

ACTIVE P.T. SOLUTIONS
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SHOULD BE ACTIVE

APTS Monthly



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Why Stress Fractures Happen

Stress fractures are among the most common overuse injuries sustained by long-distance runners, and they affect everyone from recreational runners to world-class athletes, male and female. People with stress fractures typically complain of pain in a specific area or region of the body. Symptoms gradually worsen and most commonly occur from the pelvis to the lower extremity. Patients provide a history of pain that is aggravated by physical activity (such as training for endurance events) and relieved by rest. Patients usually recall a history of a recent and dramatic increase in exercise volume, the initiation of a new activity, or some other change in their routine.

Overuse injuries strike endurance athletes like marathon runners because of the demands of the sport and the makeup of the athletes. Distance running requires athletes to perform the same movements repeatedly, subjecting the same muscles to overuse and subjecting the same joints and bones to sustained impact. To make matters worse, runners often condition their minds to ignore pain, driving them to push muscles, joints, and bones to the brink of injury. When a runner's muscles fatigue, he or she compensates by bouncing higher in the air during their stride, which, in turn, forces the legs and pelvis to absorb more impact. A runner might also compensate during their stride for imbalances in posture or leg length, again forcing the legs and pelvis to absorb greater impact.

One of the top training errors that can lead to stress-related fractures is a rapid increase in training intensity, which can occur in two forms: a large increase in mileage and/or an increase in training speed (i.e. running faster more often). For years, the 10 per-

cent rule has been used to govern changes in weekly mileage. Unfortunately, the fault in the 10 percent rule is that it is weekly, and it does not account for increases in training pace or the addition of speed work. Many people do not accommodate on a weekly basis and actually take 2-3 weeks for their body to accommodate. This is why many runners that use the 10 percent rule still get hurt or experience stress fractures.

Running on hard surfaces such as roads and sidewalks (especially cambered road surfaces that slant to the side to allow water drainage) puts a long distance or marathon runner at greater risk for a lower extremity or pelvic stress fracture. While the rigors of training already strain a runner's pelvis and lower extremities, the strain can become even more significant when a runner suffers from a dietary deficiency and/or an eating disorder. Depleting the body of necessary nutrients and specific muscular weaknesses in the hips prevents adequate recovery from strenuous training routines.

If you are a distance or marathon runner, the simple rule of thumb regarding stress fractures of the pelvis and lower extremity is as follows: stress fractures below the knee (leg, ankle, and foot) are generally considered training-related injuries from impact stress. These injuries occur from a combination of rapid increases in training volume and intensity, worn footwear, hard surfaces, etc. Stress fractures occurring above the knee are first and foremost "dietary stress fractures". This does not mean that training errors may have contributed to the fracture; it means that the diet is grossly deficient in calcium and total usable calories.

Many runners often confuse the begin-

ning stages of a stress fracture with a simple muscle pull. But, unlike the pain of a muscle pull, the pain of a stress fracture will not subside during a run, nor will it loosen up with stretching. When a runner sustains a stress fracture, he or she might initially feel a deep, aching pain that remains localized in the region in question. As the injury remains untreated, the pain can spread to other areas of the body as the brain compensates for the injury.

Stress fractures are usually diagnosed by using an MRI or CT scan. It has been reported in medical journals that stress fractures are missed on plain x-ray 85% of the time. If a lower leg, ankle, or foot stress fracture is diagnosed, the treatment is to rest, find alternative non-weight-bearing activities, correct running shoes, begin a structured rehabilitation program, and review training logs for signs of training error. If a stress fracture above the knee (pelvis, sacrum, or femur) is diagnosed, running activities must be discontinued and the diet scrutinized for total available calories and calcium intake. If the diet is not checked, the patient may suffer a repeat stress fracture within a few months when the patient begins training again.

Stress fractures in high level and recreational distance runners are a very common injury. These injuries are treated by training and dietary correction. If your condition does not resolve in 14 days, it most likely needs medical assessment and care.

Article by Dale Buchberger, DC,
PT, CSCS



Side walks with resistance band, start position (l), exercise position (r)

Stress fractures below the knee are generally considered training-related injuries from impact stress. Stress fractures occurring above the knee are first and foremost 'dietary stress fractures'.



"This is not so funny!"

Exercise of the Month: Side Walks

Side walks are a great exercise for strengthening and stabilizing the muscles in the low back, hips, knees, and ankles. Making side walks a part of your everyday exercise routine will help to improve balance and prevent injury to the back and lower extremities. To perform this exercise, the only thing you will need is floor space.

To start, stand with your feet together and toes pointing straight forward. (It might feel like you are pigeon-toed.) Take a step sideways, no greater than the width of your hips, keeping your knees straight and toes pointing straight.

It is helpful to think about leading with your heel and not your toes. Be sure not to lean to the side when stepping, keeping your shoulders as level as possible. Bring feet together and continue this pattern for a distance of 25 feet. When you reach 25 feet, return the other direction, leading with the other foot, facing the same direction as when you started so that you work both hips equally. Continue this for a total of 100 feet, progressing to 150-250 feet per day. Once you are able to complete 250 feet, add a low resistance exercise band and drop

back down to a total distance of 100 feet. The exercise band should be positioned just below the knees to start. As this gets easier, move the band down your legs, the hardest resistance being all the way down around your ankles (as shown). We sell these resistance bands here at APTS in 4 different strengths if you need one!

As always, if you have any questions about this exercise, or your experience increased pain during or after performing this exercise, please contact one of the providers at our office.

What's Going on at APTS?

Carolyn Collier, PTA, completed her Lower Extremity course in Active Release Techniques in Orlando, FL, in June. This means that ALL providers at APTS are now Full Body Certified and can treat all patients using the same technique!

Carolyn and her husband, Patrick, also closed on their first house in Auburn on June 24!

Julie Hauberg, PT student from Ithaca College, is doing very well

at her first clinical with us. She is catching on to the field of physical therapy and fits right in! She will be with us until July 29, after which she will continue with her 5th year of PT school in August.

Jack Schattinger, Linda's (front desk) son, graduated from Auburn High School on Friday, June 24. He is headed to a 7 1/2 month program at Modern Welding School in Schenectady where he will learn the trade!

Laura Fennessy (front desk) also graduated from Auburn High School and plans to attend Cayuga Community College for two years. She will continue to work at APTS during this time.

Zachary Buchberger finishes up at Officers Candidate School in Quantico, VA, on July 1, and will be home for a month before heading back to University of Dubuque in Iowa for his second year of college.

Did You Know That...?

The **funny bone** isn't actually a bone at all? It's a nerve! The **ulnar nerve**, to be exact. This nerve sits on top of the hard elbow so it is prone to being irritated because there is not a lot of fatty cushion in that area. The area of the elbow through which the ulnar nerve runs is a groove in the lower part of the upper arm bone, or *humerus*. It is often called the funny

bone because it is a homophone with the word *humorous* and hitting it can give a funny feeling due to the vulnerable location of the ulnar nerve.

Hitting your funny bone usually causes a sharp jolt of pain that follows the path of the ulnar nerve (down the forearm and into the ring and pinky fingers) that quickly resolves. However, ulnar nerve

problems can be more persistent for some people, a condition called *cubital tunnel syndrome*, which can be treated surgically or non-surgically.

...now you know!

Article by Carolyn Collier, PTA



The Good & Bad of Barefoot Running & Minimalist Footwear



The topic of barefoot running is one that will draw mixed opinions, not only from health care professionals but also track and field coaches. This is not the first time the concept of barefoot running has been brought to our attention; it seems to happen nearly once a decade. When Abebe Bikila won the 1960 Olympic marathon in bare feet, the concept was prominent. In the '70s "earth shoes" came out. In the '80s it was South African barefoot runner Zola Budd. Recently you may have seen some people wearing odd-looking footwear with "toes" instead of the closed toe box of conventional footwear. These are Vibram Five Fingers shoes also known as "minimalist" shoes. This has given the barefoot craze some momentum. For starters they are more comfortable and appealing than their hideous looking predecessors, the "earth shoes". So the question remains: is barefoot running good or bad?

The idea of barefoot running has been studied for many years, but much of the mainstream popularity was created by the bestseller *Born to Run* by Christopher McDougall. After living with and observing a tribe of well-trained humans in Mexico, McDougall proposed that everyone should be running barefoot because this improves your gait cycle and promotes a more efficient gait. When looking at McDougall's

ideas, they are not so much about shoes as they are about learning to run efficiently. It just so happened that running barefoot was a short cut to learning how to run efficiently. So the next question is: why does barefoot running create efficiency?

Barefoot running forces the individual to land on their mid- and forefoot rather than on his or her heel and rear foot (as most traditional running shoes now promote). Running with a "heel strike" increases forces through the lower extremities and into the spine. Landing on the forefoot, or "barefoot strike", reduces the forces through the lower extremity and spine at impact. This creates a smoother transition to the next cycle as the other leg comes through and prepares to hit the ground. So instead of pounding the ground and springing forward, the individual glides over the terrain.

The beginning of the "running craze" of the '70s that began with the "rock star" approach of Steve Prefontaine, the gold medal performance of Frank Shorter, and publishing of *Running* by Jim Fix also began with "minimalist shoes" (only we didn't call them "minimalist shoes" because they were all we had!). Nike's original models such as the Oregon Waffle and the Waffle Trainer did what they were supposed to do: keep you from cutting your foot on man made surfaces and provide a shield from the elements. Once shoes became "corrective devices", all heck broke loose creating a magnification of running injuries and the idea that running was "bad for you". In reality, running is not bad but rather running bad is bad. Our old "minimalist shoes" forced us to run correctly or not run at all. The new breed of athletic shoes has allowed an entire generation of inefficient runners to hit the

streets and literally "pound the pavement".

The most popular minimalist shoes are the Vibram Five Fingers, New Balance Minimalist, and the Nike Free Run. The idea goes back to Nike's original designs: provide protection to the foot but allow you to run with barefoot mechanics. They are lightweight, flexible, have a wide toe box (front of the shoe), and what is known as a "zero-drop sole". This means the heel of the shoe is the same thickness of the rest of the sole. This is contrary to conventional running shoes that are built with a dramatic heel lift. It is actually the heel lift of modern day shoes that creates a good portion of running related injuries by creating imbalances of strength, weakness, and stiffness in the lower extremities.

If you want to try minimalist shoes, there are a few simple rules to follow. First, be realistic with your expectations. Minimalist shoes will not fix your injuries and you will most likely go through a period of soreness in the legs and back. Do not expect to train at your normal volume or intensity for several weeks to months. Make sure that you are injury free. Start by wearing your new shoes for daily activities and progress to running. Make sure you are regularly stretching your calves and plantar fascia (bottom of the foot). Like it or not, age is a large determining factor in being able to wear minimalist shoes. The older you are, the longer it takes to adapt to the minimalist approach. You may have also developed certain maladies that will prevent the use of these shoes. As always, if you experience any increased pain, discontinue use of the shoes and seek the help of a health care professional.

Article by Dale Buchberger, DC,
PT, CSCS

Running is not bad; rather running bad is bad. Our old "minimalist shoes" forced us to run correctly or not at all. The new breed of athletic shoes has allowed an entire generation of inefficient runners to hit the streets and literally "pound the pavement".

APTS Recipe Box: Paleo 4th of July Lemon Fruit Tart

Ingredients for the crust: 1 cup almond butter, 1 cup unsweetened shredded coconut, 2/3 cup walnuts, 1 heaping tablespoon Coconut Cream Concentrate or homemade coconut butter, 1 heaping tablespoon raw honey, pinch of salt

Ingredients for the topping: 5 eggs, whisked; 1/2 cup honey; 1/3 cup Coconut Oil; juice of 4 lemons; 1 cup blueberries; 1/2 cup raspberries

Instructions: Place all crust ingredients in food processor and mix until completely broken down. Add to an 8x8 glass baking dish and press down to form an even crust. Put in fridge for about 20 minutes and make lemon topping in the meantime. Place a small saucepan over medium heat. Add your eggs, honey, coconut oil, and lemon juice to the saucepan and whisk together. Continue stirring together until

mixture begins to thicken. Once thickened, remove from heat and place bowl to cool in the fridge for about 20 minutes. When the lemon topping has cooled, spread it over your crust and place your raspberries and blueberries however you'd like—flag, star, stripes, etc.

Source: <http://paleomg.com/4th-july-lemon-fruit-tart/>



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Get Well...Get Active...Be Active

Newsletter Edited by Carolyn B. Collier, PTA

**At Active Physical Therapy Solutions,
we utilize the most cutting edge
treatment and management
techniques available. Our goal is to
deliver the best possible healthcare in
a friendly, caring, and well-organized
environment. Our staff is here to
provide active solutions to achieving
your personal goals!**

...BECAUSE LIFE SHOULD BE

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Nutrition 101: How the Paleo Lifestyle Optimizes the Microbiome

The microbiome has become one of the most important areas of nutrition research. The human microbiome consists of 100 trillion microbes living on and within the body. The composition of your microbiome is unique to you, and it depends on numerous factors, including sex, age, genetics, environmental exposure, and lifestyle. Diet, however, has the most impact. Bacterial species diversity is key to microbiome health. The gut alone houses 1,000 microbial species, and as this number decreases, the microbiome becomes less capable of optimally performing its many duties; thus, health suffers.

The microbiome's role includes synthesizing vitamins, aiding digestion, warding off pathogenic bacteria, training the immune system to respond only to pathogens, and influencing cognitive development and behavior. The two main culprits that damage the microbiome are poor diet and antibiotics (which can also include antimicrobial personal hygiene products). Antibiotics destroy both good and bad bacteria, and a single round can significantly disrupt the microbiome. A diet that is low in fiber and high in refined sugar can also cause a host of problems.

The most important factors for microbiome health are (1) avoiding these things that damage the microbiome as much as possible, and (2) eating foods rich in microbiota-accessible carbohydrates (MACs). The Paleo diet provides plenty of these MACs. The most common source of MACs is both soluble and insoluble fiber. It is important to consume a wide variety of fiber-rich vegetables, fruits, nuts, and seeds, but unfortunately MACs only feed existing strains of microbes – they don't introduce new strains. A low-MAC diet results in a progressive loss of diversity of the microbiome. Probiotic supplementation might be necessary, in addition to a high-fiber Paleo diet, to maintain a healthy microbiome and reap its benefits.

Whenever scientists compare hunter-gather societies and urban populations, the former always have far more diverse microbiomes. Bacterial species diversity is key to microbiome health. Those of us following the Paleo diet should take clues from these hunter-gather populations: eat seasonally and select a wide variety of foods. We're creatures of habit, but monotony has its consequences, namely decreasing the diversity of your microbiome.

Low microbiome diversity may cause or accel-

erate conditions such as obesity, inflammatory bowel disease, liver diseases, autoimmune diseases, and allergies. The microbiome may also play a role in neurological diseases such as anxiety, depression, autism, schizophrenia, and neurodegenerative disorders.

The microbiome rapidly adapts to our food choices, making the best of whatever we eat. However, this does not mean that whatever we eat becomes our ideal diet. As mentioned above, a high-fiber, low-sugar diet is best for microbiome health. Grains and legumes contain fiber but they also contain gut-harming molecules. A true Paleo diet does strengthen the number and diversity of gut bacteria through a high fiber content with the inclusion of large amounts of fruits and vegetables and a sparing amount of nuts and seeds, as well as increased diversity of bacteria by eating a variety of seasonal fruits and vegetables.

**Article by Tom Zirilli, PT, and
Carolyn Collier, PTA**

Sources: <http://thepaleodiet.com/how-the-paleo-lifestyle-optimizes-the-microbiome-part-1/>
and
<http://thepaleodiet.com/how-the-paleo-lifestyle-optimizes-the-microbiome-part-two/>