

## Dr. Ernat's ACL Reconstruction Post-Operative Protocol

May attend up to 1-3 times weekly for 8-12 weeks.

In order for University of Utah Health Care to complete this referral, please fax the patient's first consult notes to the University of Utah Orthopaedic Center at 801-581-4404. Thank you.

**RESTRICTIONS:** Avoid hyperextension. No jogging until 10-12 weeks. No agility/contact sports until cleared around 6-9 months. **If hamstring autograft**, no aggressive hamstring stretches for 4-6 weeks and no resisted hamstring exercises for 8-12 weeks.

**WB / CRUTCHES:** PWB 25-50% w crutches and brace for 2 days post-op or until the nerve block has worn off, then full WBAT w crutches/brace for 10-14 days. Wean as tolerated after 10-14 days. If meniscal repair also performed, then PWB 25-50% with crutches for 4 weeks postoperative with brace locked in extension and with crutch assistance.

**BRACE:** 1-2 wks s/p with brace locked in full extension for ambulation and while sleeping until full extension reached. Brace will be worn for a minimum 6 weeks post-operatively in all cases while ambulating and for daily activities but may be removed for sleep, around the house, and therapy as soon as full extension is achieved but no sooner than 2 weeks postoperatively.

**RANGE OF MOTION:** Full extension immediately. No hyperextension. Increase ROM daily as tolerated. Goal of 90 degrees by post-op clinic visit 8-12 days out of surgery. If meniscal repair performed, avoid flexion beyond 90 degrees for first 4 weeks, then may progress after that.

**STRENGTHENING:** Quad sets immediately. Begin light hamstring strengthening progression around weeks 4-6 if BTB autograft or allograft, or around 8-12 wks if hamstring autograft.

**MODALITIES:** Per PT or ATC's discretion. Ice use 3-5 x/daily for first 10-14 days then 2-3 x/daily over first 4 weeks as needed.

**RETURN TO ACTIVITY:** subject to change, based on individual progress, age, graft, activity level, and sport.

- **Recumbent bike:** 2 weeks
- **Road bike outside:** 8 weeks
- **Elliptical:** 10 weeks
- **Planks:** 10 weeks
- **Swimming:** 10-12 weeks
- **Light jogging:** 10-12 weeks
- **Running:** 3-4 months
- **Golf (chip/putt):** 3 months
- **Golf (full swing):** 4 months
- **Throwing:** 4-5 months
- **Skiing:** 6-9 months
- **Tennis:** 6-9 months
- **Soccer:** 6-9 months
- **Basketball:** 6-9 months
- **Contact sports:** 6-9 months

### KEY FOR PATIENTS:

- **POST-OP** = after your surgery
- **WB** = weight-bearing
- **ROM** = range of motion
- **PROM** = passive range of motion, someone else moves you
- **AAROM** = active assisted range of motion
- **AROM** = active range of motion, you move yourself
- **RROM** = resisted range of motion, motion against resistance, strengthening
- **SLR** = straight leg raise
- **WNL** = within normal limit

*Timing of each phase varies based on the size of the tear, quality of tissue, length of time immobilized, strength/ROM status, and expected short and long term performance/activity demands.*

**\*\*IF HAMSTRING AUTOGRAFT:** No aggressive hamstring stretches for 4-6 weeks. May begin resisted hamstring exercises after 8-12 weeks.\*\*

**PHYSICAL THERAPY (PT):** Begin formal PT about 3 days s/p surgery. Attend 2 times prior to your first post-op clinic visit. Please call as soon as you have your surgery date to set up post-op PT so the facility does not get over-booked.

### **PHASE I: PROTECTION, RANGE OF MOTION (POST-OP – WK 2)**

- 1) **PRESENTATION:** Post-op day 1-3, post-op hemarthrosis, post-op pain, decreased ROM, decreased voluntary quadriceps contraction, dependent ambulation, post-op knee immobilizer.
- 2) **GOALS:** Protect graft, control inflammation, prevent muscle shut down and pain, full bilateral extension, flexion  $\geq 90^\circ$ - $100^\circ$ , obtain normal gait pattern, WBAT 75% to full, establish home exercise program, good quad set, SLR without extension lag (all may change if meniscal repair performed).
- 3) Protective bracing, ice, compression, elevation (PRICE).
- 4) Ambulation training: Crutches WB 25%-50% initially then progress to full as tolerates.
- 5) Patient education, modalities at therapist discretion; patella mobs
- 6) Full P/AROM, quad activation with quad sets and SLR, Ankle pumps
- 7) Gastroc/soleus and hip flexor stretches
- 8) Stationary bike with no resistance once flexion is to 105 degrees
- 9) Isometrics: quads, hamstrings, hip adductors (may augment with e-stim as needed).
- 10) Stationary bike once flexion is to  $105^\circ$ , with no added resistance.

### **PHASE II: MODERATE PROTECTION, ROM, LIGHT RESISTANCE (POST-OP WKS: 2-6)**

- **PRESENTATION:** Pain and swelling decreased, improving ROM, quad set and SLR
- **GOALS:** Restore normal gait, maintain full extension and progress flexion ROM, protect graft, and control swelling.
- Continue phase I exercises. Progress to full weight bearing if not reached yet. Initiate weight shifting exercises.
- Modalities at therapist discretion; Patella Mobs
- Stationary bike- may progressively add resistance, **NO outside road biking before 10-12 weeks.**
- FWB double leg balance exercises; may begin closed chain terminal extension with no added resistance ; Hamstring exercises as tolerated if NOT hamstring autograft; Teach sport cord HEP.

- SLR's in 4 planes, heel/toe raises, closed chain double leg strengthening with no added resistance.
- Trunk and pelvic stability program. Total gym light leg press.
- Aquatic therapy when wounds are well-healed. OK to flutter kick, but no other kicks.
- Wks 5-6, advance resistive exercises with quads, gastroc, hips.

### **PHASE III: STRENGTHENING** (*POST-OP WKS: 6-12*)

- **PRESENTATION:** Pain and joint swelling controlled, no increased joint instability, full or near full pain free ROM, fair-plus to good muscle strength with MMT, muscular control of joint, independent ambulation.
- **GOALS:** Keep full and pain free ROM and patellar ROM, improve strength, endurance and proprioception, protect the graft and PF joint, good to normal muscle strength with MMT, dynamic control of joint normal ADL function, compliance with HEP, normal stair gait, sufficient strength (75% RM leg press/hamstring curl)
- **RESTRICTIONS:** No cutting, agility, pivoting, twisting, jumping/landing, contact sports.
- Continue with previous phase's exercises.
- Modalities at therapist discretion; Patella Mobs
- Full ROM; Begin closed chain double leg strengthening and advance as tolerates with light resistance, progress slowly as tolerates then advance closed chain strengthening to single leg as tolerated;
- Isometrics. LE flexibility program; after 8 weeks may progress hamstring exercises as tolerates
- May begin riding road bike outside on flat ground at about 10-12 weeks and if have full ROM and good balance;
- Pool running with vest; all swimming kicks OK after 8 wks s/p;
- Advance trunk stability. Proprioception training: tilt boards, BAPS board, beam walking, single-leg stance, challenged stance
- Rhythmic stabilization: manual resistance, band walking
- Initiate a straight ahead walk/jog program by 10-12 weeks, running progression after 10-12 weeks s/p as tolerated;
- Golf short game progression 50% swing (chipping and putting) 8-12 weeks s/p.

### **PHASE IV: FUNCTIONAL PROGRESSION** (*POST-OP MONTHS: 4-6*)

- **PRESENTATION:** No instability, swelling or pain. Good to normal strength with MMT. Unrestricted ADL function.
- **GOALS:** Increase strength/power, endurance, neuromuscular control and dynamic stability in functional activities; education on RTP, no patellofemoral or soft tissue complaints
- **RESTRICTIONS:** No contact sports, no basketball/soccer or similar activities.
- Continue phase 3 exercises. Continue LE flexibility and advance progressive resistive exercises.
- Modalities per therapist discretion; Patella Mobs
- Advance proprioceptive training; Isokinetic training if desired; endurance training - bike, pool, ski machine, etc.
- May begin plyometrics and box jumps as appropriate for patient's goals, straight ahead box jumps, jump rope.
- Initiate sport-specific and more functional drills as appropriate for patient.
- Advance single leg closed chain activity as tolerates. PNF patterns.
- Can progress golf to full swing; racket and field sports skill training as advised by physician and therapist.

#### **PHASE V: RETURN TO ACTIVITY / SPORT (POST-OP MONTHS: 6-9)**

- **PRESENTATION:** No instability. Muscle function 75%-100% of uninjured. No c/o instability, pain, or swelling.
- **GOALS:** Safe return to athletics; maintain strength, endurance, power and proprioception; patient education. Regain ability to function at highest desired level. Develop maintenance program.
- **RESTRICTIONS:** Progress gradually back to sport specific and contact sports.
- Progress running program: full-speed jog, sprints, figure-of-eight, running and cutting. Add agility drills specific to skill/sport - high-speed stepping drills, unstable surface drills, balance beam, etc. to increase proprioception.
- Gradual return to sports participation; maintain other programs for strength, endurance, and proprioception.
- Advance agility and running drills. Implement drills specific to sport or occupation.
- Determine the potential need for functional protective bracing as prescribed by the physician.
- Functional: Skiing and other sport activities.

#### **FREQUENTLY ASKED QUESTIONS:**

**WEIGHT-BEARING:** Progress gradually to full weight bearing as tolerated immediately post-op. This may change if a meniscal repair is performed.

**ICE:** Ice, elevation and compression. Ice machine on low pressure setting or other methods, 5-6 x daily for 20-30 min. for 7-14 days.

**BRACE:** Brace to sleep 0-14 days, locked in full extension for ambulation and while sleeping until full extension. Brace will be worn for minimum 6 weeks post-operatively even if you are progressing well. This is to protect you from others, not necessarily yourself. This may change if a meniscal repair is performed.

**CRUTCHES:** Typically use 0-14 days s/p surgery. Weaning requirements: full extension, SLR with no lag, normal gait. This may change if a meniscal repair is performed.

**TED HOSE:** Wear bilateral legs for 7 days post op, then remove from unaffected side. Wait 8-14 days to remove from surgical leg. You may remove them for bandage changes and hygiene purposes. You may request new ones if needed or can pick them up from your local pharmacy.

**DRIVING:** More a legal/liability concern. MUST be off ALL narcotic pain meds, have good control of the leg, and feel safe and in control of vehicle. Recommend to be off crutches and out of knee brace. Assume all risks associated if decision made to drive.

**RUNNING:** Typically do not begin gradual running progression until 10-12 weeks s/p procedure.

**JUMPING:** Typically no plyometrics initiated until around 4 months s/p procedure.

**RETURN TO SPORT:** Clearance around 6-9 mo., esp. sports requiring quick acceleration/deceleration, agility, and contact sports