

## White Paper

# Patient's Guide to Foot Orthotics

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In the interest of background, Dr. Huppin and Dr. Hale are Seattle based podiatrists with extensive backgrounds in orthotic therapy. Dr. Huppin is the medical director for ProLab Orthotics – a very high-quality orthotic production laboratory in Napa, CA – and is an Associate Professor and Asst. Chair of the Dept of Applied Biomechanics at the California School of Podiatric Medicine in Oakland. Dr. Hale is the Chief of the Podiatric Staff at renowned Swedish Medical Center and Extern Director of one of the country's top residency programs. In addition, at our practice in Seattle we specialize in orthotic therapy and have treated thousands of patients with orthotic therapy over the past 15 years. You can learn more about our clinic at [www.footankle.com](http://www.footankle.com).

This is a long article. Much of it is based on the best available research, some is our opinion. It is intended to help the patient for whom orthotic therapy has been recommended to make an informed decision so that they can reach the best outcome for their particular problem. It is not intended to help one decide if orthotics are appropriate for their particular problem.

The article will cover:

- What are orthotics
- How do custom orthotics work
- Production of orthotics
- Dispensing, break-in and follow-up
- Custom orthotics
- Customized and computer generated orthotics
- Off-the-shelf orthotics
- Custom orthotics for dress shoes and specialty shoes
- Orthotic guarantees – what should you expect
- How do custom orthotics work in treating plantar fasciitis
- Who should make your orthotics – how to find a skilled practitioner.

### What are Orthotics?

The term "orthotic" can refer to almost any device which is worn inside a shoe. Items called "orthotics" are available from physicians and other medical professionals, in shoe stores, in infomercials, retail stores and even at trade shows. There are three very different types of "orthotics" – custom, customized and off-the-shelf. The educated consumer should be aware of each type.

There is a confusing amount of information available on orthotics. For many consumers making an informed decision is difficult. Recognizing a sales pitch and separating it from facts is the key to better health. The information presented here should help you make an informed decision.

### What are Custom Functional Foot Orthotics?

Custom functional foot orthotics are prescription medical devices made from non-weight bearing molds of your feet. They are designed to control alignment and function of the foot in order to treat or prevent injury-causing force on bones, joints, tendons and ligaments. Often they are used to limit motions such as excessive pronation (rolling-in) and excessive supination (rolling-out). They also act to make activities such as running, walking – even standing – more efficient. Finally, they can act to redistribute pressure on the bottom of the foot to relieve pain from excessive pressure or calluses.

### **How do Custom Foot Orthotics work?**

This is a very involved subject and too much to get in to here. But in general, most foot pain is the result of a faulty relationship between the bones and muscles of the foot. Even the slightest misalignment can result in significant discomfort. This abnormal function can result in problems such as bunions, hammer toes, arch and heel pain, corns, knee pain ... even back pain.

The function of custom orthotics is much more than an arch support. Orthotics realign the structures of the foot and leg to prevent bone mal-alignment as well as muscle, tendon, and ligament fatigue. They are often used after surgery to help stop the recurrence of foot deformities.

As your foot rests on a properly constructed custom orthotic it is gently and consistently directed into the correct position (or at least a better position) for walking, running, and standing.

Because your foot is now functioning properly, the pain of muscle strain and pressure points is relieved, and the progression of deformities is often stopped or slowed.

### **PRODUCTION OF CUSTOM ORTHOTICS**

The production of custom orthotics is an exacting process and determines whether or not you receive quality devices that will best treat your condition. As with everything, there are well-made orthotics and poorly-made orthotics . The ability of an orthotic device to eliminate your pain is dependent on the quality of the orthotics. The quality of the orthotics is dependent on three primary steps:

- The cast of your feet
- The prescription the doctor writes (based on the examination and the doctors knowledge and experience)
- The work of the orthotic lab in producing your orthotics and following the doctor's prescription

### **What is Involved In Producing Custom Foot Orthotics?**

The most important factor in designing foot orthotics that will provide optimum function is an orthotic prescription based on a thorough examination by an experienced and knowledgeable medical practitioner. We cannot emphasize this enough. The exam should include a complete biomechanical examination and gait analysis.

Following a biomechanical and gait examination, there are three important components to ensure you receive the best possible orthotic devices:

- An accurate cast of your foot must be taken. This is a VERY exacting process as your foot must be placed in a precise position to ensure the best clinical outcomes. To help ensure that a proper cast is taken, we feel that the doctor, and not a technician, should take the cast of your foot.
- A proper prescription must be written to accommodate your biomechanical problems, your activities, and your shoes. This process requires that an exacting gait evaluation and biomechanical examination be performed.
- A high-quality foot orthotics laboratory should be used to produce your orthotics. This will ensure that the prescription is filled correctly, that the orthotics are comfortable, and that high-quality and long lasting materials are used.

### **Dispensing and Break-in**

Your doctor should work with you to ensure that your orthotics are comfortable and are relieving your symptoms. They should also provide you with detailed information on the proper shoes for your feet. This will help you find appropriate, comfortable, and fashionable shoes.

### **Follow-up:**

One of the most important parts of orthotic therapy is appropriate follow-up. If you have a problem with orthotic fit, function, comfort, shoe fit or any other issue, your doctor must be able to diagnose and correct these concerns. This is why a skilled, knowledgeable and experienced practitioner can usually provide the best clinical outcomes.

## **CUSTOMIZED ORTHOTICS AND COMPUTER GENERATED ORTHOTICS**

Another type of foot orthotic is known as “customized” rather than “custom.” These devices can be difficult to distinguish from custom foot orthotics and, unfortunately, are sometimes marketed as authentic custom foot orthotics . They are often the product of a computerized system where the patient is asked to walk across a force plate which then shows pressure distribution on a computer display. Typically, the orthotic is made by adding extra components to a pre-manufactured insole. Sadly, patients are often told that these are custom – and charged a custom orthotic price.

So how can you tell the difference between customized orthotics and authentic custom foot orthotics? If you are receiving authentic custom orthotic devices, a three-dimensional mold of your foot, using plaster or fiberglass, must be taken. Walking or standing on a force plate can be used to evaluate some aspects of foot function, but a force plate cannot capture the 3-dimensional impressions of your feet that are necessary for best outcomes. Remember, if there is no cast, it can't be a custom orthotic.

Don't be fooled by impressive looking images on a computer monitor. It is our opinion – and that of most experts on orthotic therapy - that it is not possible to make a quality custom orthotic from walking across a pressure mat or taking a weight-bearing scan of your foot. With the technology currently available, a custom functional foot orthotic requires a non-weightbearing cast of your foot.

## **OFF-THE-SHELF ORTHOTICS**

Off-the-shelf orthotics (often called arch supports) are usually found in retail stores - including sport stores, shoe stores, online stores and pharmacies. They are non-custom devices designed to provide gentle support to the arch of the foot and help spread weight more evenly along the bottom of the foot. They are sometimes called “prefabricated orthotics.”

There are many different arch supports on the market. Like everything else, some are better than others. And one brand might work well for your feet while another brand works well for your friend's feet. Quality off-the-shelf orthotics usually cost \$30.00 - \$50.00.

## **Orthotic Advertising on Radio, TV and Web**

You may have heard radio or television commercials promoting “custom fit” orthotics at shoe and orthotic retail stores. While these devices are not “bad” per se, they are substantially over-priced. Our advice is “let the buyer beware” – you should never pay more than \$50.00 for an “orthotic” unless it is made from a cast of your foot by an experienced and skilled medical professional. The franchise stores that advertise arch supports heavily on radio and television tend to “hard-sell” and have extremely poor reputations among medical professionals and ethical shoe stores. If you are asked to pay more than \$50.00 for orthotics in a retail store you are probably being over-charged.

You may have also seen web sites selling “custom” orthotics based on a foam box of your feet. While a foam box can be used to take a cast of the foot for custom orthotics (although it is not a particularly effective method), an extensive exam by an experienced and skilled medical practitioner is necessary to write the proper prescription for orthotics —and thus for optimum clinical outcomes. This isn't to say you won't improve with these devices, but the odds of maximum improvement are poor. Again, just don't spend more than \$50.00 unless a thorough examination and casting by an experienced medical professional is taking place.

## **ORTHOTICS FOR DRESS SHOES AND SPECIALTY SPORT SHOES**

Custom molded foot orthotics provide protection against pain and injury. Custom orthotics can be specially designed to match your shoe type and activity to help provide the support and comfort you need in all of your shoes.

### **Full Support Orthotics**

Your first pair of orthotics are usually not meant to fit in all shoes. Most of the time the first pair of orthotics you receive is designed to fit primarily in lace-up walking and athletic shoes. These orthotics are prescribed to be as close as possible to the full width of your foot in order to give you maximum control when you are performing activities that put the most force onto your feet. In addition, they are deeper around the heel to offer more control. These wider and deeper orthotics are called “full-support orthotics ” and are meant to be worn in standard running and walking shoes.

Once your doctor is sure that your first pair is comfortable and working correctly you can order smaller orthotics designed to fit in smaller shoes – such as dress shoes. Some specialty sport shoes – soccer and bicycling for example – also tend to be small and require smaller orthotics.

### **Dress Shoe Orthotics**

Dress shoe orthotics are custom orthotic devices that are small enough to fit into a dress shoe. These orthotics are very thin and narrow. They have a shallow heel cup to fit into smaller shoes and a very thin cover so that they leave plenty of room for your feet.

### **Sport Shoe Specific Orthotics**

Some athletic activities require you to wear shoes or boots that are smaller than the average walking or running shoe. This might include soccer, bicycling, skiing, snow boarding, etc. In these cases, you may have difficulty fitting your full-support orthotics into the sport shoes. Sporting activities, however, usually put maximum force on your feet so it is important that you be protected and wear orthotics. In these situations, a pair of orthotics can be prescribed to fit perfectly into those shoes or boots.

## **ORTHOTIC GUARENTEES**

The following is our opinion only – but we feel that orthotic comfort (not clinical outcome) should be guaranteed in most situations. When properly prescribed and produced, foot orthotics are very comfortable—in fact, you should barely be aware that you are wearing them. It is the responsibility of the prescribing practitioner to make sure that your orthotics are comfortable and that they are providing the best biomechanical solution to your foot problem.

The quality of orthotic devices varies considerably and depends on many factors. No one can guarantee exactly how your symptoms will respond to any particular orthotic (this depends on many factors), but we feel that quality practitioners should guarantee that your orthotics will be comfortable. This is a good question to ask when evaluating practitioners - see below.

## **HOW DO ORTHOTICS WORK IN TREATING PLANTAR FASCIITIS?**

Plantar fasciitis or heel spur syndrome is one of the most common disorders treated with orthotic therapy. It offers a good example of how orthotics function for a particular pathology. You can learn more about plantar fasciitis at [www.footankle.com](http://www.footankle.com)

The primary purpose of orthotic therapy in most pathologies is to reduce abnormal force on the body structure that is being injured. In the case of plantar fasciitis/heel spur syndrome, the primary problem is excessive tension on the plantar fascia. Thus, in this situation, the primary function of custom orthotics should be to decrease tension on the plantar fascia. In other pathologies, the primary function of the orthoses will be different as will the orthotic prescription. Even within the single pathology of plantar fasciitis there are many different biomechanical causes and many different optimum prescriptions.

Before prescribing orthoses for plantar fasciitis your practitioner must first determine why, in your case, there is excessive tension on the plantar fascia. Sometimes it is because the heel everts and jams the medial (inside) foot into the ground. This pushes up on the bottom of the first metatarsal and causes the foot to lengthen. This stretches the plantar fascia. In this case the orthotic must stop heel eversion (among other actions). Sometimes the heel stays straight, but the arch collapses – again this lengthens the foot and stretches the fascia. In this case the orthotic will be prescribed to focus on arch support – a very different function than stopping heel eversion. Sometimes it is due to a tight heel cord – again, a different orthotic prescription is required. I can name 10 other biomechanical reasons why the fascia might be stretched. Each condition might require a somewhat different orthotic prescription in order to get the best clinical outcome (that's not to say you won't improve with a less than optimum prescription – but you are likely not getting full benefit). This is why it is so important to have a skilled and knowledgeable practitioner to make your orthotics. Nothing determines orthotic outcome more than the skill of the practitioner.

### **WHO SHOULD MAKE YOUR ORTHOTICS**

In general, podiatrists have the best backgrounds and training in foot biomechanics and custom foot orthotic therapy. Most of the best orthotic therapy experts will be podiatrists (now, keep in mind, we are podiatrists and may be biased, but in consulting with many different practitioners on a daily basis this is what we have found to be true). This does not, by any means, mean that every podiatrist is an expert in orthotic therapy. As in any profession, some are exceptional; some are horrible and most are somewhere in-between. Some podiatrists specialize in orthotic therapy and prescribe many orthotics and some do it as part of a more general practice and prescribe fewer. As with all medical procedures, more experience usually means better outcomes. Also, there are some pedorthists and physical therapists who have taken a special interest in the foot and do an excellent job with orthotic therapy. You should, however, carefully evaluate the training of the practitioner. Pedorthists, who are trained in shoe modifications and manufacturing orthotics, are only required to have a two week course for certification. Physical therapists may or may not have training on orthotic therapy. We have seen very few orthotics made by chiropractors with which we have been impressed, but they may be out there. Now, there are exceptions to every rule, but in teaching and consulting with thousands of practitioners and students over the past 15 years, we have found the above to be true.

To find someone locally ask friends, colleagues and medical professionals in your area for recommendations. Often the same names will keep coming up. Also, our web page at [www.footankle.com](http://www.footankle.com) has a list of practitioners around the country who have expertise in orthotic therapy.

Some questions to ask in order to evaluate a practitioner include:

- What kind of cast do you take? (it should be a non-weight bearing or “neutral” cast in most cases)
- Who takes the cast? (you will likely get better results if the doctor takes the cast rather than an assistant)
- How many orthotics do they prescribe per week? How many years have they been in practice? (experience counts!)
- Are orthotic adjustments done in the office or do the devices have to be sent back to the lab (always look for someone to does their own adjustments. It is faster, more convenient and we guarantee they will know more).
- Do you guarantee orthotic comfort? (comfort only – not clinical outcomes. Clinical outcomes can not be guaranteed with any medical device or procedure. In fact, a “guarantee” of a cure should be a red flag that you may not be dealing with an honest and ethical practitioner).

For a list of expert orthotic practitioners throughout the US, refer to our website at [www.footankle.com](http://www.footankle.com).