

### **TIBIAL TUBERCLE TRANSFER PHYSICAL THERAPY PROTOCOL**

The intent of this protocol is to provide guidelines for progression of rehabilitation and is not intended to serve as a substitution for clinical decision-making. Progression through each phase of rehabilitation should consider tissue-healing time frames, clinical objective findings, and MD approval to ensure structural stability. There will be variability between patients in terms of time frames. Please reach out to Dr. Harrison with concerns or questions.

#### **Knee Post-Surgical Instructions:**

- Follow-up appointment with Dr. Harrison 6-10 days after surgery
- Shower 2 days after surgery (remove dressing, wash incision with soap and water)
- Do not soak in water until the incision is completely healed (minimum 2 weeks)
- Take medication as needed for pain management
- Ice 20 minutes every 1-2 hours
- Wear compression socks on both legs until follow-up appointment
- Wear brace (if given after surgery) all the time besides when changing clothes or showering
- Start post op exercises day of surgery
- Call the physical therapy office of your choice and schedule an appointment for physical therapy
- Schedule the following post operative follow-up appointments:

Post op week 1

Post op week 4

Post op week 10

Please call our office with any questions or concerns, including redness, draining of the incisions or fever

#### **Weight Bearing Progression:**

- 0-4 weeks → WBAT with brace locked in full extension
- 4-6 weeks → FWB with brace open 0-90 degrees
- 6-8 weeks → Discontinue brace with good quad control and normal gait pattern
- Brace may be removed at night to sleep after 10 days



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### **PHASE 1 – PROTECTION PHASE (post-op 1-4 weeks)**

#### **Week 1-4:**

- Restore knee ROM 0-90 degrees and regain terminal extension. Brace may be removed to do ROM
- Reduce effusion, swelling and pain
- Quad activation working on terminal extension
- Quad/Hamstring/Glute sets
- Straight leg raises in brace without a lag,
- Short & Long Arc Quads
- Gastrocnemius stretching weight bearing
- Hip, Glute, Upper Extremity, and Core strengthening

### **PHASE 2 – REGAIN FULL ROM AND PROGRESSIVE STRENGTHENING (post-op 4-8 weeks)**

#### **Week 4-6:**

- Full weight bearing with brace open 0-90 degrees
- Increase ROM as tolerated
- Progressive balance, strength, proprioception and neuromuscular training
- Calf raises, mini squats, step-ups, leg press, double leg squats
- Core, hip, and upper body strengthening as appropriate

#### **Week 6-8:**

- Full symmetrical ROM
- Discontinue brace with good quad control and normal gait
- Begin Stationary biking with no resistance

### **PHASE 3 – PROGRESSIVE STRENGTHENING (post-op 8-12 weeks)**

#### **Week 8-12:**

- Build lower extremity strength, endurance, and balance.
- Quad strength 90% of contralateral side
- Transition to strengthening program at gym or at home
- Double leg squats, leg press, static lunges, dynamic lunges, balance training
- Core, hip, and upper body strengthening as appropriate
- Stationary bike with resistance, elliptical machine, treadmill, easy outdoor walking.

#### **PHASE 4 – RETURN TO TRAINING (post-op Months 3 to 6)**

A team approach is used in returning an athlete to sport. Dr. Harrison, the physical therapists, the athletic trainers, and coaches will work together on preparing the patient to return to their specific sport. The below activities will vary depending on the patient's clinical state and the patient's goals and specific athletic needs. Preservation and protection of the patient's knee integrity is the number one priority.

##### **Month 3-5:**

1. Goals:
  - a. Muscle Girths within 2-3 cm
  - b. Full ROM (140)
  - c. Plyo Progression with no pain/problems
  - d. Complete Return to Running / Sprinting Progression
2. Activities:
  - a. Introduce / Complete Micro Plyo → Plyometric Progression
  - b. Advanced Gait / Sprinting mechanics
  - c. Advanced Neurocognitive Activities
  - d. Sports Specific Controlled Skill Movements
3. Benchmarks:
  - a. Y Balance: expect PL/PM measures to be within 4 cm prior to initiating any plyometrics, jumping, or hopping.
  - b. IPRRS (Psychological Readiness for Return to Sport) Questionnaire
  - c. IKDC Questionnaire on knee function
  - d. Hop Test:
    - i. Within 90% symmetry SL Triple Cross over hop for Distance
4. Criteria to Progress to Next Stage
  - a. Single Leg Jump Test:
    - i. Within 90% symmetry SL Static Hop for Distance
  - b. USTART: pass Double leg Jump Competency
  - c. Force Plate:
    - i. symmetry of 90% strength (Rel. Peak Force)
    - ii. minimum of 90% previous best strength

##### **Month 4-6:**

1. Goals:
  - a. Eliminate deficiencies / modifications to move to full training as able
  - b. Training goals to meet full RTS criteria
2. Activities:
  - a. Agility
  - b. Advanced Plyometrics
  - c. Eccentric Hamstrings
  - d. Deficit work as needed
  - e. Progressive Sport Specific Controlled Skill Movements

3. Criteria to Progress to Next Stage:
  - a. Y Balance: <4cm difference in all planes
  - b. Girth Measures within 2cms at each site
  - c. Force Plate Testing\*: equivalent to demonstrating
    - i. symmetry of 90% strength (Rel. Peak Force)
    - ii. minimum of 90% previous best strength
    - iii. minimum of 90% symmetry in power
    - iv. minimum of 90% previous best strength
  - d. Pass Assessment of Drop Jump Test –functional landing mechanics
  - e. Physician and Rehab Team Clearance

Month 6-9:

1. Goals:
  - a. Build back to a robust “pre-season” training block.
  - b. Continue to improve fundamental sport skills
2. Force Plate Testing\*: equivalent to demonstrating
  - i. symmetry of 92% strength (Rel. Peak Force)
  - ii. minimum of 92% previous best strength
  - iii. minimum of 92% symmetry in power
  - iv. minimum of 92% previous best strength
- b. Maintain all criteria

Return to Training:

1. Restoration of Full Volume and Intensity of Training.
2. Accumulate a load equivalent to 50% of typical Pre-Season volume

**Clearance determined by Dr. Harrison, Rehab Team, and Coaches  
that the athlete is ready to return to competition.**

**Surgery - Rehab - Return to Train - Return to Sport - Return to Competition Progression (4 – 9 Months)**