



Cartilage Repair Center

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Patellofemoral + Tibial Tubercle Osteotomy (TTO) and/or High Tibial Osteotomy (HTO)

Autologous Chondrocyte Transplantation

Stage 3 – Remodeling Phase (13+ weeks)

PRIMARY GOALS

DO NOT OVERLOAD GRAFT

INCREASE TIBIAL-FEMORAL AND PATELLA-FEMORAL MOBILITY

RESTORE QUADRICEPS CONTROL

BRACE

- ♦ No hinged knee brace required with good quad control

GAIT

- ♦ Full weight-bearing as tolerated with crutch or cane as needed/pain allows
- ♦ Full AROM. Continue to avoid active open-chain exercises with weight and/or resistance

ROM

- (long-arc & short-arc)

THEREX

- ♦ Stationary bicycling with low resistance as tolerated
- ♦ Treadmill forward/retro-walking encouraged
- ♦ Elliptical machine permitted at 3 months
- ♦ Inline skating permitted at 6-7 months
- ♦ Pool exercise – flutter/straight leg scissor kick and running in water permitted (No frog kicks)
- ♦ Continue gentle closed-chain LE strengthening through functional range – terminal knee extension 0-40 degrees and 120-70 degrees extension from flexed position
- ♦ Full active flexion with resistance permitted

THERAPY

- ♦ Multi-directional patella mobilization as needed
- ♦ Continue cryotherapy for edema control
- ♦ E-stim for VMO/quadriceps muscle re-education/biofeedback as needed
- ♦ Massage/deep friction to scar, hamstring insertions, suprapatellar quadriceps, medial/lateral gutters, and infrapatellar regions

COMMENTS

- ♦ **NO** active open-chain exercises (long-arc or short-arc) until cleared by MD
- ♦ Physical assessment by MD and MRI required before full activities resume at approximately 1 year after surgery
- ♦ **Activity level should be modified if increased pain, catching, or swelling occurs**

For Outpatient Physical Therapist:

2-3x week / 6 weeks



ORTHOPEDIC & SPINE INSTITUTE

at St. Mary's Medical Center