

Rehabilitation Protocol for Achilles Rupture Repair

This protocol is intended to guide clinicians through the post-operative course for Achilles tendon repair. This protocol is time based (dependent on tissue healing) as well as criterion based. Specific intervention should be based on the needs of the individual and should consider exam findings and clinical decision making. The timeframes for expected outcomes contained within this guideline may vary based on surgeon's preference, additional procedures performed, and/or complications. If a clinician requires assistance in the progression of a post-operative patient, they should consult with the referring surgeon.

The interventions included within this protocol are not intended to be an inclusive list. Therapeutic interventions should be included and modified based on the progress of the patient and under the discretion of the clinician.

Considerations for the Post-operative Achilles tendon repair program

Many different factors influence the post-operative Achilles tendon rehabilitation outcomes, including type and location of the Achilles tear and repair. Consider taking a more conservative approach to range of motion, weight bearing, and rehab progression with tendon augmentation, re-rupture after non-surgical management, revision, chronic tendinosis, and co-morbidities, for example, obesity, older age, and steroid use. It is recommended that clinicians collaborate closely with the referring physician regarding intra-operative findings and satisfaction with the strength of the repair.

If the patient develops a fever, unresolving numbness/tingling, excessive drainage from the incision, uncontrolled pain or any other symptoms you have concerns about, the referring physician should be contacted.

PHASE I: IMMEDIATE POST-OP (0-1 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Protect repair • Maintain strength of hip, knee and core • Manage swelling • Ensure gait safety with appropriate assistive device(s)
Weight Bearing	<i>Walking</i> • Non-weight bearing (NWB) on crutches in splint at all times
Intervention	<i>Range of motion/Mobility (in boot/splint)</i> • Supine passive hamstring stretch <i>Strengthening (in boot/splint)</i> • Quad sets • Straight leg raise • Abdominal bracing • Hip abduction • Side-lying hip external rotation-clamshell • Sidelying hip abduction • Prone hip extension • Prone hamstring curls
Criteria to Progress	• Pain < 5/10 • No signs of infection

PHASE II: INTERMEDIATE POST-OP (2-3 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Continue to protect repair - Avoid over-elongation of the Achilles - Reduce pain, minimize swelling - Improve scar mobility once incision is healed - Restore ankle plantar flexion, inversion, and eversion - Dorsiflexion to 5 degrees below neutral
Weight Bearing	<i>Walking</i> Non-weight bearing (NWB) on crutches in Achilles boot with 3 wedges.
Additional Intervention <i>*Continue with Phase I interventions</i>	<i>Range of motion/Mobility</i> - Initiate ankle active range of motion (AROM) and active assisted range of motion (AAROM) - DO NOT dorsiflex (DF) ankle past 5 degrees below neutral Ankle pumps (maintain DF precaution) Ankle circles (maintain DF precaution) Ankle inversion Ankle eversion - If stiff from immobilization, initiate great toe DF and PF stretching (by patient or therapist) – <i>maintain DF precaution while performing</i> - Foot and ankle joint mobilizations: per therapist discretion - May begin gentle scar mobilization once incision is healed - NO instrument assisted soft tissue mobilization (IASTM) directly on tendon until at least 16 weeks post-op. <i>Cardio</i> - Upper body ergometer (UBE) <i>Strengthening</i> - Continue proximal lower extremity strengthening as in Phase I <i>Proprioception</i> Joint position re-training
Criteria to Progress	- Pain < 3/10 - Minimal swelling (recommend water displacement volumetry or circumference measures such as Figure 8) - Full ROM PF, eversion, inversion - DF to 5 degrees below neutral per precautions

PHASE III: INTERMEDIATE POST-OP (4-5 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Continue to protect repair - Avoid over-elongation of the Achilles. No overt/prolonged stretching of the Achilles. - Initiate weight bearing in Achilles Boot with wedges and crutches, using a Shoe Leveler for the uninvolved side - Gradually progress DF range of motion. Do not force. - Safely progress strengthening - Promote proper movement patterns - Avoid post exercise pain/swelling - Weight bearing as tolerated (WBAT) in the Achilles boot with 3 wedges with assistive device as needed
Weight Bearing	<i>Walking</i> - Week 4: - Initiate WBAT with 2 crutches as needed for normalized gait pattern in Achilles Boot with 3 wedges, with Shoe Leveler on the uninvolved side. - Depending on tolerance may require 2 crutches to normalize and tolerate gait.

Additional Intervention <i>*Continue with Phase I-II Interventions as indicated.</i>	<i>Range of motion/Mobility</i> - Initiate seated heel-slides for DF ROM to tolerance – DF ROM no longer restricted but continue to gently progress - Gentle stretching of proximal muscle groups as indicated: (Examples: standing quad stretch, standing hamstrings stretch, kneeling hip flexor stretch, piriformis stretch) No overt stretching of the calf in NWB or weight-bearing - Ankle/foot mobilizations (talocrural, subtalar, midfoot, MTPs) as indicated - Continue soft tissue mobilization and scar mobilization as needed <i>Cardio</i> - UBE <i>Strengthening</i> Calf isometrics in boot - Once able sit with foot flat on the floor with ankle close to neutral DF: Seated heel raises - Foot intrinsic muscle strengthening to minimize atrophy while in boot including seated arch doming and toe yoga 4 way ankle with resistance band (beginning with light resistance) - Lumbopelvic strengthening as appropriate per patient's fitness level (ex: bridges on physioball, bridge on physioball with roll-in, bridge on physioball alternating) - Gym equipment: hip abductor and adductor machine, hip extension machine, knee extension machine: full arc, seated hamstring curl machine (with modified lower leg pad placement for comfort)
Criteria to Progress	- No swelling/pain after exercise - Normal gait in Achilles boot with 3 wedges, WBAT, with crutches as needed - PROM DF to neutral

PHASE IV: INTERMEDIATE POST-OP (6-11 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Continue to protect repair - Avoid over-elongation of the Achilles. No overt/prolonged stretching of the Achilles. - Progress weight bearing - Continue to gradually progress DF range of motion - Safely progress strengthening - Promote proper movement patterns - Avoid post exercise pain/swelling - Weight bearing as tolerated (WBAT) in the Achilles boot with 3 wedges with assistive device as needed
Weight Bearing	<i>Walking</i> - Week 6: Remove 1 wedge from boot, leaving 2 wedges remaining. - Continue WBAT with crutches as needed for normalized gait pattern in Achilles Boot with Shoe Leveler on the uninvolved side. - Once gait in boot with 2 wedges and gait with 2 crutches is normalized and well-tolerated, wean to 1 crutch - Week 8: Remove 1 wedge from boot, leaving 1 wedge remaining. - Continue WBAT with one crutch (only if needed). - Week 10: Remove 1 wedge from boot, NO wedges remaining. - Ambulation in boot with no wedges without assistive device. Check height of shoe leveler for uninvolved side.
Additional Intervention	<i>Range of motion/Mobility</i> No overt stretching of the calf in NWB or weight-bearing

<i>*Continue with Phase I-III Interventions as indicated.</i>	- Continue previous ROM exercises as needed. - Continue ankle/foot joint mobilizations, soft tissue mobilization and scar mobilization as indicated <i>Cardio</i> - Stationary bike in boot (only if comfortable after removal of first wedge) otherwise upper body ergometer <i>Strengthening</i> - Progress resistance as indicated for strengthening exercises - Begin <u>seated calf raises with weight on thigh</u> - Gym equipment – may initiate without boot per PT discretion once comfortably able to achieve at least 0 degrees of dorsiflexion <u>Leg press machine</u> (squats) - ensure foot position does not allow ankle dorsiflexion past neutral (0 degrees) while performing <u>Heel raises on leg press machine</u> - Begin supine/reclined resisted plantar flexion on leg press machine or shuttle press beginning with bilateral heel raises and progressing to unilateral No heel raises in standing or on machines where heels are unsupported to allow ankle DF past neutral <u>Seated calf raise machine</u>
Criteria to Progress	- No swelling/pain after exercise - Normal gait in Achilles boot with NO wedges, full weight bearing (FWB), without assistive device - Ankle ROM equal to contralateral side for ankle inversion, eversion, and plantar flexion - Ankle dorsiflexion PROM to at least 10 degrees in preparation for weaning the boot

PHASE V: TRANSITIONAL (12-14 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Maintain full ROM (except some minimal PROM DF restriction may still be present) - Normalize gait in supportive sneaker with 1 cm heel lift - Avoid over-elongation of the Achilles - Safely progress strengthening and Achilles tendon loading - Promote proper movement patterns - Avoid post exercise pain/swelling
Weight Bearing	<i>Walking</i> Transition to sneaker with 1 cm heel lift for level, predictable surface. Continue to wear boot (no wedge) for unpredictable outdoor/community ambulation.
Additional Intervention <i>*Continue with Phase I-IV interventions as indicated.</i>	<i>Range of motion/Mobility</i> No overt stretching of the calf in NWB or weight-bearing - Continue ankle/foot joint mobilizations, soft tissue mobilization and scar mobilization as indicated - Initiate <u>standing ankle dorsiflexion lunge stretch on step</u> <i>Cardio</i> - Stationary bike in sneakers, swimming, forward and retro walking on treadmill <i>Strengthening</i> - Begin Standing calf raise progression (isotonic and isometric holds): <u>Bilateral standing heel raises</u> (25% body weight thru involved leg) <u>Bilateral standing heel raises</u> (50% equal weight through both legs) <u>Bilateral standing heel raises</u> (75% body weight thru the involved leg) <u>Wall sit with bilateral calf raises</u> **The following exercises are to focus on proper pelvis and lower extremity control with emphasis on good proximal stability:

	○ Hip hike ○ Forward lunges: Begin leading with injured leg only then progress to leading with uninjured leg. ○ Lateral lunges ○ Bilateral squats progressing to single leg progression (below) ○ Single leg progression: lateral slide board lunges, retro slide board lunge, step ups and step ups with march, lateral step-ups, step downs, single leg squats, single leg wall slides <i>Balance/proprioception</i> ● Single limb balance – progress as able to uneven surfaces including perturbation training ● Double limb standing balance utilizing uneven surface (wobble board)
Criteria to Progress	● No swelling/pain after exercise ● Normal gait in supportive sneaker with 1 cm heel lift ● Full ROM during standing bilateral calf raise with equal weight bearing through both legs

PHASE VI: ADVANCED POST-OP (3.5-6 MONTHS AFTER SURGERY)

Rehabilitation Goals	● Safely progress strengthening ● Promote proper movement patterns ● Avoid post exercise pain/swelling ● Avoid over-elongation of the Achilles ● Good tolerance with progression to plyometrics and agility training
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Additional Intervention <i>*Continue with Phase II-V interventions as indicated.</i>	<i>Range of motion/Mobility</i> - Continue standing ankle DF mobilization on step - If indicated, may initiate gentle IASTM or dry needling directly to the tendon or scar beginning at 16 weeks post-op. <i>Cardio</i> - Elliptical, stair climber - Alter-G treadmill (if available): - Begin jog/walk interval return to run program with reduced body weight (50-60%) once bilateral stance plyometrics have been initiated and well-tolerated with good technique - Gradually progress jog time and body weight until able to run continuously at full body weight <i>Strengthening</i> - Heel raise progression: <u>Bilateral standing heel raises</u> with 75% weight bearing -> <u>eccentric calf raises</u> (bilateral raises, unilateral lowering on involved) -> <u>standing unilateral heel raises</u> -> standing unilateral heel raises with resistance <u>Bent knee standing heel raises</u> - bilateral progressing to unilateral <i>Plyometrics</i> - Initiate Beginner Level plyometrics: <u>Rebounding heel raises bilateral stance</u> -> <u>rebounding unilateral heel raises</u> - Hopping (once demonstrates good performance/tolerance with rebounding heel raises): <u>Bilateral mini hops in place</u> -> <u>bilateral multi-directional mini hops</u> (forward/back, lateral) <u>Forward bounding</u> and <u>lateral bounding</u> -> <u>unilateral hopping in place</u> -> <u>unilateral multi-directional hops</u>
Criteria to Progress	- No swelling/pain after exercise - Heel Rise Endurance Test (on floor – NOT incline) $\geq$ 90% of uninvolved - No swelling/pain with 30 minutes of fast-paced walking - Good tolerance and performance of Beginner Level plyometrics

PHASE VII: EARLY to UNRESTRICTED RETURN TO SPORT (6+ MONTHS AFTER SURGERY)

Rehabilitation Goals	- Continue strengthening and proprioceptive exercises - Safely initiate sport specific training program - Symmetrical performance with sport specific drills - Safely progress to full sport
Additional Intervention <i>*Continue with Phase III-VI interventions as indicated.</i>	<i>Range of motion/Mobility</i> - May initiate gentle <u>standing gastroc stretch</u> and <u>soleus stretch</u> as indicated at 6 months post-op <i>Running</i> - Interval walk/jog program - Phase 1, then phase 2 of the <u>Return to Running Program</u> <i>Strengthening</i> - May initiate eccentric loading into ankle dorsiflexion (ex: <u>heel raises on incline platform</u>, <u>heel raises off edge of step</u>) <i>Plyometrics and Agility</i> - Criteria to progress to the <u>Agility and Plyometrics Program phase 1</u> and <u>phase 2</u>: - Good tolerance/performance of Beginner Level Plyometrics in Phase VI above

	○ Completion of Phase 1 Return to Running Program (walk/jog intervals) with good tolerance or completion of Alter-G protocol to full weight bearing running
Criteria to Discharge	● Clearance from MD and ALL milestone criteria below have been met ○ Completion of both phases of the Return to Running Program without pain/swelling. ○ Functional Movement Assessment (FMA) - add Heel Rise Endurance Test (on incline) ○ Lower Extremity Functional Tests should be ≥95% compared to contralateral side for unilateral tests ○ Achilles Tendon Total Rupture Score (ATRS) ≥ 90% ○ Ankle Ligament Reconstruction – Return to Sport After Injury (ALR-RSI) psychological readiness ≥ 90%
Contact	Please email MGHSportsPhysicalTherapy@partners.org with questions specific to this protocol

Revised 3/2026 by Marie T. Figueroa, PT, DPT, MPT, ATC

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