



# Rediscovering the Rationale for Orthotic Dispensing

It's important to understand why these devices are prescribed.

BY LISA M. SCHOENE, DPM

Many practitioners make and dispense orthotics in today's healthcare marketplace: podiatrists, physical therapists, athletic trainers, pedorthists, orthotists, chiropractors, etc. More often than not, biomechanical and orthotic research is being done not by podiatrists but rather by these other clinicians, or gait lab PhD students with biomechanical backgrounds, to name a few. Podiatrists should, however, be the experts on foot mechanics, and how foot dysfunction creates havoc in the foot and up into the kinetic chain. Not only is biomechanics knowledge important to understand and cultivate as a podiatrist, but becoming a skilled surgeon, wound specialist, or sports medicine expert requires it. Podiatric colleges and seminars should be regularly and wholeheartedly including this training. Biomechanics knowledge should be the major strength that sets podiatrists apart from orthopedists, PAs, and physical therapists, who are slowly working their way into the orthotics marketplace. We cannot lose this valuable skill.

Although all these different healthcare practitioners are making custom orthotic devices or modifying OTC devices, there is no consensus on the actual nomenclature of what constitutes a "functional device" vs. an "accommodative" device. The way biomechanics is taught depends upon which textbook, author, or clinician is actually doing the teaching. There are so many theories: Root the-

ory, stress theory, preferred movement theory, and so forth; therefore, there is no real consistency among clinicians—podiatric or otherwise—who prescribe orthotic devices. Measuring mal-alignment and performing a biomechanical exam is probably not done by the majority of podiatrists, but it should be. Using a tracograph and/or other methods of measurement may lead to a different prescription than if not performed.

stand biomechanics, and we want to functionally improve structural alignment and prevent structural deformities; orthotics is one major way to go. Biomechanical exams are done on patients, so when there is poor foot/lower extremity alignment, that is a major prevailing reason for prescribing orthotics.

Longitudinal metatarsal padding for mechanically-based issues works extremely well with our patients, and

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Taking the actual measurements often changes the Rx that is ordered from the lab.

The vast majority of those reading this article probably believe that orthotic devices are a very necessary treatment modality to correct dysfunctional biomechanics. Let's just reconsider why, when, and how we can get it done!

## Why

Let's relook at why we should suggest orthotic devices. If we are thoughtful about why we prescribe orthotics, it must include a few things. It's safe to say that we under-

it has been noted that use of the pads will increase orthotic success. The pad also helps with the break-in process, as the patient becomes comfortable with support of the arch. Another consideration: any ongoing or re-occurrence of lower extremity conditions will be a compelling reason to put patients into devices. The patient who complains of conditions we see regularly in practice—plantar fasciitis, metatarsalgia, neuromas, medial tibial stress syndrome, patellofemoral syndrome, ITB issues, piriformis syndrome—will benefit, as typically a portion of the etiology of these con-

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ditions can be due to excessive pronation with or without surgery. We can aid in reducing pelvic obliquity, improve lumbar positioning, and other spine-related issues, by reducing rotary forces and improving the vector of muscle tension and pull up the chain. Temporomandibular joint function can improve with the changes in the sagittal plane via the Rx for the device.

As our residency training has progressed surgically, so have foot and ankle reconstruction procedures. But if first ray hypermobility and excessive pronation are the cause of hallux abductovalgus, why don't podiatrists prescribe orthotic devices either in lieu of surgery or after correcting the deformity, so bunions do not come back? Not every HAV patient needs or should get a Lapidus! For hallux limitus (especially functional hallux limitus), we know that the first ray is elevated, and usually long, which causes jamming at the first MPJ, plain and simple. If you order a first ray cut-out all the way to the cuneiform, then it will allow the first metatarsal to plantarflex, allowing better first MPJ motion.

By supporting the longitudinal and oblique axis within the foot, the pull of the peroneus longus will actually function at its best, pulling that first ray down. Maybe this will prevent the spurring and damage to the cartilage. Not everyone needs foot surgery, nor is everyone a good surgical candidate (due to age, medical conditions, etc), and some patients simply don't desire foot surgery, so why not keep those patients happy and fix the mechanics another way and make it a win-win for everyone?

Even for those patients who have relatively normal mechanics, there are advantages to prescribing devices. Consider patients who are excessively on their feet for work or athletics, or patients who have poor gait, neurological deficits, postural weakness, or loss of fat padding in the heel or forefoot. Mitigating those ground-reactive forces can help these patients with extra padding and supporting both the longitudinal and transverse arch. Also, talk to

your fellow orthopods: patients who have had ACL repair can benefit too. The ACL ligament is an anti-internal rotation "check-rein". Why not help keep that ligament aligned properly, by mitigating the pronation/internal rotation forces after knee surgery, or even in lieu of surgery for those patients who are not surgical candi-

transition to the custom device. Look at the devices that patients came in with, as they all may be correct in their static form; use the ones they already have, as they will be grateful most of the time. Gentle myofascial work, stretching, massage, strengthening, and daily rotation of shoes will also help the cause. For other

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dates. Sure, there is some expense in dispensing devices, but the devices will last for many years, with occasional refurbishing. The overall cost ends up being very minimal in the big picture. Typically, two or three PT sessions will cost more to the insurance company or patient, so orthotics are a valuable tool within the course of treatment for many conditions.

### When

Timing is everything. There is the correct time to dispense a device during a treatment protocol. We know that if we dispense a device and the patient is compliant, then the problem goes away, quickly and easily. There are other patients who may not do well at first, or at all. Here are some thoughts to consider. If a patient comes to your office with a bag full of orthotics or shoes that they can't wear, it may be a red flag that yours will end up in that bag too. Don't think your orthotic devices will finally be the ones that work; consider not making a second or third pair after the first ones didn't work.

Fibromyalgia or very sensitive patients might be those who will have a hard time adjusting to devices. Changes in alignment or myofascial pull may backfire in these patients. Very, very slow progression is suggested. Start with an L&M pad, a prefab, or OTC device, then slowly

common conditions that we see, dispensing a custom functional device as the only acute care treatment is not appropriate and often premature.

One example is plantar fasciitis. Often, there is gastroc-soleus equinus that occurs with this common condition. Compensations for the tight calf will tend to force the oblique midtarsal joint to have to dorsiflex to compensate and allow for that sagittal movement that is lacking at the ankle joint. Putting a functional firmer device under the foot that corrects or supports the midtarsal joint will now take away that compensation, causing more pain in the plantar fascia and often in the Achilles tendon. Increased pain will change perceptions about the usefulness or desire to wear the device that the patient has just paid for. Utilizing an L&M type pad or very soft insert throughout the "acute" treatment timeframe is really important, along with lots of stretching, and your other office protocols.

Put patients into orthotics at the end of the road, not the beginning. This is often overlooked as some DPMs will dispense a device and send patients on their way on the first appointment. This is neither appropriate treatment nor adequate to resolve the acute condition at hand. There is definite timing and finessing to make it a smooth transition, so

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wait until the condition is resolved and use the orthotic device not as an acute care treatment, but rather a discussion on how to prevent the “X” condition from returning, or better yet, prevention of abnormal pronation that so often causes many, if not most, of the conditions that we treat. What do we treat most of the time? Overpronation and all the conditions that suffer from its wrath.

### **How**

We have numerous methods for capturing the impression: neutral plaster casting, either prone or supine; we have fiberglass socks, foam boxes, i-pad scanning, gait analysis, weight-bearing scanning, and so forth. Orthotic labs would all agree that well-done impressions are part of the key to success in fabricating a great orthotic. Whatever the method is, consistent technique is of great importance and will yield the best impression results.

The device selected has to be determined by patient needs. Important to note are body weight and activity, either for work or athletics. The orthotic material selected will often change based on body weight. Polypropylene commonly used by many labs typically will change based on body weight. Under 200 lbs. may suggest a 1/8” shell, whereas a much higher weight would be best with a 3/16” shell. Considering this when choosing the shell material is important because if the shell deforms under

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a foot due to a higher weight, correction may fail. Shell fill can be used to tweak the device if someone is at the cutoff of the weight limit of a particular material.

Keep in mind that fill often can make the device bulkier, so the shoe dynamics may make it difficult to fit. Mindful consideration for each patient’s situation and foot issues is so important. If a woman wears only small dressy shoes, then why make a huge full-length device? Make sure your lab has different styles and use them. So often patients come in with a bag of orthotics that are all the same, made once every year. The polypropylene plastics generally don’t deform, so just consider refurbishing the devices and then make a different type of orthotic for a second or third pair. New replacement orthotics are not necessary that often for adult patients, unless there are major changes in foot alignment from surgery or weight changes.

Re-evaluation and regular refurbishing will keep the devices working well. Having different styles will definitely ensure that the patient will wear them all the time in all of their shoes. If you want to truly correct dysfunction and deformities, then the patient has to wear them

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daily. Why give them to patients only when they run? Don't they have the same foot alignment when they walk around the other 10,000 steps that day? Consider a variety of styles that will fit in all the shoes for that par-

needs to be slender as do ones for skates or cycling shoes. This is all possible with some ingenuity and lab selection. If your lab doesn't have what you want, discuss with them how to find a solution or a variation of what they offer.

Another important factor is

can be quite different when looking at it from both the front and back.

Have the patient stand on just one foot at a time, and check how the foot aligns. Does the patient pronate over the medial edge? Have the patient do a single leg knee bend (small lunge) on each side, and check the alignment of the foot, knee to hip. If the foot aligns well, but the knee falls into valgus, then hip weakness more likely is the culprit. If the foot is collapsing into pronation, then wedge up the rearfoot and/or forefoot and check lower leg alignment. If that corrects the knee collapse, then you need to change the orthotic and add more correction, considering the shoe along with that. If the subtalar joint is the problem, usually rearfoot correction is necessary; if the midtarsal joint is the problem, then tweaking the arch or forefoot will most likely work.

Look at the feet in the shoe, too,

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ticular patient. This goes for women, men and kids. Foot gear will determine some of these choices.

Currently, gym shoes are more shallow, narrow, and curved. This will change how the device sits inside. If not sitting flat, it may throw the patient into too much supination. Either narrow the device or try a different shoe model. Cleats can house an orthotic but the device

checking the devices after they are dispensed. There are times where adjustments are needed. Our office has patients return after three to four weeks to be checked by the doctor. We check the devices for proper fit in the heel and forefoot, to make sure the shell length is correct and to check for alignment from both posterior and anterior views. The way the foot sits and functions on the device

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as it's interesting to see how it all changes with the wrong shoe! For those who have gait equipment, check devices with that technology as well. Comment to the patient and tweak as needed. If you don't look at the device or check its functionality in the shoe, then there is really no way of knowing that the prescription is correct. If we are making the devices to functionally change the biomechanics of the lower extremity, then we have to evaluate what we just made.

Top covers, accommodations, and posting details will vary depending on each patient, and should always be thoughtfully taken under consideration. Taking a hard shell and adding a top cover padding and appropriate posting will make an unused and disliked device into something that the patient will use, so this is worth-

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while. Orthotic making combines science and a little bit of art, and sometimes some finessing to get to the final product. Consider changes that happen up the chain, as patients may complain of knee, hip, low back pain, or even headaches after they start to wear the devices. This not only proves that we are changing what's going on above, but can also open a dialogue on how to treat the condition—e.g., strengthening, postural work, massage, and tweaking the devices/shoes etc. We do need to feel comfortable knowing that whatever we do at the foot and ankle (including surgery) will affect the upper body.

### **Recap**

As a profession, we need to stand apart from the other healthcare practitioners who are encroaching on our turf. We cannot just be "mini orthopedic surgeons", only doing rearfoot ankle cases. We must use all the tools at our disposal, because as podiatrists, that's what sets us apart. We need to continue to keep our profession relevant in this continually fluctuating healthcare world in which we practice. Biomechanical knowledge is paramount for the podiatrist, and it is necessary for every aspect of what we are all already so good at. **PM**



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