

# PATELLAR TENDINOPATHY

## Evidence Based "CHEAT SHEET"

### WHAT IS PATELLAR TENDINOPATHY? (2,4)

- Injury to patellar/quadriceps tendon
- Generally not due to trauma
- Overuse injury following excessive stress to the patellar tendon
- Insufficient recovery time between bouts of exercise may not allow the tendon sufficient time to remodel
- Tendon becomes "pathologic" over time

### ANATOMY

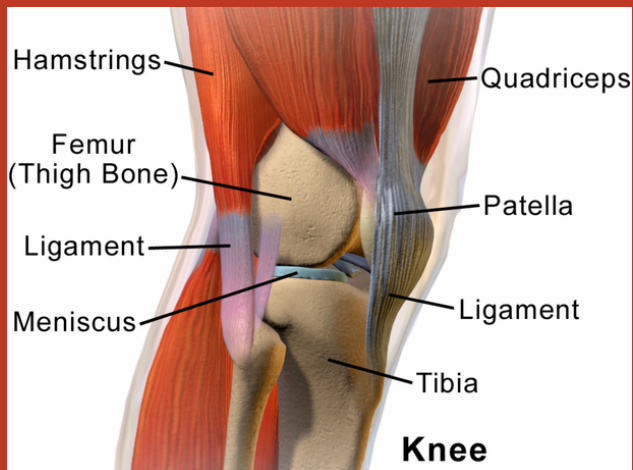


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- Patella
- Tibia
- Patellar tendon (ligament)
  - Inferior pole most common
- Quadriceps tendon
- Tibial tuberosity
- Quadriceps
  - More quadriceps contraction = more stress on patellar tendon
- Fat pad?

### "ITIS" VS. "OTIS" (4)

- Evidence suggests patellar tendinopathy is not purely an inflammatory condition but rather due to degeneration (wear and tear) over time
- -Opathy as opposed to -itis
- Still some inflammatory markers present



## PREVALENCE (4)

- More common in men
- Most common in age group 15-30 years old
- Common in sports which require repetitive loading of the patellar tendon (basketball, volleyball, tennis)



## CLINICAL PRESENTATION (4)

- Inferior pole (bottom) of patella
- Pain with activities that require increased demand on knee extensors (quads)
- Pain with jumping and plyometric activities
- Only hurts when loaded
- Usually pain free at rest
- Pain may improve with repeated loading (warm up), however increases the next day
- Aggravating factors:
  - More load in a squat
  - More depth while squatting
  - More intense jumping variations
  - Longer duration of knee intensive activities



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## RISK FACTORS FOR PATELLAR TENDINOPATHY (3)

- Increased weekly training sessions
- Greater total training volume
- More weight training sessions per week
- Decreased hip extensor strength
- Decreased hamstring and quadriceps strength
- Patellar tracking issues
- Non-optimal landing patterns



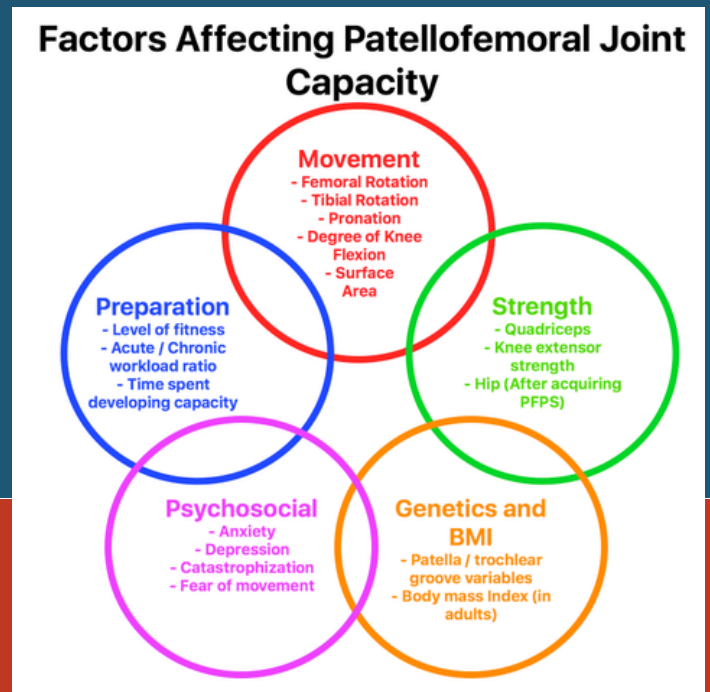
# PATELLAR TENDINOPATHY TREATMENT



1. Knowledge about the diagnosis and pain
2. Initial period of unloading and modification
3. Direct quadriceps strengthening and patellar tendon loading
4. Kinetic chain and sport specific strengthening
5. Correcting mobility limitations
6. Modifying jumping and squatting technique

## PATIENT EDUCATION (9)

- Educating patients about pain:
  - Decreases their pain
  - Increases physical performance
  - Decreases perceived disability
  - Decreases catastrophization
  - Positively alters behavior



## IMPORTANT THINGS TO KNOW



- Patellar tendinopathy
  - Generally gets better over time
  - Takes a long time to improve
- Patellar tendons generally do not rupture
- Pain in the patellar tendon is not a sign of more damage
- Loading the tendon directly helps people get out of pain
- Over-reliance on passive treatments can delay rehabilitation

# HOW MUCH PAIN IS "OK" DURING REHAB EXERCISES?

- General recommendations
  - Pain should be kept at or below 3/10 during physical therapy exercises
  - Pain should return to baseline level 24 hours following a therapy session
  - Pain or exercise tolerance should improve throughout rehab



## DIRECT QUADRICEPS AND TENDON STRENGTHENING

- Phase 1: Isometrics
- Phase 2: Isotonics
- Phase 3: Energy storage loading
- Phase 4: Return to sport

General Plan

- Unload- > Reload -> Return to sport

## Modify Jump and Squatting Technique (24)

Things that increase stress on the patellar tendon:  
Modifiable variables

- Dynamic valgus- knee in
- Increased knee flexion (bending) under load
- Increased load (barbell, additional bodyweight)
- Forward weight shift (anterior knee translation)
- Faster, more explosive muscular contractions
  - Stiffer and faster jump landings

### Patellar Tendinopathy Patients Land with More Knee Flexion and Less Hip Flexion



More stress to the patellar tendon

Force shared more evenly between knee and hip



Rehabilitation of Patellar Tendinopathy Using Hip Extensor Strengthening and Landing- Strategy Modification: JOSPT 2015 [fitnesspainfree.com](http://fitnesspainfree.com)



# WANT TO LEARN MORE ABOUT HOW TO GET YOUR PATIENTS OUT OF PAIN AND BACK IN THE GYM WHERE THEY BELONG?

Sign up to receive the **FREE Fitness Pain Free Mini Course**



Injuries are multifactorial and often occur from a combination of issues. Understanding these mechanisms is vital in order to both prevent further injury and properly rehabilitate clients from an injury. With some help from the best available evidence and my experience as a coach and physical therapist, I've identified 7 reasons why people get hurt in the gym and what we are able to do to help get them back to training the lifts they love.



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