

**REHABILITATION PROTOCOL –
 ACL reconstruction in patients with
 completed growth
 (closed epiphyseal plates)**

<input type="checkbox"/> ACL reconstruction with patellar tendon graft <input type="checkbox"/> ACL reconstruction with hamstring tendon graft <input type="checkbox"/> ACL reconstruction with quadriceps tendon graft <input type="checkbox"/> With LET <input type="checkbox"/> Meniscal sutures : <table style="margin-left: 40px; width: 100%;"> <tr> <td><input type="checkbox"/> Medial</td> <td><input type="checkbox"/> Lateral</td> </tr> <tr> <td><input type="checkbox"/> Peripheral</td> <td><input type="checkbox"/> Complex</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Bucket handle tear</td> </tr> </table> <input type="checkbox"/> Meniscectomy : <table style="margin-left: 40px; width: 100%;"> <tr> <td><input type="checkbox"/> Medial</td> <td><input type="checkbox"/> Lateral</td> </tr> <tr> <td><input type="checkbox"/> Partial</td> <td><input type="checkbox"/> Complete</td> </tr> </table>	<input type="checkbox"/> Medial	<input type="checkbox"/> Lateral	<input type="checkbox"/> Peripheral	<input type="checkbox"/> Complex		<input type="checkbox"/> Bucket handle tear	<input type="checkbox"/> Medial	<input type="checkbox"/> Lateral	<input type="checkbox"/> Partial	<input type="checkbox"/> Complete
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<input type="checkbox"/> Partial	<input type="checkbox"/> Complete									

Please note that this protocol is provided for informational purposes only. It may be adjusted according to each patient's condition by the CHUSJ medical team. For specific information, please refer to the orthopedist's written prescription.

In addition to the specific restrictions mentioned by the referring physician, the patient's progression through the indicated stages should be based on symptoms and functional difficulties.

KNEE BRACE	<input type="checkbox"/> Day and night for 4 weeks, then only during the day. Lock in extension for weightbearing at the beginning, unlock when ASLR without lag. Wean off after 8 weeks if good control during single-leg squat. <input type="checkbox"/> Other : _____ _____
ROM	<input type="checkbox"/> No restrictions, progression according to tolerance (unless otherwise advised) 2-week target: full extension and flexion >90 degrees 6-week target: >120 degrees of flexion Targets stay the same if combined with meniscectomy <input type="checkbox"/> Associated with <u>meniscal sutures/repair</u> , <u>peripheral tear</u> : 0-90 degrees for 6 weeks. Avoid squatting or sitting on heels for 4-6 months <input type="checkbox"/> Associated with <u>meniscal sutures/repair</u> , <u>complex tear</u> : 0-30 degrees for 2 weeks, then 0-60 for 2 weeks, then 0-90 for 2 weeks, then 0-120 for 2 weeks, then according to tolerance. Avoid squatting or sitting on heels for 4-6 months. <input type="checkbox"/> Other : _____ _____

<p>WEIGHT BEARING</p>	<ul style="list-style-type: none"> <input type="checkbox"/> WBAT with crutches for 2 weeks, then wean off crutches (unless otherwise advised) <input type="checkbox"/> Combined with <u>meniscal sutures/repair</u>: TTWB only for 4 weeks, then gradually increase WB over 2 weeks as tolerated. <input type="checkbox"/> Other : _____ _____
<p>MODALITIES</p>	<ul style="list-style-type: none"> • Pain and edema management = Ice + Tubigrip + education • NMES if needed if quadriceps contraction is not effective • Treatment: mainly active modalities. We suggest closer follow-ups for the first 3 months, then less frequent follow-ups until the patient returns to sports after 9-12 months (with exercises at home or at the gym 4 to 5 times a week).
<p>STRENGTHENING</p>	<ul style="list-style-type: none"> • Weeks 0-3 = maintain quadriceps strength, isometric quad exercises, ASLR, final degrees of knee extension on roller, calves, hip strengthening, hip ABD and external rotation (<u>caution</u>: no isolated hamstrings if hamstring is used as graft before <u>6 weeks</u>). If WB is permitted: bridge, half squat, weight transfers with balance. • TARGET AT 3 WEEKS : ASLR without lag (without brace) • 3-6 weeks = step down, bipodal squat, forward lunges, side lunges, continue hip strengthening, stationary bike, walking • 6-8 weeks: begin hamstring strengthening as per surgical instructions, leg press, unipodal squat, high step. • Starting at 12 weeks: add weights if progress is favorable and there is no swelling; we suggest starting gym training. Caution with leg extensions: very gradual starting at 4 months, 90-45 degrees for one month, 90-30 degrees for one month, then 90-20 degrees. Avoid if there is patellar pain; not essential. • TARGET AT 16 WEEKS: quad/hamstring deficit less than 25% at 180°/sec, step down without compensatory movement. • ≥16 weeks = progress strengthening exercises according to clinical progress, work on control and depth of single-leg squats ++
<p>PROPRIO</p>	<ul style="list-style-type: none"> • Weeks 1-2 (as soon as WB is indicated) = begin weight transfer, single-leg balance, even without orthotics if safe with support • ≥ Week 2 = progress with eyes closed, unstable surface, dynamic balance, clock, touch foot while balancing, etc. • 12 weeks and more = progress ++ (e.g., single-leg squat on inverted BOSU) • Caution: If associated with <u>meniscal sutures/repair</u>, begin only when WB is permitted (usually 4 weeks).
<p>RETURN TO SPORT</p>	<ul style="list-style-type: none"> • Stationary bike if flex >110° and WB permitted, starting at 3 weeks • Elliptical trainer and stair master after 3 months (if meniscus repair, wait 4 months) • Swimming after about 4 weeks if the wound has healed well, after 8 weeks if meniscus repair. Do not push off from the walls. Focus on swimming in a sagittal plane rather than breaststroke or swimming in place (eggbeater). • Running : 4 months: Start running in a straight line on a stable surface <u>if</u>: <ul style="list-style-type: none"> ▪ Full ROM complet in extension ▪ ROM >95% in flexion ▪ Quadriceps and hamstring strength >75% vs unaffected side. ▪ Minimal edema ▪ Running does not cause pain

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| | <ul style="list-style-type: none">• Jumps :
Begin simple two-legged jumps at about 5 months if quadriceps and hamstring strength >80%.
• Psychological aspect :
Around 4-6 months: ACL-Return to sport and injury (RSI) questionnaire: if <55/100, address the psychological aspect. To improve the score, work extensively on dual tasks, break down the sporting movement, and gradually reintroduce the “traumatic” situation or movement. |
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Return to sport criterias:

Starting at 9 months post-op, with the surgeon's approval for return to full sports activities if functional tests have been successfully completed.

- 1) Complet ROM at the knee
- 2) Isokinetic strength $\geq 90\%$ for quad and hamstrings at $180^\circ/s$ and $60^\circ/s$ and hamstrings/quad ratio $\geq 60\%$
- 3) Y balance test: Composite score $\geq 94\%$ and ≤ 4 cm difference for ant. reach vs.unaffected side
- 4) Hop tests $\geq 90\%$ limb symetry, pain and apprehension free and good neuromuscular control (1 hop – 3 hops – 3 crossovers)

Before returning to fully competitive sports, we suggest practicing sports movements, technical skills alone, then non-competitive one-on-one play, agility, footwork, etc. This could be started around 8 months if tests for returning to sports are successful, but no simulation of games, matches, or contact with other players before 9 months.

* In addition to the specific restrictions cited by the referring physician, the client's progression through the indicated stages should be based on symptoms and functional difficulties. It is preferable to wait 12 months before returning fully to competitive sports.

* This protocol remains the same if a meniscectomy is performed at the same time but differs in the case of meniscal repair. Refer to the necessary adjustments listed above.