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## **ACL Reconstruction with Quadriceps Tendon Autograft Rehabilitation Protocol**

### **GENERAL GUIDELINES**

- Presuppose 8 weeks for complete graft re-vascularization
- CPM not commonly used
- ACL reconstructions performed with meniscal repair or transplant follow the ACL protocol. For semitendinosus/gracilis autografts, no isolated hamstring strengthening for 6 weeks. Physician may extend time frames for use of brace or crutches.
- Supervised physical therapy takes place for 3-9 months.

### **GENERAL PROGRESSION OF ACTIVITIES OF DAILY LIVING**

Patients may begin the following activities at the dates indicated (unless otherwise specified by the physician):

- Bathing/showering without brace after suture removal
- Sleep with brace locked in extension for 1 week
- Driving: 1 week for automatic cars, left leg surgery
- 4-6 weeks for standard cars, or right leg surgery
- Brace locked in extension for 1 week for ambulation
- Use of crutches, brace for ambulation for 6 weeks if altered gait. DC assistive device when FWB without limp, ROM 0-90, and patient able to perform SLR without extensor lag.
- Weightbearing as tolerated immediately post-op

### **PHYSICAL THERAPY ATTENDANCE**

The following is an approximate schedule for supervised physical therapy visits:

- Phase I (0-6 weeks) 1 visit/week
- Phase II (2-3 weeks) 2-3 visits/week
- Phase III (2-6 months) 2-3 visits/week
- Phase IV (6-9 months) 1 visit/1-2 weeks

### **REHABILITATION PROGRESSION**

The following is a general guideline for progression of rehabilitation following ACL semitendinosus/gracilis autograft reconstruction. Progression through each phase should take into account-patient status (e.g., healing, function) and physician advisement. Please consult the physician if there is any uncertainty concerning advancement of a patient to the next phase of rehabilitation.

# Table 1

## Postoperative anterior cruciate ligament reconstruction protocol

Phase/Criteria for advancement	Goals	Brace/WB status	Therapeutic exercises
Phase I: PO Weeks 1-4	Protect graft fixation	<b>Brace</b>	Heel slides as tolerated BPTB
Criteria for Advancement II	Minimize effects of immobilization	Week 0-1	Wall slides 0-45° (hamstring repairs)
Good quad set	Control inflammation	Locked full extension	Quadriceps sets(NMES if poor control)
Approximately 120° flexion	Full extension ROM	Week 1-2	Patellar mobilizations
Full knee extension	Education	Unlocked for ambulation when full extension with no lag	Non-weight bearing gastrocnemius and hamstring stretches (hold 3 weeks if hamstring repair)
		Week 2-4	SLR in all planes – with brace if extensor lag
		DC brace when full extension with no lag	Multi-hip
		If lag in extension >5 sleep in brace	Quadriceps isometrics at 60° and 90°
		<b>WB Status</b>	Toe raises bilaterally

Phase/Criteria for advancement	Goals	Brace/WB status	Therapeutic exercises
		WB as tolerated	Terminal knee extension (T-band)
		Bilateral axillary crutches	Balance – bilateral weight shifts
			Stationary bike (high seat, low tension)
<b>Phase II: PO Weeks 4-6</b>	Restore normal gait	<b>WB Status</b>	Exercise as previous
Criteria for Advancement III	Maintain full extension	No assistive device when gait with no antalgia	Wall slides 0–90°
Excellent quadriceps set	Progress flexion ROM		Multi-hip
SLR without extensor lag	Protect graft fixation		Toe raises unilaterally
Full knee extension			Leg press - bilaterally
No signs of inflammation			Balance – bilateral weight shifts – unilateral
			Hamstring isometrics (hamstring repairs) – curls (BPTB)
		Hamstring and gastrocnemius & soleus	

Phase/Criteria for advancement	Goals	Brace/WB status	Therapeutic exercises
			stretch
<b>Phase III: PO 6 Weeks–3 Months</b>	Full ROM		Flexibility as appropriate
Criteria for Advancement to IV	Improve strength		Stairmaster/Nordic Track (avoid knee hyperextension)
Full pain-free ROM	Improve endurance		Isolated knee extension 90°–45° progress to eccentrics
85% quadriceps and hamstring strength	Improve proprioception	Functional brace may be recommended by physician for use during sports for first 1–2 years after surgery	Advanced CKC – Single leg squats; leg press – unilaterally (0°–45°)
Good static proprioception and balance	Prepare for functional activities		
Physician clearance for advanced activities	Avoid overstrengthening graft		Step-ups (begin 2" progressing to 8")
	Protect PF joint		
<b>Phase IV: PO 3 months–6 months</b>	Progress strength		Begin in-line jogging
Criteria for Advancement to V	Progress power	Functional brace may be recommended by physician for use during sports for first 1–2 years after surgery	Initiate bilateral plyometric exercises

Phase/Criteria for advancement	Goals	Brace/WB status	Therapeutic exercises
Full pain-free ROM – flexion and extension	Progress proprioception		Progress proprioception - Slide board, ball toss, racquets
No patellofemoral irritation			
90% quadriceps and hamstring strength	Prepare for return to <i>controlled</i> individual functional activities/sports		Walk/jog progressions
Sufficient proprioception			
Physician clearance for advanced activities			
<b>Phase V: 6 months +</b>	Progress strength		Continue to progress flexibility and strength
	Progress power		Progress plyometrics – unilateral
	Progress proprioception	Functional brace may be recommended by physician for use during sports for first 1–2 years after surgery	Walk/jog progression
	Prepare for <i>full return</i> to functional activities		Forward/backward running progressing from ½, ¼, full speed
Safe return to athletics including individual/team sports	Cutting, cross-over drills, carioca		

<b>Phase/Criteria for advancement</b>	<b>Goals</b>	<b>Brace/WB status</b>	<b>Therapeutic exercises</b>
			Initiate sports specific drills as appropriate
	Education on possible limitations		Gradual return to sports participation
			Maintenance of strength and endurance