

JUMPER'S KNEE



PRO SPORTS PHYSICAL
THERAPISTS GUIDE TO
ELIMINATE KNEE PAIN

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WELCOME

My name is Dr. Jonny and I wanted to take the time to say thank you for downloading this guide and taking the first step to take charge of your athletic health!

DISCLAIMER

- The Pain-Free Knee Program, including all its materials and resources, is meant for educational and informational purposes only.**
- It is not a replacement for professional medical advice, diagnosis, or treatment. Always consult your physician or a qualified health provider with any questions about a medical condition. Never ignore professional medical advice or delay seeking it because of information from this program.**
- The creators of the Pain-Free Knee Program do not guarantee that it will prevent, heal, or alleviate pain. Results may vary based on individual circumstances. If you have severe or persistent knee pain, seek immediate help from a healthcare professional.**
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Chapter

ONE

Introduction to tendon injury



01

DEFINITIONS



Your quadriceps consist of four muscles that merge to form the quadriceps tendon. This tendon connects to the patella and continues to the tibia via the patella tendon.

Research defines Patella Tendinopathy as pain and loss of function in the patella tendon caused by mechanical loading.

The term **tendinitis**, once used to describe tendon inflammation, is outdated; it is now understood that inflammation is a normal response to tendon loading.

Tendinosis, which describes tendon degeneration, is also an inaccurate term.

"**Jumper's Knee**" is sometimes used interchangeably with Patella Tendinopathy, but research shows not all patella tendon pain fits this classification. Patella Tendinopathy specifically involves pain at the lower part of the patella, which correlates with the magnitude and rate of tendon loading.

02

Assessing your Patella Tendon



Chapter

TWO



DIAGNOSING PATELLA TENDON PAIN

It's crucial to understand that not all knee pain originates from the patella tendon. Although this may seem obvious, many people mistakenly confuse patella tendon pain with patellofemoral pain or Osgood-Schlatter disease. This confusion often leads individuals to perform generic exercises for tendon rehabilitation without seeing results. Properly distinguishing patellar tendon pain from other knee pain types is essential to ensure that the rehabilitation program addresses the correct issue.

COMMON SYMPTOMS OF PATELLA TENDINOPATHY

1. Pain is localized to the lower part of the patella (kneecap).
2. The pain is associated with increased load on the quadriceps, especially during activities like jumping.
3. The pain remains localized and does not spread with increased loading.
4. The onset of pain is gradual and typically follows an increase in high-load activities involving the tendon, such as jumping and cutting.
5. Pain can occur while sitting, particularly during car rides.
6. There is a warm-up effect, where pain improves during activity but may increase after training.
7. Pain is often experienced the day after training.

Assessment of Irritability

Irritability describes how the tendon reacts after activity. Research indicates that experiencing pain for less than 24 hours post-activity is generally acceptable during rehabilitation. If your tendon is highly irritable, the pain typically lasts longer than 24 hours.

Pain Provocation Test (PPT)

Identifying tendon pain localized at the lower part of the patella through loading maneuvers and energy storage/release exercises is crucial for diagnosing tendinopathy and evaluating tendon irritability. It is recommended to use Pain Provocation Tests (PPTs) to assess the current level of tendon irritability. This can be done using one of the following exercises:

- Double Leg Decline Squat
- Single Leg Decline Squat
- Double Leg Jumps



Monitoring Your Progress

There are a few primary methods to track your progress. One way is by using the VISA-P scale. A score below 80 suggests tendinopathy, although this scale is not very effective at detecting minor changes in tendon function. To assess short-term changes, you will use the:



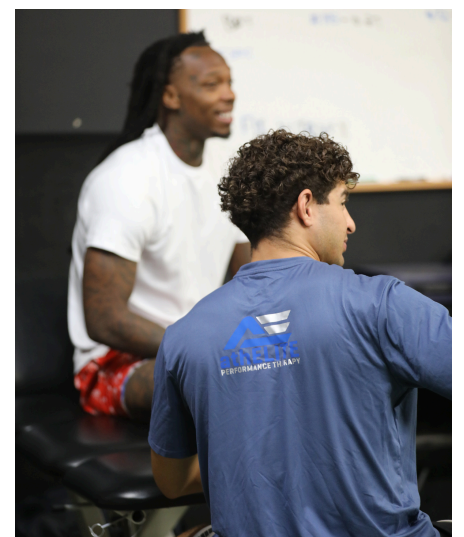
24-Hour Response to Activity Test

To perform this test, follow these steps:

1. Perform a decline squat or another activity that places a high load on the tendon.
2. After 24 hours, record your pain level on a scale from 1 to 10 (10 being the most severe).

Morning Discomfort and Stiffness

Morning discomfort and stiffness are common after engaging in activities that irritate tendons. Pay attention to any pain and stiffness you experience the morning after training.



Monitoring Your Pain

In the course of rehabilitating your tendon, it's natural to encounter some discomfort—it's part of being human. However, it's important to note that experiencing some pain doesn't equate to enduring excessive pain. If you find yourself facing intense spikes of pain, to the extent that it becomes intolerable (as indicated by certain tests), it's a sign that you're pushing too hard and need to reduce your workload.



Allowable Pain

It's normal to experience some discomfort during tendon rehabilitation. We recommend starting at a level of discomfort you can tolerate and gradually increasing from there. For many individuals, this might be around a 3-4/10 on the pain scale. During your exercises, it's acceptable to feel pain up to this level. However, this isn't a strict guideline. What's tolerable for one person might differ from another—some might find a 3/10 pain level manageable, while others might tolerate a 5/10 or only a 2/10. The key is finding what works best for you.

Loads Affecting the Patella tendon



Numerous factors influence the load placed on the patella tendon, with two particularly significant ones being jumping and biomechanical loads.

Jumping

During the final phases of knee flexion before take-off in activities like jumping or direction changes, the patella tendon experiences its highest loads. Although research on the number of jumps performed by basketball players during a game is limited, volleyball athletes can jump up to 300 times per match, imposing a substantial load on the patella tendon, which likely extends to basketball players as well.

Biomechanical Loads

Biomechanical factors also play a role, with studies indicating a correlation between limited dorsiflexion range of motion and patellar tendinopathy. Dorsiflexion, or pointing the toes upward, is crucial for shock absorption during landing, so reduced range of motion in this regard likely leads to increased knee loading during take-off.

IMAGING TECHNIQUES & ASSESSMENTS

Imaging

- **Magnetic Resonance Imaging (MRI):** MRI provides detailed images of the soft tissues in the knee, such as ligaments, tendons, and cartilage. It is particularly valuable in identifying tears and structural damage.
- **X-Rays:** X-rays are useful for assessing the bones and detecting fractures, dislocations, and conditions like arthritis. They can also help evaluate joint alignment.
- **Ultrasound:** Ultrasound can visualize soft tissues, making it effective in diagnosing conditions such as tendinitis and bursitis.
- **CT Scans:** Computed Tomography (CT) scans can provide detailed cross-sectional images, helping to identify complex fractures and bony abnormalities.
- **Arthroscopy:** While not an imaging technique, arthroscopy involves inserting a small camera into the knee joint, allowing for direct visualization and often treatment of the issue.

Assessments

- **Range of Motion (ROM):** Assessing your knee's flexibility and limitations in movement.
- **Strength Testing:** Evaluating the strength of the muscles surrounding the knee, which can reveal imbalances or weaknesses that may be contributing to your pain.
- **Joint Stability Testing:** Examining the integrity of ligaments and other stabilizing structures within the knee.
- **Specialized Tests:** Depending on your symptoms, your healthcare provider may employ specific tests to assess your condition, such as the Lachman test for ACL injuries or the McMurray test for meniscus tears.
- **Functional Movement Screen (FMS):** This is a comprehensive assessment of your movement patterns and mechanics during various activities. It can help identify issues related to your knee pain.

PATELLA TENDINOPATHY MANAGEMENT: SHOULD YOU PLAY?

To effectively manage your patella tendon, it's crucial to strike a balance between rehabilitation exercises and your regular training or playing schedule. Failure to maintain this balance may lead to an accumulation of strain on the tendon, exacerbating symptoms and disrupting your training routine. It's important to monitor pain levels before, during, and after exercise, as well as the following morning, to gauge your tendon's response and adjust your regimen accordingly.



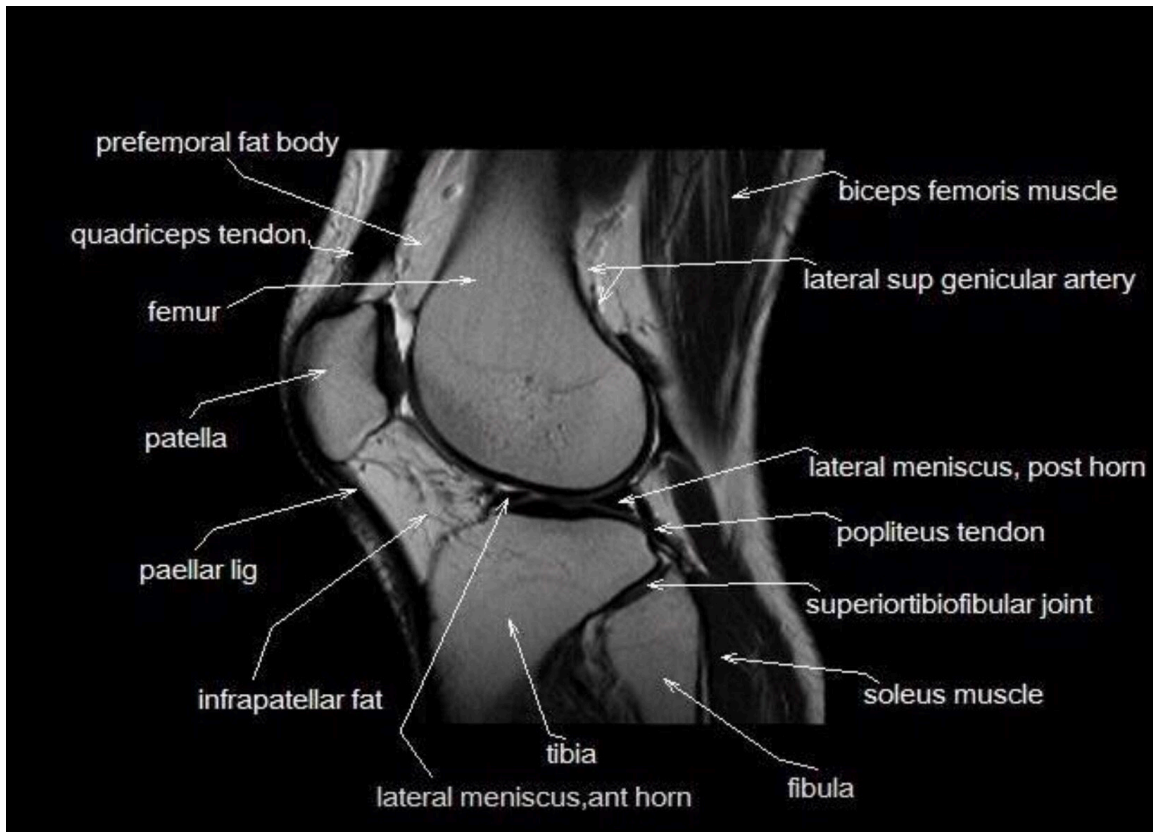
IMPORTANCE OF ACCURATE DIAGNOSIS

Accurate diagnosis is the foundation of effective treatment. By identifying the specific nature and extent of your knee pain, your healthcare provider can tailor your rehabilitation and therapy to address the root causes, optimizing your chances for a full recovery and a return to peak athletic performance.

Chapter THREE

03

Tendon Rehab



Rehabilitation

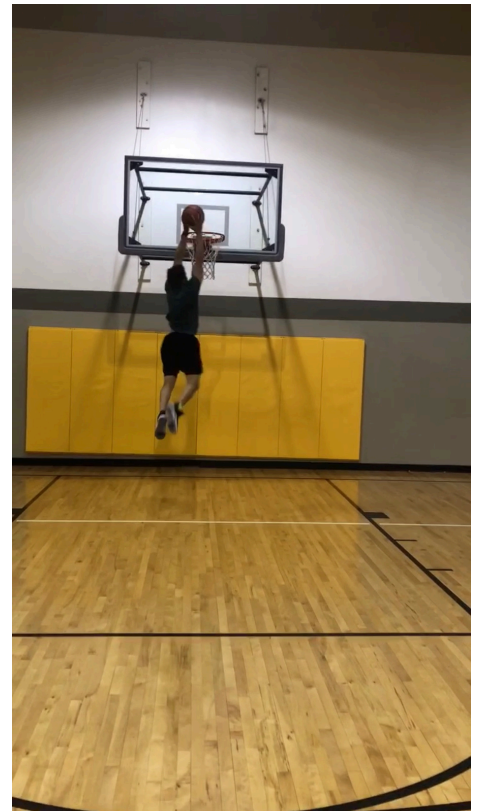
Rehabilitating Patella Tendinopathy demands patience; rushing can prolong the process. Those who grow frustrated with rehab and prematurely give up often find themselves back at square one after re-injuring themselves. Avoid this trap.

The Load Continuum

When recovering from tendinopathy, the best approach is a gradual loading program. This not only rebuilds leg strength, which tends to decline with tendinopathy, but also ensures proper tendon loading.

In-Season Athletes

For athletes in-season, returning from tendinopathy poses challenges. The decision to pause activity for rehab or continue with modified loads is pivotal but complex. In such cases, adhering to a progressive loading plan is crucial: adjusting loads to manage pain, gradually reintroducing exercises, monitoring pain and load, and slowly advancing training to control pain.



INITIAL LOAD MODIFICATION STRATEGIES



The primary step in alleviating your symptoms is to decrease the strain on your body. This can be achieved through various methods:

- 1.Reducing Load Type:** Avoid activities that heavily stress your tendon, such as running, jumping, sudden changes in direction, and cutting.
- 2.Reducing Load Volume:** Decrease the duration of your training sessions. Initially, consider cutting the duration in half, for instance, if you usually train for 1.5 hours, reduce it to 45 minutes.
- 3.Reducing Load Frequency:** Allow your tendon to recover by spacing out your training sessions, ideally 2-3 days apart. The structural changes in the tendon induced by activities like jumping and cutting persist for 24-78 hours. Thus, training on alternate days might be beneficial during the initial phase.
- 4.Improving Kinetic Chain:** Strengthen other areas of your body to enhance overall resilience and reduce injury risk when you resume sports activities. During movements like hopping and landing, the load is distributed from the ankle upwards through the hips and upper body. Hence, it's crucial to ensure that the ankle, knee, hip, and pelvis can handle these demands effectively.



Chapter

FOUR

Staged Exercise Program

04

Staged Exercise Program



The jumping athlete should advance through five stages—Isometric loading, strength, functional endurance, energy storage and release, and return to training—to cultivate the required attributes for a successful comeback in sports. Each stage of the exercise rehabilitation program must include precise milestones for the athlete to strive toward. This serves two main purposes: providing tangible goals and ensuring that they have sufficiently developed the targeted quality in each stage to progress while managing their symptoms effectively. Here's a summary of each stage and its purpose in the rehabilitation process.



STAGES

Stage 3: Energy Storage & Release

Aims:

- Enhance tendon loading rate
- Enhance tendon energy storage capacity
- Keep symptoms under control
- Enhance tendon energy release capacity

Modality:

- Resistance/Speed Training

Stage 4: Sport Specific Loading

Aims:

- Enhance tendon loading rate to match that experienced in trainings
- Enhance tendon energy storage and release capacity to match that experienced in trainings
- Continue to build strength and endurance
- Keep symptoms under control

Modality:

- Resistance Training / Speed Training / Team Training

Stage 5: Progressive Return to Training/Sport

Aims:

- Gradual return to training with symptoms under control
- Enhance tendon energy storage and release capacity to match that experienced in games
- Continue to build strength and endurance to prepare for matches

Stage 1: Symptom Control

Aims:

- Reduce pain using a variety of strategies (most of which have been described here)
- Modify loading appropriate to your tendon's health
- Reduce pain on decline squats
- Reduce next morning pain
- Reduce 24 hour pain
- Reduce cortical inhibition of relevant knee structures

Modality:

- Isometric exercise

Stage 2: Strength & Functional Endurance

Aims:

- Improve maximal leg strength
- Balance keeping symptoms under control
- Improve functional kinematics and strength up and down the chain

Modality:

- Resistance Training

THANK YOU !



Hey there.

Thank you for making it all the way through! I hope you found this document useful in understanding how you might go about rehabbing your tendon.

would appreciate a message of support on my instagram page @athelitetherapy if you think it was worth your time! I am currently in the process of constructing an advanced patella tendon rehabilitation protocol to help athletes such as yourself to recover from this condition.

Click this [link](#) and input some of your details and I'll keep you updated for when it drops.

Thanks,

Jonny

Some Key Papers I used to make this document. Thanks to all the author's and researchers for all their hard work in helping understand this debilitating condition.

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