

SUPPLEMENTARY MATERIALS

Table S1. Protocols for postoperative rehabilitation after ACLR surgery

	Conventional rehabilitation (scheduled for 12 months)	Accelerated rehabilitation (scheduled for 6 months)
Goal	Stability allowing RTP 12 months after surgery	Stability allowing RTP 6 months after surgery
Phase 1	day 1–4 <ul style="list-style-type: none"> - Early postoperative phase - close observation - pain management - wound management - introducing CPM 	day 1–4 <ul style="list-style-type: none"> - Early postoperative phase - close observation - pain management - wound management - CPM from day 1 if possible
Goal	<ul style="list-style-type: none"> - <i>no swelling/reduced swelling</i> - <i>well-controlled pain</i> - <i>surgeon is satisfied with the surgical site and early phase of wound healing</i> <p style="text-align: center;">Ready for phase 2? → Green light</p>	
Phase 2	week 1–2 <ul style="list-style-type: none"> - pain management - wound control - CPM 6 hr daily - gait training 	week 1–2 <ul style="list-style-type: none"> - pain management - wound control - CPM 6 hr daily - gait training
Goal	<ul style="list-style-type: none"> - <i>patient is pain-free without painkillers</i> - <i>passive ROM 0°–110°</i> - <i>full extension, quadriceps control and full weight bearing with brace</i> - <i>stable gait with correct posture</i> - <i>surgeon is satisfied with the surgical site and wound healing</i> <p style="text-align: center;">Ready for phase 3? → Green light</p>	
Phase 3	week 2–6 <ul style="list-style-type: none"> - gait training without brace - increasing quadriceps strength, passive and active training, isolation exercises - improving proprioception - EMS training 	week 2–6 <ul style="list-style-type: none"> - gait training without brace - increasing quadriceps strength, passive and active training, isolation exercises - improving proprioception - EMS training
Goal	<ul style="list-style-type: none"> - <i>passive ROM 0°–125°</i> - <i>improved quadriceps strength</i> - <i>full weight bearing without brace</i> - <i>patient is pain-free during exercising</i> <p style="text-align: center;">Ready for phase 4? → Green light</p>	
Phase 4	week 6–16 <ul style="list-style-type: none"> - functional exercises - isokinetic training and testing - increasing quadriceps strength - improving proprioception, balance training - EMS training 	week 6–12 <ul style="list-style-type: none"> - functional exercises - isokinetic training and testing - increasing quadriceps strength - improving proprioception, balance training - EMS training
Goal	<ul style="list-style-type: none"> - <i>passive ROM 0°–135°</i> - <i>strength tests, hop tests</i> - <i>quadriceps strength reaching 75%–80% of pre-injury strength</i> - <i>stability during functional training</i> <p style="text-align: center;">Ready for phase 5? → Green light</p>	

Table S1. Continued

	Conventional rehabilitation (scheduled for 12 months)	Accelerated rehabilitation (scheduled for 6 months)
Phase 5	week 16–24	week 12–16
	<ul style="list-style-type: none"> - beginning with sport-specific exercises and drills - plyometrics - isokinetic training and testing - increasing quadriceps strength - improving proprioception, balance training 	<ul style="list-style-type: none"> - beginning with sport-specific exercises and drills - plyometrics - isokinetic training and testing - increasing quadriceps strength - improving proprioception, balance training
Goal	<ul style="list-style-type: none"> - <i>improved limb symmetry</i> - <i>strength tests, hop tests, isokinetic testing</i> - <i>quadriceps strength reaching 85%–90% of pre-injury strength</i> - <i>stability during sport-specific drills</i> <p style="text-align: center;">Ready for phase 6? → Green light</p>	
Phase 6	week 24–48	week 16–24
	<ul style="list-style-type: none"> - sport-specific exercises and drills - endurance training - isokinetic testing - maximizing quadriceps strengths and proprioception 	<ul style="list-style-type: none"> - sport-specific exercises and drills - endurance training - isokinetic testing - maximizing quadriceps strengths and proprioception
Goal	<ul style="list-style-type: none"> - <i>no significant difference in limb symmetry and muscle mass compared to the non-operated side</i> - <i>strength tests, hop tests, isokinetic testing</i> - <i>quadriceps strength reaching 95%–100% of pre-injury strength</i> - <i>adequate cardiovascular and muscular endurance</i> - <i>proprioception and balance are completely restored</i> - <i>the athlete is psychologically ready to return to competitive sport</i> <p style="text-align: center;">Ready for RTP?</p>	

The table demonstrates two rehabilitation protocols after ACLR surgery. The protocols are similar in their principles but scheduled differently in time. Both programs are divided into 6 phases and individualized according to the so-called traffic light concept. Thus, patients need to reach specific goals to get a green light and be allowed to proceed to the next phase. However, the time length of phases 4–6 differs significantly in the two protocols. Choosing the appropriate program is a shared decision between patient and surgeon, taking the individual risk stratification into consideration. General health status and physical condition, concomitant injuries, compliance, and the explicit wish of the patient are important factors by making the final decision.

ACLR, anterior cruciate ligament reconstruction; RTP, return to play; CPM, continuous passive motion; ROM, range of motion; EMS, electrical muscle stimulation.