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Anterior Cruciate Ligament Reconstruction

Allograft ACL (Achilles Tendon)-Accelerated Rehab

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This rehabilitation protocol has been designed for patients with ACL-HS reconstruction who anticipate returning to a high level of activity early postoperatively. The ACL protocol for Achilles Tendon Allograft is similar to the standard accelerated for HS/PT except:

1. Plyometric exercises should be delayed until at least 16 weeks.
2. Sport specific training should also be delayed until at least 16 weeks.

The following are **exclusionary criteria** for this protocol:

- Concomitant meniscal repair
- Concomitant ligament reconstruction
- Concomitant patellofemoral realignment procedure
- ACL revision reconstruction
- MRI evidence of severe bone bruising or articular cartilage damage noted

The protocol is divided into several phases according to postoperative weeks and each phase has anticipated goals for the individual patient to reach. The **overall goals** of the reconstruction and the rehabilitation are to:

- Control joint pain, swelling, hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Achieve the level of function based on the orthopedic and patient goals

The physical therapy is to begin 2nd day post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility.

Important post-op signs to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitive

- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Insufficient lower extremity flexibility

Return to activity requires both time and clinic evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return to activity.

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Phase 1: Week 1-2
Allograft ACL Accelerated Protocol

WEEK	EXERCISE	GOAL
1-2	ROM	0-110°
	Passive, 0-110°	
	Patella mobs	
	Ankle pumps	
	Gastoc-soleus stretches	
	Wall slides	
	Heel slides with towel	
	STRENGTH	
	Quad sets x 10 minutes	
	SLR (flex, abd, add)	
	Multi-hip machine (flex, abd, add)	
	Leg Press (90-20°)-bilateral	
	Mini squats (0-45°)	
	Multi-angle isometrics (90-60°)	
	Calf Raises	
	BALANCE TRAINING	
	Weight shifts (side/side, fwd/bkwd)	
	Single leg balance	
	Plyotoss	
	WEIGHT BEARING	
	Wt bearing as tolerated with crutches	
	Crutches until quad control is gained	
	One crutch before FWB with no crutches	
	BICYCLE	
	May begin when 110° flex is reached	
	DO NOT use bike to increase flexion	
	MODALITIES	
	Electrical stimulation as needed	
	Ice 15-20 minutes with knee at 0° ext	

BRACE

Remove brace to perform ROM activities
I-ROM when walking with crutches

GOALS OF PHASE:

- ROM 0-110°
- Adequate quad contraction
- Control pain, inflammation, and effusion
- PWB TO FWB as capable

Phase 2: Week 2-4
Allograft Accelerated Protocol

WEEK	EXERCISE	GOAL
2-4	ROM	0-125°
	Passive, 0-125°	
	Patella mobs	
	Ankle pumps	
	Gastoc-soleus stretch	
	Light hamstring stretch at wk 4	
	Wall, heel slides to reach goal	
	STRENGTH	
	Quad sets with biofeedback	
	SLR in 4 planes (add ext at wk 4)	
	Heel raise/Toe raise	
	Leg Press	
	Mini squat (0-45°)	
	Front and Side Lunges	
	Multi-hip machine in 4 directions	
	Bicycle/EFX	
	Wall squats	
	BALANCE TRAINING	
	Balance board/2 legged	
	Cup walking/hesitation walk	
	Single leg balance	

Plyotoss
WEIGHT BEARING
As tolerated with quad control
MODALITIES
E-stim/biofeedback as needed
Ice 15-20 minutes
BRACE
Discharge week 3 - 4

GOALS OF PHASE:

- Maintain full passive knee extension
- Gradually increase knee flexion to 125°
- Diminish pain, inflammation, and effusion
- Muscular strengthening and endurance
- Restore proprioception
- Patellar mobility

Phase 3: Week 4-12
Allograft Accelerated Protocol

WEEK	EXERCISE	GOAL
4-8	ROM	Full ROM
	Self-ROM to gain FROM	0-135°
	And maintain 0° extension	
	Gastoc/soleus stretching	
	Hamstring stretching	
	STRENGTH	
	Progress isometric program	
	SLR with ankle weight/tubing	
	Leg Press-single leg eccentric	
	Initiate isolated hamstring curls	
	Multi-hip in 4 planes	
	Lateral/Forward step-ups/downs	
	Lateral Lunges	

Wall Squats
Vertical Squats
Heel raise/Toe raise
Bicycle/EFX
Retro Treadmill
Mini-squats/Wall squats
Straight-leg dead lifts
Stool crawl

BALANCE TRAINING
Steam boats in 4 planes
Single leg stance with plyotoss
Wobble board balance work-single leg
½ Foam roller work

MODALITIES
Ice 15-20 minutes following activity

BRACE
Functional brace as needed

ROM — Full ROM
Self-ROM as needed — 0-135°
Gastroc/Soleus/HS stretch

STRENGTH
Continue exercises from wk 4-6
Progress into jogging program as ROM normalizes, pain and swelling are minimal.
Begin on mini-tramp, progress to treadmill as tolerated then hard surface when tolerated.
Progress with proprioception training
Isokinetic work (90-40°)(120-240°/sec)

WEEK	**EXERCISE**
8-10 cont	Walking program
	Bicycle for endurance
	Plyometric leg press/shuttle work

10-12	ROM
	Gastroc/Soleus/HS stretch
	STRENGTH
	Continue exercises from wk 4-10
	Isokinetic test at 180 and 300°/sec
	Continue with stretching
	MODALITIES
	Ice 15-20 minutes as needed

GOALS OF PHASE:

- Restore full knee ROM (0-135°)
- Increase lower extremity strength and endurance
- Restore functional capability and confidence
- Enhance proprioception, balance, and neuromuscular control

Phase 4: Week 12-16
Allograft Accelerated Protocol

WEEK	**EXERCISE**
12-16	ROM
	Continue all stretching activities
	STRENGTH
	Continue all exercises from previous phases
	Start Plyometric drills at 16 weeks
	Increase jogging/running program
	Swimming (kicking)
	Backward running
	CUTTING PROGRAM
	Lateral movement
	Carioca, figure 8's
	MODALITIES
	Ice 15-20 minutes as needed

GOALS OF PHASE:

- Maintain muscular strength and endurance
- Enhance neuromuscular control
- Progress skill training
- Perform selected sport-specific activity

Phase 5-Weeks 16-36 ACL Allograft Protocol

WEEK	EXERCISE
16-36	STRENGTH
	Continue advanced strengthening
	FUNCTIONAL PROGRAM
	Progress running/swimming program
	Progress plyometric program
	Start sport training program
	Progress neuromuscular program
	Ice 15-20 minutes as needed

GOALS OF PHASE:

- Return to unrestricted sporting activity
- Achieve maximal strength and endurance
- Progress independent skill training
- Normalize neuromuscular control drills

At six and twelve months, a follow-up isokinetic test is suggested to guarantee maintenance of strength and endurance. Advanced weight training and sports specific drills are advised to maintain a higher level of competition.