

Orthopaedic Observations

A Matter of Medicine...

TM Pending

Common Foot and Ankle Problems

By Brian Tenehaus, MPT



It's a common scene. You are at the movies, or watching your kids' soccer game, and you see someone hopping along on the sidelines on their crutches. Afterwards, you think to yourself, "Thank God that's not my kid!" You wonder what happened to them? It's usually an ankle sprain, the #1 most common injury in the United States. More

often than not, it occurs during recreational or sports activity, however, I recently witnessed one happen as somebody missed a step while walking down the stairs. It happens so fast; before you realize what happened, it is too late.

Approximately one million Americans will injure their ankle each year, not accounting for all the times you may roll your ankle in the yard and decide not to go to the doctor. Of the that one million, 85% will be an ankle sprain.

The foot and ankle is comprised of several bones, 26 to be exact. The lower leg is formed by two long bones that run parallel to one another, the *tibia* and *fibula*. They articulate with a square-shaped bone called the *talus*. This bone sits atop a longer, more rectangular bone called the *calcaneus*, more commonly known as the *heel bone*. In front of the heel bone, sits two other awkwardly shaped bones called the *navicular* and the *cuboid*, moving towards the pinky side of the foot. Just in front of these two bones sit three more bones called the *cuneiforms*, and five long, narrow bones called *metatarsals*. Together, these bones combine to make the *midfoot*. Lastly, the *forefoot* is comprised of shorter, narrower bones called *phalanges*, a total of fourteen. Let's start with the basics. A typical, "roll your ankle" sprain, also known as an *inversion sprain*, is when your foot rolls inwards and the pressure is placed on the outside of your ankle. Occasionally, you can irritate muscle tendons, known as *tendonitis*. Tendons attach muscles to bones. When rolling your ankle, the structures usually injured are called ligaments, tissue that connects bone to bone. Ligamentous tissue is relatively strong, similar to string or rope, but the amount of weight that we place on these

support structures can overstress the ligament, especially with jogging, running, or jumping.

When grading the ankle sprain, there are three grades. A grade I sprain is minor. One might not even see a doctor for this, depending on the patient. There could be a bit of swelling, with no discoloration, or slight bruising. A grade II sprain is more swollen, often with purple, green, or yellowish bruising. The color of bruising changes over the course of the healing process. Pain is more intense, and worsens when you put weight on it. It will also be tender to the touch. A grade III sprain is considered a severe sprain. One should be *non-weight bearing* with crutches for about 6-8 weeks for this type of sprain. The discoloration will be substantial. The patient might tell you, "it swelled up like a balloon."

Treatment for all three grades is similar, especially at the beginning. The good ole' acronym, RICE: rest, ice, compression, elevation. The addition of an anti-inflammatory medication is necessary as well. **Rest** means, "try not to walk on it, give the ankle a rest." **Ice** means, "twenty minutes on, twenty minutes off, *not* ice 'til it freezes!" I have seen frozen skin from patients who lay on the ice too long. Compression with an **ace wrap** is effective in reducing swelling. Be sure to wrap from the bottom up, in order to push the fluid north, after all, we don't want "Pillsbury" chubby toes.

Once you get the pain and swelling under control, the treatment protocol stems around mobility and stability. It is imperative to get a stiff joint moving, but too much mobility will mean that the ankle is prone to re-injury, thus, stability is important. Therefore, strengthening becomes just as necessary.

From a therapy standpoint, we can help with both of these goals. Ultimately, therapists will help gain more motion by stretching and mobilizing the ankle. With the help of various stretching techniques, patients achieve gains with *active* motion as well as *passive* motion. While gaining motion, therapists help direct patients with a proper strengthening program in order to help them regain stability.

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When working on the above two goals, it is also necessary to focus on functional activities like walking, kneeling, and ascending/descending stairs. Balance strategies and proprioceptive training will also be addressed. Once the patient feels comfortable with walking on flat, smooth surfaces, they re-learn to walk on uneven surfaces like gravel and grass. Eventually, they transition from one surface to the next.

Other than ankle sprains, a few other common foot problems that are addressed in therapy include: hallux valgus, trauma injuries, plantar fasciitis, and achilles tendonitis. The latter two are both common overuse injuries, often interrelated. With plantar fasciitis, it is typically characterized by a sharp pain on the underside/sole of the foot, initiating at the underside of the heel and running along the arch (bottom of the foot) whereas with achilles tendonitis, pain/discomfort is more often at the back of the heel. Usually, plantar fasciitis is worse after long periods of sitting or upon waking in the morning. Achilles tendonitis is commonly seen with runners or long distance walkers.

For a treatment recipe, there are several ingredients which are effective in helping to aid the healing process as seen below.

- 1. Stretching of the calf and foot musculature is of the utmost importance**
- 2. Rolling your barefoot on a tennis ball for a minutes 1-2x /day can help loosen the plantar fascia**

- 3. Rolling your barefoot over a frozen bottle of water has also been effective for plantar fasciitis (keep your foot moving forwards and backwards) no more than 8 minutes.**
- 4. Soft tissue massage on the tender area**
- 5. Iontophoresis is an effective method of delivering various anti-inflammatory medications subcutaneously via an electrical stimulating device**
- 6. Custom made orthotics can be made at The Orthopaedic Group, LLC, ProPT center which will often correct alignment issues at the foot and ankle joint which could be contributing to the underlying problem.**

When looking at foot problems and injuries like bunions, trauma, flat feet or high arches, treatment plans vary, depending on the specific issues involved. The premise often revolves around correcting malalignments and muscle imbalances with the use of strengthening exercises and increasing flexibility. Again, the use of orthotics is often indicated to correctly neutralize the ankle's subtalar joint. Always keep in mind that foot and ankle problems could be contributing to knee, hip or back pain.

In conclusion, it is necessary to see the body in its entirety, realizing that the foot and ankle are the body's foundation. Without that base of support, you're asking for the rest of the body to follow in suit. Along with properly supporting shoes (or sandals in the summertime) physical therapy can be a great adjunct at providing a steady and comfortable foundation for many years to come.

http://www.cureresearch.com/a/ankle_sprain/intro.htm

Brian graduated from Quinnipiac University in 2004 with a Master of Science degree in Physical Therapy. Brian recently moved to Connecticut from Reston, Virginia where he worked at Georgetown University Hospital. Brian was an accomplished collegiate tennis player and has enjoyed teaching tennis since 1999. Brian applies his sports background to the rehabilitation of his patients. Brian has been with The Orthopaedic Group, LLC since moving back to Connecticut in 2006.