

Active Bones

Orthopaedic Surgery and Sports Medicine
Teaching and Research Foundation Newsletter



otrfund.org

Summer 2016

Dear Reader:

Summer's here and so are the many outside activities everyone enjoys. While sunshine is a good source for Vitamin D, it also damages skin and causes skin cancer. As a reminder of what we need to do to be safe in the sun, Dr. Christina Steil, a board-certified dermatologist prepared an article for this issue on sun precautions. Even if you think you know what you should do, take a minute to read her tips and suggestions. I think you'll find it interesting and helpful.

Pick-up games, league play and even a game of HORSE in the driveway could bench you for the rest of the summer with a strained gastrocnemius muscle, or a ruptured Achilles tendon. Kurt Gengenbacher, PT, DPT, OCS, SCS, CSCS with ATI Physical Therapy, delves into the causes, treatments and prevention protocols of these injuries to help you prevent them the next time you're asked to shoot some hoops, or go for a run.

Water sports this time of year are a great way to get exercise, stay cool and have fun. However, researchers found one popular summer activity—wakeboarding—has a high frequency of anterior cruciate ligament (ACL) injuries. Usually ACL tears are associated with cutting, pivoting and jumping in sports like basketball and soccer. Because of the extreme nature of wakeboarding, researchers discovered more than 70 percent of the participants with torn ACL were unable to return to the sport without surgery. Before you hit the water on your board this summer, you will want to read the researchers' recommendations when it comes to preventing wakeboarding injuries.

Last, I haven't mentioned this for a while, but I want to thank those who have contributed to OTRF and support the education and research we're doing to improve people's lives and surgical procedures. I founded OTRF in 2007 as a nonprofit 501 (C)(3) organization because there wasn't reliable, unbiased information on orthopaedic injuries, surgeries and rehabilitation. I'm proud to say we are making a difference in people's lives and surgery outcomes. If you'd like to learn how you can help change lives for the better, you'll find more information inside about donation opportunities. Thank you in advance for any amount you might wish to contribute to help us continue our mission.

Steven Chudik, MD
President OTRF
Orthopaedic Surgeon and Sports Medicine Physician



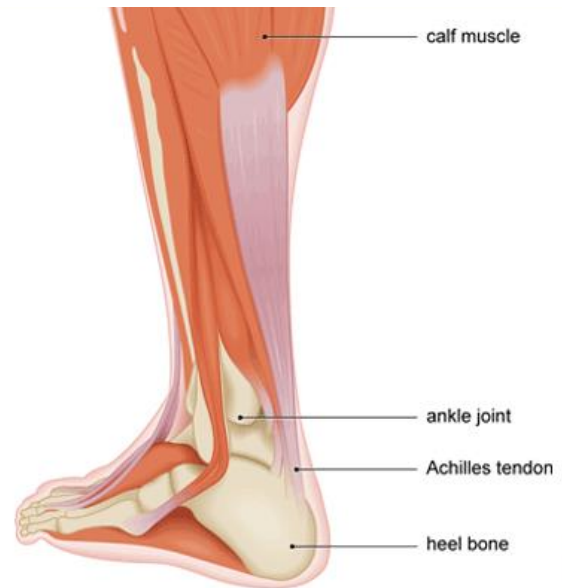
Calf muscle, Achilles tendon strains are preventable

by

Kurt Gengenbacher, PT, DPT, OCS, SCS, CSCS, ATI Physical Therapy

As you run down the basketball court, you feel a pull in your calf. Suddenly, you feel it is challenging and painful to raise yourself up onto your toes and walk. Unfortunately, you have just either strained your gastrocnemius (calf) muscle, or possibly ruptured your Achilles tendon.

The gastrocnemius, or calf muscle attaches to your heel bone by the Achilles tendon and it provides the power needed to push off with your foot when you stand, walk and run. Gastrocnemius strains represent an injury and tear at the junction between the muscle fibers and the tendon. There is bleeding which results in swelling, delayed bruising, and significant pain that makes it difficult to walk, let alone continue to play. The muscle-tendon junction has such a broad area of connection that these strains tend to be partial tears where there remains continuity between the muscle and tendon and therefore, do not require surgical intervention to be reattached.



Achilles tendon ruptures represent a tear and traumatic separation within the tendon just a few centimeters above the calcaneus (heel) bone. Because many Achilles tendon injuries are complete, the gastrocnemius (calf muscle) and soleus (deeper calf muscle) muscles are disconnected from the calcaneus (heel) bone, resulting in loss of power and the ability to push off with your foot. Because the muscles act like coiled springs, they retract resulting in a gap or separation of the tendon ends at the tear site which will not functionally heal unless the tendon ends are re-approximated (put back in touch with each other).

How do I know if I injured my calf?

Acute, or sudden injuries are clearer as there is a specific moment when you will feel the pain start. This often is described as a rubber band snapping, or feeling as if someone kicked you in the back of the ankle. Following the initial injury there typically is pain in the calf and/or Achilles tendon. Due to weakness in the muscle, it may become difficult to raise up on your toes as needed when climbing stairs. There also may be pain when squatting or going down stairs as these actions stretch the tendon and calf muscle.

Those who have a more gradual onset of pain usually do not have a specific instant that they can report as the start of their symptoms. Additionally, this process often can lead to a noticeable deformity in the tendon and it may look like there is a marble-size lump in the back of the ankle. However, the functional limitations often are similar, with difficulty negotiating stairs, squatting, and/or lifting. Most individuals

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with this injury also will complain of stiffness in the ankle early in the morning and that it feels like it needs to continually be stretched.

What is the most common treatment?

Initially, rest, ice (20 minutes every three to four hours), elevation and an Ace™ elastic bandage wrapped with a comfortable amount of compression from your toes to just above the injury site will help minimize the swelling and discomfort.

Gastrocnemius strains do not require surgery but improve faster with an active rehabilitation rather than just rest. Progressive mobility, stretching, strengthening and functional exercises will reduce swelling, pain and return patients to activity within two to six weeks, depending on injury severity. An active rehabilitation also allows for better tissue healing and remodeling that helps prevent re-injury. Physical therapists often are enlisted to guide patients through their course of treatment.

Achilles tendon ruptures require intervention to approximate the torn tendon ends and restore function. Non-operative treatment with a cast to hold the foot in an equinus position (flexed down) can allow the torn

tendon ends to come together and heal. However, studies have documented decreased strength and higher re-rupture rates with conservative treatment. For active patients, most orthopaedic surgeons recommend surgical repair to sew the torn ends together to help the tendon to heal at its previous length.



Following either conservative treatment or operative treatment, the tendon requires protection to allow early healing over at least six weeks before more aggressive weightbearing, stretching and strengthening can begin. Because of this requirement, the muscle atrophies (shrinks, gets weaker) considerably and requires four to six months to gain sufficient strength and function before being able to return to full activities. Depending on the effort and capabilities of the patient, it can take even longer.

What can I do to prevent this injury?

With all of this in mind, don't let your "Achilles heel" slow you down and take some measures to lower your risk for injury. Before any competition or strenuous activity, you should take ten to fifteen minutes to warmup. A proper warmup should include some dynamic stretching, light running and other sport-specific activities like cutting, jumping or throwing, etc. Also, it is important to maintain adequate hydration by drinking plenty of water before, during and after the activity. Avoid muscle fatigue either prior to or during the activity. Many muscle strains occur when someone tries to sprint before their muscles are adequately recovered from a previous game or workout, even from the day or two before. Regular sport or activity-specific training should include flexibility with stretching, strength with resistance exercises and applicable cardiovascular endurance exercise. To download free, specific in-season training programs, visit otrfund.org and click on the Sports Performance Program tab at the top of the page.

Summer Sun Safety

by

Christina Steil, MD, *Steil Dermatology*

“Honey, put on your sunscreen.” As a dermatologist, I constantly find myself reminding others to protect their skin from the harmful effects of the sun. The ultraviolet rays in sunlight that are responsible for causing sun damage, such as skin cancer and premature aging of the skin, are invisible and their exposure is painless. And, during the summer while you are outside playing, it is easy to forget to protect your skin. But the fact is, even one-half hour of sun exposure will cause permanent damage to the skin.



Unlike a sports injury that usually causes sudden pain to let you know something is wrong and needs to be fixed, sun damage occurs gradually and with only the symptoms of a tan, freckles or a sunburn. The hours spent outside add up and the cumulative sun damage that occurs during childhood will result in pre-skin cancers and skin cancers that will develop years later.

Steps to protect your skin:

- Use sunscreen with a sun protection factor (SPF) of 30, or greater. SPF is a rating that tells you how long you can stay in the sun without getting burned wearing that particular sunscreen as compared to how long you can stay in the sun before you burn *without* wearing that sunscreen. A higher SPF does not indicate superior sun protection. In fact, an SPF 2 factor protects your skin just as effectively as an SPF 30. However, an SPF 2 will need to be applied more frequently because it is only doubling the amount of time you can stay in the sun before burning.
- Apply a nickel- to a quarter-sized amount of sunscreen to cover your face, the same amount for the neck and, if exposed, the same amount for the chest. You must use the correct amount of sunscreen to get the SPF protection shown on the label.
- Reapply your sunscreen every two hours if you are sweating or swimming. If the sunscreen is labeled "very water resistant," you get about 80 minutes of protection while perspiring or swimming. If the label states "water-resistant," you only get about 40 minutes of protection. In addition to your sunscreen washing off, the lotions lose their effectiveness the longer you are in the sun. Ingredients in sunscreen breakdown in the presence of sunlight.
- Apply sunscreen 20 minutes prior to sun exposure to ensure the sunscreen has time to attach to the skin and provide a protective layer.
- Wear sun-protective clothing instead of sunscreen to protect your skin. This can be more cost-effective and minimizes the exposure to chemicals that are absorbed by the body when applied to the skin. Look for material with an ultraviolet protection factor (UPF) rating. A shirt with a UPF of 50, for example, allows just 1/50th of the sun's ultra violet (UV) radiation to reach the skin. This means the fabric will reduce your skin's UV radiation exposure significantly because only two percent of the UV rays will get through. A white T-shirt only provides a UPF of seven.

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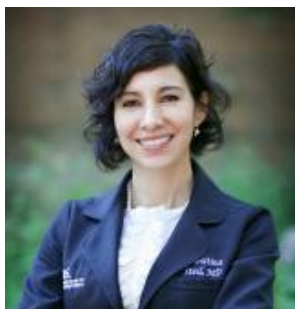
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- Wear a hat with at least a three-inch brim. Baseball caps only cover the scalp and the central forehead. Unfortunately, the rest of the face is left unprotected.
- Talk to your physician or dermatologist about taking Heliocare[®], an oral antioxidant supplement that helps skin resist ultraviolet damage.

If you forget to apply your sunscreen and are unfortunate enough to get a sunburn you have changed your skin forever. Not only will you suffer the immediate effects of pain and blisters, five sunburns over your lifetime doubles your risk for melanoma, and one blistering sunburn has the same effect. So, prevention is the key.

Treating a sunburn

- If you notice your skin turning pink during sun exposure, get out of the sun because the damage that has occurred already is worse than it appears. The skin will continue to redden over the next four to six hours.
- Take a cool shower, apply a moisturizing cream and take ibuprofen for the next 48 hours. Ibuprofen will help reduce swelling, pain and redness. You may use an over-the-counter hydrocortisone cream for one to two days to help relieve discomfort.
- Remain hydrated. Sunburned skin draws fluid away from the rest of the body.
- Do not pick or peel the healing skin. Apply fragrance-free moisturizers and avoid further sun exposure.
- Blistering sunburns that cover greater than 20 percent of the bodies surface area (a person's whole back) require medical attention and anyone with a sunburn that is suffering from fever and chills also should seek medical attention.



Dr. Christina Steil is an American Academy of Dermatology board certified dermatologist who has devoted many years to studying diseases of the skin.

She graduated magna cum laude with a biochemistry degree from Washington University, St. Louis, and earned her medical degree for the University of Chicago Pritzker School of Medicine. Dr. Steil completed her dermatology residency at Cook County Hospital in Chicago where she trained in the clinical and surgical treatment of skin diseases and served as chief resident. She also had a medical internship at Loyola University Medical Center. After completing her medical training, Dr. Steil spent a year researching psoriasis, skin cancer cells and their relationship to the cutaneous immune system.

Dr. Steil's practice is located at 125 W. Second Street, Hinsdale, Ill. Call 630-455-0955 for an appointment, or visit her website at steilderm.com/.



Without surgery ACL injuries often keep wakeboarders on shore

Wakeboarding has become increasingly popular since its beginnings in the 1980s and is listed as a possible inclusion for the 2020 Olympics. Throughout the past 20 years, wakeboarding has become more intense and incorporated new tricks with “bigger air,” more flipping and more twisting. Landing these “big air” tricks is leading to an increased number of non-contact anterior cruciate ligament (ACL) injuries while landing on the water, suggesting the injuries are due to direct or twisting contact with the water, not another object. One study published in *The American Journal of Sports Medicine* surveyed orthopaedic surgeons and wakeboarders and found both groups separately reported that the most common wakeboarding injuries are ACL tears. Other common injuries reported

were fractures, shoulder dislocations, ankle sprains and eardrum ruptures. Many people believe that because the athletes are landing on water, which is a softer surface, injuries will not occur. According to researchers, however, this is not true.

Another study focused on ACL injuries in wakeboarders and attempted to analyze the mechanism of ACL injury to help with future prevention. Of the participants, 76 percent described a pop or buckle feeling when landing in the water. Researchers believe the risk of ACL injury stems from the athlete’s feet being perpendicular to the direction of motion and landing with the feet flat. This motion also occurs in snowboarding, which has a low rate of ACL tears, but snowboarders usually land on a slope, whereas wakeboarders land on a horizontal surface. Currently, researchers are studying releasable bindings to see if they may help decrease the force on the knee.

Usually, ACL tears are associated with planting, cutting and pivoting sports such as soccer and basketball. ACL tears prevented 71 percent of wakeboarders from returning to wakeboarding without surgery. This suggests that knees with damaged ACLs cannot handle the extreme pounding and forces associated with wakeboarding.

Since wakeboarding is far from an organized sport and is performed individually on lakes across the country, it is difficult to receive large amounts of information regarding wakeboarding injuries. There is, however, enough information to show that wakeboarding is a high impact sport that may include a high risk for injury, especially injury to the ACL. As wakeboarding continues to grow in popularity, researchers hope to discover more about the mechanisms of injury associated with wakeboarding in order to help prevent future injury.



Overuse injuries not resolved with Tommy John surgery

Before 1974, no one had ever heard of Tommy John surgery, the ulnar collateral ligament (UCL) reconstructive surgery named after the Los Angeles Dodgers' ace pitcher. Since then, though, the surgery has become a well known orthopaedic procedure and a potential career-saver for a limited number of individuals who may benefit from its ability to restore stability to the elbow. Even with more

than three decades of surgery results, research reported to the American Orthopaedic Society for Sports Medicine found misperceptions remain that Tommy John surgery improves athletic performance.

“Even though the number of pitches thrown have long been recognized as contributors to overuse injuries, nearly one-third of those surveyed did not believe pitch counts are an injury risk,” explained Steven Chudik, board certified orthopaedic surgeon, sports medicine physician with the Steven Chudik MD Shoulder and Knee Injury Clinic and founder of the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF). “Even more disturbing was the fact that one-quarter of the players and coaches surveyed thought a pitcher’s performance could be enhanced with Tommy John surgery,” Dr. Chudik added another misconception is that the elbow is stronger after UCL surgery. “The majority of orthopaedic ligament reconstructive surgeries can restore stability to an injured joint and allow return sport. However, the complex anatomy and function of the native ligament is likely never completely restored,” he explained.

The UCL is the main ligament that attaches the ulna, (lower arm bone) to the humerus (upper arm bone) at the inside of the elbow and keeps these bones and the elbow joint properly aligned during activity. If this ligament is torn or damaged, the elbow joint can become unstable and painful during throwing. UCL injuries are most prevalent in baseball pitchers, but they also can occur in other athletes such as wrestlers and gymnasts. In pitchers, the UCL is usually partially torn and stretched out from the high forces exerted across the elbow during repetitive throwing. Poor throwing mechanics and muscle fatigue can increase those forces across the UCL of the elbow. The UCL also can be torn from a single event, such as a fall on an outstretched arm, or a single excessively hard and uncontrolled throw without warming up. The earliest sign of UCL injury is pain on the inside of the elbow during throwing which usually is associated with a decrease in pitching velocity and accuracy. If detected early, immediate cessation of throwing, followed by proper rehabilitation and the correction of throwing mechanics, may save the ligament and allow a gradual return.

Most athletes with UCL injuries, complete and partial, can return to sports and everyday activity without surgery. Typically, only high level throwers or other athletes that place tremendous forces on the elbow require surgery. The surgery is performed by harvesting either the palmaris tendon (extra tendon in the forearm) or the hamstring tendon (at the knee) and reconstructing the ligament on the inside of the elbow. This procedure is successful in returning the athlete to pitching in nine months to a year about 95 percent of the time if there are no other injuries in the elbow joint. Because of the long recovery time and complication risks, many non-professional athletes elect to switch positions or sports rather than undergo the surgery.

Play, participate at peak performance with sport-specific OTRF programs

Through the Orthopaedic Surgery & Sports Medicine Teaching & Research Foundation (OTRF), Dr. Steven Chudik and his health performance team provide reliable and proven training information to help athletes of all ages and abilities compete and perform at their best—no matter if it is a state athletic championship, or a weekly golf outing with friends. One of the most popular resources is OTRF’s sports performance programs. Research-based, these programs incorporate appropriate exercises, weights and stretching into weekly training schedules to maintain strength and help minimize injuries.

The health performance programs are electronically distributed with the OTRF *Active Bones* e-newsletter. To automatically receive new programs, email OTRF and request to be added to the *Active Bones* mailing list. Sports performance programs previously developed by OTRF are available as PDF downloads on the OTRF website, otrffund.org. To download, click on the sports performance tab. Or for a printed copy, you can email contactus@chudikmd.com. Make sure to include your mailing address.



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Research Roundup

Freshman 15: Fact or Fiction?

A study published recently in the *Journal of Behavioral Sleep Medicine* revealed bad sleeping habits may be the real culprit behind the infamous “Freshman 15” and not necessarily dorm food and alcohol.



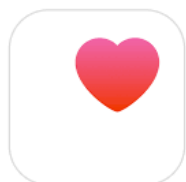
Researchers asked 132 freshman at Brown University to keep sleep diaries and track their weight for nine weeks. During the study, more than one-half of the students packed on nearly six pounds and averaged a little more than seven hours of sleep per night with lights out about 1:30 a.m. The students' late bedtimes also could be a contributing factor according to another study in the journal, *Sleep*, that linked increased body mass with late bedtimes.

According to the Brown University researchers, the student diaries also showed participants awoke at different times every morning; particularly male students whose wake times varied by an average of as much as two and one-half hours. While most students probably seize the opportunity to sleep in on days their classes don't start until noon, fluctuating wake times could be harmful. Experts say waking up around the same time every day, even on weekends, sets the body up for success by keeping “internal clocks” regulated. The National Sleep Foundation recommends eight to ten hours of sleep for teens.

While the Brown research correlates findings from other studies, more decisive research is necessary. However, it does spotlight the poor health habits young adults can develop when they live on their own for the first time. Instilling more regulated sleep habits in students *before* they go to college may be a good way to help avoid those extra pounds.

Your iPhone could save your life

If you own an iPhone or newer model with an iOS 8 or higher operating system, it just might save your life. The phone’s software includes a new feature, an app called Health, that allows users to keep track of things like nutrition, sleep and body measurements. It also comes with a built-in emergency information storage space—much like a medical ID—that lets iPhone users store data that can help paramedics and emergency room personnel make important decisions about an individual’s immediate care when they cannot speak for themselves. The app can store:



Health

- Birth date
- Medical conditions
- Allergies and reactions
- Medications
- Emergency contacts
- Blood type
- Organ donor specification
- Height and weight

iPhone users can enter their personal data into Medical ID by accessing the Health application. Once entered, the information can be viewed by clicking the Emergency button on the lock screen. If there isn't a passcode and lock screen set up on the phone, Medical ID can be opened by once again clicking the Health application.

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Research Roundup

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Is 30 minutes of exercise a day enough?

Thirty minutes a day of moderate-intensity exercise may not be enough to ward off heart disease, according to researchers the University of Texas Southwestern Medical Center who studied how much physical activity is needed to effectively lower the risk of heart disease. They analyzed 12 studies involving more than 370,000 people who kept track of their exercise habits for 13 years.

According to the report, individuals who exercised the government-recommended 150 minutes of moderate exercise each week—the equivalent of 30 minutes of walking at a moderate speed five times a week—lowered their heart failure rate ten percent compared to those who did not exercise at all. Significant reduction rates were not reached—more than 30 percent—until individuals exercised at four times the recommended rate. Men and women benefited equally from exercise.

Although the research supports the well known link between physical activity and coronary heart disease prevention, it also suggests the amount of exercise could be even more important part in decreasing the risk of heart failure raising the question, are the current exercise guidelines appropriate?



Dietary supplements, vitamins and energy drinks contributing to overdoses

A study conducted by the U.S. Centers for Disease Control and Prevention published in *New England Journal of Medicine* found that more than 23,000 people wind up in emergency departments each year from the adverse effects of consuming dietary supplements that appeared harmless. Researchers noted most of the emergency department visits involved weight-loss or energy-boosting products. In some situations, the products sending people to the

hospital were vitamins or herbal supplements they were taking to improve their health.

One contributing factor researchers noted was that the U.S. Food and Drug Administration does not regulate dietary supplements for safety and effectiveness the way it regulates over-the-counter and prescription medications. Therefore, it is very difficult to know what ingredients are in the products that can cause problems or react with other prescription medications. Some of the symptoms of herbal supplement overdose include heart palpitations or a racing heart, dizziness, anxiety and/or nervousness leading researchers to recommend people talk to their physician before taking any supplement or vitamin.

Researchers said the study also suggests older adults sometimes experience swallowing difficulties when taking dietary supplements. Another problem is unsupervised children ingesting them because adults don't consider dietary supplements as harmful so they don't take the same storage precautions they would take with prescription medication.

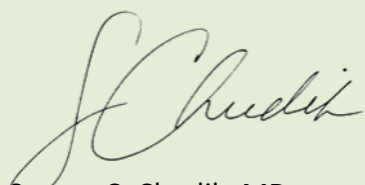
Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation helps people stay fit and healthy

Steven Chudik, orthopaedic surgeon and sports medicine physician with the Steven Chudik Shoulder and Knee Injury Clinic, founded the Orthopaedic Surgery and Sports Medicine Teaching and Research Foundation (OTRF) in 2007. OTRF is a nonprofit, 501 (c)(3) organization dedicated to funding research and education for the purpose of keeping people active and healthy.

Dr. Chudik has seen a growing demand by patients, athletic trainers and clinicians for up-to-date medical information and unbiased research on injury prevention—especially for children—as well as facts on arthritis and wear and tear on joints, cartilage, tendons, ligaments, etc. To fulfill these requests, OTRF produces and distributes this newsletter, shares information about health performance-related issues like nutrition and fitness, hosts athletic training educational programs, conducts seminars for healthcare providers and the community and most important, funds unbiased research and development particularly in emerging areas such as arthroscopic and minimally invasive surgery for injuries to the meniscus, labrum, rotator cuff, ACL and cartilage.

However, none of this is possible without ongoing financial support. We are extremely grateful to all those who have contributed in the past. Many of the donations came from patients or their family members who benefited from Dr. Chudik's orthopaedic and sports medicine expertise. If you might be interested in helping us continue our research, please visit our website, otrfund.org and click on the donation link. Or, if you prefer, email me at contactus@chudikmd.com. Also, many companies sponsor programs that match charitable contributions made by their employees. Some even match donations made by retirees and/or spouses. Matching gift programs are a great way to double your generosity. Regardless of the amount, every contribution helps make a difference.

Thank you for your interest in our newsletter, *Active Bones*, and the ongoing work of OTRF.



Steven C. Chudik, MD
OTRF Founder and President
Orthopaedic Surgeon and Sports Medicine Physician



Orthopaedic Surgery & Sports Medicine Teaching & Research Foundation

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Sports Medicine Injury Clinic

Monday
Evenings

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for an appointment

Sign Up Today!

Don't miss another issue of **Active Bones**, an email newsletter from OTRF. Each issue contains information to help you stay healthy and live an active life with tips on injury prevention, sports conditioning, research and newsmakers.

Simply email us at:
contactus@

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