ANTERIOR CRUCTIATE LIGAMENT RECONSTRUCTION REHABILITATION PROTOCOL

PATELLAR TENDON AUTOGRAFT RECONSTRUCTION

GENERAL GUIDELINES

- The local anesthetic (similar to novacaine) in your knee will last 6-12 hours
  - Start taking the pain medication as soon as you start feeling pain
- Vistaril may be taken every 6 hours as needed for nausea, itching, or trouble sleeping
- Take 1 aspirin (325 mg) daily for two weeks, starting the day after surgery
- Use cryotherapy continuously for the first 72 hours, then as-needed thereafter
  - Ensure that the cryotherapy cuff never contacts the skin directly
  - Apply to the knee after performing rehab exercises for the first 12 weeks
- Remove the bandage 72 hours after surgery, but leave the white steritrips on the skin
  - apply fresh gauze pad with ace bandage for the first 2 weeks after surgery
- You may shower after surgery, wrapping the dressing in plastic wrap to keep dry
  - You may get the incision wet after the first postoperative visit with the doctor
  - Do NOT submerge the knee underwater for the first 6 weeks
- 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 brace for ambulation for 6 weeks, crutches for at least 2 weeks
- Weight-bearing as tolerated, using crutches for the first two weeks at least
- Take precautions not to fall, as a fall could result in fracture or graft failure
- Schedule a follow-up appointment for two weeks after surgery 410-448-6400

PHYSICAL THERAPY ATTENDANCE

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

Phase I	(0-2 weeks):	1 visit/week
Phase II	(2-6 weeks):	2-3 visits/week
Phase III	(6 weeks – 3 months):	2-3 visits/week
Phase IV	(3-6 months):	1-2 visits/week
Phase V	(> 6 months):	Discharge with home program

REHABILITATION PROGRESSION

The following are guidelines for rehabilitation. Please consult the physician with any concerns or questions about advancement to the next phase of rehabilitation. Physician visits are routinely scheduled at 2, 6, 14, 26, and 52 weeks postoperatively.

`

PHASE I

Begins immediately post-op through the first postoperative visit (2 weeks)

Goals:
- Protect graft fixation and minimize inflammation
- Ensure wound healing and prevent blood pooling/blood clot
- Maintain full extension, initiate early range of motion

Brace:
0 – 1 week: Locked in full extension for ambulation and sleeping
1 – 2 weeks: Unlocked 0-90 deg for ambulation, lock in extension for sleeping

Weight-Bearing Status:
0 – 2 weeks: Weight bearing as tolerated with two crutches

Therapeutic Exercises (3 times per day):
- *Ankle pumps*
- Knee extension/hamstring stretching with *heel prop*
- *Heel slides* with assistance from unaffected leg
- Sitting *leg dangle* to 90 degrees using unaffected leg for support
- *Patellar mobilizations* (medial, lateral, proximal, distal)
- Quad isometrics (hold for 10 seconds, with 5 repetitions)

PHASE II

Begins 2 weeks postoperatively and extends to 6 weeks postoperatively

Criteria for advancement to Phase II:
- No signs of active inflammation, flexion to 70 degrees

Goals:
- Restore normal gait
- Maintain full extension, progress flexion
- Protect graft fixation

Brace/Weight-Bearing Status:
- Brace may be unlocked at all times; may remove for exercises and sleeping.
- Weight bearing as tolerated with two crutches for a minimum of 2 weeks
  - Transition to 1 crutch, then discontinue when comfortable

Therapeutic Exercises (3 times per day):
- All exercises from Phase I
- Aggressive *patellar mobilizations* (medial, lateral, proximal, distal)
- Stationary bike (no tension; begin with high seat & progress to lower seat for ROM)
- *Prone hangs* to promote knee extension
- *Straight-leg raises* (10 repetitions; start with brace locked, then unlocked as tolerated)
- *Hip abduction* (leg raises to the side while lying on your side)

`

PHASE III

Begins 6 weeks postoperatively and extends to 3 months postoperatively

Criteria for advancement to Phase III:
- No difficulty with straight-leg raise
- Flexion to at least 120 degrees

Goals:
- Maximize range of motion
- Improve functional strength while protecting the graft and patellofemoral joint
- Wean the postoperative brace and discard when comfortable

Therapeutic Exercises (perform strengthening exercises every other day):
- All exercises from Phase II (perform 3 times per day)
- Stationary bike (increase tension as tolerated)
- *Wall slides* and *leg press* from 0-45 degrees of knee flexion
- 3-way hip motion with progressive resistance (flexion, abduction, adduction)
- *Hamstring curls* with progressive resistance
- Toe raises
- Treadmill walking with emphasis on normalization of gait pattern
- Aquatic program to include pool running and flutter kick (NO breaststroke)

PHASE IV

Begins 3 months postoperatively and extends to 6 months postoperatively

Criteria for advancement to Phase IV:
- Full range of motion and normal gait
- No difficulty with wall slide to 45 degrees.

Goals:
- Improve strength and endurance in preparation for functional activities
- Initiate proprioceptive training while protecting the graft and patellofemoral joint

Brace:
- Well-fitting ACL Sports brace prior to jogging or proprioception exercises

Therapeutic Exercises (perform every other day):
- All exercises from Phase III
- Progress to single leg wall slides and leg press to 90 degrees of flexion
- Step-up/Step-down beginning at 2", gradually progress height as tolerated
- Elliptical trainer (transition to jogging when comfortable and has Sports brace)
- Treadmill or track jogging, gradually increasing distance and speed
  - Avoid uneven terrain or concrete surfaces such as sidewalks and streets
- Balance/Proprioceptive training (single leg stance, balance board)
- Plyometric training (see following page for guidelines)

`

Plyometric training (should be performed on dedicated soft, level surface with good traction).
12-16 weeks postop: Double limb hops (advance to 30 reps)
16-20 weeks postop: Add alternating single leg hop (advance to 15 reps each foot)
Add double limb forward, side, and back hops (advance to 10 reps each)
(distance should be 6 to 12 inches)
20-26 weeks postop: Add single leg hop (advance to 10 reps)
Increase distance of double limb forward hop as tolerated, add triple hop
26-36 weeks postop: If appropriate for desired sports or activities,
Add double leg rotational hops (90 degree turn midair, advance to 5 reps)
Add double leg rotational hops (180 degree turn midair, advance to 5 reps)

PHASE V

Begins 6 months postoperatively and extends to 1 year postoperatively

Criteria for advancement to Phase V:
- Surgeon clearance
- Symmetric thigh musculature and performance within 10% of uninvolved limb

Goals:
- Maximize strength, endurance, and proprioception
- Gradual return to sport (wearing ACL Sports brace for the first year)

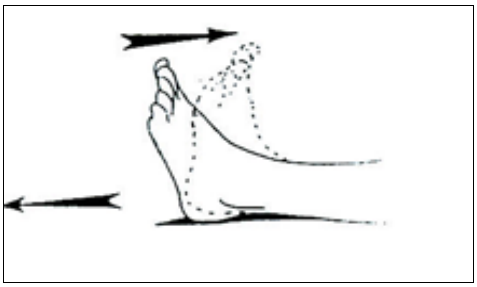
Therapeutic Exercises (perform every other day with brace):
- All exercises from Phase IV
- May jog on any surface as tolerated, gradually increasing distance and speed
- Non-linear running (zig-zag run, backwards run, Carioca each side for 50 yards each)
  - Start with 'walk-through' at < 1% of maximum effort
  - Increase 10% effort each session as tolerated
- Agility drills added after non-linear running mastered (shuttle run, box drill, weaves)
  - Start with 'walk-through' at < 1% of maximum effort
  - Increase 10% effort each session as tolerated
- Sport specific training/practice once agility drills mastered
  - Start with 'walk-through' at < 1% of maximum effort
  - Increase 10% effort each session as tolerated

General timeframe for typical return to sports

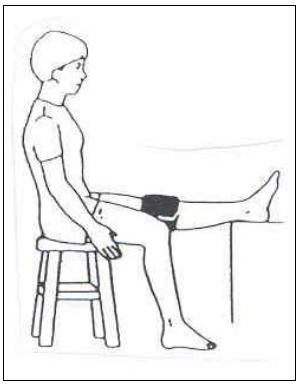
Jogging:	14 weeks postoperatively
Golf:	5 months postoperatively
Roller blading:	6 months postoperatively
Skiing:	7 months postoperatively
Return to practice for all other sports:	7 months postoperatively
Full return to sports:	9 months postoperatively

`

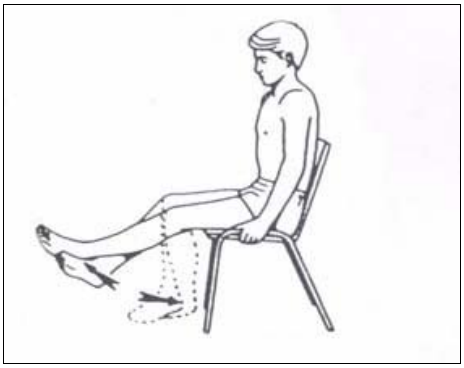
Exercise Diagrams (Phase I)



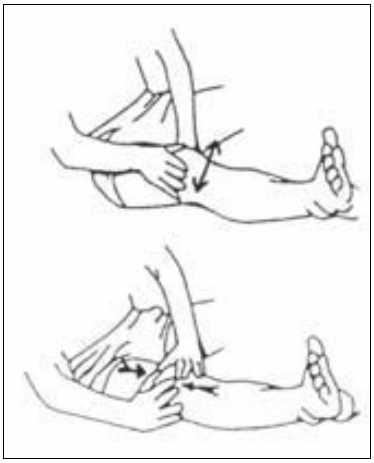
Ankle Pumps



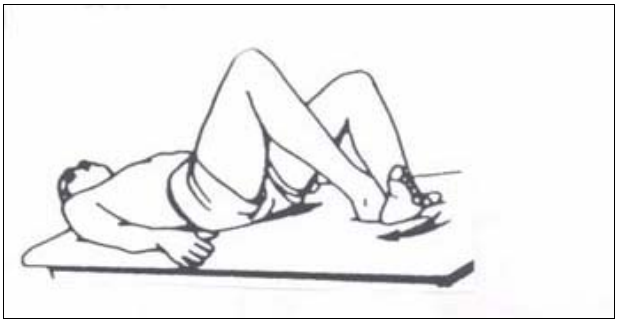
Sitting extension/hamstring stretch with *heel prop*
May also be performed recumbent (lying down)



Sitting *leg dangle* to 90 degrees
using unaffected leg for support



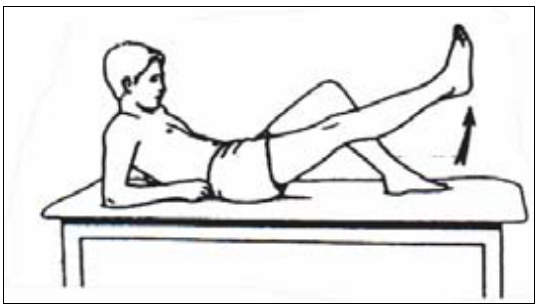
Patella mobilizations
stretch in 4 directions (side to side, up and down)



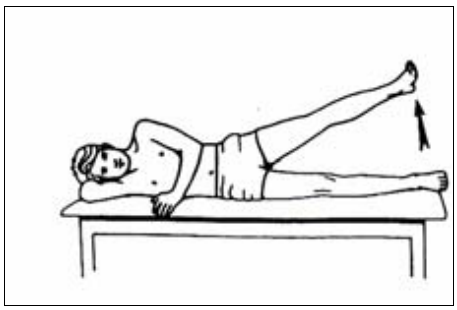
Recumbent *heel slides* with assistance

`

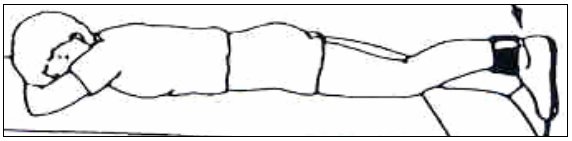
Exercise Diagrams (Phase 2)



Straight-leg raises

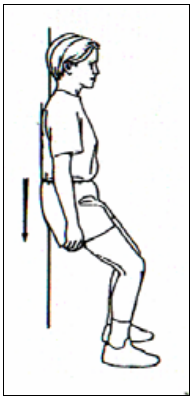


Hip abduction **(both legs)**

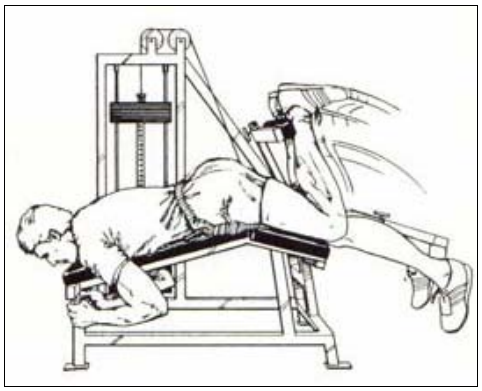


Prone hangs to promote full knee extension

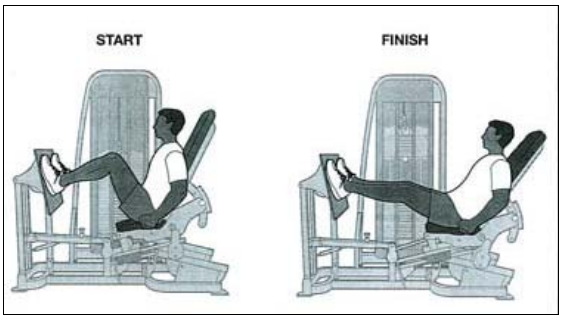
Selected Exercise Diagrams (Phase 3)



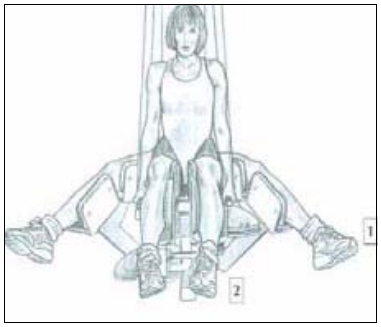
Wall slides (0-45 degrees of knee flexion)



Hamstring curls



Leg Press (0-45 degrees of knee flexion)



Hip abduction and adduction