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The information and related photos contained in the APM guide and glossary are for education purposes only, and not intended to be for diagnostic. For assessment of your individual symptoms please consult a licensed healthcare professional.
What Exactly Is a Podiatrist?

A Doctor of Podiatric Medicine (DPM) is to the foot what a dentist is to the mouth, or an ophthalmologist to the eye - a doctor specializing in the prevention, diagnosis and treatment of foot disorders resulting from injury or disease.

A DPM makes independent judgments, prescribes medications and performs surgery. The human foot has a complex interrelation with the rest of the body which means that it may be the first area to show signs of serious conditions such as diabetes and cardiovascular disease. Since the podiatric physician is often the first to detect symptoms of these disorders, he or she becomes a vital and sometimes lifesaving link in the health care team.

A podiatrist, also called a doctor of podiatric medicine, is a specialist who provides medical diagnosis and treatment of foot and ankle problems, such as bunions, heel pain, spurs, hammertoes, neuromas, ingrown toenails, warts, corns and calluses. A podiatrist also renders care of sprains, fractures, infections, and injuries of the foot, ankle and heel. In addition to undergraduate medical school training, podiatrists also attend graduate school for a doctorate degree in podiatry. Podiatrists are required to take state and national exams, as well as be licensed by the state in which they practice.

According to the American Podiatric Medical Association, there are an estimated 15,000 practicing podiatrists in the United States. Podiatrists are in demand more than ever today because of a rapidly aging population. In addition, according to the association, foot disorders are among the most widespread and neglected health problems affecting people in this country.
EACH FOOT contains 26 bones, 33 joints, and a network of more than 100 tendons, muscles and ligaments, along with a network of blood vessels & nerves, our feet are truly a biomechanical masterpiece.

understanding the miracle

The foot can be compared to a finely tuned race car, or a space shuttle, vehicles whose function dictates their design and structure. And like them, the human foot is complex, containing within its relatively small size 26 bones (the two feet contain a quarter of all the bones in the body), 33 joints, and a network of more than 100 tendons, muscles, and ligaments, to say nothing of blood vessels and nerves.

The components of your feet work together, sharing the tremendous pressures of daily living. An average day of walking, for example, brings a force equal to several hundred tons to bear on the feet. Coupled with the fact that people spend about 4 hours per day on their feet and take 8,000 - 10,000 steps, it’s not difficult to understand why our feet are more subject to injury than any other part of our body.

Foot ailments are among the most common of our health problems. Although some can be traced to heredity, many stem from the cumulative impact of a lifetime of abuse and neglect. About 75% of people in the United States have foot pain at some time in their lives. Most foot pain is caused by shoes that do not fit properly or that force the feet into unnatural shapes (such as pointed-toe, high-heeled shoes).

Our feet serve many functions:

• Supports weight
• Acts as a shock absorber
• Serves as a lever to propel the leg forward
• Helps maintain balance by adjusting the body to uneven surfaces

reference: www.APMA.org

MAKE A WISH

A portion of every American Podiatry Magazine™ sponsorship and subscription goes to support the Make-A-Wish® Foundation.

Make-A-Wish® grants a wish, on average, every 38 minutes to a child with a life-threatening medical condition. Wishes come in all shapes and sizes. Some are heartfelt or jaw-dropping - others funny or tear-jerkers.

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I WISH-TO-BE A FIREFIGHTER.

BRENDAN, AGE 4
RENAL FAILURE

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TODAY ISN’T ABOUT HOSPITALS IT’S ABOUT HOPE.

I WISH-TO-BE A FIREFIGHTER.
WHEN SHOULD YOU CONSULT A PODIATRIST?
People call a Doctor of Podiatric Medicine (DPM) for help diagnosing and treating a wide array of foot and ankle problems.
- Persistent pain in your feet or ankles, including ligament sprains and fractures
- Changes in the nails or skin on your foot
- Severe cracking, scaling, or peeling on the heel or foot
- Blisters on your feet

PODIATRIC EDUCATION & MEDICAL SCHOOL TRAINING
Podiatric Medical School is the term used to designate the institutions which educate students and train them to be podiatric physicians.
In the United States, only schools which are accredited by the Council on Podiatric Medical Education (CPME) may earn the status of being a “Podiatric Medical School”. The Doctor of Podiatric Medicine degree is commonly abbreviated D.P.M. degree. The D.P.M. degree is a prerequisite for an individual to be accepted into a CPME accredited surgical residency.

PODIATRIC MEDICAL SCHOOL IN THE UNITED STATES
Podiatric medical education in the United States consists of four (4) years of post-graduate education with the first two focusing primarily upon the sciences and the last two focusing upon didactic, clinical, and hospital externship experience. After successful completion of these four (4) years of professional education, students are granted a Doctor of Podiatric Medicine (D.P.M.) degree. A Doctor of Podiatric Medicine is considered a physician and surgeon of the foot and ankle and receives an education very similar to that of a Doctor of Medicine (M.D.) and Doctor of Osteopathic Medicine (D.O.).

PODIATRIC RESIDENCY
In order to enhance the progression from student doctor to competent podiatric physician and podiatric surgeon status, graduates are required to complete a three year residency program before practicing podiatric medicine.

Each individual residency program must be approved by the Council on Podiatric Medical Education of the American Podiatric Medical Association. The American Association of Colleges of Podiatric Medicine provides a complete list of approved Podiatric Residency Programs.

ACCREDITATION AND GOVERNING BODIES
All podiatric medical schools in the United States are accredited by the Council on Podiatric Medical Education. The American Association of Colleges of Podiatric Medicine is in charge of governing many aspects of Podiatric Medical Education including a mentor network, a centralized application service for prospective students, the Central Application Service for Podiatric Residencies (CASPR), and the Centralized Residency Interview Program (CRIP).
Doctors of Podiatric Medicine are among the first lines of defense for foot conditions related to diabetes including wound healing and peripheral neuropathies.

PODIATRIC MEDICAL SCHOOLS—UNITED STATES

There are nine accredited podiatric medical schools in the United States. All nine podiatric medical schools in the United States are affiliated with colleges or universities, while the remaining two continue to exist as independent academic institutions.

The nine podiatric medical schools (all are accredited by the rigorous standards established by the CPME) in the U.S. are:

Arizona School of Podiatric Medicine at Midwestern University
19555 North 59th Avenue
Glendale, AZ 85308
(888) 247–9277
email: admissaz@midwestern.edu

Barry University School of Podiatric Medicine
11300 NE Second Avenue
Miami Shores, FL 33161
(800) 695–2279
email: admissions@mail.barry.edu

California School of Podiatric Medicine at Samuel Merritt University
3100 Telegraph Avenue,
Oakland, CA 94609
(800) 607–6377
email: admission@samuelmerritt.edu

Des Moines University, College of Podiatric Medicine and Surgery
3200 Grand Avenue
Des Moines, IA 50312
(515) 271–7497
email: cpmsadmit@dmu.edu

Kent State University College of Podiatric Medicine
6000 Rockside Woods Blvd.
Independence, OH 44131
(216) 231–3300
email: admissions@kent.edu

New York College of Podiatric Medicine
53 East 124 Street
New York, NY 10035
(800) 526–6966
email: admissions@nycpm.edu

Dr. William M. Scholl College of Podiatric Medicine at Rosalind Franklin University
3333 Green Bay Road
North Chicago, IL 60064–3095
(847) 578–8400
email: scholl.admission@rosalindfranklin.edu

Temple University School of Podiatric Medicine
148 North Eighth Street
Philadelphia, PA 19107
(800) 220–FEET
email: admissions@tuspm.temple.edu

Western University of Health Sciences College of Podiatric Medicine
309 E. Second Street
Pomona, CA 91766
(909) 469–5485
email: manderson@westernu.edu

Employment of podiatrists is expected to increase 20 percent from 2010 to 2020, faster than the average for all occupations. Are you interested in learning more about becoming a doctor of podiatry? Please call our office and we will send you a complete packet of all Doctoral Programs in Podiatric Medicine.

CALL (888) 999–6609 TODAY TO RECEIVE YOUR COMPLETE INFORMATIONAL PACKET
SUPINATION & PRONATION

Supination (inversion) and pronation (eversion) are complex motions around the joint beneath the ankle. Both the pronated (low arch, flat) foot and supinated (high arch, cavus) foot may have associated symptoms that may benefit from orthopedic device or arch support.


Art direction by Fredric M. Harwin, medical illustrations by Lena Lyons, in consultation with Ivanhoe B. Higgins, M.D., and Joseph J. Mandiberg, M.D.
SPRAINS & FRACTURES
Sprains are injuries to the ligaments, those structures that attach one bone to another. In the ankle, the degree of severity is directly related to the degree of involvement of the three bands of the lateral collateral ligament (anterior talofibular, posterior talofibular, calcaneofibular). Fractures or breaks in the bony architecture of the ankle can result from severe stresses. Displacement often requires surgical intervention to restore normal anatomic relationships.
### PLANTAR FLEXION
Downward flexion of the ankle joint. Constant repetition of this movement can cause injury.

**For example:** Ballet dancers can acquire posterior ankle impingement syndrome from being “on point” too often.

### DORSIFLEXION
Upward flexion of the ankle joint. Constant repetition of this movement can cause injury.

**For example:** Soccer players may develop dorsal ankle impingement from repetitive kicking motions.

### INVERSION
An inward rotation of the ankle joint. Severe or sudden inversion can cause sprains of ligaments and fractures of the foot bones.

**For example:** Jones’ fracture, Chopart avulsion fracture, tears of the anterior talofibular or calcaneofibular ligament.

### EVERSION
An outward rotation of the ankle joint. Severe or sudden eversion can cause sprains of the foot ligaments.

**For example:** Deltoid ligament tears.
1. **BUNION.** The misalignment of the bones of the big toe (first metatarsal and sesamoid bones) is often caused by ill-fitting shoes. Symptoms include a bulge on the inside of the foot with pain, redness, and swelling.

2. **MORTON’S NEUROMA.** A neuroma is a noncancerous thickening of nerve tissue; this type occurs in a nerve between the third and fourth toes. It causes sharp and burning pain in the ball of the foot and toes and sometimes numbness. It is often caused by ill-fitting shoes.

3. **BUNIONETTE** (Tailor’s bunion). Similar to a bunion, but this involves the outside of the foot.

4. **HAMMERTOE.** A permanent sideways bend in a middle toe joint. Aggravation by tight shoes results in pain over the prominent bony areas of the toe. A hard corn may develop over this prominence as well.

5. **JONES’ FRACTURE.** A fracture of the base of the fifth metatarsal bone. People often experience pain and swelling over the middle/outside area of the mid portion of the foot.

6. **CHOPART AVULSION FRACTURE.** An ankle-twisting injury that may tear the tendon attached to the navicular bone and pull a small piece of the bone away.

7. **LISFRANC DISLOCATION.** This is a relatively common condition that is often misdiagnosed in emergency rooms. A twisting fall can dislodge the second bone from the first because the first and second metatarsal bones are not held together well.

8. **METATARSAL STRESS FRACTURE.** A common cause of foot pain when people suddenly increase their activities (e.g. taking up jogging). Excessive stress on the ball of the foot can cause this hairline break resulting in pain and swelling. The most common location is the head of the 2nd metatarsal.

9. **ACHILLES’ TENDON RUPTURE.** Often a sports-related injury for those who suddenly take up activity or are active only on the weekends. A “pop” is often felt in the posterior ankle, with edema (swelling), and pain.

10. **TARSAL TUNNEL SYNDROME.** Most commonly, the entrapment of the tibial nerve by the flexor retinaculum. Pain and stiffness occur over this area on the inside part of the ankle.

11. **CALCANEAL FRACTURE.** A break in the “heel bone” commonly caused by a high fall (e.g. it is becoming more common amongst snowboarders).

12. **PLANTAR FASCIITIS WITH HEEL SPURS.** The most common cause of heel pain is inflammation of the connective tissue on the sole of the foot (plantar fascia). It may be associated with a bony protrusion known as a heel spur.
ANKLE SPRAINS

Ankle sprains occur when one or more ligaments - fibrous bands of tissue that provide stability to the joint, are stretched or torn from excessive force such as a sudden twisting during sports, stepping on an uneven surface, or a blow to the ankle.

Lateral Inversion
Over 85% of all ankle sprains occur when the foot rolls outward (inversion), injuring the ligaments on the lateral, or outside, of the ankle. The anterior talofibular is the most commonly injured ligament.

Medial Eversion
Occurs when the foot rolls inward (eversion), injuring the ligaments on the medial, or inside, of the ankle.

Syndesmosis (High Ankle)
The least common of all ankle sprains, this injury occurs in the upper part of the ankle when the foot rolls inward, accompanied by internal rotation of the tibia. It most often occurs in contact sports.

First Degree Sprains
Ankle sprains are generally “graded” according to the extent of injury: A first degree sprain is an injury in which one or more ligaments are stretched, accompanied by mild pain, bruising, inflammation, difficulty walking, and tenderness.

Second Degree Sprains
A second degree sprain occurs when one or more ligaments are partially torn, producing moderate pain and disability, bruising, inflammation, and the inability to bear weight.

Third Degree Sprains
A third degree sprain is an injury in which one or more ligaments are completely torn, resulting in severe pain and swelling, bruising, joint instability, and loss of function.

Treatment
Acute ankle sprains should be treated with PRICE: Protection, Rest, Ice, Compression & Elevation. Non-steroidal anti-inflammatory medications are also used to decrease swelling and pain. Depending on the degree of injury, a brace, cast or walking boot may be needed. Early rehabilitation with home exercise or formal physical therapy can improve range of motion and speed healing.

ANKLE SPRAINS BY SPORT

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FOOT PAIN DEMOGRAPHICS

Gender
Women are at higher risk than men for severe foot pain, probably because of high-heeled shoes. Severe foot pain appears to be a major cause of general disability in older women.

Occupational Risk Factors
An estimated 120,000 job-related foot injuries occur every year, about a third of them involving the toes. A number of foot problems -- including arthritis of the foot and ankle, toe deformities, pinched nerves between the toes, plantar fasciitis, adult-acquired flat foot, and tarsal tunnel syndrome -- have been attributed to repetitive use at work (for example, walking long distances or standing for many hours). No studies, however, have scientifically distinguished between injuries due to work versus those due to regular use. This is an important issue because of its potential impact on disability claims.

Pregnancy
Pregnant women have an increased risk of foot problems due to weight gain, swelling in their feet and ankles, and the release of certain hormones that cause ligaments to relax. These hormones help when bearing the child, but they can weaken the feet.

Sports and Dancing
People who engage in regular high-impact aerobic exercise are at risk for plantar fasciitis, heel spurs, sesamoiditis, Achilles tendinitis, and stress fractures. Women are at higher risk for stress fractures than men.

Weight gain
Gaining weight puts added stress on the feet and can lead to foot or ankle injuries. The added pressure on the soft tissues and joints of the foot in overweight people increases the likelihood of developing tendinitis and plantar fasciitis.
ARThritis Overview

Arthritis is a general term for a group of more than 100 diseases. The word “arthritis” means “joint inflammation.” Arthritis involves inflammation and swelling in and around the body’s joints and surrounding soft tissue. The inflammation can cause pain and stiffness. There are several types of arthritides that can and do effect the foot and ankle. Among the most common are; osteoarthritis, rheumatoid arthritis, and gout. Although there causes are very much different, they do share the same symptom - PAIN.

<table>
<thead>
<tr>
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<th>Rheumatoid Arthritis (RA)</th>
<th>Gouty Arthritis</th>
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<td>Osteoarthritis, or “wear-and-tear” arthritis, is the most common type of arthritis. Also known as degenerative joint disease or age-related arthritis, osteoarthritis is more likely to develop as people age. Inflammation and injury to the joint cause a breaking down of cartilage tissues, resulting in pain, swelling, and deformity. The changes in osteoarthritis usually occur slowly over many years, though there are occasional exceptions. Symptoms of foot and ankle osteoarthritis often include: Tenderness or pain; reduced ability to move, walk, or bear weight; stiffness in the joint and swelling in the joint. The most essential element of foot care for people with foot and ankle osteoarthritis is to wear shoes that fit properly and feel comfortable.</td>
<td>Rheumatoid arthritis affects everyone differently. For some, joint symptoms develop gradually over several years. In others, rheumatoid arthritis may progress rapidly, while other people may have rheumatoid arthritis for a limited period of time and then enter a period of remission. Rheumatoid arthritis may cause pain, swelling, stiffness, and tenderness in foot joints. If the disease progresses, joints may become distorted and disabled. Pain and tenderness is common under the ball of the foot. The joints between the foot and the toes (metatarsophalangeal joints) swell and move, causing the toes to curl and overlap. The big toe may bend inward (hallux valgus). The middle toes may bend into a clawlike curl (hammer toe).</td>
<td>The most common symptom of an acute gout attack is the sudden and severe onset of pain in the joint, along with warmth, swelling, redness and marked tenderness. The small joint at the base of the big toe is most commonly affected. Other joints affected can include ankles, knees, wrists, fingers and elbows. In some people, the pain is so intense that even a bed sheet touching the toe causes severe pain. These painful attacks usually subside in hours or days, with or without medication. In rare instances, an attack can last for weeks. Most people with gout will experience repeated bouts of gouty arthritis over the years.</td>
</tr>
</tbody>
</table>

Osteoarthritis on Xray
The location of the arthritis is limited to the big toe, and is common with OA.

Rheumatoid Arthritis on Xray
The classic pattern of multiple locations of joint involvement is indicative of RA.

Gouty Arthritis on Xray
When it comes to the foot, Gout attacks the first metacarpalphalangeal joint.
BUNIONS

A bunion is a deformity that usually occurs at the head of the first or fifth of the five long bones (the metatarsal bones) that extend from the arch of the foot and connect to the toes.

A bunion typically develops in the following way:
• Most often it occurs in the first metatarsal bone (the one that attaches to the big toe). A bunion may also develop in the bone that joins the little toe to the foot (the fifth metatarsal bone), in which case it is known as either a bunionette or a tailor’s bunion.
• A bunion begins to form when the big or little toe is forced in toward the rest of the toes, causing the head of the metatarsal bone to jut out and rub against the side of the shoe.
• The underlying tissue becomes inflamed, and a painful bump forms.
• As this bony growth develops, a bunion is formed as the big toe is forced to grow at an increasing angle toward the rest of the toes. One important bunion deformity, hallux valgus, causes the bone and joint of the big toe to shift and grow inward, so that the second toe crosses over it.

People born with abnormal bones in their feet are more likely to form a bunion. In addition, wearing narrow-toed, high-heeled shoes, which put enormous pressure on the front of the foot, may also lead to a bunion formation. The condition may become painful as extra bone and a fluid-filled sac grow at the base of the big toe. Flat feet, gout, arthritis, and occupations (such as ballet) that place undue stress on the feet can also increase the risk for bunions.

Shoes and Protective Pads.
Pressure and pain from bunions and bunionettes can be relieved by wearing appropriate shoes, such as the following:
• Soft, wide, low-heeled leather shoes that lace up
• Athletic shoes with soft toe boxes
• Open shoes or sandals with straps that don’t touch the irritated area

A thick doughnut-shaped, moleskin pad can protect the protrusion. In some cases, an orthotic can help redistribute weight and take pressure off the bunion. Nonsteroidal anti-inflammatory drugs (NSAIDs) or corticosteroid injections may offer some pain relief.

Do I Need Bunion Surgery?
If discomfort persists, surgery may be necessary, particularly when pain is daily and conservative care fails. There are more than 100 surgical variations, ranging from removing the bump to realigning the toes.

The most common surgery, an outpatient procedure known as bunionectomy, involves shaving down the bone of the big toe joint. This is the most basic and least complicated of the bunion procedures.
CORNS AND CALLUSES

A corn is a protective layer of dead skin cells that forms due to repeated friction. It is cone-shaped and has a knobby core that points inward. This core can put pressure on a nerve and cause sharp pain. Corns can develop on the top of, or between, toes. If a corn develops between the toes, it may be kept pliable by the moisture from perspiration and is therefore called a soft corn.

Corns develop as a result of friction from the toes rubbing together or against the shoe. They often occur from the following:
- Shoes, socks, or stockings that fit too tightly around the toes
- Pressure on the toes from high-heeled shoes
- Shoes that are too loose, due to the friction of the foot sliding within the shoe
- Deformed and crooked toes

Calluses are composed of the same material as corns. Calluses, however, develop on the ball or heel of the foot. The skin on the sole of the foot is ordinarily about 40 times thicker than the skin anywhere else on the body, but a callus can even be twice as thick. A protective callus layer naturally develops to guard against excessive pressure and chafing as people get older and the padding of fat on the bottom of the foot thins out. If calluses get too big or too hard, they may pull and tear the underlying skin.

Risk factors for calluses include the following:
- Poorly fitting shoes
- Walking regularly on hard surfaces
- Flat feet

CORNES OR CALLUSES?

Calluses are composed of the same material as corns. Calluses, develop on the ball or heel of the foot, while corns develop on top of or between the toes.
**Corn & Calluses Prevention**

To prevent corns and calluses and relieve discomfort if they develop:
- Do not wear shoes that are too tight or too loose. Wear well-padded shoes with open toes or a deep toe box (the part of the shoe that surrounds the toes). If necessary, have a shoe specialist stretch the shoes in the area where the corn or callus is located.
- Wear thick socks to absorb pressure, but do not wear tight socks or stockings.
- Apply petroleum jelly or lanolin hand cream to corns or calluses to soften them.
- Use doughnut-shaped pads that fit over a corn and decrease pressure and friction. They are available at most drug stores.
- Place cotton, lamb's wool, or mole skin between the toes to cushion any corns in these areas or injury to the toe or foot.

**INGROWN TOENAILS**

Ingrown toenails can occur on any toe but are most common on the big toes. They usually develop when tight-fitting or narrow shoes put too much pressure on the toenail and force the nail to grow into the flesh of the toe. Incorrect toenail trimming can also contribute to the risk of developing an ingrown toenail. Other causes are:
- Fungal infections
- Injuries
- Abnormalities in the structure of the foot
- Repeated impact on the toenail from high-impact aerobic exercise

**Caring for Toenails.**

Trim toenails straight across and keep them long enough so that the nail corner is not visible. If the nail is cut too short, it may grow inward. If the nail does grow inward, do not cut the nail corner at an angle. This only trains the nail to continue growing inward. When filing the nails, file straight across the nail in a single movement, lifting the file before the next stroke. Do not saw back and forth. A cuticle stick can be used to clean under the nail.

**Treatments.**

To relieve pain from ingrown toenails, try wearing sandals or open-toed shoes. Soaking the toe for 5 minutes twice a day in a warm water solution of Domeboro or Betadine can help. People who are at increased risk for infections, such as those with diabetes, should have professional treatment.

Antibiotic ointments can treat ingrown toenails that are infected. Apply the ointment by working a wisp of cotton under the nail, especially the corners, to lift the nail up and drain the infection. The cotton will also help force the toenail to grow out correctly. Change the cotton daily, and use the antibiotic consistently.

In chronically painful cases, more permanent treatment is necessary. Surgery (most often in the office) involves simply cutting away the sharp portion of ingrown nail, removing the nail bed, or removing a wedge of the affected tissue. Orthonyxia, a newer surgical technique that implants a small metal brace into the top of the nail, may be as effective as traditional surgical techniques for preventing ingrown toenails from recurring.

Nonsurgical methods can also treat ingrown toenails. One technique uses chemicals to remove the skin. Both sodium hydroxide and phenol may be used, but research shows that sodium hydroxide produces a better outcome and faster recovery than phenol. Other nonsurgical methods include using cauterization (heating), or lasers, to prevent the occurrence of the ingrown nail.
MORTON’S NEUROMA
A neuroma usually means a benign tumor of a nerve. However, Morton’s neuroma, also called interdigital neuroma, is not actually a tumor. It is a thickening of the tissue surrounding the nerves leading to the toes. Morton’s neuroma usually occurs between the 3rd and 4th toes as a result of abnormal pressure on the nerve. It can also occur in other locations. The nerve becomes enlarged and inflamed. The inflammation causes a burning or tingling sensation and cramping in the front of the foot.

Other causes of this condition include:
• Tight, poorly-fitting shoes
• Injury
• Arthritis
• Abnormal bone structure

Treatment for Neuromas.

Pain from Morton’s neuroma can be reduced by massaging the affected area. Roomier shoes (box-toed shoes), pads of various sorts, and cortisone injections in the painful area are also helpful. A combination of cortisone injections and shoe modifications provides better immediate relief than changes in footwear alone. Ultrasound-guided injection of alcohol might also provide relief from Morton’s neuroma, research finds.

If these treatments are not effective, the enlarged area may need to be surgically removed. Success rates for this procedure seem to be high and provide long-term relief. Some numbness is common afterward, but it rarely bothers patients. Occasionally, the nerve tissue may re-grow and form another neuroma (known as a “stump neuroma” which requires further treatment.

SESAMOIDITIS
Sesamoiditis is an inflammation of the tendons around the small, round bones that are embedded in the head of the first metatarsal bone, which leads to the big toe. Sesamoid bones bear much stress under ordinary circumstances; excessive stress can strain the surrounding tendons. Often there is no clear-cut cause, but sesamoid injuries are common among people who participate in jarring, high-impact activities such as ballet, jogging, and aerobic exercise.

Treatment for Sesamoiditis.

Rest and reducing stress on the ball of the foot are the first lines of treatment for sesamoiditis. A low-heeled shoe with a stiff sole and soft padding inside is all that is usually required. In severe cases, surgery may be necessary.

STRESS FRACTURE
A stress fracture in the foot, also called fatigue or march fracture, usually results from a break or rupture in any of the five metatarsal bones (mostly the second or third). These fractures are caused by overuse during strenuous exercise, particularly jogging and high-impact aerobics. Women are at higher risk for stress fracture than men.

Treatment for Stress Fractures.

Patients should seek treatment if pain persists for more than 3-5 days. Delayed treatment may reduce the chances of returning to previous level of functioning.

Surgery may be needed if conservative measures fail. In most cases, however, stress fractures heal by themselves if you avoid rigorous activities. Some health care providers recommend moderate exercise, particularly swimming and walking.

It is best to wear low-heeled shoes with stiff soles. Occasionally, a health care provider may recommend wearing a special boot and surgical shoe and a compressive wrap to make walking more comfortable.
HEEL PAIN

The heel is the largest bone in the foot. Heel pain is the most common foot problem and affects 2 million Americans every year. It can occur in the front, back, or bottom of the heel.

Types of heel pain include:
- Achilles tendinitis
- Bursitis of the heel
- Excess pronation
- Haglund’s deformity
- Heel spur syndrome
- Plantar fasciitis

ACHILLES TENDINITIS

The Achilles tendon is the largest tendon in the body. It connects the two main calf muscles - the gastrocnemius and soleus - to the heel bone (the calcaneus). Common injuries of the Achilles tendon include: tendonitis (inflammation), Achilles tendinosis (degeneration), and rupture (tear).

Tendinitis (inflammation)

Achilles tendinitis most often results from overuse during work or athletic activities. The sheath surrounding the tendon (the paratendon) may become swollen. Symptoms include a burning pain and tenderness during or after activity. The condition may become chronic without treatment and rest.

Tendinosis (degeneration)

Tendinosis also comes from overuse, but unlike tendonitis, it is chronic and degenerative. Continuous stress produces microtears and a breakdown of the collagen tissue within the Achilles tendon. The condition is often painful and may reduce tendon strength and mobility.

Rupture (tear)

An Achilles tendon may rupture because of overuse or an injury such as a direct blow to the lower leg or ankle. Most commonly, it tears when the calf is contracting while an external force is stretching it. Symptoms include severe pain and a popping sound at the time of injury, followed by swelling and the inability to stand or point the toes.

Treatment

For tendinitis and tendinosis, treatment includes rest, ice, over-the-counter pain relievers and physical therapy. Heel lifts, which elevate the heel and diminish stress on the Achilles tendon, are often very helpful. Occasionally immobilization in a walking boot or cast is recommended. Ruptures are treated either with surgery, a cast or both.

FOOT FACT

Most ruptures occur about two to three inches above where the tendon inserts the calcaneus (heel bone). This area is the narrowest part of the tendon and has the poorest blood supply, making it more prone to injury and rupture.

The Achilles tendon can withstand a force of 1000 pounds without tearing, making it the strongest in the body (Horwitz, 1999). Despite its tremendous strength, the Achilles tendon is the second most frequently ruptured tendon in the body.
BURSITIS OF THEHEEL

Bursitis of the heel is an inflammation of the bursa, a small sack of fluid beneath the heel bone. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin or ibuprofen (Advil), and steroid injections will help relieve pain from bursitis. Applying ice and massaging the heel are also beneficial. A heel cup or soft padding in the heel of the shoe reduces direct impact when walking.

Excessive Pronation

Pronation is the normal motion that allows the foot to adapt to uneven walking surfaces and to absorb shock. Excessive pronation occurs when the foot has a tendency to turn inward and stretch and pull the fascia. It can cause not only heel pain, but also hip, knee, and lower back problems.

HAGLUND’S DEFORMITY

Haglund’s deformity, known medically as posterior calcaneal exostosis, is a bony growth surrounded by tender tissue on the back of the heel bone. It develops when the back of the shoe repeatedly rubs against the back of the heel, aggravating the tissue and the underlying bone. It is commonly called pump bump because it frequently occurs with high heels. (It can also develop in runners, however.

Treatment for Haglund’s Deformity.

Applying ice followed by moist heat will help ease discomfort from a pump bump. Nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin or ibuprofen (Advil), will also reduce pain. Your doctor may recommend an orthotic device to control heel motion. Corticosteroid injections are not recommended because they can weaken the Achilles tendon. However short acting steroid injections adjacent to the tendon may provide relief.

In severe cases, surgery may be necessary to remove or reduce the bony growth. Studies show, however, that recovery from surgery is very long, and success rates vary. Experts advise patients to try all conservative measures before choosing surgery.

TIP #33 SHOELosophy™ 101:

Those who have foot pain are much more likely to experience problems in other areas of the body, such as;

- Weight issues
- Back pain/discomfort
- Joint pain/arthritis
- Knee pain/discomfort

FASHION & FUNCTION

When trying on a potential new pair of shoes, think “fashion & function.” If they’re just a wee-little bit tight when you try them on, think about how they’ll feel after an hour or two of walking in them - regardless of how terrific they look :)

RESIST THE TEMPTATION
FLAT FEET
Flat foot, or pes planus, is a defect of the foot that eliminates the arch. The condition is most often inherited. Arches, however, can also fall in adulthood, in which case the condition is sometimes referred to as posterior tibial tendon dysfunction (PTTD). This occurs most often in women over age 50, but it can occur in anyone.

The following are risk factors for PTTD:
• Wearing high heels for long periods of time is a particular risk for flat feet. Over the years, the Achilles tendon in the back of the calf shortens and tightens, so the ankle does not bend properly. The tendons and ligaments running through the arch then try to compensate. Sometimes they break down, and the arch falls.

• Some studies have indicated that the earlier a person starts wearing shoes, particularly for long periods of the day, the higher the risk for flat feet later on.

• Other conditions that can lead to PTTD include obesity, diabetes, surgery, injury, rheumatoid arthritis, or the use of corticosteroids.

Some research suggests that flat feet in adults can, over time, actually exert abnormal pressure on the ankle joint that can cause damage. One indirect complication of flat arches may be urinary incontinence or leakage during exercise. The less flexible the arch, the more force reaches the pelvic floor, jarring the muscles that affect urinary continence. Nevertheless, whether flat feet pose any significant problems in adults is unknown.

Treatment for Flat Feet in Children.
Doctors usually can’t diagnose flat feet until a child is 6 years old. Children with flat feet typically don’t have symptoms, and often outgrow the condition. Children who are experiencing symptoms might need to change shoes or wear arch supports. In rare cases, minimally invasive joint insert surgery may be an option.

Treatment for Flat Feet in Adults.
In general, conservative treatment for flat feet acquired in adulthood (posterior tibial tendon dysfunction) involves pain relief and insoles or custom-made orthotics to support the foot and prevent progression.

HIGH ARCHES
An overly-high arch (hollow foot) can cause problems. Army studies have found that recruits with the highest arches have the most lower-limb injuries and that flat-footed recruits have the least. Contrary to the general impression, the hollow foot is much more common than the flat foot.

Clawfoot, or pes cavus, is a deformity of the foot marked by very high arches and very long toes. Clawfoot is a hereditary condition, but can also occur when muscles in the foot contract or become unbalanced due to nerve or muscle disorders.
PLANTAR FASCIITIS
HEEL PAIN SYNDROME

PLANTAR FASCIITIS & HEEL SPUR SYNDROME
Plantar fasciitis is a common foot problem that accounts for 1 million office visits per year. Plantar fasciitis occurs from small tears and inflammation in the wide band of tendons and ligaments that stretches from the heel to the ball of the foot. This band, much like the tensed string in a bow, forms the arch of the foot and helps serve as a shock absorber for the body.

The term plantar means the sole of the foot, and fascia refers to any fibrous connective tissue in the body. Most people with plantar fasciitis experience pain in the heel with their first steps in the morning. The pain also often spreads to the arch of the foot. The condition can be temporary, or it may become chronic if ignored. Resting can provide relief, but only temporarily.

Heel spurs are calcium deposits that can develop under the heel bone as a result of the inflammation that occurs with plantar fasciitis. Heel spurs and plantar fasciitis are sometimes blamed interchangeably for pain, but plantar fasciitis can occur without heel spurs, and spurs commonly develop without causing any symptoms at all.

Causes of Plantar Fasciitis.
The cause of plantar fasciitis is often unknown. It is usually associated with overuse during high-impact exercise and sports. Plantar fasciitis accounts for up to 9% of all running injuries. Because the condition often occurs in only one foot, however, factors other than overuse are likely to be responsible in many cases. Other causes of this injury include poorly-fitting shoes, lack of calf flexibility, or an uneven stride that causes an abnormal and stressful impact on the foot.

Treatment Goals.
The three major treatment goals for plantar fasciitis are:
• Reducing inflammation and pain
• Reducing pressure on the heel
• Restoring strength and flexibility

Embarking on an exercise program as soon as possible and using NSAIDs, splints, or heel pads as needed can help relieve the problem. Pain that does not subside with NSAIDs may require more intensive treatments, including leg supports and even surgery.

Treatment.
Inflammation and pain is most commonly treated with ice and over-the-counter nonsteroidal anti-inflammatory drugs (NSAIDs), such as aspirin or ibuprofen. NSAIDs reduce pain and disability in people with plantar fasciitis when used with other techniques, such as night splints and stretching.

Corticosteroids are powerful anti-inflammatory agents. An injection of a steroid plus a local anesthetic (such as Xylocaine) may provide relief in most cases of plantar fasciitis.

For athletes or performers who need immediate relief, an effective method is to administer the steroid dexamethasone using a procedure called iontophoresis, which introduces the drug into the foot’s tissue using an electrical current.

Several non-drug approaches can relieve pressure on the heel, including:
• Sturdy Shoes and Insoles. It is important to wear comfortable but sturdy shoes that have thick soles, rubber heels, and a sole insole to relieve pressure. (An insole with an arch support might also be helpful.) Cutting a round hole about the size of a quarter in the sole cushion under the painful area may help support the rest of the heel while relieving pressure on the painful spot. Heel cups are not very useful. When combined with exercises that stretch the arch and heel cord, over-the-counter insoles may offer the same relief as prescribed orthotics.

• Night Splints. Some evidence suggests that splints worn at night may be helpful for some people. One device, for example, uses an Ace bandage and an L-shaped fiberglass splint to keep the foot stretched while the patient is sleeping. This allows the muscle to heal.

NIGHT SPLINT
Over 90% Of Plantar Fasciitis Cases Do Not Require Surgery.

There’s no need to suffer with the debilitating pain associated with plantar fasciitis. Ask your podiatrist to evaluate your individual case for the best solution.

**FOOT FACT**

Plantar fasciitis is the #1 reason people visit a podiatrist complaining of heel pain.

Although patient compliance may be better with custom-made prescribed orthotics than with tension night splints, it is believed that they are equally effective in improving pain. In addition, evidence suggests that nearly any splint, regardless of cost, is equally effective in about three-quarters of patients.

- **Elevated Heels.** Some people report relief from mild symptoms with the use of shoes or cowboy boots that have elevated heels. This approach, however, may not work in some people and is not recommended for anyone with a moderate-to-severe condition. (Heel cups have not been proven to be very useful.)

- **Orthotics.** For severe conditions, such as fallen arches or structural problems that cause imbalance, insoles, called orthotics, molded from a plaster cast or scan of the patient’s foot may be needed.

- **Extracorporeal Shock Wave Therapy (ESWT).** ESWT may be used as an alternative to surgery for patients who have not responded to other treatments. The therapy uses sound waves to injure the surrounding tissues in the heel, which is believed to trigger healing of the tissues that are causing the pain. Multiple treatments are often required.

ESWT can be considered as an option for patients who haven’t responded well to extensive conservative treatment.

- **Surgery.** Surgery may be needed for some patients, typically those who have severe heel pain that does not respond to 6 months or more of conservative care.

An instep plantar fasciotomy is a common surgery that relieves pressure on the nerves reducing tightness of the plantar fasciitis and reducing or eliminating pain.

A less invasive method uses a procedure called an endoscopic plantar fasciotomy. This procedure often allows you to return to tennis shoes quickly. The surgery recommended will be the one most commonly performed by your surgeon. **Note:** It is rare to have to remove a heel spur during the surgery.

- **Botox.** Studies show that injections of botulinum toxin (Botox), a protein used to temporarily paralyze certain muscles, reduces pain and improves patients’ future ability to walk.
ACHILLES TENDON
The Achilles tendon is the tendon which connects the three strongest flexor muscles of the leg to the foot. It is a tendon which connects the two heads of the gastrocnemius muscle and the deeper soleus muscle to the calcaneus, or heel bone. The tendon can be felt in the back of the ankle and is just under the skin. This tendon is a common source of pain in runners and other athletes. Achilles tendonitis, tendonosis and rupture are some of the common problems encountered with this structure.

ACCOMMODATIVE SHOES
Shoes designed specifically for comfort. Usually fits the shape of the foot with wide toe box and good arch support.

ADDUCTED FOOT
A pediatric condition where the front of the foot twists inward. Treatment may be with special shoes, braces or surgery depending on the severity of the deformity.

ANKLE INSTABILITY
Chronic, repetitive sprains of the ankle. This can be due to an injury that never healed properly but can also be due to weak ankle ligaments or a heel that tilts inward (varus heel).

ANKLE JOINT
The joint between the foot and the lower leg. It allows the foot to dorsiflex (move upward) and plantarflex (move downward). It is made up of the two bones of the lower leg (tibia & fibula) and the ankle bone (talus). There are ligaments that hold the joint together on the inside (deltoid) and outside (lateral ankle ligament complex).

ARTHRITIS
Arthritis typically refers to the wearing away of joint surfaces. Arthritis falls into one of three categories: Osteoarthritis is primary arthritis of the joint and may be related to family history. Traumatic arthritis is arthritis that develops after injury to a joint. Inflammatory arthritis occurs when a disease affecting the patient causes the cartilage to wear away.

BUNION
A painful swelling or lump along the inner side of the joint where the big toe meets the foot (Metatarsophalangeal Joint). Many people are under the impression that a bunion is a growing bone spur in this location, but it is usually a result of an imbalance of the muscles that pull on the big toe, causing the big toe joint to slip out of place.
**BUNIONECTOMY**

A surgical procedure to remove the bunion and re-align the big toe. Surgery may involve “ostectomy” (bone cutting) of one or more bones of the foot, removal of spurs around the joint and re-balancing of the tendons around the great toe. Recovery time depends upon the complexity of the surgery.

**BUNIONETTE**

A painful swelling or lump along the outer side of the joint where the little toe meets the foot (Metatarsophalangeal Joint). This may be a spur on the outside of the joint, or may be related to the 5th toe joint becoming angled.

**CALCANEUS**

The heel bone. Two joints are present: the subtalar joint which allows motion with the talus (ankle) bone which allows “inversion” and “eversion” of the foot with the leg; and the calcaneocuboid joint has a complicated biomechanical function that controls flexibility of the foot and controls the arch of the foot. The Achilles tendon attaches to the back of the calcaneus, and the plantar fascia also attaches to the bottom of the calcaneus.

**CALLUS**

Hard skin that grows in the area of increased pressure, usually from pressure of a shoe.

**CARTILAGE**

Cartilage is a living tissue that lines our joints. It is a matrix of proteins and collagen that is tough, absorbs shock and is very smooth. Healthy cartilage can, and often does, last our whole life without problems. Disease of the cartilage or trauma can cause the cartilage cells to die. Unlike most tissues in our body, joint cartilage cells do not reproduce themselves once our skeletons are fully grown. Basic science and clinical research has led to recent innovations in cartilage transplantation and growth.

**CHARCOT JOINTS**

“Charcot” joint in the foot typically refers to painless fracture and dislocation of the foot in patients without normal sensation or feeling in their foot. Loss of sensation in the foot for any reason can be responsible for developing a Charcot fracture, although this is most commonly seen with neuropathy. Neuropathy of the nerves that affect the foot is most commonly seen with diabetes, but is associated with other diseases as well. Treatment depends on the severity of the condition and the amount of deformity that is present.

**CLAW TOE**

Most deformities of the lesser toes are commonly referred to as “Claw Toe”. This is usually the result of a muscular imbalance within the foot causing the lesser toes to deform.

**CLUBFOOT**

Clubfoot is a condition where the foot is malformed at birth. Usually the foot is tightly and rigidly twisted downward at the ankle and inward at the heel and midfoot. Correction by stretching the foot and casting can be effective, although sometimes surgery is necessary. This condition requires treatment by an podiatric foot and ankle surgeon and should be evaluated soon after birth.

**CORN**

Corns are hardened areas of abnormal skin on the foot. They usually form in an area where there is increased pressure on the foot, most typically on the tops or sides of toes where a shoe pinches. They can also form on the sole of the foot when deformity of the toes is present, most commonly on the ball of the foot. Treatment by following the 10 points of proper shoe fit is often effective. “Paring” of the callus may be necessary for treatment of the condition. Simply paring the corn without alleviating the pressure (i.e., changing the shoe) will result in return of the corn.

**CUBOID**

The midfoot bone on the outside of the foot. This bone lies between the calcaneus and metatarsals. This bone may be crushed (“Nutcracker fracture”) when the midfoot is injured.

**CUNEIFORM**

Three cuneiform bones are present in the foot: the medial cuneiform, the intermediate cuneiform, and the lateral cuneiform. These are of primary importance in injuries to the Tarsometatarsal Joint or “Lisfranc Injuries.”

**DIABETIC FOOT**

Diabetes affects the feet in a profound way which can lead to foot disease, fractures, and ulcers. Diabetic foot problems may be the result of poorly functioning nerves (neuropathy), hardening of the arteries (atherosclerosis), and decreased resistance to infection (immunosuppression). Diabetic foot problems should be monitored carefully by the patient, a primary care physician, and a podiatric foot and ankle specialist.

**EVERSION**

Twisting out, away from the midline of the body.

**FLAT FEET**

Flat feet (pes planovalgus) can be present from birth (congenital), or develop with time (acquired). Congenital flat foot may be the result of a deformity of one or more bones in the foot, or a failure of the bones to separate during growth before birth (tarsal coalition).

**FOOT ULCER**

A breakdown of the skin in the foot. This is usually a problem with patients who have other diseases such as diabetes, rheumatoid arthritis, neuropathy, venous stasis or other long standing medical problems. Ulcers vary in severity ranging from superficial breakdown of the skin to deeper ulceration that extends though muscle and bone. All ulcers need the care of a podiatric physician.

**FRACTURE**

A fractured bone is one that has cracked or broken. Bones are comprised primarily of calcium and are quite hard. A crack usually occurs as a result of an injury. In cases of abnormal bone structure, a fracture can occur after a very minor injury. Overuse can cause a “stress” fracture. Displacement refers to the amount the two broken pieces have moved from each other. In non-displaced fractures the pieces of bone haven’t separated at all.
HIGH ARCHES

High arches or “pes cavus” is a condition that can be normal or can be problematic. No two people have the exact same arch height and shape, and some high arches may need no treatment. High arches that are problematic are often the result of problems with the way the bones of the foot developed as a child, or sometimes are the result of serious neurological conditions that require treatment. A podiatric surgeon can help you decide whether your arches are within the normal range or whether they require treatment.

HALLUX RIGIDUS
Arthritis of the great toe, specifically at the joint where the big toe meets the foot. Treatment may be with orthotics or surgery.

HAMMERTOE
Deformity of a lesser toe, usually resulting in a fixed position that can cause significant pain and discomfort with tight shoes. Treatment is by shoe modification or surgery.

HEEL PAIN
Pain in the heel can be from a number of problems. The most common is “plantar fasciitis.” Other conditions exist and include Achilles tendonitis, stress fracture, peroneal tendonitis, and others. Your podiatric foot and ankle medical doctor can help you determine the specific cause of the pain and how to resolve it.

HEEL SPUR
“Heel spurs” are commonly used to describe plantar fasciitis. On x-rays, they appear as a “spur” on the bottom or back of the heel bone (calcaneus). Surgical removal of the spur is usually not required for successful treatment of plantar fasciitis.

INFLAMMATORY ARTHRITIS
Inflammatory arthritis occurs when a disease affecting the patient causes the cartilage to die off. Treatment is dependent on the cause and extent of the arthritis and may entail medication, bracing or surgery.

INGROWN TOENAIL
As a nail grows in, it may catch at the inside or outside edge of the toe. When the nail begins to cut through the skin, an infection can occur resulting in redness, pain, and pusy discharge. Treatment is by removal of part or all of the nail by a podiatric foot and ankle specialist.

INVERSION
Twisting in, towards the midline of the body.

LATERAL MALLEOLUS
The end of the fibula, the most prominent bone on the outside of the ankle.

LIGAMENT
A band of tissue that connects one bone to another, typically to support a joint. Ligaments are made primarily of collagen. Injury to a ligament is referred to as a sprain.

LISFRANC’S LIGAMENT
The ligament between the medial cuneiform and the base of the second metatarsal. Injury to this ligament is important because rupture can lead to significant arthritis of the midfoot.

MALLET TOE
Mallet toe is a deformity of a lesser toe similar to a hammer toe, but with less of a curvature of the toe. Only the joint at the tip of the toe is flexed in a mallet toe. The condition may be congenital or may develop in association with wearing ill-fitting shoes. It generally leads to a painful callus on the tip of the toe.

MEDIAL MALLEOLUS
The most prominent bone on the inner side of the ankle.

METATARSALGIA
Pain under the ball of the foot.

METATARSOPHALANGEAL JOINT
The joint where the toes meet the foot.

MORTON’S NEUROMA
A nerve which is pinched in the forefoot. When long standing, a “neuroma” or scarring of the nerve can develop. Symptoms include pain and foot numbness that radiates into the toes.

NAVICULAR
A “boat” shaped bone in the midfoot. Two joints are present: the talonavicular joint which has a complicated biomechanical function that controls flexibility of the foot and controls the arch of the foot; and the naviculocuneiform joint which can be injured in midfoot injuries and can contribute to flatfoot deformity.

NAIL FUNGUS INFECTION
“Onychomycosis” or fungal infection of the nail is a common condition affecting adults. Usually this results in thickening, discoloration, and roughness of the nail.

NEUROMA
An injured or damaged nerve.

NEUROPATHIC ARTHROPATHY
Neuropathic or “Charcot” joints in the foot typically refers to painless fracture and dislocation of the foot in patients without normal sensation or feeling in their foot. Loss of sensation in the foot for any reason can be responsible for developing a Charcot fracture, although this is most commonly seen with neuropathy. Neuropathy of the nerves that affect the foot is most commonly seen with diabetes, but is associated with other diseases as well. Treatment depends on the severity of the condition and the amount of deformity present.

ORTHOSES
A brace or other external device used to support a joint or the foot.

OSTEOARTHRITIS
Osteoarthritis is primary arthritis of the joint and may be related to family history.

OUTTOEING
By age 2, most children walk with their toes pointed slightly outward. If the feet angle out excessively, this is called outtoeing. It is not as common as intoeing, but in most cases, it is also just part of normal development.
PERONEAL TENDON
The peroneal tendons are behind the outside bone of the ankle (the fibula). These two tendons move the foot outwards in a direction called eversion. They balance the ankle and the back of the foot and prevent the foot from turning inwards repetitively. The peroneal tendons are susceptible to injury as the ankle turns, rolls or becomes sprained because they are not as strong as the muscles and tendons on the inside of the ankle.

PHALANGES
Phalanges are the long bones of the fingers or toes. (Plural form of phalanx)

PLANTAR FASCITIS
An inflammation of the plantar fascia. Symptoms are usually pain at the bottom of the heel with the first step in the morning. Non-operative treatment is usually successful.

PLANTAR WARTS
“Warts” are a viral infection of the skin which cause a lump or outgrowth. Treatment varies in the size and severity and may include destruction by freezing, heating, laser, surgical removal or other treatments. Referral to a dermatologist is often appropriate.

POSTERIOR TIBIAL TENDON
The posterior tibial tendon and other supportive ligaments help to maintain the arch of the foot. This tendon goes behind the ankle and around the medial malleolus (a bone inside the ankle).

RHEUMATOID ARTHRITIS
One of the inflammatory arthritis diseases. This is an “autoimmune” disorder where the patient’s immune system malfunctions and attacks the cartilage and tendons.

SESAMOIDITIS
Inflammation of the small bones under the great toe.

SPRAIN
An injury causing tearing of a ligament. Sprains vary in severity and can range from a partial tearing of the ligament to a complete rupture.

STRESS FRACTURE
A crack in a bone resulting from “overuse.” This can occur in athletes who are trying to push their performance to a higher level, or in a non-athlete who suddenly increases the amount of walking in a day. Changing shoes, starting a new exercise program or dramatically changing the kind or amount of activity are often inciting events. Often stress fractures do not appear on normal x-rays for weeks or months. Most stress fractures heal of their own accord, although some are problematic due to their location or due to the blood supply of the involved bone. Stress fractures of the navicular bone, 5th metatarsal and tibial shaft are particularly problematic in athletes and may require surgery.

TALUS
The ankle bone. This bone sits within the ankle “Mortise” or hinge which is made up of the two leg bones, the tibia and fibula. Three joints are present: the ankle, which allows the up and down motion of the foot with the leg; the subtalar joint which allows “inversion” and “eversion” of the foot with the leg; and the talonavicular joint which has a complicated biomechanical function that controls flexibility of the foot and the arch of the foot. The talus has no muscular attachments and is mostly covered with cartilage, which makes injuries to the talus difficult to heal.

TARSALS
Tarsal bone refers to one of the bones of the foot.

TENDON
A tendon is a structure in the body that connects muscle to bone. As the muscle contracts, it pulls on the tendon which moves the bone. Tendons are made mostly of collagen. Inflammation of a tendon is called tendonitis. Tendons can tear or rupture if they are pulled too hard by the muscle, or if they degenerate.

TENDINITIS
Inflammation of a tendon. Most cases of tendonitis are caused by some type of injury, overuse or a mechanical abnormality in the foot or ankle. Treatment depends on the specific tendon involved, the extent of involvement and the length of time the symptoms have been present.

TENDONOSIS
A later stage of tendonitis where the tendon starts to fray and tear.

TIBIA
The larger, medial bone of the leg that extends from the knee to the ankle.

TIBIALIS ANTERIOR TENDON
The function of the tibialis anterior is to move the ankle upwards. It stabilizes the foot in the latter part of the stance phase of gait and extends the foot at the beginning and middle portions of the swing phase of gait.

TOE WALKING
A condition in children in which walking is done on the toes. Some forms are not harmful and resolve of their own accord. Some forms are more serious and may represent an underlying neurological problem. All children who are “toe walking” should be evaluated by a podiatric foot and ankle surgeon.

TURF TOE
A sprain of the great toe joint (metatarsophalangeal joint), usually the result of the toe bending upwards violently. Complete rupture of the structures at the bottom of the joint may require surgery. Lesser injuries can be treated with immobilization and taping.

VALGUS
Tilted “outward” or away from the midline of the body.

VARUS
Tilted “inward” or towards the midline of the body.