

Posterior Tibial Tendinopathy Rehabilitation Guideline

This rehabilitation program is designed to return the individual to their activities as quickly and safely as possible. It is designed for rehabilitation of posterior tibial tendinopathy. Modifications to this guideline may be necessary depending on physician-specific instruction, specific tissue healing timeline, chronicity of injury and other contributing impairments that need to be addressed. This evidence-based posterior tibial tendinopathy (PTT) guideline is criterion-based; time frames and visits in each phase will vary depending on many factors including patient demographics, goals, and individual progress. This guideline is designed to progress the individual through rehabilitation to full sport/activity participation. The therapist may modify the program appropriately depending on the individual's goals for activity following posterior tibial tendinopathy.

This guideline is intended to provide the treating clinician a frame of reference for rehabilitation. It is not intended to substitute clinical judgment regarding the patient's post injury care, based on exam/treatment findings, individual progress, and/or the presence of concomitant injuries or complications. If the clinician should have questions regarding progressions, they should contact the referring physician.

General Guidelines/Precautions:

This guideline is designed for individuals intending to return to high level activity or sports.

- Focus on posterior tibialis recruitment & strength, secondary emphasis on peroneals, gastrocnemius length & strength, foot intrinsics and proximal hip stability
- Surgical vs conservative decision-making depends on progression of disease, amount of deformity, and flexibility
 - Stage 1: Simple tenosynovitis without deformity (most common)-associated with slight discomfort during exertion
 - Category A: Inflammatory disease
 - Category B: Partial PTT tear with normal anatomy
 - Category C: Partial PTT tear with slight deformity
 - Stage 2: Presence of PTT rupture
 - Category A: Hindfoot valgus: flexible hindfoot able to be manually reduced to neutral
 - Category B: Flexible forefoot supination: Same as 2A but with excessive, flexible forefoot supination 2/2 gastrocnemius contracture
 - Category C: Fixed forefoot supination: fixed deformity d/t long-standing hindfoot valgus, does not manually reduce in plantarflexion
 - Category D: Forefoot abduction: flexible hindfoot valgus with transverse tarsal abduction resulting in frontal & transverse plane deformity
 - Category E: Medial ray instability: same as 2A with medial column instability resulting in less load during stance resulting in pronation
- Assessment
 - Barefoot & shod walking, standing, single-leg balance
 - Assess leg, hindfoot, midfoot & forefoot deformities
 - Hindfoot norms from 0 deg neutral to 5 deg valgus
 - Too many toes sign
 - Single-leg heel raise test
 - Assess for concomitant pathology such as subtalar impingement, peroneal tendon irritation & calf contractures
- Conventional treatment of Stage 1- Stage 2 includes medication, cryotherapy, peroneal tendon irritation & calf contractures
 - Encourage cross-training type shoe for athletes for optimal longitudinal arch support with lateral motion & hindfoot control
 - Best results for stage 1 found with orthosis use with high-rep, aggressive plantarflexion exercises and calf stretching (Alvarez)

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PHASE	SUGGESTED INTERVENTIONS	GOALS/MILESTONES FOR PROGRESSION
<p>Phase I Acute Phase/ Inflammatory</p> <p>Weeks: 1-3</p> <p>Expected Visits: 1-2</p>	<p>Discuss: Anatomy, existing pathology, rehab schedule and expected progressions.</p> <p>Suggested Treatments:</p> <p>Modalities as Indicated:</p> <ul style="list-style-type: none"> Edema controlling treatments if inflammatory <p>Range of Motion:</p> <ul style="list-style-type: none"> Passive and AROM within tolerance, normalize joint mechanics <p>Manual Therapy: Joint mobilizations rearfoot, midfoot, forefoot, IASTM</p> <p>Exercise Examples:</p> <ul style="list-style-type: none"> Inversion isometrics Sole-to-sole isometrics Double-leg heel raises with ball squeeze between ankles or heel raise isometric holds mid-range if irritable Gastrocnemius/soleus stretching Foot intrinsic activation, toe yoga, towel scrunches Single-leg balance on firm or soft surface Proximal strengthening focused on hip ER/abd/ext as needed <p>Other Activities:</p> <ul style="list-style-type: none"> May bike or walk as able without increasing pain 	<p>Goals of Phase:</p> <ol style="list-style-type: none"> Diminished pain and inflammation Improved flexibility/range of motion Reestablished dynamic muscle control, balance, and proprioception <p>Criteria to Advance to Next Phase:</p> <ol style="list-style-type: none"> Non-painful to minimally painful ADLs No pain with maximal isometric inversion
<p>Phase II Intermediate Phase/Proliferative</p> <p>Weeks 3-6</p> <p>Expected visits: 1-2</p>	<p>Specific instructions:</p> <ul style="list-style-type: none"> Avoid walking on sloped or slanted surfaces for long distances <p>Suggested Treatments:</p> <p>Modalities as Indicated:</p> <ul style="list-style-type: none"> Edema controlling treatments <p>Range of Motion:</p> <ul style="list-style-type: none"> Cont. passive & active range of motion progressions at end-range <p>Manual Therapy: D/c mobilizations once normalized, IASTM</p> <p>Exercise Examples:</p> <ul style="list-style-type: none"> Heel raises: double-leg concentric, single-leg eccentric Banded inversion, eversion, dorsiflexion Toe walking progressing towards 300 ft Sole-to-sole repetitions working up to 100+ reps Active arch lifts off step (see photos) Continue calf strength & mobility Progress proximal hip strength & stability Single-leg balance on soft-surface with eyes-closed <p>Other Activities:</p> <ul style="list-style-type: none"> May utilize elliptical equipment as tolerated, progress walking distance and intensity, incline walking 	<p>Goals of Phase:</p> <ol style="list-style-type: none"> Improve muscular strength and endurance Progress to full active and passive ROM Improve total body proprioception and control Non-tender to palpation of the posterior tib & calf <p>Criteria to Advance to Next Phase:</p> <ol style="list-style-type: none"> Pain-free ambulation x 10' Able to complete 50 reps heel raise 2 up, 1 down PROM 0-90 degrees Able to toe walk 300 ft Single-leg balance equal to uninvolved side

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<p>Phase III <i>Advanced Strengthening/ Remodeling</i></p> <p>Weeks 6-12</p> <p>Expected visits: 3-4</p>	<p>Specific Instructions:</p> <ul style="list-style-type: none">• Continue with previous exercise program <p>Suggested Treatments:</p> <p>Manual Therapy: IASTM/dry needling PRN</p> <p>Exercise Examples:</p> <ul style="list-style-type: none">• Heavy resistance banded ankle working towards 100+ reps• Single-leg heel raises, decline heel raises, weighted heel raises• Single-leg press with triple-extension finish• Jump rope or light ankle hops/agility• Compound lifts focused on lower extremity alignment• Single-leg balance on unstable surface with dual tasks <p>Other Activities:</p> <ul style="list-style-type: none">• Custom orthotic fabrication may be required for advanced deformity	<p>Goals of Phase:</p> <ol style="list-style-type: none">1. Return to strength training & running with appropriate modifications2. Improve muscular power, speed, agility, & endurance3. Normalized strength at the ankle & proximal hip <p>Criteria to Advance to Next Phase:</p> <ol style="list-style-type: none">1. All above goals still met2. 5/5 heel raises strength to 20 reps3. Satisfactory completion of the FAAM or LEFS4. >90% symmetry with ankle hop testing if returning to sport
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Appendix



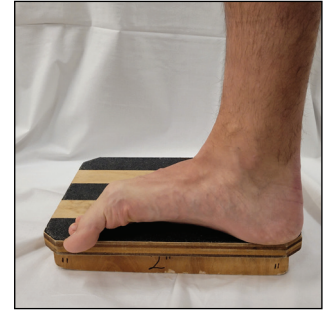
Sole-to-sole isometrics



Heel raise with
PTT bias



Active arch
starting position



Active arch
finish position



Banded adduction with 45° line of force
to bias PPT



Triple extension
leg press

REFERENCES:

1. Alvarez, R. G., Marini, A., Schmitt, C., & Saltzman C. L. (2006). Stage I and II posterior tibial tendon dysfunction treated by a structured nonoperative management protocol: an orthosis and exercise program. *Foot & Ankle International*, 27(1), 1-8.
2. Espinosa, N. & Maurer M. A. (2015). Stage I and II posterior tibial tendon dysfunction: Return to running? *Clin Sports Med*, 34, 761-768.
3. <http://dx.doi.org/10.1016/j.csm.2015.06.012>
4. Kulig, K., Burnfield, J. M., Reischl, S., Mais-Requejo, S., Blanco, C. E., Thordarson, D. B. (2005). *Med Sci Sports Exerc.* 37(1), 24-29.
5. Kulig, K., Reischl, S. F., Pomrantz, A. B., Burnfield, J. M., Mais-Requejo, S., Thordarson, D. B., & Smith, R. W. (2009). Nonsurgical management of posterior tibial tendon dysfunction with orthoses and resistive exercise: a randomized controlled trial. *Physical Therapy*, 89(1), 26-37.
6. Ross, M. H., Smith, M. D., Mellor, R., & Vicenzino, B. (2018). Exercise for posterior tibial tendon dysfunction: a systematic review of randomized clinical trials and clinical guidelines. *BMJ Open Sport Exerc Med*, 4(430), 1-11.

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