

MEANS OF PHYSICAL THERAPY APPLIED IN RECOVERY AFTER THE SURGERY OF ANTERIOR CROSSING LIGAMENT

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Abstract:

What is about to be presented underlines the clarity of the most important issues of physical therapy intervention in sports traumatology and not only, aspects sustained in paper's context.

With the help of physiotherapist G.M. and through a unique practical experience, I had the opportunity to collect information and to process them in this context. The paper is based on data obtained during anamnesis, but also from studying the mechanisms production, relevant aspects in a clinical examination functional and complex, and data from specialized books.

In this paper I tried to reach both the starting point (choice of treatment) but also the selected means in order to reach a better efficiency of the program of physical therapist treatment.

Introduction:

The knee joint is the biggest joint of human body that represents the mobile segment of the musculoskeletal system that bounds the thigh to the gamba.

The knee being a quite big joint, in the moment when an injury happens at the joint, the instability occurs, functional insufficiency and post trauma sequelae. The patient is affected in terms of aesthetic, social and professional.

Motto: „The means of medical gymnastics are applied regularly in the complex trauma, being preferably associated with other related means, through the way of action and effects.” (Adrian N. Ionescu in Clement Baciu, 1981)

From the point of view of Doctor C. Baciu, physical therapy finds wide applications in all spheres of rehabilitation, being necessary to medical recovery and to psychiatric rehabilitation, not lacking to professional recovery and social rehabilitation.

General objectives pursued in the recovery program:

- Recovery muscle strength
- Increase muscle strength
- Improving coordination function, body control and balance
- Posture correction
- Increase joint mobility
- Increase range of movement (Ionică Cărăbuș, 2008)

Research hypotheses

To what extent does physical therapy help through its means at pain relief, at inflammation and can prevent countervailing deformations?

After the surgery of rupture of anterior crossing ligament, after a physical therapy program judiciously composed, taking into account the sports' 'particularities, the severity of trauma, does it ensure a full recovery of the athlete?

The aim of the paper was well defined according to verification of individualized recovery program for athlete.

For optimal success recovery in most sports trauma, the existence of a strong motivation is the key to success.

Task - Application of specific means of physical therapy in order to recover the athlete of sport performance after the surgery of anterior crossing ligament

Material and method:

The place of the recovery program and research was in The Complex of Swimming and Physical Therapy of the Faculty of Physical Education and Sports Suceava, physical therapy office and swimming pool, for a period of 4 months, October 2015 – January 2016.

The recovery program was followed over a longer period of time because the subject was a athlete of performance and he was at his second surgery. The subject, after his second surgery, interrupts the sports activity.

The recovery program started since day 10, the subject being in the second stage of recovery. I made the recovery program for a period of 12 weeks, with 2 sessions every week. The patient worked at home also, this thing promoting a faster recovery. Due to the performed sport, the muscle atrophy was nonexistent, dropping just strength and muscle tone.

Part of the recovery program

Initial position stand, with feet apart, the stick held horizontally, with arms at shoulder width, inhale while carrying the arms in body extension, exhale at the same time with flexing the trunk forward and lowering the arms to the ground. 2 series of 10 repeats- breaks between the series: 30 seconds.

Initial position dorsal decubitus – raising and lowering the affected limb - 2 series of 10 repeats- breaks between the series: 30 seconds (Fig 1)

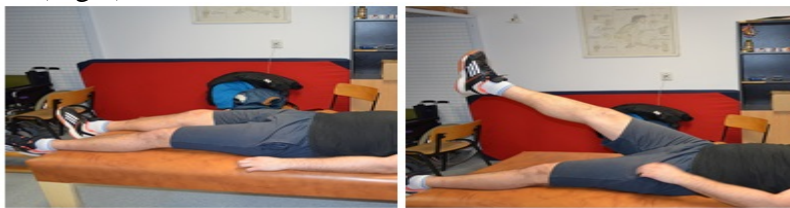


Fig 1 Raising and lowering the affected limb

Initial position dorsal decubitus, knees slightly bent with the attachment of a small weight at the level of distal extremity of gamba, feet on the ground, arms along the body, the patient performs extension from knee's articulation, 4-5 seconds maintaining, return. 2 series of 10 repeats- breaks between the series: 30 seconds.

Initial position dorsal decubitus, arms along the body, with the attachment of a weight at gamba's level, it is performed leg's lifting, 4 seconds maintaining, then it is performed the flexion and the knee is brought to chest, return. 2 series of 10 repeats- breaks between the series: 30 seconds

Initial position sitting on the physical therapy table, feet apart from the support surface, with the attachment of a weight at ankle level, it is performed the knee's flexion and extension with 5 seconds maintaining, return. 2 series of 10 repeats- breaks between the series: 30 seconds

From initial position standing, facing the sports trellis, hands grab a strip of the trellis, the subject executes tiptoe lifting, with 5 seconds maintaining. 2 series of 10 repeats- breaks between the series: 30 seconds

Initial position sitting on the physical therapy table, feet apart from the support surface, the physical therapist holds the ankle one side and on the other side pushes the third part of distal thigh, patient must

learn how to overcome the applied resistance by performing knee's flexion and extension. 2 series of 10 repeats- breaks between the series: 30 seconds

Initial position of a patient is in dorsal decubitus, around the plantar vault of the affected foot, it is fixed an elastic band, following the subject to execute member's extension. 3 series of 10 repeats- breaks between the series: 30 seconds.

Initial position dorsal decubitus, bend knees, vertical gambas, it is performed at the same time leading the legs sideways left, then right, with return to initial position. 3 series of 10 repeats- breaks between the series: 30 seconds

Initial position of the patient and of physical therapist is dorsal decubitus, hands along the body, heels unite, and the patient must learn how to overcome the resistance applied by the physical therapist. 3 series of 10 repeats- breaks between the series: 30 seconds

Initial position standing on one foot on the BAPS plate, subject performs movements in different directions, keeping his balance with his hands. 3 series of 10 repeats- breaks between the series: 30 seconds

Presentation and interpretation of the achieved results

Table1 - General data of the patient

Nr Crt.	Name and surname	Sex	Age	Profession	Clinical diagnosis	Entry date into evidence	Exit date from evidence
	R. T	M	22 years	High performance athlete	Neo ligament damage anterior crossover	05.10.2015	29.01.2016

Table 2 Representation of pain intensity

Evaluation	Pain intensity										
	0	1	2	3	4	5	6	7	8	9	10
Values											
Initial evaluation								x			
Intermediate evaluation					X						
Final evaluation	X										

At the articular balance the subject shows reduced movement amplitude at the right knee. The subject accuses pain at thigh level, both at rest but also in motion.

Table 3 Articular balance

Movement	Initial evaluation		Intermediate evaluation		Final evaluation	
	Active	Passive	Active	Passive	Active	Passive
Flexion	44°	56°	84°	92°	126°	135°
Extension	94°	106°	124°	132°	166°	175°

Table 4 Muscular balance

Evaluation	0	1	2	3	4	5	6	7	8
	-F2	F2	+F2	F3	F3+	F4	F4+	F5	F5+
Initial evaluation	X								
Intermediate evaluation					X				
Final evaluation								X	

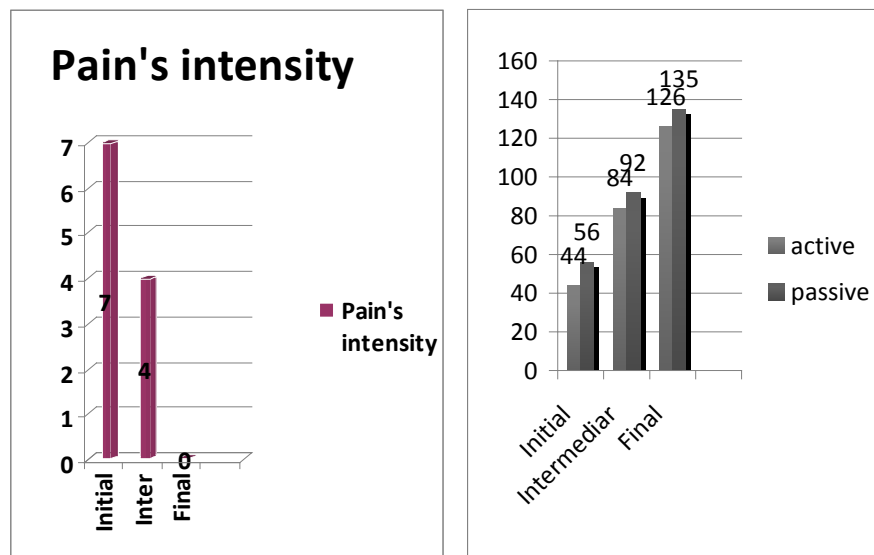
In order to present in graphic the value of muscle strength, I gave numeric values appropriate to force obtained at evaluations.

Legend:

Initial evaluation = patient's evaluation at the beginning of physical therapy treatment 5.10.2015

Intermediate evaluation = patient's evaluation on 20.11.2015

Final evaluation = patient's evaluation at the end of physical therapy treatment 29.01.2016



Graph 1 Intensity of pain Graph 2 Articular balance on flexion

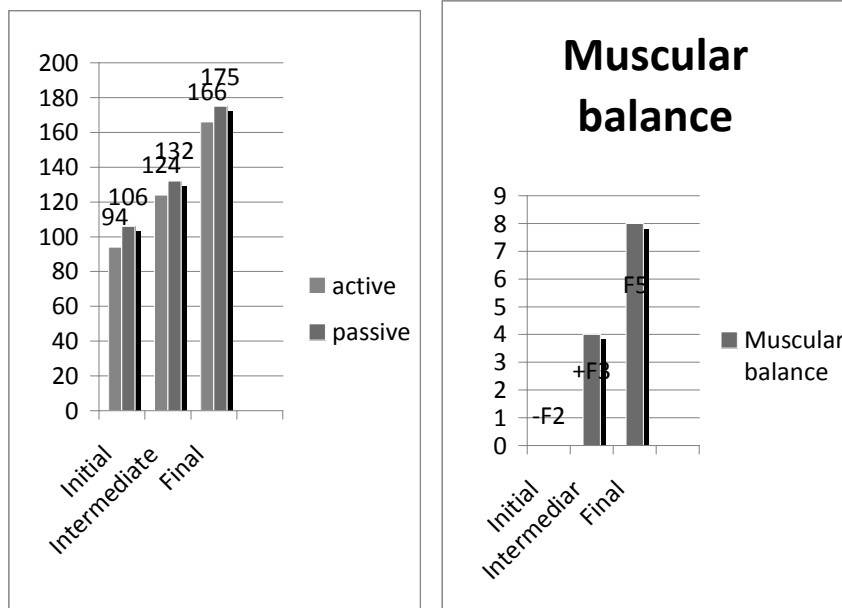
Analyzing the information from graph number 1 we can see that pain intensity from initial evaluation, representing a high value of 7, decreases till the intermediate evaluation to a value of 4, reaching to 0 at the final evaluation.

In graph number 2 the movement performed active by the patient is represented with blue, and the passive movement with red.

There can be noticed that at initial evaluation the patient could actively perform a flexion of 44°, and passive till 56°. At the next evaluation the mobility degree increases up to 84° active and passive till 92°, and at the last evaluation the patient regains a considerable increase of 126° active and 135° passive.

Following the graph number 3 we can see that at initial evaluation the patient had an extension of 94° active, and passive of 106°. The next evaluation shows a mobility increase up to 124° active and 132° passive, following that final evaluation to estimate an active increase till 166° and passive of 175°.

In graph number 4 there can be seen at initial evaluation a force – F2, corresponding to a numerical value 0, intermediate evaluation determines a force's increase up to +F3 with a numerical values of 4, and at final evaluation there is a force's increase up to F5, a numerical values of 8 that represents the efficiency of training program.



Graph 3 Articular balances on extension Graph 4 Muscular balance

CONCLUSIONS

1. As a result of applying the recovery program, it was confirmed the hypothesis ensuring a full recovery of the athlete.
2. The recovery program has a very important part in improvement the knees' functionality and patient's quality of life.
3. Applying the physical therapy program, over a period of 4 months, can determine the mobility improvement and knee's functionality, pain relief, improvement of life's quality.
4. Treatment has lead to a significant improvement of functionality due to a greater stability in knee's articulation.
5. As a result of applying the recovery program the patient started the training at Sportive Club University.

PROPOSALS

- Knee protection by wearing orthotics at training.
- At the beginning of the training it will be taken into consideration graduation of exercises not to require at maximum capacity the affected limb.
- Avoid running on off road.
- Continuing the recovery program, both at home but also at the gym.

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MIJLOACE ALE KINETOTERAPIEI APLICATE ÎN RECUPERAREA DUPĂ INTERVENȚIA CHIRURGICALĂ A LIGAMENTULUI ÎNCRUCIȘAT ANTERIOR

Cuvinte cheie: kinetoterapie, mijloace, recuperare, genunchi.

Rezumat: Ceea ce urmează a fi prezentat subliniază claritatea celor mai importante aspecte ale intervenției kinetoterapiei în cadrul traumatologiei sportive și nu numai, aspecte susținute în contextul lucrării. Cu ajutorul kinetoterapeutului G.M. și printr-o experiență practică unică am avut posibilitatea de a culege informații și de a le prelucra în contextul dat. Lucrarea are la bază date obținute în cadrul anamnezei, dar și din studierea mecanismelor de producere, cât și aspecte relevate în cadrul unui examen clinic și funcțional complex, dar și date din cărți de specialitate. Prin această lucrare am încercat să ating atât punctul de plecare (alegerea tipului de tratament) cât și mijloacele selectate pentru a se atinge o eficiență cât mai bună a programului de tratament kinetoterapeutic.