

Post-Operative Instructions

Achilles Tendon Repair

Day of Surgery

- A. Diet as tolerated.
- B. Pain medication as needed every 6 hours.
- C. Icing is important for the first 5-7 days post-op. Ice is applied for 20-minute periods 3-4 times per day. Care must be taken with icing to avoid frostbite.
- D. Set up your physical therapy appointment for 4 weeks after surgery
- E. **Keep leg elevated above heart**

First Post-Operative Day

- A. Continue icing
- B. You will need to keep your cast/splint dry when taking a shower. Do this for about 4 weeks after surgery.

Second Post-Operative Day until return visit

- A. Continue icing
- B. Leg elevation as much as possible

Ankle Support

- A. Weeks 0-2: posterior slab/splint
- B. Weeks 2-4: short leg cast
- C. Weeks 4-6: Aircast walking boot with 2 cm heel lift, weightbearing as tolerated
- D. Weeks 6-8: Remove heel lift
- E. Week 8-12: wean off boot

Call our office @ 646-501-7223 option 4, option 2 to confirm your first postoperative visit, which is usually about 1-2 weeks after surgery. If you are experiencing any problems, please call our office or contact us via the internet at www.newyorkortho.com.

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Rehabilitation After Achilles Tendon Repair

The Achilles tendon is the strongest and thickest tendon in the body. It attaches the calf muscles (soleus and gastrocnemius) to the heel bone (calcaneus). The tendon transmits force from the contracting calf muscles to the calcaneus to cause the foot action of plantar flexion (foot pointed down) that is important in walking, running, jumping and change of direction activities. Although the Achilles tendon is the strongest tendon in the body, it is also the tendon most commonly torn or ruptured. The most common causes of rupture are:

- Sudden plantar flexion (foot moving downward) such as taking off to jump.
- Unplanned or forced dorsiflexion (foot moving upward) such as landing a jump or stepping into a hole.
- Direct trauma to the tendon.

Most Achilles tendon ruptures occur in sports that require running, jumping, and change of direction. The typical age for rupture occurs between 30–40 years of age and is significantly more common in males than females. Older adults can also rupture the Achilles tendon and are more inclined to have degenerative partial tearing of the tendon. Other risk factors for Achilles tendon rupture include use of

Fluoroquinolone antibiotics and direct steroid injections into the tendon.¹

The diagnosis of an Achilles tendon rupture is made from clinical history, physical exam and diagnostic testing. Most patients who sustain an Achilles tendon rupture report a pop and a feeling of being kicked or shot in the back of the leg. On exam, there is a palpable divot or gap in the area of the rupture along with significant swelling. Patients will demonstrate a positive Thompson test, performed by squeezing the calf muscle while the patient lies prone. This test is positive when the calf is squeezed and plantarflexion does not occur. Diagnostic testing such as an Ultrasound or MRI (magnetic resonance imaging) may be used to determine if there is a complete or partial tear.

Treatment options for an Achilles tendon rupture include surgical repair and conservative non surgical rehabilitation. Decision making is based on age, past medical history, and desired level of functional return. Conservative non-surgical treatment includes rehabilitation with initial immobilization followed by gentle range of motion and progressive strengthening to regain function. Most surgical procedures to repair a torn Achilles tendon include an open longitudinal incision medial to the Achilles tendon (Figure 1).²

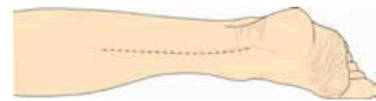


Figure 1 The dotted line represents the longitudinal incision used to expose the ruptured Achilles tendon during surgical repair.

The incision is made medial to the tendon to improve skin healing and to reduce the risk of scarring to the underlying tendon repair. Once the incision is made and the rupture is identified (Figure 2), clamps are used to match the ends together in an optimal tendon length. A primary repair of the two ends of the tendon is performed by stitching them together. There are many different stitching techniques to repair the tendon. The type used will depend on the surgeon, the type of rupture, and tissue quality.

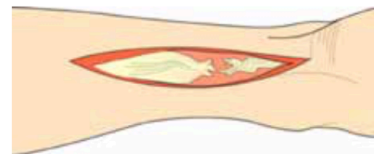


Figure 2 Torn Achilles tendon.

Sometimes the repair is augmented or strengthened using fascia or tendon. A gastrocnemius aponeurosis augmentation is performed when a 1–2 cm wide by 8 cm long flap is made and turned down over the repair and

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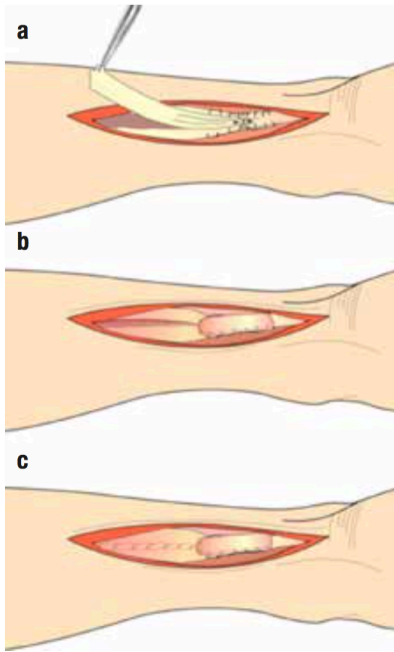


Figure 3 – a: Flap from the gastroc fascia (calf muscle sheath) is surgically freed up above the Achilles tendon repair; **b:** This flap is then “turned down” and sutured over the Achilles tendon repair; **c:** After turn down of the flap the resultant defect in the fascia is sutured together.

sutured to reinforce the repair. The area that the flap was harvested from is then stitched together (Figure 3). In cases of tendon degeneration, or tendinosis, this may help strengthen the repaired tendon.

Historically it has been thought that a surgically repaired Achilles tendon offered a significantly smaller risk of re-rupture rate and increased strength in comparison to non- surgical treatment.⁵ The major risks associated with surgery include infection, deep vein thrombosis (DVT) and difficulty with wound closure. Recent studies suggest similar rupture rates, strength, and mobility between surgery and non surgery approaches to the management of Achilles tendon ruptures.^{3, 4}

The best approach varies for each individual. Your surgeon and you will determine what is best for you by

discussing your specific injury and goals.

Rehabilitation following Achilles tendon repair is vital in regaining motion, strength and function. Initially a walking boot is used for the first 4–5 weeks.

Gradually more weight bearing and mobility is allowed to prevent stiffness post-operatively. The rehabilitation progresses slowly into strengthening, gait and balancing activities. Rehabilitation guidelines are presented in a criterion based progression. General time frames refer to the usual pace of rehabilitation. However, individual patients will progress at different rates depending on their age, associated injuries, pre-injury health status, rehab compliance, tissue quality and injury severity. Specific time frames, restrictions and precautions may also be given to enhance wound healing and to protect the surgical repair/reconstruction.

Rehabilitation After Achilles Tendon Repair

Phase I (Surgery to 2 weeks after surgery)

Precautions	<ul style="list-style-type: none">○ Posterior slab/splint○ Non-weight bearing with crutches
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Phase II (2 weeks to 6 weeks following surgery)

Precautions	<ul style="list-style-type: none">○ Weeks 2 – 4<ul style="list-style-type: none">○ Short leg cast○ Protected weight-bearing with crutches○ Weeks 4 – 6<ul style="list-style-type: none">○ Aircast walking boot with 2cm heel lift (wear while sleeping, can remove for bathing/dressing)○ Weight-bearing as tolerated
Therapeutic Exercises	<ul style="list-style-type: none">○ Weeks 4– 6<ul style="list-style-type: none">○ Can Start PT exercises:○ Initiate active plantar flexion and dorsiflexion to neutral○ Initiate active inversion/eversion below neutral○ Hip/knee exercises with no ankle involvement○ Non-weight bearing fitness exercises○ Hydrotherapy – within motion and weight-bearing limitation

Phase III (6 weeks to 12 weeks following surgery)

Precautions	<ul style="list-style-type: none">○ Weeks 6 – 8<ul style="list-style-type: none">○ Remove heel lift○ Continue weight-bearing as tolerated○ Weeks 8 – 12<ul style="list-style-type: none">○ Wean off boot
Therapeutic Exercises	<ul style="list-style-type: none">○ Weeks 6– 8<ul style="list-style-type: none">○ Dorsiflexion stretching○ Graduated resistance exercises (open and closed kinetic chain)○ Proprioceptive and gait training○ Fitness exercises to include WBAT – bicycling, elliptical machine○ Hydrotherapy○ Weeks 8 – 12<ul style="list-style-type: none">○ Continue to progress ROM, strength, and proprioception

Rehabilitation After Achilles Tendon Repair

Phase IV (12 weeks after surgery and beyond)

Goals	<ul style="list-style-type: none">○ Continue to progress ROM, strength, and proprioception
Therapeutic Exercises	<ul style="list-style-type: none">○ Increase dynamic weight-bearing exercises – plyometric training○ Sport-specific training○ Work to restore strength, power, and endurance

References

1. Paul van der Linden et. Al. "Increased Risk of Achilles Tendon Rupture with Quinolone Antibacterial Use" *Arch Intern Med* 2003; 163: 1801-1807.
2. Baer GS, Keene JS. "Tendon Injuries of the Foot and Ankle: Achilles Tendon Ruptures." *In Orthopedic Sports Medicine: Principles and Practice*. (Third Edition) Ed. DeLee and Drez, Saunders, Philadelphia, PA, 2010 2002-2011.
3. Twaddle, Poon. "Early motion for Achilles Tendon Ruptures: Is Surgery Important?" *AJSM* 2007 2033-2038.
4. Nilsson-Helander et al. "Acute Achilles Tendon Rupture: A Randomized, Controlled Study Comparing Surgical and Nonsurgical Treatments Using Validated Outcome Measures" *AJSM* 2010.
5. Bhandari et al. Treatment of acute Achilles tendon ruptures: a systematic overview and metaanalysis *Clin orthop Relate Res* 2002 190-200.
6. Willits, et al. Operative versus nonoperative treatment of acute Achilles tendon ruptures: A multicenter randomized trial using accelerated functional rehabilitation. *JBJS*. 2010;92-A;17(2767-74).

LOC Achilles Tendon Repair Phase II (weeks 2-6)

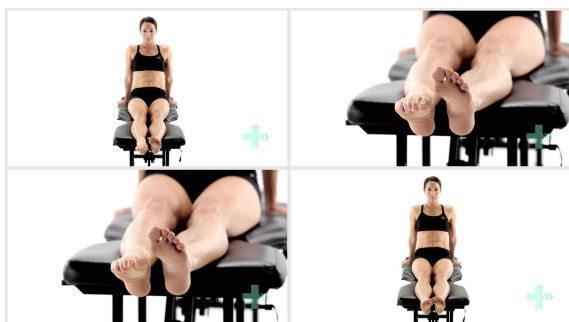
3 Sets / 15 Reps



1. AROM ankle dorsiflexion

Start in a seated position with your legs out straight.
Point your toes up towards the ceiling, keeping the leg straight.
Stop when the foot is perpendicular to the table.
The knee stays flat on the table as you move your foot up and down.

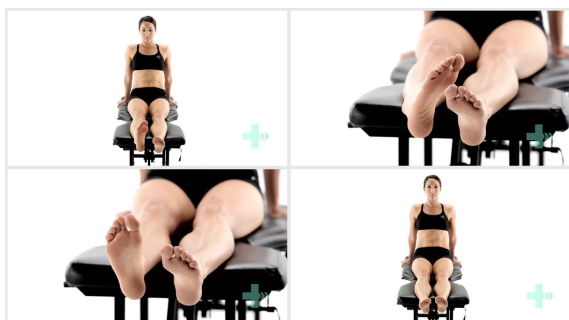
3 Sets / 15 Reps



2. AROM ankle plantarflexion

Start in a seated position with your legs out straight.
Point your toes down as far as you can, and then back to neutral position.
The knee stays straight during this exercise.

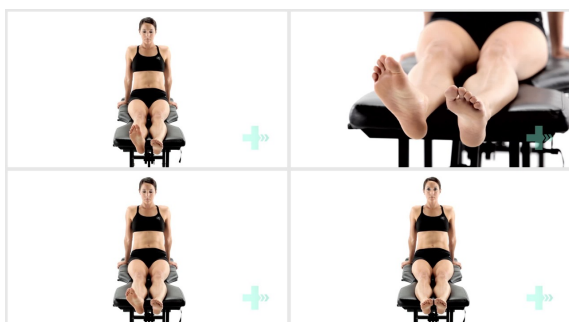
3 Sets / 10 Reps



3. AROM ankle inversion

Start in a seated position with your legs straight.
Invert your ankle by turning the sole of your foot towards the midline of the body.
Do not move your knee or the hip to create this range of motion, move your ankle only.

3 Sets / 15 Reps



4. AROM ankle eversion

Sit down with your legs extended out straight.
Start with your ankle in a neutral position and slowly evert your ankle by rotating the sole of your foot away from midline of the body.
Do not move your knee or hip to create this range of motion, strictly move your ankle only.

**5. Isometric ankle dorsiflexion**

Sit up straight in a chair.

Place your good foot on top of your affected foot.

Try to lift the ball of your affected foot upwards, resisting the movement with your good foot.

Hold this position.

**6. Hold and relax, heel raises**

Sit upright on a chair with your feet flat on the floor.

Slowly raise your heels up keeping your toes in contact with the floor.

Continue on for the required duration.

**7. Isometric ankle inversion**

Sit up straight with both feet flat on the floor.

Have a small space between your feet.

Keeping your heels in the same position, slide the front of your feet together so that your big toes touch.

Press your toes in towards each other.

Hold this position.

Relax, and repeat.

**8. Isometric eversion in long sit against ball**

Sit with your legs straight out in front of you, for example on a mat.

Your legs should be close to a wall with the foot to be exercised closest to the wall.

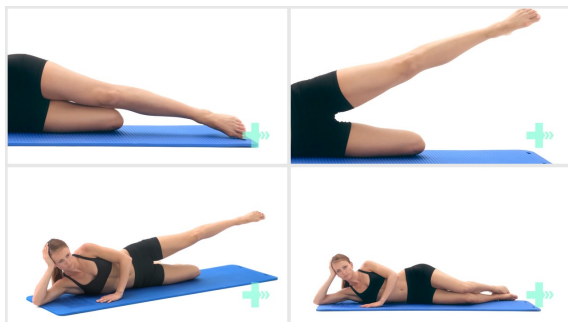
Place a ball between the outside of your foot and the wall.

Move sideways until you have your leg parallel to the wall.

Press the outside of your foot into the ball, keeping your knee straight.

Hold this position.

Relax, and repeat.



9. Hip abduction with straight leg, head supported in side lying and knee bent

Lie on your side with your affected leg on top.

Bend your bottom leg for stability but keep your top leg straight and in line with your body.

Lift the top leg up, making sure you do not roll your body forwards or backwards. Control the movement as you lower it back down to the starting position and repeat.

1 Set / 3 Reps / 30 s hold



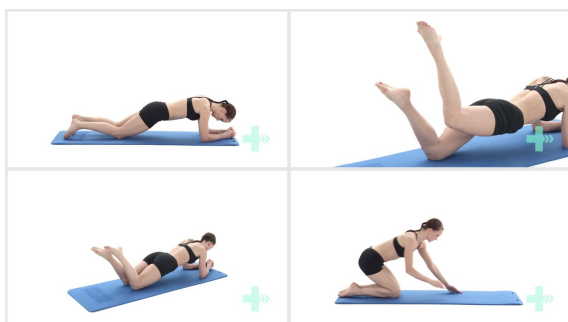
10. Side plank on knees

Lie on your side and prop yourself up on your elbow.

Bend your knees and lift your hips off the mat until you have a straight line from your knees to the top of your head.

Hold this position for as long as you can.

2 Sets / 10 Reps / 1 s hold



11. Kneeling plank with hip extension

Lie on your front with both knees bent.

Lift your body up onto your forearms, ensuring your elbows are under your shoulders.

There should only be a slight angle at your hips.

Holding this position, lift the knee of your affected leg off the floor, pushing the sole of your foot up towards the ceiling.

Hold this position before you lower it back down to the starting position, and then repeat.