

Physical Therapy Protocol: Knee Extensor Repair

Philosophy:

Patellar/quadriceps tendon rupture or patellar fracture can be devastating injuries. Since the knee extensor tendon complex connects the thigh muscles to the tibia for knee motion & strength at push-off, functional recovery is critical for both balance, walking, stair climbing and return to sports. Successful results in knee surgery can only be accomplished through the cooperation and team approach of the surgeon, therapist and patient. Initially, immobilization will be used, followed by gradual return to bending. A strong, pain-free knee with functional range-of-motion only comes about through an anatomic reconstruction of the knee extensor complex with aggressive (but appropriate) physical therapy performed with the therapist and at home.

Phase I, surgery to 6 weeks

OSMS appointments:

- Medical appointments at 2 weeks
- Physical therapy will begin as directed by your physician and as indicated on your physical therapy order

Rehabilitation Goals:

- Achieve excellent hip and ankle range-of-motion
- Reduce swelling in the limb
- Control pain

Precautions:

- WBAT in locked brace for 6 weeks
- No active knee extension (quad sets in extension only)
- No loaded knee flexion
- Avoid knee hyperextension
- ROM restrictions as below

Range-of-Motion Exercises:

- After 2 weeks, 0-60 degrees allowed
- After 4 weeks, 0-90 degrees allowed
- After 6 weeks, unlimited flexion allowed

Suggested Therapeutic Exercises:

- Ankle pumps, isometric quad sets, glute/hip sets

- Gentle patellar mobilizations
- 4-way leg lifts with brace locked in full extension

Cardiovascular Exercises:

- Upper body circuit training or upper body ergometer

Progression Criteria:

- Progress to phase II after 6 weeks if they have 0-90° knee PROM and only trace effusion

Phase II, (after Phase I criteria met, usually at 6-12 weeks)

OSMS appointments:

- Medical appointments at 6 & 12 weeks
- Physical therapy appointments continue at every 5-7 days

Rehabilitation Goals:

- Weight bearing without the TROM brace as quadriceps function allows

Precautions:

- Begin weaning from TROM at 6 weeks

Range-of-Motion Exercises:

- No restrictions beyond 6 weeks

Suggested Therapeutic Exercises:

- Begin short crank ergometry and progress to standard (170mm) if knee ROM >115°
- Core strengthening
- Proprioceptive training
- Open chain hip strengthening
- Closed chain TKE from 0-40° degrees with mini squats, weight shift

Cardiovascular Exercises:

- Treadmill walking
- Stationary bike or recumbent bike
- Nordic Track/Elliptical

Progression Criteria:

- Progress to phase III after 12 weeks if they have knee PROM 0-130° and zero effusion

Phase III, (after Phase II criteria met, usually 12-26 weeks)

OSMS appointments:

- Medical appointment at 12 weeks
- Physical therapy continues to home program



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Rehabilitation Goals:

- Restore normal quadriceps control for walking
- Restore normal squats/presses
- Jogging and running
- Agility exercises (sport cord)

Precautions:

- Avoid forceful eccentric quadriceps contraction
- After 20 weeks, ok to begin impact cardio
- After 20 weeks return to sport if quad isometric strength is 85% of uninvolved side on Biodex

Range-of-Motion Exercises:

- No restriction on ROM
- Active knee extension is now permitted
- Add directional cutting and/or resistance

Suggested Therapeutic Exercises:

- AROM for open chain knee flexion and extension
- Prone knee flexion
- Patellar mobilization
- Isotonic knee extension, closed chain preferred

Cardiovascular Exercises:

- Treadmill walking, including resisted forward & retro walking.
- Versaclimber/Nordic Track
- Resisted cariocas
- Progress light weights based on 3 sets of 10 repetitions.
- Single leg jumps, including quadrant jumps
- Up to 100% full sprints