

## Recurrent Unremitting Patellar Tendinitis Rehabilitation Program

### Phase I

**Goals:** Diminish pain and inflammation

- Promote tendon healing
- Improve quadriceps strength
- Enhance flexibility
- Control functional stresses

**Treatment Regimen:**

- Hot packs applied to knee
- Phonophoresis to patellar tendon
- Transverse friction massage
- Warm-up bicycle (10-12 min.)
- Stretch (hamstrings quadriceps, gastroc)
- Application of pain stimulation to PT x 10 minutes
  - Electrical stimulation parameters
    - Waveform: Russian
    - Frequency: 2500 Hz pulse; width: 200 MS; Rate: 50/sec
    - 60 pulses per second (pps)
    - duty cycle 10 on/10 off; ramp of 1 second
  - 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)
- 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 min.)

\*Monitor subjective pain level response (goal level 5-7)

- 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:**

- Hot packs or warm whirlpool
- Phonophoresis to patellar tendon
- Transverse message to patellar tendon
- Active warm-up bicycle (10-12 min.)
- 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 (0-70°)
  - Lateral step-up (foam)
  - Front lunges
  - Knee extension (progress from concentric to eccentric)
  - Leg press (progress from concentric to eccentric)
  - Hamstring curls
  - Toe-calf raises
  - Bicycle/stairmaster
  - Control forces to knee
    - Enhance hip & ankle strength & stability
    - Core stability

\*Monitor subjective pain level response (goal 5-7)

- Aggressive stretching
- Cryotherapy

### Phase III

**Goals:** Gradually increase applied loads

Functional training

Enhance lower extremity strength

Improve flexibility

### **Treatment Regimen:**

- Hot packs to knee
- Phonophoresis to patellar tendon
- Transverse message
- Active warm-up
- Stretch
- Strengthening program (Level III)
  - Continue previous exercises
  - Continue eccentric progression
  - Leg press
  - Hip machine
  - Wall squats
  - Tilt board squats
  - Lateral step-ups
  - Front step-downs
  - Agility drills
    - Lunges onto unstable surface
    - Step-ups on unstable surface
    - Single leg balance on unstable surface
  - Plyometric program
    - Initiate two-legged jumps
    - Progress to one-legged jumps

\*Monitor pain level (goal level 5-7)

- 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:**

- 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)