O·S·M·S
ORTHOPEDIC & SPORTS MEDICINE SPECIALISTS

Green Bay, WI • Appleton, WI • Marinette, WI • Phone: 920-430-8113 • Fax: 920-430-8124
osmsgb.com

Non-Operative Flatfoot Deformity (Posterior Tibial Tendon Dysfunction) Protocol

Treatment protocol has two components:

1. Bracing to protect and support the injured medial structures
2. A high repetition, low resistance, strengthening program to gradually strengthen the posterior tibial tendon

Limitations of the protocol

The protocol does not correct the underlying flatfoot deformity, nor does it undo the damage that has already been done to the tendon. However, it can significantly improve symptoms and function. The significance of these limitations is that patients will be at risk for recurrence of symptoms, and will likely have to do a scaled down version of the exercise program 3-4x per week for the rest of their lives in order to minimize the risk of recurrent symptoms. In addition, patients that are looking to regularly perform high demand activities (ex. Running) may find this difficult.

Which patients are NOT candidates for this protocol?

Any patient with a dysfunctional posterior tibial tendon where the tendon is completely torn is not a candidate for this protocol. Approximately 1 out of 10 patients with Stage 2 AAFD fall into this category. To determine whether the posterior tibial tendon is intact, the patient is asked to invert the foot, and the tendon is palpated. If it is unclear whether the tendon is intact, an MRI can be ordered. However, routine MRIs are NOT needed to diagnose this condition. The MRI will show an abnormal posterior tibial tendon, but what is important is whether or not the tendon is completely torn.

The BRACING component of the treatment protocol

Bracing is instituted to support the stretched-out and overloaded medial structures, including the posterior tibial tendon. For patients with Stage 2 deformities characterized by the inability to do a single heel rise, a custom brace (custom mold AFO or Arizona brace) is often recommended. However, some patients find these too hot or bulky. An ankle lacer specific for posterior tibial tendonitis or similar supportive ankle brace is often a successful alternative and has the advantage of being an over-the-counter device that patients can being using right away. After a few months of the protocol patients have regained some function in their posterior tibial tendon and may be transitioned to an over the counter orthotic with a medial arch support. Patients should wear their brace or orthotic any time they are walking.

O·S·M·S
ORTHOPEDIC & SPORTS MEDICINE SPECIALISTS

Green Bay, WI • Appleton, WI • Marinette, WI • Phone: 920-430-8113 • Fax: 920-430-8124
osmsgb.com

The PHYSICAL THERAPY component of the treatment protocol:
The physical therapy protocol is a high repetition, low resistance protocol. Walking and standing normally puts 2-4x body weight through the posterior tibial tendon. These forces are initially far too high to allow the dysfunctional tendon to function. However, by starting at much lower forces, the tendon can be rehabilitated. The role of the physical therapist is to educate and evaluate, not to supervise every exercise session. Patients need to do their exercise routine daily during the four months or more of the protocol, in order for it to be successful. The physical therapist will see the patient 8-10 times during this four month period, typically weekly for the first 4 weeks and then biweekly after that. Patients should follow up with their treating physician after 4-6 weeks to monitor their progress. After successful completion of the protocol, patients should continue performing a shortened version of their exercise routine 3x per week, indefinitely.

PHASE I

- **Sole to sole exercises: (start at 4 sets of 10, increase daily until 12 sets of 25 can be performed).** In this exercise, the patient sits with their feet dangling and inverts each foot, trying to bring the bottom of the feet together. In doing this, the patient fires the posterior tibial tendon with only gravity as resistance.
- **Picking up a ball with the heels: (alternative exercise).** With this patient sitting and the feet dangling on the ground, a ball is placed between the feet and the patient picks up the ball by inverting each foot and trapping the ball in the arch of the foot (start at 4 sets of 10, increase daily until 12 sets of 25 can be performed). Some patients find this easier to do than the sole to sole exercise.

PHASE II

This phase starts when the patient can comfortably do 12 sets of 25 repetitions of one of the Phase 1 exercises, usually 10-14 days after the exercises program is started.

- **Continue Phase 1 routine as a warm up**
- **Exercises against resistance:** An exercise routine using a red exercise band as resistance is started. Inversion (moving the foot inward), eversion (moving the foot outward), and dorsiflexion (moving the foot upward) are performed, although the inversion exercises are the most important. Movements are performed with a controlled return without rotating the leg. Start with 4 sets of 10 repetitions, and gradually increase the number of sets and repetitions until 10 sets of 20 repetitions (200 total) can be performed.

- **Double Leg Heel Rises:** With the patient standing and holding on to a wall or a chair for balance, they should raise their heels off the ground in a controlled manner, the uninvolved leg should take 75-85% of the body weight. Patients should start at 4 sets of 5 repetitions, and progress to 10 sets of 20 repetitions.

Phase 2 will typically take 4-8 weeks to complete. Patients should progress gradually! If the patient has a flare-up of symptoms, they should back off their routine for a few days until the symptoms improve.

PHASE III

This phase begins when the patient can comfortably perform a total of 200 repetitions of the exercises against resistance, and the double leg heel rises as described in Phase 2.

- **Continue Phase 1 routine as a warm up**
- **Exercises against resistance:** Continue the exercise routine using a stiffer exercise band as resistance, as the Phase 2 exercises inversion, eversion, and dorsiflexion are performed, and although the inversion exercises are the most important. Movements are performed with a controlled eccentric return without rotating the leg. Continue to focus on higher repetitions, working up to 200-300 repetitions total (ex 10 sets of 20-30 reps).
- **Double Leg Heel Rises:** With the patient standing and holding on to a wall or a chair for balance, they should raise their heels off the ground in a controlled manner. The uninvolved leg now takes only 50% of the body weight. Patients should start at 4 sets of 5 repetitions and progress to 10 sets of 20 repetitions.
- **Single Leg Heel Rises:** Patient may attempt some single leg heel rises. This exercise should be done in a controlled manner. Patients should start at 4 sets of 5 repetitions and progress to 10 sets of 20 repetitions.
- **Toe walking:** Patient should attempt toe walking for 10 feet, keeping the knees straight. Gradually progress until 5 x 100 feet can be performed.

Phase 3 typically lasts 4-8 weeks.

Stabilization Protocol

After completing the treatment protocol, the patient should develop a routine of double leg heel rises, exercises against resistance, and toe walking that takes 10-15 minutes to complete. They should perform this routine a minimum of 3 times per week.

O·S·M·S
ORTHOPEDIC & SPORTS MEDICINE SPECIALISTS

Green Bay, WI • Appleton, WI • Marinette, WI • Phone: 920-430-8113 • Fax: 920-430-8124

osmsgb.com

This is an outline of a non-operative protocol for treating a flexible (Stage 2) Acquired Adult Flatfoot Deformity (AAFD). The details of this protocol are reported in a research paper published in the January 2006 edition of Foot and Ankle International (Alvarez RG, Marini A, Schmitt C, Saltzman CL. Stage 1 and 2 Posterior Tibial Tendon Dysfunction Treated by a Structured Nonoperative Management Protocol: An Orthosis and Exercise Program. FAI Vol. 27(1): 1-8, Jan 2006).