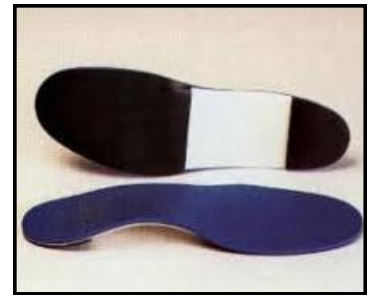


## Who Needs Orthotics?

With all of the fancy shoe choices out there, not to mention the “barefoot” craze, we are often questioned in our clinic about the benefits of orthotics, or arch supports. Who needs them and how can they help? In short, problems with alignment of the foot and ankle can not only cause foot and ankle issues but also knee, hip, and even back problems. Often a doctor will recommend orthotics to correct some biomechanical problems (i.e. overpronation, oversupination, or “flat feet”) in order to treat certain conditions. Orthotics are often called arch supports and are simply placed in the shoe. They resemble the insert that comes in many athletic shoes but have more structure and support to alleviate problems and increase comfort with weight bearing activities.



## Over the counter vs. custom

Many shoe stores sell over the counter (OTC) orthotics, which range in price from \$20-\$50. These inserts can provide necessary support and shock absorption and fit easily in most shoes. They can be very effective in treating minor injuries or mild biomechanical abnormalities.

Custom orthotics, often prescribed by a doctor, will be made according to an imprint of your foot with appropriate accommodations to treat certain abnormalities. Custom orthotics are much more expensive than OTC inserts (\$200-500), but can be beneficial if there is a significant alignment issue or if the OTC method has failed.

Many patients express concern about having to wear or stop wearing certain shoes after obtaining orthotics. You do not need to buy a bigger shoe to accommodate an insert. They should be made or purchased to fit your size, and often replace the lining or insole that comes with most athletic shoes. Casual and dress shoes will often accommodate orthotics, though you may benefit from a shorter length insert, which does not extend all the way to the toes. Very narrow shoes or stiletto heels will most likely not accommodate an insert. At this point the patient will have to make the choice between comfort and fashion.

## Types of custom orthotics

Many different types of orthotics exist depending on who is making them. Orthotics can be made of very rigid plastic material or a more shock absorbing material. Some will be one rigid layer and others provide layers to combine rigidity and support with cushion and shock absorption. Custom orthotics can be made with a variety of accommodations based on patient need. For instance, someone with pain at the ball of the foot, often diagnosed as metatarsalgia, may benefit from a pad in the midfoot called a metatarsal pad which will redistribute the weight to relieve the painful metatarsal heads. Patients with a painful heel, which could be anything from soft tissue inflammation such as plantar fasciitis to a stress fracture, will often benefit from extra heel cushion built into the insert. There are numerous accommodations available to treat certain patients and conditions. This is one reason customizing a pair of orthotics can be so beneficial.



## **Common pathologies and how orthotics can help**

### **Plantar Fasciitis**

Plantar fasciitis is the inflammation of the tissue which attaches to your calcaneus, or heel bone and runs along the bottom of the foot along the arch up to the metatarsal heads, or the ball of the foot. It acts as a stabilizer of the arch. This condition often presents itself as pain right on bottom of the heel, and occasionally feels as if you're walking on a bruised heel. Pain is often worse in the morning and after long periods of immobility. There are a number of different causes for plantar fasciitis. One common cause is overpronation, which is where the ankle turns in and can often be associated with low arches or flat feet ("pes planus"). This biomechanical issue can be corrected with an orthotic that corrects the angle of the hindfoot and supports the arch to avoid overstressing the plantar fascia.

### **Patellofemoral pain**

Patellofemoral pain is a generalized term for knee pain with an origin at or around the kneecap. Again there can be many factors contributing to this condition. Patellar tracking problems arise when the kneecap does not sit in or glide properly in its groove on the femur. This condition can occur due to muscular imbalances or soft tissue/bony injury, but also from abnormal alignment at the foot and ankle which can affect the alignment of the knee during weight bearing activities such as running.

### **Posterior tibialis tear/tendinitis**

The posterior tibialis tendon (PTT) is located on the inner ankle and foot and is an important ankle and foot stabilizer. This tendon also supports the medial arch of the foot. A tear of this tendon can result in a loss of arch support, or flat feet, which can be helped with proper support from orthotics. A preexisting state of low arches or overpronation can lead to problems with the PTT such as weakness, tendinitis or partial tears. Orthotics are often implemented to correct the alignment at the ankle so the PTT can function more normally, thus relieving the patient's symptoms.

### **Hallux valgus/bunion**

A bunion involves the deviation of the big toe medially towards the rest of the toes, which is called hallux valgus. The joint becomes inflamed and painful, as the joint capsule is often damaged depending on the severity of the displacement. This condition often results from overpronation, as the excess stress on the first joint during the push-off phase of gait can damage the joint capsule and surrounding soft tissue. While a severe bunion cannot be reversed with the use of orthotics, correcting overpronation with orthotics will correct the underlying problem thus inhibiting or slowing further damage. Often a patient will need surgery to correct severe hallux valgus, and post-operative orthotic intervention is important to maintain the alignment corrected by surgery.

Above is a short list of common complaints and pathologies that can be helped with the use of orthotics. Various other conditions exist, including arthritis of the foot and ankle, Achilles tendinitis, leg length discrepancies, low back pain, and congenital abnormalities, which can benefit from orthotics as an adjunct to any other necessary medical intervention.

## Custom Orthotics

### Scanning vs. Casting

Orthotics can be made with a variety of technologies. Formerly a type of casting or molding was the standard method. This involves a therapist or orthotist using plaster strips to obtain a mold of the foot. The orthotic is made by filling in the mold and correcting any abnormalities necessary. Another popular method is the foam box. The patient steps into a box of foam-like substance, similar to a memory foam mattress or pillow, and leaves an impression of the feet. More recently 3D computer images have been implemented to assess abnormalities and guide the manufacturing of a customized orthotics.

In our clinic we use Footmaxx® which uses software designed to analyze digital pressure on a mat and translate the information obtained from these computer images into a customized orthotic. One advantage of this method is the fact that often these images are created while the patient is walking, creating a more functional image of the pressure distribution. Other advantages to our method include the time required to assess the patient (about 5 minutes to scan) and the ease of sending the scans to the manufacturer over the internet versus the mail.



### Wear schedule

Once a patient is fitted for orthotics, it is important to break them in over a period of time. We suggest wearing the new inserts for about an hour the first day and then removing them, adding about an hour on subsequent days until it is very comfortable to have them in for a full day. If you do not take the time to break the orthotics in slowly, you could end up with different pains in the foot, ankle, or hip from altering your alignment too suddenly. Usually it takes between one and two weeks to break a pair in but depending on the rigidity of the insert or the problem being addressed, that time could be even longer. It is important to listen to your body and only do what it comfortable.

## **Life expectancy**

Generally a good pair of custom orthotics should last at least one to two years. Someone who wears them only part of the time for a minor problem will find they last longer than somebody who runs 40 miles per week. Signs to look for include an obvious break-down of the orthotic and/or a return of the symptoms for which you received the orthotics in the first place.

Not all injuries can be fixed with the simple placement of an arch support in the shoe. However orthotics do have a place in the treatment of many lower extremity pathologies, especially those of the foot and ankle. If you have a nagging injury or have noticed a change in your arches over the years, it is important to contact your doctor to receive the appropriate care. Orthotics may be indicated along with an appropriate activity modification, exercise program, or surgery if indicated for certain conditions.