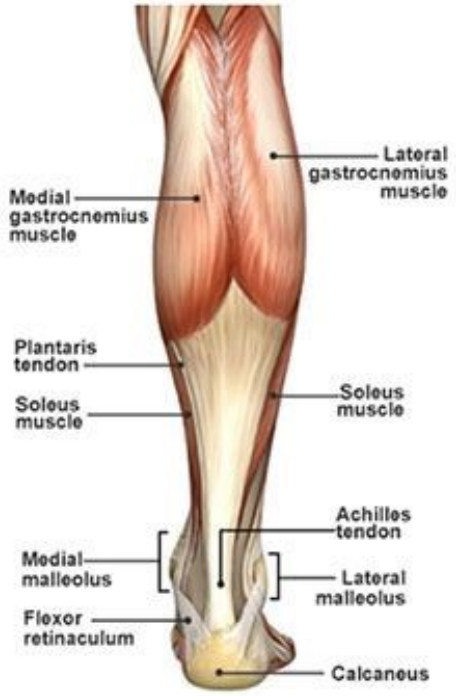
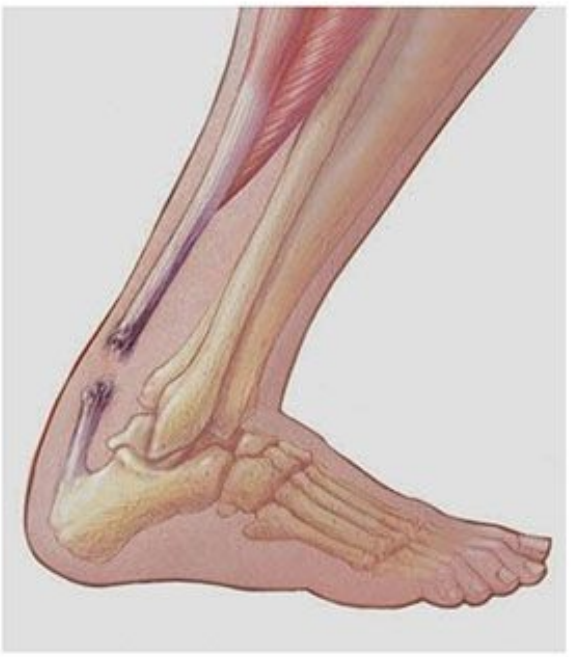
Rehabilitation Guidelines:
Post Achilles Tendon Reconstruction

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.



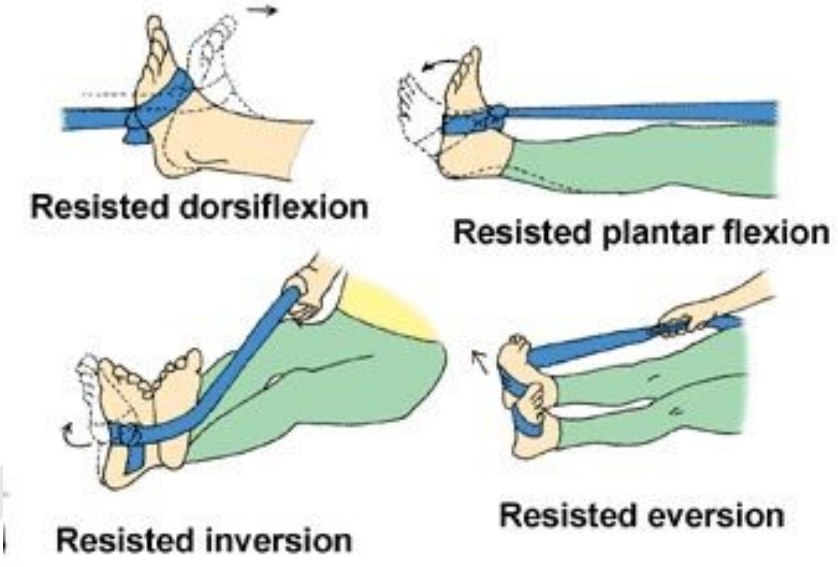


PHASE I (surgery to end of week 2)	
Goal	• Control oedema and protect the repair site • Minimize scar adhesion and detrimental effects of immobilization • Minimize hip, upper thigh & ankle atrophy
Precautions	• Ankle is casted in **locked plantarflexion (20-30°)** • Toe touch weight bearing using the axillary crutches • Keep the incision dry • Watch for signs of infection (disproportionate pain) • Avoid long periods of dependent positioning of the foot during the first week to assist in wound healing (elevate leg)

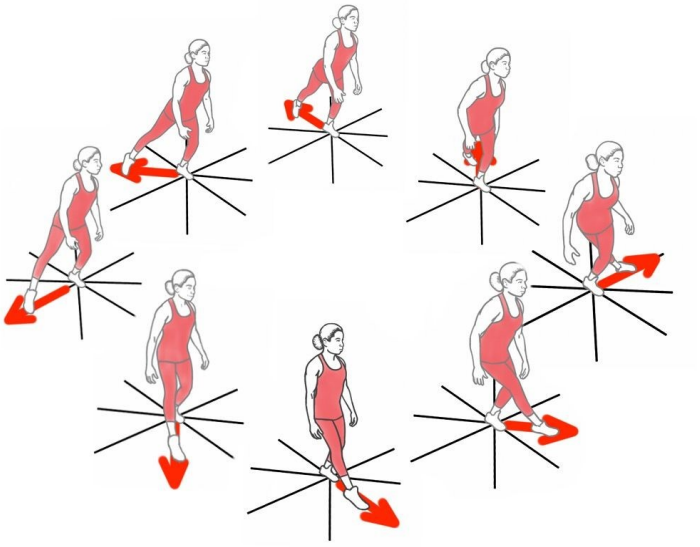
"NOTE: All progressions are approximations and should be used as a guideline only. Progression will be based on individual patient presentation, which is assessed throughout the treatment process"

Intervention	• Modalities for pain and oedema • Muscle strengthening for hip and knee • Inner range quads, 4ways SLR (see Fig. 1.1) (supine, hip abduction, adduction, prone), • Clamshell • Gentle AROM: plantar and dorsiflexion, inversion and eversion (week 3 onwards) • Upper extremity cardiovascular exercise as needed • Joint mobilization and soft tissue work, as indicated • 4-ways SLR
Progression Criteria	• 2 weeks after surgery • Approval from your surgeon before moving onto the next phase

PHASE II (usually 3 to 6 weeks post-surgery)	
Goals	• Normalize gait on level surfaces without boot or heel lift • Manage pain and control swelling by using cold therapy and elevation • Maintain hip and knee range of motion • Improve core, hip, and knee strength • Safe crutch use with full weight bearing in Walking BootN the walker boot, week 3&4 – 2cm heel raise, week 5 & 6, 1cm heel raise, week 7 & 8 completely neutral. Able to progressively lose crutches and continuously full weight bear in the walker boot • lowly increasing dorsiflexion to a neutral position
Precaution	• WBAT (based on pain, swelling and wound appearance) using the axillary crutches and boot • Do not soak the incision (i.e. no pool or bathtub typically until week 4) • Watch for signs of poor wound healing
Intervention	**Week 3 and 4** • Passive ROM/Active ROM/Active Assisted ROM * Do not Dorsiflex ankle beyond 0 degrees/neutral • Light resistance band exercises **(Week 4)** **Week 6 (Convert to sport shoes)** • Seated heel raises • Isometric dorsiflexion to neutral • Proprioception exercises – single leg stance with front support to avoid excessive dorsiflexion • Soft tissue mobilization/scar massage/desensitization/edema control • Ankle flexibility at various knee angles

	• TheraBand resisted ankle exercises • Low velocity and partial range of motion for functional movements (squat, step back, lunge) • Cardiovascular progression (stationary bike, pool exercise once the wound fully heals) 
Progression Criteria	• Six weeks post-oper Six weeks post operatively • Pain-free active dorsiflexion to 0° • No complications. If wound complications occur, consult with a physician

	PHASE III (6 to 12 weeks)
Goals	• No adhesion • Full Weight Bearing in sneakers • Single leg stance with good control for 10 seconds • Active ROM between 15° of dorsiflexion and 50° of plantarflexion
Precautions	• Slowly wean from use of the boot (usually at end of week 8) • Avoid over-stressing the repair (avoid large movements in the sagittal plane; any forceful plantarflexion while in a dorsiflexed position; aggressive passive ROM; and impact activities)
Intervention	**Range of motion/Mobility** • Gentle long-sitting gastrocnemius stretch as indicated • Gentle stretching all muscle groups: prone quad stretch, standing quad stretch, kneeling hip flexor stretch • Ankle/foot mobilizations (talocrural, subtalar, and midfoot) as indicated **Strength and balance** • Progressive ankle and lower extremity strengthening • Double heel raise/lower progressing to single leg heel raise at various speeds

	• Single limb balance progress to uneven surface including perturbation training  Fig 1.3 single leg balance exercise
Progression criteria	• Limb symmetry (>90%) • Pain levels managed to enable exercise progression • Full weight bearing without a limp. • Dorsiflexion is beyond neutral • Normal gait mechanics without the boot

PHASE IV (months 3 to 6)	
Goals	• Minimize calf atrophy • Good control and no pain with sport/work specific movements, including impact
	• Return to all activities
Precautions	• Post-activity soreness should resolve within 24 hours • Avoid post-activity swelling • Running with a normal gait pattern

Intervention	• Progress with strengthening, proprioception, and gait training activities • Begin **light jogging at 12-14 weeks** • **Return to sports at 5- 6 months** (*Able to do Single Leg heel raise with good neuromuscular control and absence of symptoms or compensatory movements) • Increase dynamic weight bearing exercise, include plyometric • **Start Advanced dynamic drills** at **14 weeks Hopping, skipping** • **Sport Specific** retraining at **14 weeks** • Running/cutting at 16 weeks

Figure 1.4 Agility ladder drills

References

1. Brumann, M., Baumbach, S. F., Mutschler, W., & Polzer, H. Accelerated rehabilitation following Achilles tendon repair after acute rupture-Development of an evidence-based treatment protocol. Injury. 2014
2. A systematic review of early rehabilitation methods following a rupture of the Achilles tendon. Physiotherapy 98 (2012) 24–32 https://www.physiotherapyjournal.com/article/S0031-9406(11)00416-0/pd f
3. Rehabilitation program for Achilles tendon rupture / repair http://banffsportmed.com/wp-content/uploads/2018/01/Achilles-Tendon-Rupture_0.pdf
4. https://www.stoneclinic.com/achilles-tendon-repair-rehab-protocol
5. Early functional rehabilitation or cast immobilisation for the postoperative management of acute Achilles tendon rupture? A systematic review and meta-analysis of randomised controlled trials. https://www.ncbi.nlm.nih.gov/pubmed/26281836
6. A Proposed Return-to-Sport Program for Patients With Midportion Achilles Tendinopathy: Rationale and Implementation https://www.jospt.org/doi/pdf/10.2519/jospt.2015.5885
7. Return to Play Post Achilles Tendon Rupture: A Systematic Review and Meta-Analysis of Rate and Measures of Return to Play

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5136353/pdf/nihms800754.pdf **Rehabilitation Guidelines: Post Achilles Tendon Reconstruction (Summary)**

	Post op to end of week 2	Week 3 – week 6	Week 7 – week 12	Months 3-6
Goal	Reduced swelling and pain management	Slowly increasing dorsiflexion to a neutral position	-FULL ROM of the ankle - Single leg stance with good control for 10 seconds	-Good control and no pain with sport/work specific movements, including impact - Return to all activities
Precaution	• Non weight bearing • Continuous use of cast in locked plantarflexion (20-30°)	Weight bearing as tolearated (based on pain, swelling and wound appearance) using the axillary crutches and boot	Avoid over-stressing the repair	-Avoid post-activity swelling
	Start: - Cryotherapy - Soft tissue mobilization to ankle/foot/effleurage for oedema - Strengthening for hip and knee - Simple ankle ROM exercises	Start: **Week 4** - TheraBand resisted ankle exercise s -Scars mob -Active dorsiflexion **Week 6** -Proprioceptive training - Increase Ankle passive stretches - Seated heel raises -Eccentric heel raises -Gait training	Start: - Progressive ankle and lower extremity strengthening -Double heel raise/lower progressing to single leg heel raise at various speeds - Cont. proprioceptive training and Eccentric heel raises	-Progress with strengthening, proprioception, and gait training activities - Begin light jogging at 12-14 weeks **-Return to sports at 5- 6 months** (*Able to do SL heel raise with good neuromuscular control and absence of symptoms or compensatory movements)
Ambulation	Non weight bearing with axillary crutches/cast	-Safe crutch use with weight bearing in Walking Boot -Normalize gait pattern with sport shoes (push off)	Normal gait pattern with sport shoes	Running without limp

Exercises	- Toe curls, toe spreads, gentle foot movement in boot - 4 ways Straight Leg Raise	Week 6: Stationary bike Swimming Exercises inside the pool	Closed chain exercises: controlled squats, lunges, bilateral calf raise (progress to unilateral)	-Progress with strengthening, proprioception, and gait training activities - Begin light jogging at 12-14 weeks

"NOTE: All progressions are approximations and should be used as a guideline only. Progression will be based on individual patient presentation, which is assessed throughout the treatment process"