

Tibialis Posterior Torque and Stability Taping

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Abstract

The tibialis posterior serves many functions of the lower leg. Often the muscle is more difficult to correct than other muscles as the tibialis posterior is so intricately involved in the gait cycle. This paper describes how to stress the muscle under load and provide support to the lower leg which will lead to faster rehabilitation of the tibialis posterior as well as problems associated with its dysfunction.

Key Indexing Terms

Tibialis posterior, manual muscle testing (MMT), interosseous membrane, deep fascia of lower leg

Introduction

The tibialis posterior is a vital muscle of the lower leg because of its numerous insertions, support of the leg, foot, and ankle, and its relationship with normal foot pronation. Inhibition of the tibialis posterior often results in knee pain, foot pain, and ankle pain, as well as overpronation, which can defer excess shock to the rest of the body during impact. Problems such as shinsplints, plantar fasciitis, bunions, hammer toes, and neuromas are often a result of tibialis posterior dysfunction.

The tibialis posterior's main action is to invert and plantar flex the ankle joint, as well as stabilize the medial aspect of the ankle. It is also the major muscle that supports the medial arch of the foot and, along with many of the insertions throughout the plantar aspect of the foot, the tibialis posterior is responsible for the actual strength and health of the foot itself.¹

The tibialis posterior originates at the medial portion of the proximal posterior tibia and the medial two-thirds of the proximal posterior fibula. The interosseous membrane binds the tibia and fibula together, as well as forms much of the origin of the tibialis posterior along with the deep fascia of the lower leg. This makes the tibialis posterior very important in the stability of the lower leg, support of the medial arch, and normal pronation.

The tibialis posterior muscle serves more functions than any other lower leg muscle; therefore it is extremely important that the muscle function optimally. Manual muscle testing (MMT) of the tibialis posterior is done by placing the foot and ankle into maximum inversion and plantar flexion. The physician stabilizes the posterolateral distal leg and pressure is directed with the other hand into a dorsiflexion and eversion direction.¹

Discussion

The tibialis posterior muscle is often a muscle that is harder to keep corrected (facilitated) after treatment. This could be due to its many functions as described previously, as well as its somatovisceral connection to the adrenal glands. Adrenal gland problems are present in the majority of patients, as the glands can be overburdened due to too much stress, such as emotional distress, nutritional issues (a diet high in refined carbohydrates, caffeine, food allergies, etc...), as well as physical stress/injury. An injury to the tibialis posterior itself can feedback and compromise the adrenal glands, which in turn can cause more tibialis posterior inhibition!

Another problem when trying to correct the tibialis posterior is that the patient has to do one thing that does not allow the muscle to rest and recover. In other words, they have to walk. Often, just the mere act of walking out the door of the treatment room can inhibit the tibialis posterior muscle again, particularly if there is a gait dysfunction or if the patient is wearing improper footwear.² Testing for and providing support to the majority of the origins of the tibialis posterior (the deep fascia and interosseous membrane) will greatly reduce the reoccurrence of the muscle inhibition and provide a much longer lasting result as well as pain reduction.

Provided the physician has thoroughly evaluated and corrected the cause of the tibialis posterior problem, whether structural, chemical/nutritional, or emotional, and has verified that any and all footwear or supporting devices are not hindering its function, the patient is ready to provide a stress test to the tibialis posterior.

The physician will ask the patient to stand and put the majority of weight on the affected tibialis posterior leg. Next, the patient should be instructed to shift the majority of weight to the forefoot, lifting the heel slightly off the ground as if trying to push an object through the floor with the ball of the foot. Finally, the patient will be instructed to torque the lower leg by rotating the foot, ankle, and lower leg back and forth three to four times. This movement can be likened to doing the opposite motion of twisting a cork out of wine bottle, by pushing rather than pulling. After this procedure is done, the patient should immediately lay supine on the treatment table and the physician should re-test the tibialis posterior muscle. Re-inhibition to the muscle after the stress test proves that either the interosseous membrane and/or the deep fascia is unable to handle the overwhelming stress of all their functions and allow the muscle to heal. Therefore, a simple taping

method is used to help the support the tibialis posterior and the surrounding tissues so the patient may recover much faster.

Once the tibialis posterior is stressed and the muscle once again shows inhibition, the patient is then asked to assist the physician by placing the hands on either side of the lower leg and compressing (squeezing) them together, with a moderate amount of force. The patient begins at the top of the lower leg at the head of the fibula and the physician tests the tibialis posterior muscle. If the muscle becomes facilitated, the physician notes this and stops. If the muscle does not facilitate, then the patient is instructed to move the hands down about one-inch and the physician retests the muscle. Each time the patient moves distally down the leg, the physician retests the tibialis posterior. There will be one place somewhere between the head of the fibula and the medial and lateral malleoli, where the muscle will facilitate (become strong). In the example here (photo 1), it is approximately half-way down the lower leg.

Once the exact area of maximum facilitation is found, it is supported with athletic tape. The taping method used here is to simply wrap the tape one to two times around the lower leg, compressing the fibula and tibia together (photo 2). The tape should be wrapped tightly enough to provide the needed support but not so tightly that it causes any skin irritation or vascular compromise.



photo 1

photo 2

The patient should then re-perform the same torque test that previously weakened. This will ensure the tape is properly supporting the tibialis posterior, deep fascia, and interosseous membrane so the patient will not “walk back into the problem.” If the tape does not provide support, it is either too loose or on the wrong location of the leg.

The tape ideally should stay on the rest of the day until the patient is off his or her feet and into bed for the night. It can then be removed. If there is some reoccurrence of pain or return of the problem the next morning, the tape can be reapplied and worn as long as it continues to help. Sometimes two to three days of tape support are needed. In some cases, there is a different spot which needs to be taped. This can only be verified by a return visit to the office to see exactly what area now needs tape application. The author

has seen this in cases where the patient has placed significant torque stress on the lower leg. Two notable cases were with a nationally ranked university high jumper and a professional ballet dancer since performing both these activities causes repeated stress and torque to the lower leg.

Additionally, fascial release technique can often be beneficial to certain tibialis posterior problems. This can be verified by stretching the tibialis posterior and testing for a reoccurrence of the inhibition.³ Fascial release treatment should then be performed and can also be done on the area where patient compression strengthens prior to applying the tape, as previously described.

Conclusion

Adding extra stress to the tibialis posterior muscle with the torque test and supporting any inhibition with a simple taping procedure will assist the physician greatly in getting the patient well faster than ever before.

References

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