

Orthotics Q&A: Treating FHL: Why It's Essential For Orthotic Success

When it comes to understanding the effect of functional hallux limitus (Fhl) on foot function, Howard Dananberg, DPM, has published over 30 articles on the subject. "Early on, it was quite challenging to convince other DPMs of the relationship of the metatarsophalangeal joint's mobility during walking to late midstance pronation," notes Dr. Dananberg. "Since that time, many have gravitated to the significance Fhl has on the foot and postural alignment."

With this in mind, our expert panelists offer their opinions on the significance of Fhl and how it has impacted their biomechanical practices.

Q: How has recognizing Fhl changed the way you prescribe orthotics?

A: Graham Curryer, BSc (Hons) DPodM, says initially, he prescribed orthoses based on pure "Rootian" principles, employing mainly rearfoot varus-type posts with various forefoot posts, usually varus and rarely valgus. At first, he based his prescriptions on measurements but as he became more experienced, he mainly based his work on clinical observation and "feel."

Now he utilizes sagittal plane facilitation (SPF) principles almost exclusively. Curryer still takes an STJ-congruous cast as he feels practitioners need a "personal baseline reference point" from which to work. STJ molding possibly has occurred over time, requiring some rearfoot positioning.

However, Curryer says he no longer uses any "conventional" rearfoot posts, but instead opts for full-length orthoses, either Amfit devices or X-T Sprint devices (PARIS Orthotics, Vancouver, Canada). He usually prescribes two degrees forefoot valgus post with Fhl accommodation and he prefers using an extrinsic post, which is easier to modify. For clients with obvious MTJ instability and collapse, he will incorporate a 4-mm Kirby (medial) heel skive.

"If patients with Fhl have a tendency towards an unstable MTJ, they will automatically compensate here and collapse," explains Curryer. In these cases, he notes patients' forefeet remain on the ground and they seem to collapse their MTJs as their bodies pass over their feet.

"Over time, this process further weakens the MTJ and if they have significant lateral COP move into toe off, this places an extreme lever advantage perpendicular to the MTJ axis (making the situation even worse)," adds Curryer.

When First Ray Cutouts Can Help

In order to recognize Fhl, it is important to determine how much reducible forefoot supinatus exists in patients' feet, according to Bruce Williams, DPM.

"I find that most of my patients have enough reducible supinatus in the first ray segment of their feet to allow the first metatarsal to, at a minimum, be in the same plane with the metatarsals two to five and usually be plantarflexed, or below the plane of the metatarsals two to five," explains Dr. Williams. "This allowed me to recognize FHL and truly appreciate its significance."

Dr. Williams previously tried to "cast out" the supinatus in his orthotics, but found a problem since many labs are reluctant to valgus post the forefoot beyond four degrees. He says this causes a real limitation in the first ray and puts too much pressure under the first ray, which prolongs the Fhl.

However, when Dr. Williams started using first ray cutouts, he found the first

ray could plantarflex as much as necessary without the orthotic getting in the way. This allows the first MPJ and the hallux to dorsiflex. When this occurs, Dr. Williams says the windlass can operate as it needs to, which corrects most overpronation problems in the foot. Since employing first ray cutouts enables him to correct most biomechanical problems, Dr. Williams rarely uses rearfoot posting any more.

Improved Outcomes Spark Boost In Referrals

"Recognizing Fhl has permitted an expansion of practice through successful treatment of postural complexes which, prior to Fhl identification, had fewer successful responses to therapy," says Glenn A. Ocker, DPM, MS.

Dr. Ocker emphasizes that many patients who had previously unsuccessful orthotic therapy responded favorably when he identified Fhl and employed prescription orthotics with Kinetic Wedge therapy. This treatment has increased overall successful outcomes and often provides quicker response times to therapy, according to Dr. Ocker. As a result of the improved outcomes he has been able to achieve with Kinetic Wedge therapy, Dr. Ocker says he has seen an increase in referrals for lower extremity evaluations for spinal symptom complexes.

"It is my opinion now that there are few conditions which would not benefit from a timely plantarflexion of the first metatarsal and resultant midtarsal joint stabilization," says Dr. Ocker.

Q: What has been your patients' reaction to this treatment, particularly in those who have had a more standard approach to orthotic care?

A: One of Dr. Williams' patients is a professional basketball player who had several failures with traditional orthotic therapy. All his orthotics posted him into varus.

"The problem was that in stance and during gait, he never, and I do mean never, put any weight under his first metatarsal head," recalls Dr. Williams. "I use the F-scan system on certain patients for gait analysis. When I saw the pressure distribution for this patient, I was amazed. He had all of his weight lateral. He never put any weight under the first met."

When Dr. Williams made the basketball player a temporary orthotic and used a first ray cutout, the patient immediately walked better and he finally had pressure under the first metahead. He valgus posted the patient an extra four degrees and adjusted for his LLD. "He's been playing great all year," says Dr. Williams.

Dr. Ocker says his patients are often "remarkably impressed" that one practitioner's orthotics offer such a dramatic improvement over another's orthotics.

"This has proved most startling and informative," says Curryer. "Patients who have had orthotics from myself or others based on 'Rootian' principals or just arch supports tend to notice and comment on a sensation that their feet feel 'free.' They do not feel confined and almost always feel a positive postural benefit."

A number of patients have come to Curryer's office with foot orthoses from other providers that have not resolved their symptoms or have created other problems. Invariably, he has added an Fhl accommodation and a lateral forefoot wedge to the existing device. Six weeks later, these patients have shown marked improvement in symptoms and orthoses wear patterns, according to Curryer.

Given these successes, Curryer has also changed non-responsive fifth MTPJ diabetic ulcer patients to this approach as opposed to using a conventional arch support, varus-posted device. These lesions, which historically were difficult to maintain, healed, resolved quickly and remained healed when Curryer applied SPF principles to their foot orthoses.

Be Aware of These Post-Therapy Outcomes

Generally, you may find that patients notice some initial strain in their hip flexors, possibly due to the orthoses requiring the leg to extend fully in gait. Patients often experience some lower back stiffness initially but it resolves well with physiotherapy and a few weeks time, points out Curryer. Dorsal first MTPJ pain is rare, but if it does occur, Curryer says you can resolve the problem via manipulation and, if necessary, a local steroid injection.

On many occasions, Curryer's patients with foot or leg symptoms will return to him, saying they have noticed a decrease in previous back, neck or other postural complaints that they did not mention upon their initial visits to him. He says he did not notice this consistent patient response when he utilized conventional biomechanical approaches.

Q: What success have you found which surprised you the most and what outcomes most surprise your patients?

A: "It is the broader postural benefits which have impressed me and my patients the most," offers Curryer.

He continues to have success with the usual foot-related symptoms but has also seen an increasing number of referrals for patients with chronic postural pain.

Curryer treats them with the SPF model, in conjunction with physiotherapy and massage therapy, and usually resolves between 50 percent and 100 percent of these issues.

Curryer says most of his patients have been getting physiotherapy and massage therapy and/or chiropractic care with no long-term resolution. He adds that most of them have been wearing conventionally-prescribed foot orthoses for many years. Simple application of SPF principles and slight changes to physiotherapy treatments to adjust asymmetries and other problems have proven themselves clinically time and time again, according to Curryer.

Dr. Williams says both he and the basketball player were pleasantly surprised by what happened in his case.

"He's really pleased with his outcome and he has ordered two extra pair of orthotics," notes Dr. Williams. "But I also am amazed at how much difference the first ray cutouts for Fhl make in working with patients who have chronic low back pain and other postural conditions."

Once the first MPJ can dorsiflex as necessary, all patients experience increases in their hip extensions, allowing them to propulse more efficiently and more powerfully, according to Dr. Williams.

When he does video analysis, Dr. Williams uses an overhead camera to watch for arm swing difference and body rotational compensations. Every time he does the "after" video, after modifying a temporary orthotic for a patient with a first ray cutout, et. al., the patients always move backwards on the treadmill. The "before" video usually shows them right up on the front of the treadmill by the controls.

Dr. Williams says after patients have the first ray cutout for their Fhls, they get much more extension immediately and they have to back away from the control panel so they won't walk into it. "It is really amazing," he says.

Final Notes

"This is a complex area to debate," adds Curryer. "I have found that it was only through extensive personal research and practice that the principles and benefits of this mode of treatment became clear. Unfortunately, it appears there is still a poor comprehension of newer biomechanical models and their clinical application in the schools and the broader podiatry population. This seems to be improving slowly but

still appears to be generally misunderstood, if known about at all."

Dr. Dananberg (pictured) practices in Bedford, NH. Mr. Curryer is in private practice and is an orthotics consultant for Health Canada. Dr. Ocker has a private practice in Upland, Calif. Dr. Williams practices in Merrillville, Ind.