



Dr. Schock

Extension Mechanism Tendon Repair (Quad/Patella)

Phase 1- Early Protective Phase (0-6 weeks)

Goals for phase 1

- Control postoperative pain and swelling
- Gradually increase knee flexion ROM
- Prevent quadriceps inhibition
- Independent home program

Criteria for progression to Phase 2

- ROM 0 – 90 degrees
- Good patellar mobility
- SLR without extensor lag
- Pain-free WBAT with brace locked at 0 degrees of extension

Brace

- Locked in full extension for 6 weeks

Weight bearing

- Non-weight bearing till first post-op visit
- Week 0-2: partial weight bearing in locked brace
- Week 2-4: WBAT progressing out of crutches in locked brace
- Week 4-6: full weight bearing in brace

PROM

- Week 0-2: 0-30 degrees
- Week 2-4: 0-60 degrees
- Week 4-6: 0 – 90 degrees

Manual Therapy

- Patella and patella tendon mobility

Strengthening

- Submaximal quadriceps setting

Modalities

- Ice and modalities to reduce pain and inflammation



Phase 2 – Progressive ROM and Early Strengthening (6-12 weeks)

Goals for phase 2

- Control forces during ambulation and ADL's
- Restore full knee range of motion
- Normalize gait without assistive device
- Patient able to ascend 8 inch step

Criteria for progression to Phase 3

- Minimal to no joint effusion
- Knee flexion ROM to at least 125 degrees
- Normal patellar mobility
- Good quadriceps control – no extensor lag
- Normal symmetrical gait pattern

Brace

- Open brace to 40° - 70° of flexion week 6
- 90° at week 7
- Week 8: wean out of brace

PROM

- Gradually progress to full range of motion, avoid terminal quad stretching
- Week 10: Begin terminal quadriceps stretching

AROM

- Gradually progress to full range of motion

Manual Therapy

- Continue with patellar mobility

Strengthening

- Week 6-8
 - Begin multi-plane straight leg raising and closed kinetic chain strengthening program focusing on quality VMO function
 - Initiate open kinetic chain progressing to closed kinetic chain multi-plane hip strengthening
 - Begin stationary bike program
- Week 8-10:
 - Progress open and closed kinetic chain program from bilateral to unilateral
 - Increase intensity on stationary bike
- Week 10-12:
 - Advance unilateral open and closed kinetic chain strengthening

Gait Training

- Week 8:
 - Begin treadmill walking program forward and backward
 - Begin elliptical trainer

Aquatics

- initiate pool program

Modalities

- Ice and modalities to reduce pain and inflammation



Phase 3- Progressive Strengthening (12-16 weeks)

Goals for phase 3

- Full knee range of motion
- Return to normal ADL's
- Improve quadriceps and lower extremity flexibility
- Patient able to descend 8 inch step

Criteria for progression to Phase 4

- Full knee range of motion
- Adequate quadriceps strength and lower extremity flexibility
- Ability to descend 8 inch step with good eccentric control

AROM

- Full Range of Motion

Manual Therapy

- As needed for mobility or pain

Strengthening

- Advance open and closed kinetic chain strengthening
- Begin gym strengthening: leg press, hamstring curls, hip abduction/adduction
- Avoid lunges and resisted open kinetic chain knee extension
- Being multi-directional functional cord program

Proprioception

- Increase difficulty and intensity on proprioception drills

Gait Training Advanced

- No running or plyos

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Modalities

- As needed

Cardiovascular

- Increase intensity on bike, treadmill, and elliptical trainer



Phase 4 – Advanced Strengthening and Return to Sport (16-24)

Goals for phase 4

- Lack of apprehension with sport specific activities

Criteria for return to work, function, sport

- Pass return to sport testing if applicable
- Pain-free running
- Full knee range of motion

Strengthening

- Week 16: May begin leg extensions; 30° to 0° progressing to full ROM as patellofemoral arthrokinematics normalize
- Week 20: Advance gym strengthening

Proprioception

- Week 20: Begin bilateral progressing to unilateral plyometric drills

Gait Training Advanced

- Week 16: Begin pool running advancing to land as tolerated
- Week 20: Progress running/sprinting

Agility

- Week 20: Begin multi-directional field/court drills

Modalities

- As needed

Sport related activities

- Week 20+: Sports test for return to competition

This protocol was developed and reviewed by Brian Chapman, DPT, CSCS and Dr. Schock April 2018



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References

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