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Revolutionizing Tendon Recovery

Analysis by Dr. Joseph Mercola | November 15, 2026

STORY AT-A-GLANCE

- Prolonged rest after a tendon injury can interfere with recovery because tendons need controlled mechanical stress to maintain their structure and rebuild damaged tissue
- Healthy tendon tissue often absorbs most of the force during movement, leaving weaker, injured areas without enough stimulation to repair themselves effectively
- Slow, sustained muscle contractions help distribute tension to damaged tendon tissue while reducing the sudden forces that aggravate injuries
- Researcher Keith Baar recommends gradually increasing tension over three to five seconds, holding for 30 seconds at 30% to 40% of maximum effort, then slowly releasing the contraction
- A gradual return to pain-free movement, followed by resistance training and adequate protein, including collagen-rich foods, may help restore tendon strength and prepare your body for everyday activities and exercise

You strain your elbow, develop pain below your kneecap or feel a nagging ache in your Achilles tendon. The standard advice is to rest the injured area, apply ice and avoid movements that hurt. If a tendon is damaged, giving it time to heal seems like the safest approach. For tendons, though, too much rest can slow recovery.

Tendons are the tough connective tissues that attach your muscles to your bones, allowing you to walk, lift, jump and perform everyday activities. When they become injured, you may experience pain, stiffness, tenderness or weakness that makes even

simple movements uncomfortable.

Conventional treatment often emphasizes rest and immobilization, yet relieving discomfort and restoring the tendon's normal function are two different goals. Proper rehabilitation may help keep tendon problems from lingering and limiting your mobility.

Researcher Keith Baar, Ph.D., has spent years investigating how tendons respond to physical stress and what helps damaged tissue recover. In an interview on The Gamma Seeker Broadcast with Brooke McPoyle, he challenges the assumption that protecting an injured tendon from movement is always the best way to promote healing.[1] His research focuses on how the way you apply force to a tendon influences its structure, flexibility and ability to repair itself.

Whether you're dealing with tennis elbow, Achilles pain or a nagging knee tendon, understanding how these tissues respond to movement could change your approach to rehabilitation. The surprising part is that the difference between helping a tendon heal and making an injury worse isn't simply how much force you use. It's also how you apply that force.

How Slow, Sustained Tension May Help Injured Tendons Rebuild

During the interview, Baar explained how his laboratory work has challenged conventional approaches to **soft tissue rehabilitation**. His work includes laboratory-engineered human ligaments and observations of how connective tissues behave under tension.

Rather than focus exclusively on how much weight a person lifts, he examines how quickly force develops, how long it lasts and how these factors influence the injured tissue. His findings suggest that the right type of movement may matter as much as the amount of exercise you perform.

- **Healthy tissue can prevent injured areas from receiving enough force —** Baar compares a damaged tendon to a weak thread beside a strong wire. When you pull on both, the stronger wire absorbs most of the tension, protecting the thread.

  Your tendons behave similarly. Healthy sections carry more force, while weaker, scarred areas remain protected. Researchers call this stress shielding. That protection comes at a cost. Tendon cells rebuild collagen in response to tension, so injured fibers that never feel a pull get no signal to repair.

- **Slow contractions reduce sudden stress on damaged tissue —** Baar focuses on a physics term called jerk, which describes how abruptly force ramps up. Easing gently onto a car's brakes is low jerk. Slamming them is high jerk.

  Think about the sudden force your knee experiences when you land from a jump or the impact your elbow absorbs when a tennis racket strikes a ball. These abrupt changes place considerable stress on tendons. Baar's approach reduces that stress by gradually increasing muscle tension rather than applying force all at once.

- **A 30-second hold helps tension reach weakened areas —** Baar recommends gradually increasing force over three to five seconds, maintaining the contraction for 30 seconds at approximately 30% to 40% of maximum effort, then slowly releasing it over another three to five seconds.

  This is called low-jerk isometric loading, meaning your muscles produce tension while the joint remains still. Tendons are viscoelastic, meaning they slowly give under a steady pull, much like taffy. Over a 30-second hold, the healthy fibers stretch slightly, and as they do, more of the load shifts onto the weaker fibers they had been shielding.

- **Repeated contractions help move excess fluid out of tendons —** Baar explains that sustained tension compresses the tendon and pushes fluid out of the tissue. When you release the contraction and repeat the movement, you create a pumping effect that helps reduce fluid buildup associated with inflammation.

He describes two benefits of this approach: "I'm decreasing the negative component of inflammation," while also allowing more tension to reach the injured area. This offers a possible mechanical explanation for how gentle exercise may support recovery beyond simple symptom relief.

- **Gentle loading may begin earlier than conventional rehabilitation suggests, with professional guidance —** Baar describes protocols that introduce controlled tension on the day of an injury or shortly afterward, including selected cases involving surgical repairs. He emphasizes that the exercise requires relatively little force and uses pain as a guide. Sharp discomfort signals that the load is too high.

  However, early loading requires professional guidance, especially after surgery or a serious injury. Baar also explains that these contractions are only the first stage of rehabilitation. Once full, pain-free movement returns, patients progress toward more demanding exercises.

- **Regular loading helps tendons maintain the flexibility needed for movement —** Baar's laboratory experiments showed that when muscle activity stopped, the tendon region closest to the muscle became stiffer, resembling the less flexible portion near the bone. That gradual shift from flexible to stiff works like a shock absorber, spreading force smoothly from muscle to bone.

  When the gradient flattens, force transfers more abruptly, which may concentrate stress where the tendon meets the muscle.

  Baar's findings suggest that regular contractions help preserve the gradual transition from flexible to stiff tissue, allowing force to travel more smoothly between muscle and bone. This reinforces the value of maintaining regular physical activity after recovery. The goal extends beyond relieving pain to restoring the tissue's ability to handle the physical demands of everyday life.

How to Restore Tendon Strength and Support Recovery

If you're dealing with tendon pain or recovering from an injury, the goal is to restore the tissue's ability to handle force without causing further damage. Your tendons need the right amount of mechanical stress to maintain their structure and rebuild weakened areas. I recommend a gradual approach that starts with gentle, controlled contractions and progresses toward normal movement as your strength and comfort improve.

1. **Start with gentle, pain-free loading —** If you have a tendon injury, the first step is to determine how much tension the affected area tolerates without pain. For a mild tendon problem, gentle muscle contractions provide a way to begin restoring function while limiting sudden stress on the damaged tissue.

   I recommend starting with a comfortable level of effort and paying close attention to how the injured area responds. Your goal is to create steady tension without pain. If you experience pain, reduce the force or stop the exercise. If you've experienced a sudden injury, heard a pop or lost the ability to bear weight or move normally, seek prompt medical assessment before attempting rehabilitation. A complete rupture requires a different approach from a mild tendon injury.

2. **Use slow, sustained contractions to rebuild tendon strength —** Once you've established that gentle loading is appropriate for your injury, use the low-jerk isometric method Baar describes. An isometric exercise involves contracting your muscles without moving the affected joint.

   Gradually increase tension over three to five seconds until you reach approximately 30% to 40% of your maximum effort. On a scale of 1 to 10, aim for about a 3 or 4. That should be firm enough to feel the muscle working, yet easy enough to hold steady and breathe normally for the full 30 seconds. Hold that position for 30 seconds, then slowly release the tension over another three to five seconds. Keep the contraction pain-free throughout.

   For Achilles pain, stand with the ball of your foot on a step and rise slightly onto your toes, then hold that position. For tennis elbow, rest your forearm on a table, palm down, and press the back of your hand up against your other hand without

letting the wrist move. For pain below the kneecap, a shallow wall sit loads the patellar tendon without bending or straightening the knee.

I recommend focusing on smooth, deliberate movements rather than how hard you push. The goal is to expose your tendon to sustained tension without abrupt changes in force. The specific exercise and number of repetitions need to match the injured tendon and your stage of recovery.

3. **Restore your full range of motion before increasing intensity —** As your tendon improves, focus on regaining comfortable movement through the affected joint's normal range of motion. If you're recovering from an ankle injury, for example, pay attention to how comfortably you move your foot and ankle during everyday activities.

   Treat pain-free movement as your first milestone before progressing to more demanding exercises. Once you regain full, comfortable motion, gradually introduce exercises that move the joint through its normal range while applying resistance.

   Increase the challenge as your tendon tolerates the additional work. Track your progress through simple activities, such as walking, climbing stairs or lifting everyday objects. These give you practical ways to measure whether your recovery is translating into better function.

4. **Build tendon resilience with regular strength training —** Once your injury has healed enough for normal exercise, I recommend resistance training twice weekly to help maintain muscle strength and expose your tendons to regular, controlled loads. Focus on movements that strengthen your legs, hips, back, chest and arms, using **body weight**, resistance bands or weights.

   Begin with exercises you perform comfortably and gradually increase resistance as your strength improves. Keep your movements smooth and controlled, especially during the early stages of your return to exercise.

If heavier weights are uncomfortable, consider blood flow restriction (BFR) training, including KAATSU. This technique uses specialized cuffs to partially restrict blood flow during light-resistance exercise. A 2023 narrative review reports that BFR has been shown to increase muscle strength and size, in healthy people and in musculoskeletal rehabilitation, using much lighter loads.[2]

It may be especially useful when you're rebuilding muscle strength but aren't ready for heavier loads. Use appropriately calibrated equipment and individualized pressure settings, since BFR isn't suitable for everyone, particularly those with blood-clotting or certain vascular conditions. Check with your healthcare provider before you start BFR training.

If you're an athlete who runs, jumps or changes direction quickly, you'll eventually need to prepare your tendons for those demands as well. Progress from slow resistance exercises toward faster, more demanding movements only after you've restored strength and comfortable movement. This gradual progression helps prepare your tendons for the activities you enjoy.

5. **Support tissue repair with adequate nutrition and consistent movement —** Your tendons rely on collagen, a structural protein that gives connective tissue much of its strength. I recommend consuming about 0.8 grams of protein per pound of ideal body weight (1.76 grams per kilogram), with one-third coming from collagen-rich sources like slow-cooked meats or bone broth.

   Include enough carbohydrates to support your energy needs. For most adults, I recommend 250 grams daily, with more if you're highly active. Combine adequate nutrition with regular walking and strength training as your recovery progresses. Your goal is to give your body the nutrients and mechanical stimulation it needs to maintain healthy connective tissue.

   Focus on consistency rather than rapid increases in exercise intensity, and use improvements in everyday movement as your measure of progress.

FAQs About Tendon Recovery

Q: Is complete rest the best treatment for an injured tendon?

A: Prolonged inactivity reduces the mechanical stimulation tendons need to maintain their structure. For many mild tendon injuries, gentle, controlled exercise may help restore function. Serious injuries, including complete ruptures, require a different rehabilitation approach.

Q: How might slow isometric exercises help injured tendons heal?

A: In Baar's model, slow, sustained muscle contractions allow tension to reach weakened portions of a tendon that stronger tissue otherwise protects. This may provide mechanical signals that support tissue remodeling. The contractions also help move excess fluid out of the tendon, according to Baar.

Q: How long do I hold an isometric contraction for tendon recovery?

A: Baar recommends gradually increasing tension over three to five seconds, holding the contraction for 30 seconds at approximately 30% to 40% of maximum effort, then slowly releasing it over another three to five seconds. The exercise needs to remain pain-free, with intensity adjusted to the injury.

Q: When is it safe to return to regular exercise after a tendon injury?

A: A useful first milestone is regaining your full range of motion without pain. From there, gradually rebuild strength through controlled resistance exercises before returning to running, jumping or other high-impact activities. Progress depends on the severity of your injury and how well your tendon tolerates increased loading.

Q: What helps strengthen tendons and may lower your risk of future injuries?

A: Regular resistance training, adequate protein and gradual increases in exercise intensity support tendon health. Collagen-rich foods provide building blocks for connective tissue, while consistent movement helps tendons maintain their flexibility. BFR training, including KAATSU, also offers a lighter-load option for rebuilding muscle strength during rehabilitation, although it doesn't replace progressive tendon loading.

This article is for informational purposes only and does not constitute medical advice. Consult a qualified healthcare provider before making changes to your health regimen.

Sources and References

- [1] YouTube, Musical Breathwork, Revolutionizing Tendon Recovery with Dr. Keith Baar | GSB #44
- [2] Rheumato 2023, 3(1), 23-50