

SCIENTIFIC BASES IN ACCELERATED PHYSIOTHERAPY IN THE RECONSTRUCTION OF LCA WITH H-T- H. SECTION V

Author: Jose Manuel Sánchez

PhD student in Sports Physiotherapy

Clínica de Fisioterapia Deportiva de Alto Rendimiento Barcelona Barcelona High Efficiency Physiotherapy Sports Clinic (Spain) .

• **PROTOCOL OF ACCELERATED PHYSIOTHERAPY:**

Aim of physiotherapy:

- Immediate support.
- Early mobilisation, to recover the extension.
- English walking stick until the 3rd week.
- Start jogging at 2nd month
- Start sport activity at 4th month.

This schedule should be adapted according to the resistance and to the following control analysis.

Important : During the different recovery periods, you should control the joint and muscle recovery with isocinetic tests and the laxity with artrometer-Genucom. According to the data obtained, we will upgrade the patient to a new phase of the process.

• **10-15 days post-op: EARLY STAGE :**

- from day 0 to 7:

- Rest, analgic, prophylaxis of phlebitis, ++ cryotherapy many times a day, physiotherapy, and anti-inflammatories, fight against the Flexum.
- Isometric contractions of quadriceps, knee in extension.
- Isometric and isotonic contractions of ischios.
- MPC with no limitation (beneath pain).
- Lymphatic and venous drainage.
- Walk with support, with no blockade and two English sticks. Retaining blockade at night, in complete extension (mostly when flexum exists).
- Kneecap mobilization (vertical and transverse)
- Abductor and adductor work.

- from day 8 to 15:

- Work in CCA of ischios in all the amplitude.
- Continue to reinforce quadriceps (knee in extension) and ischios.
- Start the Ho-contractions of Quadriceps/Ischios.
- If the patient is strong and with good neuromuscular response and with a good active knee joint flexibility: work at foot load, walk forwards/backwards and side steps, with strict control on the 8th day. – Electrostimulation of the inner vastus.
- Joint rolling 0-130° in flexion (start with bicycles without resistance)
- Continue knee mobilization, lymphatic and venous drainage.
- Slow and progressive work on rolling board (skateboard) in all the amplitude.
- Start with Kabat diagonal, and ischio and quadriceps stretchings.
- Elevation on foot toes.
- Anti-flexum fight.

• **From day 15 to 60 : INTERMEDIATE STAGE :**

From day 15 to 21:

- Continue with proprioceptive work without weight.
- Rolling in swimming pools if scarring is correct.
- Remove the night blockade if extension is correct.
- Work in CCC of the lower limb between 30-90° in flexion with controlled resistance of the other lower limb.
- Leave walking sticks.
- Go up stairs at the 15th day, but go down at day 21st. And only if the inner vastus is correct (danger of knee tendon syndrome for decompensation)
- General gymnastic activity
- Continue Kabat.

From day 21 to 30:

- *Work in CCC :*

a) On foot on skateboard from 90 to 45° without weight.

b) Bicycle with little resistance, high saddle, low pedal.

c) Work in press with progressive resistance in all the amplitude. - ---- *Work in CCA:*

a) of Quadriceps between 60 and 90° of flexion, with resistance at level TTA, if dynamic work is done, with slight resistance.

b) Ischios, work in all the amplitude and intensify resistance.

- *Proprioceptive Work :*

a) With weight, unstable plane. Position: over the 2 lower limbs at 0 to 40° flexion.

From day 30 to 45:

-Work in the press in CCC in all the amplitude, with maximum weight (the contralateral limb may help between 0-30°)

-Continue Kabat with a resistance 1/3 less in femur.

-Ischios, Triceps, ABD, ADD, quadriceps and psoas stretching.

-Swimming pool in Crawl.

-Start with Proprioceptive work with weight over the lower limb submitted to surgery.

Important: from day 18 to 45, the anti-flexion fight has priority, extension recovery.

From day 45 to 60:

-Complete work of front and back chains at stretch.

-ADD and ABD muscle work.

-Work in CCC of the lower limb the maximum the better (press, step...)

-Highlight work of Ischios contra-resistance.

-Continue bicycle with increasing resistance.

-*Work in CCA :*

a) Intensifying of muscle work in CCA between 60 and 110° of flexion.

b) Work between 60-0° with little weight and in TTA.

• 2 months later. ADVANCED STAGE: Re-start of sports practice

-*Conditions in order to start this stage:*

a) Favourable trophic response.

b) No hydrarthrosis or joint effusion.

c) Pain must have disappeared.

d) Mobility must be full in extension and satisfactory in flexion.

e) Ischios must have been fully recovered (Biodex).

f) Genucom Test. If the difference between the side submitted to surgery and the sain side is >de 2mm a 89N of traction, you must stop progression during one month.

g) Quadriceps must have good tonicity.

From the 2nd to the 3rd month:

- Start doing Footing on a flat ground, in straight line and with no acceleration.

- Start the springboard and the plometrical work before 3 months.

- Continue bicycle and swimming pool.

- Intensifying of Unipodal Proprioceptive

- Jumping with feet together.

From the 3rd to the 4th month:

-Conditions to have in order to start this stage:

1) Isocynetic Test:

a) The muscle mechanic evaluation is important because it is tested at functional velocities nearby reality (60°/s, 180°/s y 240°/s)

b) The Isocynetic Test is always comparative to the opposite limb.

c) The Test will be done between 40 and 110° flexion. Quadriceps should be recovered in a 60%, in order to start this stage.

- Start accelerations and changes of directions in the race.

- Continue and accelerate the workout of the previous stage.

- Workout on the floor.

- Acquire resistance before starting the sports practice.
- Workout of CCA maximum in all the amplitude.
- Intensive Solicitation of the knee with weight in flexion and rotation.

At the 4th month:

- Training with the group.

At the 5th month:

- Return to competition.

* Important : For high level competitors, a isocynetic test with addapted muscle reinforcements program must be done.

Mechanical tensions agreement that act on the LCA, Femor-patellar and femor-tibial. Moment of development to resist a force of 1N placed at 1 meter of the center of movement : $1N \cdot 1m = 10 N$

WORKOUT IN CCA	LCA	FEMOR-PATELAR	FEMOR-TIBIAL
0°	+++	+++	-
30°	++	++	+
60°	+	+	++
90°	-	-	+++
WORKOUT IN CCC OF LOWER LIMB	LCA	FEMOR-PATELAR	FEMOR-TIBIAL
0°	+	-	+++
30°	-	+	++
60°	-	++	+
90°	-	+++	-
WORKOUT IN CCA OF ISQUIOS	LCA	FEMOR-PATELAR	FEMOR-TIBIAL
0°	-	+/-	-
30°	-	+/-	-
60°	-	-	-
90°	-	-	-