

Rehabilitation Guidelines for Total Ankle Arthroplasty

This protocol is intended to guide clinicians and patients through the post-operative course for an 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. If you have questions, contact the referring physician.

Total Ankle Arthroplasty Background

The Total Ankle Arthroplasty, otherwise known as a Total Ankle Replacement, is performed as a treatment for end-stage ankle arthritis. The arthritic surface of the distal tibia is removed along with the arthritic surface of the top of the talus. The resected bone is replaced with components with polyethylene surfaces that articulate to facilitate motion. The longevity of an ankle replacement is less certain than that of a knee or hip replacement so it is typically done in older, low demand individuals. The procedure preserves ankle motion in individuals who want to continue to perform low impact activities that would not be amenable to an ankle fusion.

Post-operative Considerations

This procedure results in a lot of pain and swelling. It is normal for the foot and ankle to be swollen up to 6-12 months post-operatively. In the immediate post-operative period, the importance of elevation with the ankle above the heart for edema management should be emphasized. The patient should be instructed to elevate for most of the day with a max of only 2-3 hours with the ankle below the heart in the first 2 weeks following surgery. After that, elevation should be performed at regular intervals throughout the day as long as the swelling persists. The procedure is not expected to increase ankle range of motion significantly but has been shown to effectively reduce pain over time. The amount of ankle range of motion achievable with a total ankle arthroplasty is variable in the literature.

If concomitant procedures such as tendon transfers are performed, strengthening of the foot and ankle against resistance as well as stretching of the involved musculature, should be avoided until 3 months post-op.

If you develop a fever, intense calf pain, uncontrolled pain or any other symptoms you have concerns about you should call your doctor.

PHASE I: IMMEDIATE POST-OP (0-2 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Demonstrate safe ambulation with assistive device. • Maintain strength of hip, knee and core. • Manage swelling with elevation “toes above nose.”
Weight Bearing	<i>Walking</i> • Non-weight bearing (NWB) on crutches in splint.
Interventions	<i>Range of motion/Mobility</i> • Supine passive hamstring stretch <i>Strengthening</i> • Quad sets • Straight leg raise • Abdominal bracing

	• Hip abduction • Sidelying hip external rotation-clamshell • Prone hip extension • Prone hamstring curls
Criteria to Progress	• Pain < 5/10 • Patient compliant with proper elevation for most of the day.

PHASE II: INTERMEDIATE POST-OP (3-5 WEEKS AFTER SURGERY)

Rehabilitation Goals	• Continue to manage pain/swelling with elevation as well as modalities. • Increase range of motion of the foot and ankle. • Minimize the loss of strength of core, hips, knees. • Improve scar mobility once incision is healed. • Initiate some limited weight bearing in boot (standing only) for ADLs.
Weight Bearing/ Precautions	• When standing in place ONLY, may weight bear in the boot. Maintain NWB while walking. • May remove boot to perform exercises and hygiene. • Keep boot on at night. • <i>No foot/ankle strengthening against resistance or stretching of involved musculature until 3 months post-operative if there are any tendon transfers.</i>
Additional Interventions <i>*Continue with Phase I interventions</i>	<i>Range of motion/Mobility</i> • Initiate ankle passive range of motion (PROM), active assisted range of motion (AAROM) and active range of motion (AROM): ○ Ankle pumps ○ Ankle circles ○ Ankle inversion ○ Ankle eversion ○ Calf stretch with towel or calf stretch with strap ○ Seated heel-slides for ankle dorsi-flexion ROM • If stiff from boot immobilization, initiate great toe DF and PF stretching. • Scar mobilization once incision healed • Soft tissue mobilization as indicated <i>Cardio</i> • Upper body ergometer <i>Strengthening</i> • Lumbopelvic Strengthening: (ex: abdominal bracing, planks and bridges in Achilles Boot) • Once able sit with foot flat on the floor in neutral (0 degrees) of ankle dorsi-flexion: ○ Seated heel raises ○ Seated toe raises ○ Seated arch doming ○ Seated great toe flexion with lesser toes extension ○ Seated great toe extension with lesser toes flexion ○ Seated toe piano ○ Seated toe abduction/adduction (spreads and squeezes) <i>Suggested Modalities (with elevation)</i> • Electrical stimulation for pain and swelling • Game ready™ cold/compression • Cold pack
Criteria to Progress	• Pain < 5/10 • Decreased swelling. • Improving ankle ROM all planes. • Good tolerance with standing in place with 50% of body weight through the involved leg in boot.

PHASE III: LATE POST-OP (6-10 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Initiate weight bearing during ambulation and normalize gait in walking boot using a shoe leveler as needed for the uninvolved side. - Good tolerance with transition from walking boot to supportive sneaker with/without assistive device. - Continue to control edema as weight bearing and activity level progresses. - Continue to progress ankle ROM. - Initiate foot/ankle resistive strengthening (unless tendon transfers have been performed)
Weight Bearing/ Precautions	Week 6: Transition to WBAT in walking boot. Week 7: Begin to wean boot by spending small amounts of time in supportive sneaker for weight shifting and short distances on level surfaces. Week 8: Transition to supportive sneaker for all ambulation. May still use assistive device if needed. <i>No foot/ankle strengthening against resistance or stretching of involved musculature until 3 months post-operative if there are any tendon transfers.</i>
Additional Interventions <i>*Continue with Phase I-II Interventions</i>	<i>Range of motion/Mobility</i> - Begin gentle standing gastrocnemius stretch and soleus stretch once out of the boot - Gentle stretching of proximal muscle groups as indicated: (Examples: standing quad stretch, standing hamstrings stretch, kneeling hip flexor stretch, piriformis stretch) - Ankle/foot mobilizations and as indicated - Scar mobilization and soft tissue mobilization as indicated <i>Cardio</i> Stationary bicycle (initially in boot and then progress to sneaker once out of boot) - May begin swimming and pool walking at post-op week 8 if incision is fully healed, fully weaned from boot and able to get safely in/out of the pool. <i>Strengthening</i> - Begin 4-way ankle with resistance band – do not begin this until 3 months post-op if any tendon transfers performed - Lumbopelvic strengthening: bridges on physioball, bridge on physioball with roll-in, bridge on physioball alternating - Gym equipment: hip abductor machine, adductor machine, hip extension machine, roman chair, knee extension machine and hamstring curl machine
Criteria to Progress	- Decreased swelling - No pain during/after exercise. - Good tolerance with transition from boot to supportive sneaker with/without the need for assistive device (<3/10 with walking/weight bearing)

PHASE IV: TRANSITIONAL (11-13 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Normalize gait in supportive sneaker. - Safely progress strengthening. - Promote proper movement patterns. - Improve balance/proprioception. - Minimize post exercise pain/swelling.
Weight Bearing/ Precautions	- Full weight bearing in supportive sneaker. <i>No foot/ankle strengthening against resistance or stretching of involved musculature until 3 months post-operative if there are any tendon transfers.</i>
Additional Interventions <i>*Continue with Phase II-III interventions</i>	<i>Range of motion/Mobility</i> - Ankle/foot mobilizations as indicated - Continue AROM/AAROM/PROM activities per prior phases as needed - Scar mobilization Standing ankle dorsiflexion stretch on step

	<i>Cardio</i> - Stationary bike, pool walking, swimming <i>Strengthening</i> - Progress intensity (strength) and duration (endurance) of exercises - Gym equipment: Leg press machine Romanian deadlift, bilateral mini squats progressing to bilateral squats <i>Balance/proprioception</i> - Double limb standing balance activities on stable surfaces progressing to eyes closed - Double limb standing balance utilizing uneven surface (wobble board, foam, etc)
Criteria to Progress	- Minimize post-exercise pain/swelling - Normal gait in supportive sneaker without need for any assistive device

PHASE V: TRANSITIONAL (14-16 WEEKS AFTER SURGERY)

Rehabilitation Goals	- Safely progress strengthening. - Initiate single limb standing exercises. - Promote proper movement patterns. - Avoid post exercise pain/swelling.
Weight Bearing	Weight bearing as tolerated in supportive sneakers
Additional Interventions <i>*Continue with Phase II-IV interventions</i>	<i>Range of motion/Mobility</i> Standing ankle DF mobilization on step <i>Cardio</i> - May implement pool jogging in addition to previously recommended cardio <i>Strengthening</i> - Begin bilateral heel raises, bilateral squats Seated calf machine <i>Balance/proprioception</i> - Begin single limb balance exercises on level surfaces (ex: single leg balance).
Criteria to Progress	- No increased swelling post-exercise that exceeds pre-exercise baseline. - No pain during or after exercise. - Good tolerance with addition of single limb exercises.

PHASE VI: ADVANCED POST-OP (4-6MONTHS AFTER SURGERY)

Rehabilitation Goals	- Safely progress strengthening. - Promote proper movement patterns. - Minimize post exercise pain/swelling. - Good tolerance with progression to single limb strengthening - Progress single limb balance/proprioception to unstable surfaces.
Additional Interventions <i>*Continue with Phase II-V interventions</i>	<i>Cardio</i> - Elliptical, stair climber, walking on treadmill <i>Range of motion/Mobility</i> - Continue per prior phases as needed <i>Strengthening</i> - If able to perform bilateral standing heel raises with 75% of body weight shifted through the involved (plantar flexion through range available – it is expected to be reduced), progress to eccentric calf raises (bilateral raises, unilateral lowering) on level surface followed by progression to unilateral heel-raises.

	• **The following exercises 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 ○ Single leg strengthening progression: partial weight bearing single leg press, slide board lunges: retro and lateral, step ups, step ups with march, lateral step-ups, step downs, single leg squats, single leg wall slides <i>Balance/proprioception</i> • Progress unilateral balance activities to unstable surfaces
Criteria to Progress	• No increased swelling/pain with 30 minutes of fast-paced walking • Standing Heel Rise test $\geq$ 90% of uninjured in available ankle range • 5/5 ankle strength (in available range) and lower extremity strength • Single leg balance on level surface $\geq$ 30 seconds

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

Rehabilitation Goals	• Safely initiate low impact sport specific training program. • Safely progress to low impact full sport participation once cleared by MD. <i>Patients participating in no impact sports may begin prior to this phase.</i>
Additional Interventions <i>*Continue with Phase III-VI interventions</i>	• Continue strengthening and progress cardiovascular endurance. • Progress to higher level balance and proprioceptive exercises. • Initiate sports specific training – low/no impact
Criteria to Progress	• Clearance from MD (timeframes will vary depending on the sport) • <u>Psych Readiness to Return to Sport (PRRS)</u> • <u>Functional Assessment (examples for low impact sports – i.e. golf, yoga, etc)</u> ○ Y-Balance Test ○ Star Excursion Balance test
Recommendation	• Patients with total ankle arthroplasty should not return to any sport, occupation or activity with repetitive, high impact to the lower extremity.

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Contact	Please email MGHSportsPhysicalTherapy@partners.org with questions specific to this protocol
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References:

1. Ajis A, Henriquez H, Myerson M. Postoperative range of motion trends following total ankle arthroplasty. *Foot and Ankle International*. 2013 May;34(5):645-56
2. Coetzee JC, Castro M. Accurate Measurement of Ankle Range of Motion after Total Ankle Arthroplasty. *Clinical Orthopaedics and Related Research*. 2004 July;424:p 27-31
3. Johns WL, Sower CB, Ross D, Thordarson DB, Jackson JB, Gonzalez TA. Return to Sports and Activity After Total Ankle Arthroplasty and Arthrodesis: A Systematic Review. *Foot & Ankle International*. 2020 Aug;41(8):916-929
4. MGH Orthopedics Foot and Ankle Service. Physical Therapy Guidelines for Total Ankle Arthroplasty. <https://www.massgeneral.org/assets/mgh/pdf/orthopaedics/foot-ankle/pt-guidelines-total-ankle-arthroplasty-final.pdf>

Psychological Readiness to Return to Sport

Patient Name: _____

MRN: _____

Surgery: _____

Date of Surgery: _____

Surgeon: _____

Please rate your confidence to return to your sport on a scale from 0 – 100

Example: 0 = No confidence at all
 50 = Moderate confidence
 100 = Complete confidence

1. My overall confidence to play is _____
2. My confidence to play without pain is _____
3. My confidence to give 100% effort is _____
4. My confidence to not concentrate on the injury is _____
5. My confidence in the injured body part to handle demands of the situation is _____
6. My confidence in my skill level/ability is _____

Total: _____

Score: _____

Examiner: _____