to sit down (secondary pause simply to a meniscal degeneration).(Hillard, 1996).

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3. KEY POINTS IN REHABILITATION OF PATIENTS WITH LIGAIGN GENE WARNINGS

While the direction taken in cruciate ligament lesions was towards surgical repair / reconstruction, the focus on managing lateral ligament lesions was conservative or non-operative.

Physical therapists need to know knee anatomy and biomechanics and be surgical and carefully updated procedures to design a rehabilitation program that offers the best conditions for healing, the choice of these therapeutic exercises that will gradually force the tissue that is curing and help preparing the patient for the return to the requirements of his work. I will begin by manipulating ligament lesions, stressing the ligament reconstruction. I have discussed the topic in an article published in the Journal of the Colombian Society of Orthopedic Surgery Volume 20 - No. 1, March 2006, based on the collaboration of orthopedic doctor and expert in this topic, Adolfo León De Los Ríos Giraldo. Understanding the LCP operation is delayed with a decade as regards LCA. Given that most physiotherapists and physicians are familiar with the rehabilitation of ACL reconstruction, we consider it useful to establish comparative points between biomechanics and anatomy of the two ligaments.

Contrary to what happens with LCA, the LCP function is little sustained by secondary stabilizers. LCA contributes 85% + 2% of the previous restrictive force, while LCP provides 94% + - 2.2% of the subsequent restrictive force.9 This means that the material used to replace the LCP is subjected to a higher postoperative load, if only because of their own weight.

This observation leads us to the conclusion that the approach to PCL rehabilitation after reconstruction should be more conservative than that used after ACL reconstruction because inappropriate physiotherapeutic intervention may produce bio-negative effects with increased residual laxity of the graft.(Prentice, 1995).

To prevent posterior tibial slip and resulting residual laxity,we need to consider:

Use a knee immobilizer with posterior support on the calves to avoid posterior tibia translation by gravitational force.It is used day and night for six weeks.

2. Avoid the action of gravity by performing initial exercises in a predisposed position (8 to 12 weeks).
3. Avoid contraction of Isquiotibiales, slowing the active knee flexion in the first 12 weeks.
4. Progress slowly in flexion of the knee.
a. 0-20 degrees the first two weeks;
b. 0-40 degrees at four weeks;
c. 0-60 degrees at six weeks.
5. Mobilize your patella and scars.
6. Localized muscular strength exercises of quadriceps from the first day of the lesion and in the immediate postoperative period.

If we are clear that the two great enemies in post-reconstruction LCP rehabilitation are gravity and hamstrings, we can anticipate a safe program, decreasing the chances of applying a negative tension to structures repaired with the possible laxity following.(Starke, 2009).

Strengthening the quadriceps is the basis for rehabilitation in the LCP reconstruction, as it stabilizes the tibia dynamics and counteracts Hamstrings posterior traction. (Surgeons, 2002).

Congenital joint congestion with meniscus and saucy, prevents posterior displacement of the tibia, in the case of a posterior crossbreak, this kinematic fact also implies careful reinforcement exercises.

quadriceps in the last degrees of extension (in predisposition) because as the flexural angle increases, the LCP stabilization voltage also increases Quadriceps can be trained in a closed kinetic chain or open kinetic chain. We recommend starting with safer and closed functional kinetic exercises as

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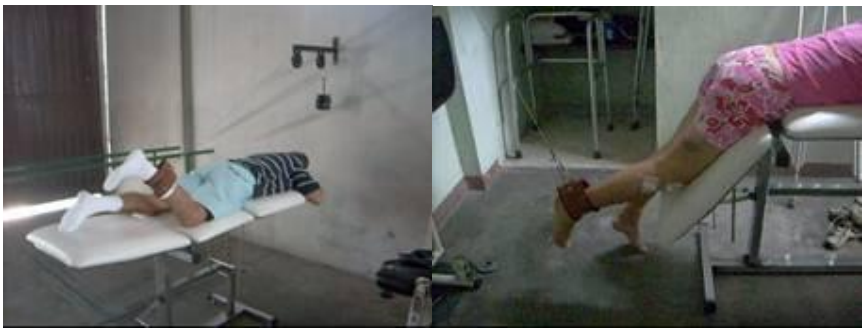
muscle contraction helps to stabilize the knee Common and lower forces are made partly cizallamiento sustained prone,without exceeding 40° of the knee flexion (Mini-Squat), for to protect both the reconstruction and the patello-femoral joint.(Norman,1992).
Recall that exercises.



In the PCL reconstruction, quadriceps reinforcement is initially performed in overtime and in the last degrees of extension. The flexibility of the knee should be passive.(LedouppeA, 1996).

Currently, rehabilitation programs used after the ACL reconstruction are more aggressive, with emphasis on immediate mobilization, complete passive extension of the knee, immediate support and functional exercises to improve the overall outcome of the patient. In 1990, Shelbourne and Nitz published better clinical outcomes in patients who followed an accelerated approach than those who followed a conservative approach to rehabilitation. They showed greater strength and motion, and fewer complications, such as arthrofibrosis, laxity, and failures.
Even with the accelerated approach,it should be taken into account that the (greater) band of the ACL is the one that is rebuilt and tense with the full extension of the knee. These biomechanical data justify that the full knee extension continues to be passive, and the quadriceps strengthening against resistance in the last degree of extension begins at least six weeks after the postoperative period. Then quadriceps strengthening in the first weeks should be done between 90 and 40 degrees. This consideration applies only to open kinetic chain exercises because closed kinetic chain exercises because they are safer and more functional can be started from the first week after surgery. The hamstrings must be strengthened by trying to obtain a 1: 1 ratio of quadriceps resistance. Patients with hamstring resistance are equal to or higher than quadriceps have higher levels of activity. The criteria for returning to work (weeks 16-22) in terms of muscle strength are: 1. Comparison of both quadriceps: 80% or more;(Villalobos, 1998).
2.Comparison of both hamstrings: 110% orymore
The exception to this approach (emphasizing hamstring consolidation) is the use of the slaughtering graft in the reconstruction of the ACL. In these cases, the hamstring empowerment in the first 4 weeks is not allowed to authorize submaximal isometric contractions from week 5-6 and the slight hamstring has lasted 6-8 weeks. At 8 weeks, the progression of the patient to a potency with increasing strength will be allowed
These key points do not destroy other important procedures and interventions, such as neuromuscular control
exercises, including dynamic stabilization and dest abilizing training.
The treatment of lateral ligament lesions can be divided into non-operative and operative operations. Trends over the past 25 years have led to conservative treatment with non-surgical methods, especially if there is no coexisting damage in LCA. Partial outbursts of the universal lateral ligaments develop well with conservative treatment. Our intervention focuses on progressive resistance exercises as soon as pain begins to decrease. Closed kinetic chain exercises are preferred because they are more biomechanically safe. Once comfortably mobilized, the tightening load is removed and the progressive weight allowed, but no ambulation crutches are allowed until the patient can go without significant claudication. The physiotherapist should suspect an associated meniscal rupture if the common line sensitivity and effusion persists after 3 weeks and an MRI is indicated. Remember that the deep

capsular ligament serves as an important anchoring point for the internal meniscus; the damage in this profound layer could extend to the meniscus, adding to the disturbance found following the application of valgus force on the knee.(Prentice, 1995).

When combined LLI / ACL ACL LLL is rebuilt, and if necessary surgically repairing the medial ligament of the knee, the potential complication of the lost postoperative mobility is relatively high and hence the aggressive program should either projected will focus the recovery of the total extension. It should be stressed that in most cases this direct suture of me dian support structures is not required.

It is also common to find posterolateral capsule damage in LLE tears. But the knee seems to be much less tolerant to lateral laxity and posterous that for the same amount of medial.14 laxity repairs Therefore the direct damage to damaged posterolateral structures is recommended to achieve a stable knee. The risk of postoperative stiffness is lower compared to medial knee repair.

Particular care should be taken when a child with a knee sprain diagnosis reaches the physiotherapy office. You have to be sure that a slip fracture was ruled out by a clinical evaluation and liking.

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