



# Inland Orthopaedic Surgery & Sports Medicine

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## Patellar Tendinosis Rehabilitation Program

(Adapted from ASMI with permission)

### Phase I:

#### Goals:

- Promote tendon healing
- Diminish pain and inflammation
- Improve quadriceps strength
- Enhance flexibility
- Control functional stresses

#### Treatment Regimen/Guidelines

- Nutritional education
  - Hot packs applied to knee
  - Ultrasound to patellar tendon
  - Laser
  - Transverse massage
  - Warm-up bicycle (10-12 minutes)
  - Stretch (hamstrings, quadriceps, gastroc)
  - Application of pain stimulation to patellar tendon
    - Treatment time 10 minutes
    - Treatment guidelines (see attached sheet)
  - Quadriceps strengthening program (Level I)
    - E-stim to quadriceps\*
    - Quad sets\*
    - SLR flexion\*
    - Hip adduction/abduction\*
    - Vertical squats (tilt board)
    - Hip flexion/extension
    - Toe-calf raises
    - Bicycle (15-20 minutes)
- \*Monitor subjective pain level response (goal level 6-7)
- Pool program
  - Stretch (aggressive stretching)
  - Cryotherapy

## **Phase II:**

### **Goals:**

- Gradual increase stress to patellar tendon
- Enhance quadriceps strength
- Improve flexibility
- Gradual increase functional activities

### **Treatment Regimen/Guidelines:**

- Hot packs or warm whirlpool
  - Ultrasound to patellar tendon
  - Laser
  - Transverse massage to patellar tendon
  - Active warm-up bicycle (10-12 minutes)
  - Pain stim to patellar tendon region
  - Stretch (hamstrings, quadriceps, gastroc)
  - Application of pain stimulation
    - (use for 3-4 times in this phase)
    - (discontinue as soon as possible)
  - Strengthening Program (Level II)
    - Leg press (90-0°) and (45-100°)
    - Hip add/abduction
    - Hip flex/extension
    - Wall squats (0-7°)
    - Lateral step-up (foam)
    - Front lunges
    - Knee extension (eccentrics)
    - Leg press (eccentrics)
    - Hamstring curls
    - Toe-calf raises
    - Bicycle/stairmaster
- \*Monitor subjective pain level response (goal 6-7)
- Aggressive stretching
  - Cryotherapy

### **Phase III:**

#### **Goals:**

- Gradually increase applied loads
- Functional training
- Enhance lower extremity strength
- Improve flexibility

#### **Treatment Regimen/Guidelines**

- Hot packs to knee
- Ultrasound to patellar tendon
- Laser
- Transverse massage
- Active warm-up
- Stretch
- Strengthening program (Level III)
  - Leg press
  - Hip machine
  - Wall squats
  - Tilt board squats
  - Lateral step-ups
  - Plyometric program
  - Initiate two-legged jumps
  - Progress to one-legged jumps
- \*Monitor pain level (goal level 6-7)
- Progress to running program
  - Backward running
  - Lateral movements
  - Forward running
- Stretching

### **Phase IV:**

#### **Goals:**

- Sports specific training
- Continue stretching/flexibility program
- Continue strengthening program

#### **Treatment Regimen/Guidelines**

- Heat and ultrasound (if needed)
- Active warm-up
- Stretching
- Continue strengthening program
- Initiate sport specific drills and training
- Progress to practice situation
- Stretch
- Ice (if needed)

# Pain Stimulation Protocol

Clinical Muscular Electro-stimulator (E-stim 180)

- Specific parameters
  - Frequency:
    - 2500 Hz pulse width: 200 MS
    - Rate: 50 Hz
    - Ramp: 1 sec
    - Waveform: Russian
  - 60 pulses per second (pps)
  - Duty cycle 10 on/10 off
  - Treatment time: 10 minutes
  - Pad placement: 1"x1" electrodes placed on each side of inflamed/painful tendon

\*After 3 minutes, palpate tendon, should be less painful and becoming numb, if not, move electrodes