

# Fhl, examination and associated symptoms

By Howard J. Dananberg, DPM

The examination of Fhl can be rather straight forward and only add a few seconds to a clinical assessment. Under normal conditions, the 1st MTP joint can dorsiflex even when the metatarsal head is loaded. This motion is facilitated by the normal function of the sesamoid apparatus. The Fhl condition exists when failure of dorsiflexion under load exists. Testing can be done either in the non or weight bearing state. In either case, failure for the 1st 15° of dorsiflexion to occur will be a positive test for Fhl.<sup>1</sup>

## Non-weight bearing (Figure 1)

With the patient either seated in an examination chair or lying supine on a table, the examiner locates themselves at the foot end of the table. Testing the left foot will be described, and simply reversed for the right. The medial forefoot is grasped with the left hand, and the thumb of the examiner is positioned just under and slightly proximal to the 1st metatarsal head. Moderate (not high or low) pressure should be exerted to dorsiflex the metatarsal head. Then, the right thumb of the right hand is located plantar to the inferior surface of the interphalangeal joint of the hallux. A dorsiflexion force is then exerted on the inferior hallux, pushing upward, while simultaneously maintaining the dorsiflexion force under the 1st metatarsal head. The test is positive when less than 15° is possible. The test is negative when more than 15° is available. It is not unusual to have positive findings on one side, and negative on the other, although it is recommended that this testing procedure be repeated if there is a clinical suspicion of Fhl and this is not confirmed on the initial testing.

## Weight bearing (Figure 2)

The subject stands barefoot and the examiner kneels at the foot of the subject. Weight is then transferred to the side to be tested, by partially lifting the non-test foot to only bare limited amount of weight. The examiner then takes their index finger and places it gently under the distal aspect of the hallux. Next, attempt to dorsiflex the great toe. A positive test is confirmed by an inability to achieve 15° of dorsiflexion.

## Assessment by Symptoms

One of the reasons that Fhl has been overlooked as a clinical entity, is that there is often no pain in the 1st MTP joint so no reason to look at this joint with the appropriate level of clinical suspicion. Most often, the location of pain is what draws the clinician's attention. Therefore, reviewing a series of symptoms that may be associated with Fhl can lead the astute practitioner on the right path. The remote symptoms

diagnostic pathway can be divided into the following:

### Lateral foot symptoms

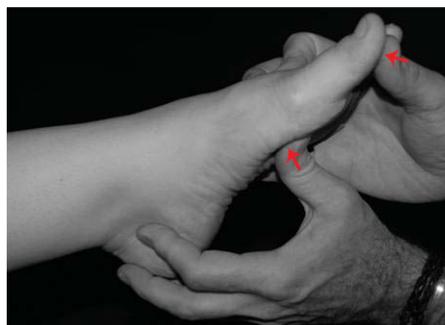
- Neuroma
- Chronic lateral foot pain
- Chronic ankle spraining

### Rearfoot symptoms

- Plantar fasciitis
- Achilles tendonitis

### Postural symptoms

- Chronic knee pain (PFS)
- Chronic lower back pain
- Chronic daily headaches with or without periodic migraines



^ Figure 1



^ Figure 2

## Lateral foot symptoms

Neuroma is one of the most common of foot problems. Neuromas are most often found within the 3rd innermetatarsal space, at the junction between the medial and lateral columns of the foot. Should inversion be the avoidance (as described in the previous article of this series) mechanism used by the patient, chronic overload to the lateral side of the foot can occur.<sup>2</sup> Recognizing that patient's who walk on the lateral side of their feet will stress this site repeatedly, recurrence of symptoms even following surgery is unfortunately a common occurrence. Understanding the Fhl is causing inversion can go a long way to solving this repetitive type strain to the lateral aspect of the foot.

Generalized lateral foot pain often presents a problem to the treating clinician. Should

pronation be thought to be associated with this problem and rear foot posting prescribed on the foot orthotic, then further weight shift laterally will be promoted. This will often only exacerbate symptoms much to the disappointment of the patient and frustration to the practitioner. Eliminating rearfoot posting or wedging and using the 1st ray cutout design of the Vasyli Dananberg appliance can often successfully manage these symptoms.

Chronicanklesprainingisacomplexproblem. Many clinical situations exist that promote this type of entity. While factors other than Fhl are often at play, not recognizing the roll of Fhl as a "perpetuating factor" may miss a substantial element of the clinical process. This concept will be covered in more depth in future articles, as well as on the [www.vasyli.com/medical](http://www.vasyli.com/medical) website.

## Rearfoot Symptoms

There is a natural propensity among clinicians to look to the area of pain for local pathology that may be producing symptoms. However, with both plantar fasciitis and Achilles tendonitis, the pathomechanical process that can either produce or perpetuate pain may be related to the 1st MTP joint.

As the body advances over the planted foot, the ability of the heel to lift is directly related to the pivotal ability at the MTP joints.<sup>3</sup> Should this pivotal motion fail to occur in a timely fashion, then stress can be applied to those more proximal structures, and ultimately produce a painful state. In the case of the plantar fascia, its largest slip inserts directly to the base of the proximal phalanx of the hallux. Lack of proper function will create a repetitive stress to the fascia's origin's at the base of the calcaneus. In the case of the Achilles tendon, its point of insertion is the connection of the triceps surae to the posterior calcaneus, so during heel lift, greater strain would have to be applied should the distal pivot malfunction. While localized treatment specifically to the tendon may be required to render the patient asymptomatic, managing the range of motion of the relatively remote 1st MTP joint, may be necessary to prevent recurrence. This concept will be covered in more depth in future articles, as well as on the [www.vasyli.com/medical](http://www.vasyli.com/medical) website.

## Postural Symptoms

The relation of pedal dysfunction to postural symptoms has been long been established in the literature.<sup>456</sup> When sagittal plane restriction is considered, many of the

mechanisms can be better understood.

Imagine a subject walking down a hallway. If an obstacle were to suddenly be placed into their path, they would trip and FALL FORWARD! The cause of the forward fall is specifically related to the affects of momentum; a body in motion will tend to stay in motion until acted upon by an outside force. Therefore, a proximal flexion moment must be produced when the distal component suddenly becomes restricted.

During normal walking, sagittal plane restriction can produce this type of flexion response within the torso, head and neck. This can create a repetitive strain to the lumbar and cervical spine, with muscular overuse resulting as the body attempts to maintain upright posture via extension. When sufficient overuse occurs, these muscles can produce trigger points, and create referred pain phenomena. Details of these referral patterns have been previously published, but are consistent with symptoms such as migraine headaches (trapezius), and pseudosciatica (quadratus lumborum and gluteals).

Other stress to the lumbar structures can also be directly related to sagittally impeded mechanics, and these will be detailed in further articles.

## Conclusion

The identification of Fhl during the biomechanical examination will result in specific changes in orthotic management. The Vasyli-Dananberg orthotic device is specifically designed to manage Fhl and the consequences of its presence. When properly identified and addressed, patient outcomes and compliance with treatment can improve.

### REFERENCES:

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## ARTICLE #3

**Howard Dananberg, renowned worldwide for development of the concepts of Functional Hallux Limitus and the relationship of gait style to Chronic Lower Back Pain...**

