LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

ACLR Protocol with Patellar Tendon Autograft AND Meniscal Repair

Name _____ **Date** _____

Procedure _____

Procedure Date _____

Frequency 1 2 3 4 5 times/week **Duration** 1 2 3 4 5 6 weeks

FIRST THERAPY VISIT

- Therapy appointment should be scheduled for 3-5 days postoperatively.
- Goals of therapy visit include:
  - Surgical site evaluation (see below for instructions)
  - Brace/sling education and adjustment as needed
  - Review of therapy protocol, expectations, and plan
  - Initiation of early phase therapy ONLY if applicable (follow protocol as outlined below)
- Surgical site evaluation
  - Incisions are closed with one or combination of below methods
    - Staples
    - Nylon sutures (black sutures)
    - Monocryl sutures covered with steristrips or glue
    - Prineo dressing (clear adherent glue dressing)
  - Anytime the dressing is changed or examined, ***please wash hands*** prior with antibacterial soap.
  - There will be gauze and padding over the incisions and the extremity may be wrapped with an ACE wrap. The surgical dressing should be changed by the therapist using ***sterile*** technique. This includes sterile field, sterile gloves, betadine or chlorhexidine skin cleanser and sterile supplies when redressing the wounds. Do NOT remove steri-strips or glue dressing. DO NOT remove sutures or staples. The new dressing should include dry gauze and ACE wrap. Before the new dressing is applied the wounds should be clean and dry (without removing steri strips or glue dressing). Please do not use tegaderm unless it was used at the time of surgery or if specifically stated on the orders. If there are any concerns with the incisions or dressings, the therapist should call the office immediately – (219) 250-5038.
  - Unless otherwise instructed, incisions must remain dry for 7 days. They must be sealed off in the shower. The Prineo dressing/glue dressing is water resistant, and incisions covered by this dressing may get wet after 3-5 days. Once you are permitted to get the incisions wet, warm soapy water should *gently* rinse the surgical area. Do NOT scrub the area. Pat the area dry with a clean towel and keep free of lotions or creams. Do NOT soak in a pool, bath or hot tub until permitted by the surgeon's office. Please wear clean clothes following shower and be conscious of any pet hair or other contaminants near the surgical area. Do not apply any ointments or medications to the area.

*****Range of motion is an important progression of therapy, but limiting swelling is important. Respecting swelling will decrease pain and improve motion.*****

LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

Meniscal Repair Protocol (this will delay the protocol for ACLR)

1. Delay weight bearing exercises 4-6 weeks (**CHECK END OF OPERATIVE NOTE)**.
2. Avoid ranging past 90° 4-6 weeks depending on weight bearing progression above (ok to do it past 90° in therapy after week 3, under controlled pain and combined minimizing loading). Therapist should use best clinical judgment.
3. Brace locked in extension for 2 weeks. Could open 0-90° for frequent ranging, but should stay locked at 0° for ambulation.
4. In 4-6 weeks when WB begins, progress as tolerated. Brace may be open 0-90° if good quadriceps control.
5. Start closed kinetic progressions in inclined machines or with low loads at week 6, but no squatting or leg press past 90°.
6. At week 8 focus on single leg squat, and other single leg closed kinetic chain activities. Start ACL protocol combining Phase 1 and 2.
7. Do not weight bear past 90° for 12 weeks

LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

ACLR with BTB Protocol

	MILESTONES	WEIGHT BEARING/ BRACE/ROM	THERAPEUTIC EXERCISE
WEEK 1	Full extension (0°) At least 90° flexion Active Quadriceps contraction Controlled Straight leg raise in all planes (brace on) Minimal swelling (less than 5% comparative girth measurements)	Walk weight bearing as tolerated with crutches	CPM machine 2 hours 3-5x per day Start 0-45°, increase 10° everyday Heel slide on the wall Assisted by other leg. Hold 10 seconds; repeat 10 to 20 times 3 times a day. Heel Prop or Prone Hang (5 to 10 minutes 3-5 times per day) May combine with ankle pumps 20 times 3-5 sets Quad Sets (5 sets of 20; 3-5 times per day) Face up SLR; Start after second therapy visit (day ~5) and use brace if necessary. 5 sets of 10 reps 3-5 times per day
PHASE I 2-4 weeks	1. Knee flexion greater than 110° (90 in first 10 days encouraged) 2. Walking without crutches 3. Use of cycle/stair climber without difficulty 4. Walking with full knee extension 5. Reciprocal stair climbing 6. Straight leg raise without a knee extension lag 7. Knee Outcome Survey activities of daily living (KOS-ADL) greater than	**WBAT with crutches** **BRACE 0-1 week**: locked in full extension for ambulation and sleeping **1-*4 weeks***: *unlocked for ambulation remove for sleeping* **ROM** as tolerated - Consider alteration of knee flexion angle to most comfortable between	Week 0-2 Heel slides Quad/hamstring sets Patella mobs NWB gastroc/soleus stretch, SLR with brace in full extension until quad strength prevents extension lag Week 2-4 (Delay WB if Meniscal repair) Step-ups in pain-free range Portal/incision mobilization as needed (if skin is healed) Bike, StairMaster. Wall squats/sits Prone hangs if lacking full extension

LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

	65%. (Ok to use any other knee outcome)	45° and 60° for MVIC assessment and NMES treatments	Patella mobilizations to emphasize gentle mobilizations in flexion if there's any restriction in flexion ROM, combined with taping if needed to alleviate patellofemoral pain
PHASE 2 4-6 weeks	1. Knee flexion ROM to within 10° of uninvolved side 2. Quadriceps strength greater than 60% of uninvolved side - Be aware of patellofemoral forces and possible irritation during progressive resistive exercises - Graft protection is still critical. Avoid high risk situations	Gradually discontinue crutch use Discontinue use when patient has full extension and no extension lag Maintain full extension and progressive flexion	Progress to weight bearing gastroc/soleus stretch. Begin toe raises Closed chain extension Begin balance and proprioceptive activities Hamstring curls Tibiofemoral mobilizations with rotation for ROM if joint mobility is limited Progress bike and StairMaster duration (10-minute minimum) - Treat patellofemoral pain if it arises: modalities, possible patellar taping
PHASE 3 6–12 weeks	1. Quadriceps strength greater than 80% of uninvolved side 2. Normal gait pattern 3. Full knee ROM (compared to uninvolved side) 4. Knee effusion of trace or less	Full without the use of crutches and a normalized gait pattern No brace, but assessment for functional brace as early as week 9 if not atrophied Full and pain-free ROM	Advanced closed chain strengthening, progress proprioception activities. Begin Stairmaster, Elliptical and running straight ahead at **12 weeks** if OK by Surgeon (see below) - Progress exercises in intensity and duration
PHASE 4 12-24 weeks	1. Maintaining or gaining quadriceps strength (greater than 80% of uninvolved side) 2. Hop tests greater than 85% of uninvolved side (see below) at 12 weeks 3. KOS-sports questionnaire greater than 70% Treatment	Measurements for Functional Brace	- Begin running progression (see running progression below); on treadmill or track with functional brace (if all milestones are met; may vary with physician or delayed if meniscal repair) - Transfer to fitness facility (if all milestones are met) - Progress flexibility/strengthening, progression of function, forward and backward running, cutting, grapevine, etc. - Initiate plyometrics double leg program at week 16 and sport specific drills. Progress to single leg plyometrics and lateral progressions around week 20 - Sports-specific activities

LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

			- Agility exercises - Functional testing (see description below).
PHASE 5 6+ months	1. Maintaining gains in strength (greater than or equal to 90% to 100%) 2. Hop test 90% or greater 3. KOS-sports 90% or greater 4. Return-to-sport criteria (see below) • Recommend changes in rehabilitation as needed. Progression may emphasize single-leg activities in gym, explosive types of activities (cutting, jumping, plyometrics, landing training)	None	Gradual return to sport participation, maintenance program for strength and endurance Neuromuscular or any sports specific injury prevention program is encouraged (FIFA 11+, Sports Metrics, etc.)

Running progression to be started if strength, ROM, effusion and pain milestones have been met (week 13 to week 20 or delayed 4 weeks if meniscal repair).

Running should only start if the patient meets ALL the following:

- Full, pain-free ROM
- No effusion
- Quad strength at least 70% of the uninvolved limb
- Hop testing at 85% symmetry

In place on mini-trampoline or any other compliant surface is encouraged first (at around week 12 to evaluate symmetry)

Level 1 0.1 mile running, 0.1 mile walking, total 1 mile
Level 2 0.2 miles running, 0.1 mile walking, total 2 miles
Level 3 0.4 miles running, 0.1 mile walking, total 2 miles
Level 4 0.5 miles running, 0.1 mile walking, total 2 miles
Level 5 0.7 miles running, 0.1 mile walking, total 2.4 miles
Level 6 1 mile running, 0.2 mile walking, 2 cycles
Level 7 1.25 miles running, 0.25 mile walking, 2 cycles
Level 8 1.5 miles running
Level 9 2 miles running
Level 10 track running

LAKESHORE
BONE & JOINT INSTITUTE
ORTHOPEDIC EXCELLENCE. KEEPING YOU IN MOTION.

Neel P. Jain, MD
Orthopedic Surgery
Sports Medicine
Direct Line (219) 250 - 5038
Fax (219) 250 - 5238

Initially, no back-to-back days running. Stop or decrease a level if effusion or soreness increase.

Comments:

FCE _____ Work Conditioning/Work Hardening_____ Teach HEP_____

Every patient's therapy progression will vary to a degree depending on many factors. Please use your best clinical judgment on advancing a patient. If other ideas are considered to improve patient's outcome do not hesitate to call.

Patient's recovery is a team approach: Patient, family/friend support, therapist, and surgeon. Every team member plays an important role in recovery.

Signature_____