

Patellar Tendinosis

ACUTE phase

Perform the next six steps in order:

- Hot packs applied to knee for 10 minutes
- Phonophoresis to patellar tendon
- Transverse friction: 5 minutes
 - Apply pressure to superior patella so that inferior pole of patella elevates
 - This allows ability to apply deep friction at the deep fibers of the tendon
 - APPLY SIGNIFICANT FORCE for 20-30 seconds at a time
 - This should be painful to the patient
- Application of pain electrical stimulation protocol (see the second page)
- Stretching - hamstring, quadriceps, gastroc, piriformis, ITB
- Warm up - bike for 5-10 minutes with light to moderate intensity
- Quadriceps strengthening program
 - E-stim to quadriceps if indicated
 - Quad sets/SLR sets
 - Hip adduction/abduction
 - Toe-calf raises
 - Clam shells
 - Bridges
- Conclude the treatment session with modalities
 - Ice massage
 - Iontophoresis
- Focus home program on stretching of tight muscle groups and relatively pain free strengthening. *Strengthening exercises should not cause pain longer than 2 hours after completion. Also teach patient, or family member, how to perform deep, painful friction massage to be done 1-2x/day, followed by ice massage.

SUBACUTE phase

- Same as the first six steps of acute phase
- Strengthening and proprioceptive exercises
 - Focus on eccentric quad strengthening
 - Begin graduated closed chain exercises to tolerance.
 - Focus on quad, glut, hamstring, hip abductor and core regions.
 - Again, strengthening exercises should not cause pain longer than 2 hours after completion.
 - Leg press (45-60 to 0)
 - Hip flexion and extension
 - Mini squats (0 to 50)
 - Monster walks
 - Forward/Lateral step-up
 - Leg press (eccentric)
 - Hamstring curls
- Conclude the treatment session with modalities
 - Ice massage
 - Iontophoresis
- Continue home program for stretching, strengthening, friction massage and ice massage

STRENGTHENING/FUNCTIONAL PROGRESSION Phase

- Performance of the first 6 steps (as listed above) will be dependent on the remaining patellar tendon pain. Gradually wean off of deep, friction massage and Russian e-stim as tenderness subsides and the patient is no longer having tenderness to patellar tendon during deep massage.
- Strengthening (continue to advance to patient tolerance)
 - Leg press
 - Hip machine
 - Squats (0-60)
 - Tilt board squats
 - Forward/Lateral step-ups
 - Step downs
 - Hamstring strengthening

Functional progression

- gradually progress to patient tolerance and work back into sport related activities
- Heat
- Active warm-up
- Stretching
- Progress to running program
 - Backward running
 - Lateral movement
 - Forward running
- Plyometric training
 - Initiate two-legged jump
 - Progress to one-legged jump
- Initiate sports specific training

PAIN STIMULATION PROTOCOL

- Electrical Stimulation
 - Specific parameters
 - Frequency: 2500 Hz
 - Ramp: 1 second
 - Waveform: Russian
 - Pulse: 50-60 pulses per second (pps)
 - Duty cycle: 10 on/10 off
 - Treatment duration 10 minutes

APPLY AS MUCH NOXIOUS INTENSITY AS THE PATIENT CAN TOLERATE

1"x1" electrodes on each side of distal patella and proximal patellar tendon junction