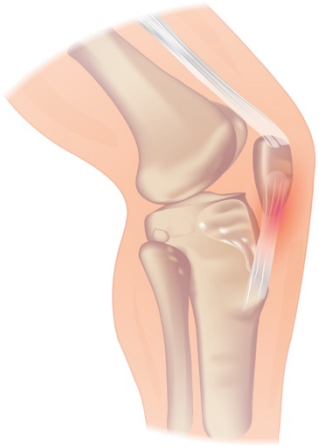
Patellar Tendon

BACKGROUND



The patellar tendon is a thick, fibrous band of dense connective tissue that connects the bottom of the patella (kneecap) to the tibial tuberosity on the shin bone, technically functioning as a ligament since it links bone to bone rather than muscle to bone. Anatomically, it's a continuation of the quadriceps tendon, forming part of a single extensor mechanism that runs from the quadriceps muscle group, over the patella, and down to the shin. Functionally, it transmits the force generated by the quadriceps to extend or straighten the knee joint, allowing actions like standing up, walking, running, and jumping. Biomechanically, it acts as a lever arm amplifier: the patella itself sits within the tendon like a sesamoid bone, increasing the moment arm and mechanical advantage of the quadriceps by keeping the tendon further from the joint's axis of rotation throughout the range of motion. The tendon experiences some of the highest tensile loads of any tendon in the body, especially during activities involving deceleration or explosive jumping, since the eccentric loading during landing can multiply forces several times body weight.

Due to the high mechanical demand, the patellar tendon is a common site of injury, both acute and chronic:

- **Patellar Tendinosis** — A chronic, degenerative condition, called angiofibroplastic dysplasia, of the tendon (often still colloquially called "jumper's knee") that develops when repeated microtrauma outpaces the tendon's ability to heal, leading to a cascade of events: 1) organized Type I collagen is replaced by thinner, weaker Type III collagen in a disorganized manner, 2) proliferation of ground substance (mucoid degeneration), and 3) growth of new blood vessels and nerve fibers. This degenerative process creates a thicker, weaker, and functionally painful tendon.
- **Patellar Tendinitis** — An acute inflammatory condition of the patellar tendon, typically resulting from sudden overuse or repetitive strain (jumping, sprinting, rapid direction changes). It involves a true inflammatory response with pain, swelling, and tenderness localized to the inferior pole of the patella.
- **Patellar Tendon Tear** — A partial or complete disruption of the tendon fibers, usually occurring from a sudden forceful eccentric contraction (such as landing awkwardly from a jump) or as an acute-on-chronic failure in a tendon already weakened by tendinosis. Complete tears typically cause an inability to actively extend the knee or maintain a straight leg raise.
- **Patellar Tendinosis following Total Knee Arthroplasty (TKA)** — A recognized complication in which the patellar tendon undergoes degenerative changes after knee replacement surgery, thought to arise from altered biomechanics, changes in patellar tendon length/tension, surgical trauma near the tibial tubercle, or vascular compromise during the procedure. It can contribute to anterior knee pain, extensor mechanism dysfunction, or in severe cases patellar tendon rupture post-TKA, which is a challenging complication to manage given the altered anatomy and often compromised tendon quality.

INITIAL MANAGEMENT

Regardless of the specific diagnosis, initial management of patellar tendon injuries begins with unloading the tendon to reduce ongoing stress, along with measures to control inflammation and pain. A home exercise program emphasizing gentle stretching is typically introduced early to maintain and enhance tendon pliability and support the healing process. A formal course of physical therapy is often prescribed as well, progressively strengthening the tendon so the person can return to full activity with a tendon that is more resilient and better conditioned for their sport or activity level.

Dr. Jonathan-Erle Reid

For scheduling or questions, please call **952-456-7209** https://tcomn.com/physicians/jonathan-reid

Oral OTC Medications

- **Ibuprofen** (Advil) — For adults and children over 12, 200–400 mg every 4–6 hours (not exceeding 1200 mg per day)
- **Acetaminophen** (Tylenol) — For adults and children over 12, 325-650 mg every 4-6 hrs, (not exceeding 4000 mg per day)
- **Lidocaine patches** (Lidoderm 4%) — Recommended to wear for 12 hours, with 12 hours in between applications

Oral Prescription Medications

- **Meloxicam** (Mobic) — Take one tablet as prescribed with food, do not take this with any other NSAID (e.g., Ibuprofen)

Daily Exercises: As you await beginning physical therapy, start with the stretches and progress as your symptoms allow

- **Standing Quad Stretch:** Standing on one leg, pull the opposite ankle toward your buttocks while keeping the knees aligned, gently lengthening the quadriceps and reducing tension transmitted through the patellar tendon.
- **Kneeling Quad/Hip Flexor Stretch:** From a half-kneeling lunge position, gently push the hips forward while keeping the torso upright, stretching the quadriceps and hip flexors of the back leg to relieve pull on the tendon's origin.
- **Isometric Walls Sits:** Holding a static squat position (knees around 60-90°) for 30-45 seconds builds tendon and quadriceps capacity while often providing an analgesic (pain-reducing) effect, making it especially useful early in rehab when dynamic loading is still painful.
- **Eccentric Decline Squats:** Performed slowly lowering (not rising) on a 25° decline board, this is considered the gold-standard rehab exercise for patellar tendinopathy because the controlled eccentric loading stimulates collagen remodeling and improves tendon load tolerance.

Physical therapy: Appointments are scheduled by patients calling the location specific scheduling phone number, which can be found on the provided physical therapy card or by going online. Typically, physical therapy consists of one appointment per week, for 6-8 weeks.

Ultrasound-Guided Corticosteroid Injection

INTERVENTIONAL MANAGEMENT

Patellar tendon pain that persists despite conservative management, as outlined above, often is indicative of a structural pathology that has not recovered or healed adequately. Depending on the etiology or nature of this structural pathology, additional recovery time may be necessary or an intervention recommended. Reevaluation is likely indicated towards this determination, however, advanced imaging can be helpful to review at the time of reevaluation to better understand the structural pathology.

- Advanced imaging will likely be recommended at the time of reevaluation. Please reach out to Rhodora **(952-456-7209)** to coordinate the appropriate imaging.

Interventional management is tailored to the structural issue preventing recovery and turn to pain-free activity/sport.

- **Orthobiologic Procedure** — Autologous stem cells or blood products (Platelet-rich plasma) can be used to augment tendon recovery
- **Percutaneous Tenotomy (TENJET)**— A minimally invasive intervention that identifies and removes diseased tendon tissue while preserving healthy tendon tissue through a form of guided, high-velocity saline debridement
- **Arthroscopic/Open Debridement +/- tendon repair** — Surgical resection of diseased tendon tissue with tendon augmentation with the use of suturing or repurposing a nearby tendon to add structural support

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Notes