Q and A: How to avoid an ankle injury

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DEAR MAYO CLINIC: I am in my early 50s and enjoy an active lifestyle. I recently heard reports of an increase in ankle sprains and broken ankles particularly in an older population, due in part to both activity and aging. How can I avoid these injuries in the first place?

ANSWER: The ankle joint is composed of the ends of the tibia and fibula bones that are connected by multiple ligaments that help stabilize joints. Collectively, this relationship is critical for stability and motion of the ankle.

Injury to any of the ankle bones, ligaments or tendons, and several types of arthritis, can cause ankle pain. Many people report ankle pain, which can be a precursor to ankle injuries.

The most common issue is a sprained ankle , which is an injury that occurs when you roll, twist or turn your ankle in an awkward way, forcing it to move out of its normal position. This can stretch or tear the ligaments. Failing to treat a sprained ankle properly, engaging in activities too soon after spraining your ankle or spraining your ankle repeatedly might lead to ongoing complications.

As far as an ankle fracture, the most common area for this to occur is at the fibula, specifically the lateral malleolus. In isolation, lateral malleolus fractures may be treated without surgery if no other ligament injuries are identified with special views on X-rays. Fractures of the lateral malleolus, medial malleolus and posterior malleolus often require surgery if they occur in combination, as the ankle becomes unstable and prone to arthritis if not surgically treated. These joints are translational joints—allowing one part to translate in respect to each other—not rotate. But historically it has been shown that just 1 millimeter of translation of the joint reduces 42% of the contact area. If this stable relationship is not restored, ankle arthritis may rapidly progress.

The incidence of ankle fractures is estimated to be more than five million ankles in the U.S. per year. Fractures can range from tiny cracks in your bones to breaks that pierce your skin. Ankle fractures can be caused by multiple factors, including low-energy rotational injuries in recreational sports or high-energy motor vehicle accidents. Treatment

for a broken ankle depends on the exact site and severity of the bone fracture. A severely broken ankle may require surgery to implant plates, rods or screws into the broken bone to maintain proper position during healing.

Prevention of these injuries is multifactorial, starting with a healthy diet and daily exercise. It has been estimated that more than 1 billion people worldwide are vitamin D deficient, and current guidelines recommend at least 600 international units (IU) for people ages 1 to 70 and 800 IU per day for people over 70.

Additional preventive measures for ankle injuries include ankle proprioceptive exercises, which optimize both balance and coordination. These exercises enhance the stabilizing ligaments and muscles to the ankle joint, including the tibialis anterior, tibialis posterior and the peroneal muscles. Furthermore, a healthy lifestyle with daily physical activity will help these muscles to stabilize the ankle on uneven surfaces.

Well-supportive shoes with inserts that help to pronate the forefoot also may better position the ankle joint for patients with high-arched feet. Finally, a tight calf, or gastrocnemius muscle, may predispose patients to ankle fractures, as a highly arched foot may be more prone to ankle sprains. Daily stretching of the calf muscle helps to combat the imbalance at the ankle joint and could help prevent ankle injuries altogether.

Treatment for ankle injuries may depend on the severity of the issue. Certainly for a sprain, self-care measures and over-the-counter pain medications may be all you need, but a medical evaluation might be necessary to determine the appropriate treatment and prevent repeat injuries. It is important to seek out a qualified health care professional, such as an orthopedic, physical medicine or sports medicine specialist to assist. Connecting with a physical therapist may be a part of the recovery

and prevention program, depending upon your specific needs.

In conclusion, ankle fractures may occur from high energy accidents or low energy rotational injuries. A healthy diet with appropriate consumption of vitamin D will optimize bone health, and daily exercise will directly activate the ankle stabilizing muscles and ligaments. For those patients prone to ankle injuries with highly arched feet, stretching of the calf muscles as well as wearing supportive shoes with inserts may place the ankle joint in a better position to prevent future injuries.

—Dr. Krystin Hidden , Orthopedic Surgery, Mayo Clinic, Rochester, Minnesota