Connecticut Orthopaedics

**Megan R. Wolf, MD**
**Sports Medicine/Foot & Ankle**

**Tibial Tubercle Osteotomy/Transfer (TTO)**
Post-Operative Protocol

**Phase I – Maximum Protection**

**0 to 2 weeks:**

- Brace - locked in full extension for 6 weeks
- Non-weightbearing for 4 to 6 weeks (per physician's instructions)

  Manual therapy
  - Ice and modalities to reduce pain and inflammation
  - Gentle patella mobilizations

  Exercise progression
  - Range of motion: 0 to 45 degrees knee flexion
  - Begin submaximal quadriceps setting

**Weeks 2 to 4:**

Exercise progression
- Range of motion: 0 to 60 degrees
- Continue with submaximal quadriceps setting
- Isometric hamstring/groin exercises

**Weeks 4 to 6:**

- Progressive weight bearing (per physician's instructions)

  Exercise progression
  - Range of motion: 0 to 90 degrees (by week 6)
  - Begin straight leg raises

**Phase II – Progressive Range of Motion and Early Strengthening**

**Weeks 6 to 8:**

- Full weight bearing
- Brace
  - Week 6: open to 45 to 60 degrees of flexion
  - Week 7: open to 90 degrees of flexion

  Goals
  - Continue with swelling control and patella mobility

  Exercise progression
  - Gradually progress to full range of motion
  - Normalize gait pattern
  - Multi-plane straight leg raising and closed kinetic chain strengthening program
  - Gradual bilateral closed chain progression
  - Gradual step up progression
  - Begin stationary bike
  - Initiate shallow and deep water pool program

**Weeks 8 to 10:**

- Wean out of brace

  Exercise progression
  - Normalize gait pattern
  - Restore full range of motion
  - Add light gym strengthening (leg press and hamstring curls)

**Weeks 10 to 12:**

Exercise progression

- Full range of motion
- Terminal quadriceps stretching
- Advance closed chain and gym strengthening program
- Add treadmill walking and elliptical trainer

**Phase III – Progressive Strengthening**

**Weeks 12 to 16:**

Exercise progression

- Full range of motion
- Advance closed chain and gym strengthening
- Increase intensity on bike, treadmill, and elliptical trainer
- Initiate shallow water pool running program

**Phase IV – Advanced Strengthening and Functional Drills**

**Weeks 16 to 20:**

- **Patients may advance to impact activity after consulting with physician and therapist about the long-term strategy for maintaining optimal knee heath. In many instances advancing to impact activity may not be appropriate.**

Exercise progression

- Begin linear land based running program
- Advance to lateral and rotational drills as tolerated

**Phase V – Plyometric Drills and Return to Sport**

**Weeks 20 to 24:**

Exercise progression

- Advance gym strengthening
- Progress running/sprinting program
- Begin multi-directional field/court drills
- Begin bilateral progressing to unilateral plyometric drills

Sports test and follow-up with physician

- Follow-up appointment with physician
- Sports test for return to competition **6 months post-op** (per physician's release)