Rehabilitation Protocol for Achilles Tendon Repair

This protocol is designed to assist clinicians in managing the post-operative recovery for Achilles tendon repair. It follows a time-based approach, dependent on tissue healing, and also includes criteria-based milestones. Specific interventions should be tailored to the individual's needs, taking into account examination findings and clinical decision-making. The timeframes for expected outcomes in this guideline may vary depending on the surgeon's preferences, additional procedures, or any complications that arise. Clinicians needing guidance on advancing a patient's post-operative care should consult with the referring surgeon. The exercises and interventions mentioned in this protocol are not exhaustive. Therapeutic interventions should be selected and adjusted based on the patient's progress, at the clinician's discretion.

Considerations for the Post-operative Achilles Tendon Repair Program
Various factors can impact the outcomes of post-operative Achilles tendon rehabilitation, including the type and location of the tear and repair. A more conservative approach may be needed for range of motion, weight-bearing, and rehab progression in cases of tendon augmentation, re-rupture following non-surgical management, revision surgeries, chronic tendinosis, and co-morbidities like obesity, older age, or steroid use. Clinicians are advised to work closely with the referring physician to understand intra-operative findings and the surgeon's satisfaction with the repair's strength.

If the patient experiences a fever, persistent numbness or tingling, excessive drainage from the incision, uncontrolled pain, or any other concerning symptoms, the referring physician should be contacted.

PHASE I: IMMEDIATE POST-OP
(WEEKS 0-3 AFTER SURGERY)

Rehabilitation Goals	• Protect repair • Maintain strength of hip, knee and core • Manage swelling
Weight Bearing	*Walking* • Non-weight bearing (NWB) on crutches in splint and/or Achilles boot.
Intervention	*Range of motion/Mobility (in boot/splint)* • Supine passive hamstring stretch *Strengthening (in boot/splint)* • Quad sets • Straight leg raise • Abdominal bracing • Hip abduction • Side-lying hip external rotation-clamshell • Prone hip extension • Prone hamstring curls
Criteria to Progress	• Pain < 5/10

PHASE II: INTERMEDIATE POST-OP
(WEEKS 4-6 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 neutral • Normalize gait as much as possible while in boot by utilizing a Shoe Leveler for the uninvolved side to prevent secondary musculoskeletal complaints.
Weight Bearing	*Walking (**Weight-bearing, wedge use/weaning, and boot types may vary by surgeon/practice.)* • Week 4: Begin partial progressive weight-bearing on crutches in an Achilles boot with 3 wedges (~1" in height each). Suggest gradually progress weight-bearing by 25% of body weight per week as tolerated until Full Weight-bearing (FWB) through the surgical side without pain. • Week 5: Wean one heel wedge leaving 2 wedges remaining in Achilles Boot. • Week 6: Wean 2nd heel wedge, leaving 1 wedge remaining in Achilles Boot.
Additional Intervention *Continue with Phase I interventions	*Range of motion/Mobility* • Initiate ankle passive range of motion (PROM), active assisted range of motion (AAROM) and active range of motion (AROM) - DO NOT dorsiflex (DF) ankle past 0 degrees o Ankle pumps (do not DF ankle beyond neutral/0 degrees) o Ankle circles (do not DF ankle beyond neutral/0 degrees) o Ankle inversion o Ankle eversion o Seated heel-slides for ankle DF ROM (not past 0 degrees) • If stiff from immobilization, initiate great toe DF and PF stretching (by patient or therapist) – Do not exceed neutral (0 degrees) DF when performing this stretch. • Foot and ankle joint mobilizations: per therapist discretion o Modify hand placement to avoid pressure on healing incision • 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. *Cardio* • Upper body ergometer *Strengthening* • Continue proximal lower extremity strengthening as in Phase I • Lumbopelvic Strengthening: planks (in Achilles Boot) • Once able sit with foot flat on the floor with ankle close to neutral DF: o Seated heel raises o Seated arch doming o Exercises for foot intrinsic muscles to minimize atrophy while in boot *Proprioception* • 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 neutral • Optimal gait in Achilles Boot with 1 wedge, crutches and Shoe Leveler on uninvolved side

PHASE III: LATE POST-OP
(WEEKS 7-8 AFTER SURGERY)

Rehabilitation Goals	• Continue to protect repair • Avoid over-elongation of the Achilles. No overt stretching of the Achilles. • Normalize gait in Achilles Boot without wedges using a Shoe Leveler for the uninvolved side. • Restore full range of motion including DF • Safely progress strengthening • Promote proper movement patterns • Avoid post exercise pain/swelling • FWB in boot without wedges, without crutches, with good tolerance and normalized gait pattern by week 8
Weight Bearing	*Walking* • Week 7: Remove final heel wedge from Achilles Boot. o WBAT/FWB with one crutch/no crutches as needed for normalized gait pattern in Achilles Boot without wedges, with Shoe Leveler on the uninvolved side (remove one layer of the Shoe Leveler) • Week 8: FWB in Achilles Boot (no wedges) with Shoe Leveler on uninvolved without crutches
Additional Intervention *Continue with Phase I-II interventions	*Range of motion/Mobility* • Continue seated heel-slides for DF ROM to tolerance – DF ROM no longer restricted but continue to gently progress. • Continue toe stretching as needed • Gentle stretching of proximal muscle groups as indicated: (Examples: standing quad stretch, standing hamstrings stretch, kneeling hip flexor stretch, piriformis stretch) • Ankle/foot mobilizations (talocrural, subtalar, midfoot, MTPs) as indicated • No overt stretching of the calf in NWB or weight-bearing. NWB stretches such as calf towel stretch should only be implemented if DF ROM progression is delayed *Cardio* • Stationary bicycle (in Achilles boot) *Strengthening* • 4 way ankle with resistance band • Lumbopelvic strengthening: bridges on physioball, bridge on physioball with roll-in, bridge on physioball alternating • Gym equipment: hip abductor and adductor machine, hip extension machine, roman chair o Progress intensity (strength) and duration (endurance) of exercises
Criteria to Progress	• No swelling/pain after exercise • Normal gait in Achilles boot without wedges or need for crutches • ROM equal to contralateral side • Joint position sense symmetrical (<5 degree margin of error)

PHASE IV: TRANSITIONAL
(WEEKS 9-10 AFTER SURGERY)

Rehabilitation Goals	• Maintain full ROM • Normalize gait in supportive sneaker with 1 cm heel lift • Avoid over-elongation of the Achilles • Safely progress strengthening • Promote proper movement patterns • Avoid post exercise pain/swelling

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PHASE IV: TRANSITIONAL
(WEEKS 9-10 AFTER SURGERY) CONTINUED

Weight Bearing	*Walking* • Transition to sneaker with 1 cm heel lift (FWB)
Additional Intervention *Continue with Phase I-III interventions	*Range of motion/Mobility* • Ankle/foot mobilizations (talocrural, subtalar, midfoot, MTPs) as indicated • Continue Seated ankle heel-slides for DF. Progress to standing ankle dorsiflexion stretch on step. *Cardio* • Stationary bike, flutter kick swimming/pool jogging (only if incision fully healed) *Strengthening* • Begin Standing calf raise progression: (based on tolerance/performance and will extend into the later phases) o Bilateral standing heel raises (25% body weight thru involved leg) o Bilateral standing heel raises (50% equal weight through both legs) o Bilateral standing heel raises (75% body weight thru the involved leg) • Knee Exercises for additional exercises and descriptions • Gym equipment: seated hamstring curl machine and hamstring curl machine, leg press machine *Balance/proprioception* • Double limb standing balance utilizing uneven surface (wobble board) • Single limb balance - progress to uneven surface including perturbation training
Criteria to Progress	• No swelling/pain after exercise • Normal gait in supportive sneaker with 1 cm heel lift

PHASE V: TRANSITIONAL
(WEEKS 11-12 AFTER SURGERY)

Rehabilitation Goals	• Maintain full ROM • Normalize gait in supportive sneakers without heel-lift • Avoid over-elongation of the Achilles • Safely progress strengthening • Promote proper movement patterns • Avoid post exercise pain/swelling
Weight Bearing	*Walking* • Wean heel-lift from sneaker. Normalize gait pattern.
Additional Intervention *Continue with Phase I-IV interventions	• Continue to progress with interventions for ROM, cardio, strengthening, balance and proprioception from previous phases as indicated.
Criteria to Progress	• No swelling/pain after exercise • Full ROM during standing bilateral concentric calf raise with equal weight bearing through both legs • Normal gait in supportive sneakers

PHASE VI: ADVANCED POST-OP
(MONTHS 3-6 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
Additional Intervention *Continue with Phase II-V interventions	*Range of motion/Mobility* • Continue Standing ankle DF mobilization on step • If indicated, may initiate gentle IASTM directly to the tendon beginning at 16 weeks. *Cardio* • Elliptical, stair climber *Strengthening* • If able to perform bilateral standing heel raises with 75% of body weight through the full range of involved limb, progress to eccentric calf raises (bilateral raises, unilateral lowering on involved) on level surface followed by progression to unilateral heel raises. • Seated calf machine or wall sit with bilateral calf raises • **The following exercises are to focus on proper pelvis and lower extremity control with emphasis on good proximal stability: o Hip hike o Forward lunges: Begin leading with injured leg only then progress to leading with uninjured leg. o Lateral lunges o Bilateral squats progressing to single leg progression (below) o Single leg progression: partial weight bearing single leg press, slide board lunges: retro and lateral, step ups and step ups with march, lateral step-ups, step downs, single leg squats, single leg wall slides *Plyometrics* • Initiate Beginner Level plyometrics: o Once able to perform 3 sets of 15 of bilateral standing heel-raises with equal weight bearing progress to rebounding heel raises bilateral stance. o Once able to perform 3 sets of 15 unilateral heel raises progress to rebounding unilateral heel raises. o Once able to demonstrate good performance/tolerance with rebounding heel raises then initiate hopping in place bilateral stance. Progress as able to unilateral hopping in place.
Criteria to Progress	• No swelling/pain after exercise • Standing Heel Rise test > 90% of uninvolved • No swelling/pain with 30 minutes of fast-paced walking • Good tolerance and performance of Beginner Level plyometrics • Achilles Tendon Rupture Score (ATRS) • Psych Readiness to Return to Sport (PRRS)

PHASE VII: EARLY to UNRESTRICTED RETURN TO SPORT

(MONTHS 6+ 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 *Continue with Phase III-VI interventions	*Range of motion/Mobility* • May initiate gentle standing gastroc stretch and soleus stretch as indicated at 6 months post-op *Running* • Interval walk/jog program (Phase 1 of the Return to Running Program) • Return to Running Program (Phase 2) *Plyometrics and Agility* • Criteria to progress to the Agility and Plyometrics Program: o Good tolerance/performance of Beginner Level Plyometrics in Phase VI above o Completion of Phase 1 Return to Running Program (walk/jog intervals) with good tolerance.
Criteria to Progress	• Clearance from MD and ALL milestone criteria below have been met. o Completion of both phases of the Return to Running Program without pain/swelling. o Functional Assessment o Lower Extremity Functional Tests should be ≥90% compared to contralateral side for unilateral tests.

For further assistance or to schedule an appointment, please contact **iOrtho - The Orthopedic Institute** at **833-464-6784** or visit our website at **iorthomd.com** to text/email us. Our team is dedicated to providing personalized care and guidance throughout your rehabilitation journey.