

### **Knee Arthroscopy Rehabilitation**

This rehabilitation protocol is designed for patients who have undergone knee arthroscopy. The intensity allowed and the time frame required for the rehabilitation process is dependent upon the surgical procedure and the clinical assessment. The protocol is divided into phases. Each phase is adaptable based on the individual patient and special circumstances.

The **overall goals** of the surgical procedure and rehabilitation are to:

- Control pain, swelling, and hemarthrosis
- Regain normal knee range of motion
- Regain a normal gait pattern and neuromuscular stability for ambulation
- Regain normal lower extremity strength
- Regain normal proprioception, balance, and coordination for daily activities
- Optimize core strength
- Achieve the level of function based on the orthopedic and patient goals

Ideally the physical therapy should be initiated within 3 to 5 days post-op. It is extremely important for the supervised rehabilitation to be supplemented by a home fitness program where the patient performs the given exercises at home or at a gym facility. **Important post-op signs** to monitor:

- Swelling of the knee or surrounding soft tissue
- Abnormal pain response, hypersensitivity
- Abnormal gait pattern, with or without assistive device
- Limited range of motion
- Weakness in the lower extremity musculature (quadriceps, hamstring)
- Insufficient lower extremity flexibility
- Core weakness and subtle postural instability

**Return to activity** requires both time and clinical evaluation. To safely and most efficiently return to normal or high level functional activity, the patient requires adequate strength, flexibility, and endurance. Isokinetic testing and functional evaluation are both methods of evaluating a patient's readiness to return to activity. Return to intense activities following a knee scope may increase the risk of an overuse injury or the possibility of compounding prior articular cartilage damages and symptoms such as pain, swelling, or instability should be closely monitored by the patient. Specific exercises can be modified, substituted, or added at the discretion of an experienced sports physical therapist or athletic trainer who has expertise in sports surgery rehabilitation.

## **KNEE SCOPE**

### **PHASE 1: WEEK 1-2**

#### **ROM/FLEXIBILITY**

- Heel slides with strap
- Patellar mobs
- Gastroc stretch with strap
- Supine or seated hamstring stretch

#### **AEROBIC**

- Cycle can be initiated when flexion reaches 110°
- Initial goal with cycling is to reach 60 RPM, no resistance until can maintain this speed

#### **STRENGTH**

- Quad sets with E-stim/biofeedback
- SLR in 4 planes
- Total gym/shuttle light resistance
- Heel raises/Toe raises

#### **GAIT**

- Patient should be WBAT unless otherwise specified
- Gait training with B axillary crutches progressing to single crutch
- Discharge crutches when N gait is achieved
- Cone walking to encourage N gait pattern with quad activation and full extension during stance

#### **BALANCE/PROPRIOCEPTION**

- Weight shift (side/side, fwd/bkwd)
- Single leg balance

#### **MODALITIES**

- Ice 10-15 minutes as needed and esp after exercise
- Biofeedback /NMES to VMO

#### **GOALS OF PHASE 1**

- Consistent increase in ROM
- Quad/VMO activation
- Control pain and inflammation
- Work to normalize gait
- I in HEP

## **PHASE 2: WEEK 2-6**

### **ROM/FLEXIBILITY**

- Continue Phase I exercises
- Flexionator/Extensionator if motion not improving
- Slant board gastroc/soleus stretch
- Quad stretch: prone or standing
- Foam roller for ITB/quad

### **AEROBIC**

- Bike: high RPM (over 60-80), increase time as able then increase Intensity
- Elliptical: initiate only if trace/mild effusion and symptom-free

### **STRENGTH**

- Continue Phase I exercises: increase Intensity as able
- Leg press/shuttle: B and single leg
- Squat to chair: 90° max
- Step ups
- Wall squats
- Step downs (weight through heel to avoid PF compression)
- Side-lying clams with theraband resistance
- TRX: assisted squats
- Core

### **GAIT**

- Discharge crutches when N gait is achieved
- Cone walking: forward and lateral

### **BALANCE/PROPRIOCEPTION**

- Continue Phase I exercises
- Advance to unstable surfaces as able for SL stance: Airex, dynadisc, wobble board
- Wobble board mini squats (double limb)

### **MODALITIES**

- Ice 10-15 min following treatment and at end of day
- Biofeedback /NMES to VMO
- Ultrasound to portals if needed

### **HEP**

- Bike (increase time; Intensity as high as possible maintaining 60-80 RPM)
- Strengthening ex as able at home/gym **INCLUDE CORE** as able
- Ice as needed post exercise and/or when effusion is present

### **GOALS TO ADVANCE TO PHASE III**

1. Minimal effusion present
2. ROM 0-135

3. Equal extension/hyperextension B
4. N gait
5. Improve strength
6. Single limb balance on stable and unstable surface

### PHASE III: WEEK 4-12

#### FLEXIBILITY

- Continue previous stretches

DYNAMIC WARMUP (Week 10): prior to jogging, 10-20 yards of each of following:

- Walking straight leg kicks
- Walking arabesque
- Walking quad stretch
- Walking butt kicks
- Hip opening
- Hip closing
- Walking lunge with twist
- Side to side lunge
- A skips

#### AEROBIC

- Bike: double and/or single leg; continue to progress time 45-60 min
- Elliptical
- Treadmill/AlterG: Jogging Week 10-12 (perform dynamic warmup immed before)
  - Criteria: **able to perform SL squats with good mechanics** – no glut compensation
  - Jog progression
    - 1-2 min jog/1 min walk up to 10 min
    - Progress as symptoms allow 2 min jog/ 1 min walk to 20 min
    - Increase interval time jogging by 1-2 min every other session as long as no increase in pain/effusion
    - Jogging should be on TM or soft surface such as track
  - AlterG: begin at BW% in which patient can jog with comfortable, N gait

#### STRENGTH

- Cont previous (D/C quad sets when patient demonstrates good VMO tone)
- Initiate active and resistive hamstring strengthening if HSG
- Lateral heel touch
- Multi-hip/Cable column Fl/Abd/Add/Ext
- Bridge progression: single limb, on swiss ball/slide board
- Lunges: in place, reverse, walking, lateral (week 8)
- Smith press squats
- Single leg squats
- Hamstring curls: seated or prone

- Sidestep and monster walk with TB
- Dead lifts: double progress to single limb
- Sled push/pull
- TRX SL squats
- Core strengthening: planks, total gym core trainer, supine strengthening

#### BALANCE/PROPRIOCEPTION

- Continue previous advanced difficulty levels
- BOSU: both sides, double and single limb balance and squats
- Y balance
- C column 4 way on Airex/dynadisc
- Plyotoss
- Sports cord sidestep over cones

#### MODALITIES

- Ice following activity 10-15 min
- Biofeedback to VMO
- US as needed

#### HEP

- Jog program is every other day as long as no increase in effusion/pain
- Cycling/elliptical/rowing can be performed daily
- Strength exercises to be performed every other day at gym/home

#### GOALS TO ADVANCE TO PHASE IV

1. Full ROM by week 8 (0-135°)
2. Improve strength/endurance: perform 10 single leg squats with good mechanics
3. Improve balance/proprioception
4. Initiate lateral movements (week 6-8)
5. Initiate functional activities (week 10-12)

#### **PHASE IV: WEEK 12-16**

##### FLEXIBILITY

- Continue previous: HS, quad, calf stretches and dynamic warmup prior to jogging

##### AEROBIC

- Continue with jogging progression on TM or soft surface such as track; no running on asphalt
- Continue bike – single and double limb
- Swimming
- Golf (if released by MD)

## STRENGTH

- Continue previous increasing intensity as able to build strength
- Progress sled push/pull speed/intensity
- Biodex flexion/extension at 180°/sec, and 300°/sec

## BALANCE/PROPRIOCEPTION

- Continue previous adding perturbation or removing vision to increase difficulty level
- Y balance: goal is <4cm difference involved vs uninjured in anterior direction

## FUNCTIONAL TRAINING

- Slide board
- Ladder drills
- Initiate shuffles, carioca, figure 8 at submax speeds
- Initiate Part 1 of FIFA11+ [http://www.f-marc.com/downloads/posters\\_generic/english.pdf](http://www.f-marc.com/downloads/posters_generic/english.pdf)

## GOALS TO ADVANCE TO PHASE V

- 80% On single leg squat test side to side with good mechanics
- Confident with side to side drills
- Patient subjective report of 75-80% recovered
- Less than 6cm difference in reach on Y balance when testing involved vs uninjured

## PHASE V: WEEK 16 TO DISCHARGE

### FLEXIBILITY/STRENGTH/BALANCE

- Continue previous

### FUNCTIONAL TRAINING

- Continue previous advancing speed and intensity
- Initiate Sportsmetrics jump training
- Advance to all 3 parts and all phases of FIFA11+ [http://www.f-marc.com/downloads/posters\\_generic/english.pdf](http://www.f-marc.com/downloads/posters_generic/english.pdf)
- Advance sports specific training

## GOALS OF PHASE V

- Unrestricted return to sport
- 85-90% on isokinetic testing
- <4cm side to side reach on Y balance
- Subjective reports of readiness to return to sport
- 90% on all strength and balance testing comparing involved to uninjured