

# Working Well

A HEALTH AND SAFETY INFORMATION PUBLICATION

INSIDE THIS ISSUE:

## Key Exercises to Keep the Ankle Healthy

PLUS

Preventing Cold Injuries  
Weight-loss Misconceptions  
An Aging Workforce  
Energy Drink Concerns

## Welcome to the second *Working Well* newsletter presented by Lexington Medical Center Occupational Health!

We appreciate the opportunity to present medical and safety articles that may interest you and your employees. Please share as you wish! In each edition, occupational health providers and staff, as well as specialists within the Lexington Medical Center community voluntarily submit information on current issues.

One topic in this issue of *Working Well* outlines weight-loss misconceptions. James Givens, MD, FACS, is a general surgeon with Riverside Surgical Group. Dr. Givens graciously submitted his article that provides helpful tips for weight-loss management. For further information, or to contact Dr. Givens or his staff, call (803) 791-2828 or visit [SCObesity.com](http://SCObesity.com).

An excellent submission from Barry Raines, MPT, manager of Outpatient Rehabilitation Services for Lexington Medical Center Lexington and Lexington Medical Park Otarre Pointe, and Amy McCraw, DPT, addresses exercises for ankle health and strength. I anticipate this will be the first submission in a series of articles addressing healthy joint exercises! You can contact the physical and occupational therapy office at Lexington Medical Park Otarre Pointe at (803) 926-6810.

Good information from "Nurse Practitioner Pearls" highlights the concerns over energy drinks and their detrimental physiological effects. "An Aging Workforce" begs the question of what an employer should do about the demographic changes in the workforce, and an article on frostbite rounds out the newsletter.

Please know that we welcome submission of articles or information that is pertinent to health and safety from you or your employees. One goal of our newsletter is to provide our client companies with a platform to share information on lessons learned or best practices that may improve overall health and wellness. I hope you enjoy our second newsletter!

—Dana Rawl, MD, MPH

# "Hey, Joe! I can't feel my fingers!"

By Dana Rawl, MD, MPH

Occupational cold injuries can occur at any time during the year! Workers can be exposed to cold temperatures in refrigerated areas or freezers. They can be exposed to cold fluids or gases while flushing lines or turning valves. They can experience a cold injury from touching cold metal, as well as have traditional cold exposure from environmental temperatures. No matter what the exposure, the cold injury can be severe and threaten life or limb.

There are several classifications of cold injury, including frostnip, chilblains, trench foot and frostbite. Frostbite can be further divided into superficial and deep frostbite. The basic mechanism of cold injury is exposure to cold or freezing temperatures or conditions.

Frostnip is a mild cold injury that can be considered the first stage of frostbite. Initial symptoms include tingling sensations in the affected area with redness of the skin and possibly mild swelling. The only necessary treatment would be to rewarm the skin with warm air, clothing or water. There are no residual problems from frostnip.

Chilblains are a result of more inflammation in the tissue from cold exposure, which causes redness of the skin with swelling, itching, and tingling or numbness sensation. It is usually

a result of repeated exposure to temperatures just above freezing to as high as 60°F. This condition causes permanent capillary damage and symptoms return with additional cold exposure. Treatment involves warming the skin and using steroid creams to help with itching and swelling.

Trench foot or immersion foot is a cold injury to the foot from prolonged cold and wet exposure. Temperatures up to 60°F can produce trench foot given the right conditions. Wet feet lose heat at a rate 25 times faster than dry feet. Normal physiologic response to cold exposure causes vascular constriction to reduce heat loss from the body. The injury is compounded by tight footwear that restricts blood flow even further, which also reduces oxygen and nutrients to the tissue, and increases toxic tissue byproducts, leading to tissue damage. Symptoms include skin redness, numbness, swelling, pain with blisters or ulcers, and bleeding in the tissue. Gangrene may result from tissue damage and infection. Treatment includes removing the person from the exposure, taking shoes off and drying his or her feet. Seek medical evaluation. Prevent walking as this may cause further tissue damage.

The body responds to cold exposure by trying to conserve heat to maintain core body temperature. Peripheral blood



## Recommendations for Preventing Cold Injuries

- Reduce cold exposure.
- Wear appropriate clothing. Layer loose-fitting clothing for warmth. Tight clothing inhibits circulation.
- Protect feet, hands, face and ears. Boots should be waterproof and well insulated. Use socks and gloves that have moisture-wicking liners under heavier wool socks and gloves. Wear a hat to reduce heat loss from head and cover ears.
- Eat well-balanced meals and stay hydrated. Avoid alcohol and smoking.
- Monitor yourself and co-workers for signs of frostbite and ask about symptoms.
- Employers can help by providing training on worker risk, prevention and personal protection as well as implementing administrative policy to reduce cold exposure and monitor workers.



vessels constrict to shunt blood and nutrients to vital organs, and to reduce heat loss from the skin surface. With this physiologic response and freezing temperature exposure, tissues freeze. Freezing of the tissue causes frostbite. Ice crystals form in the extracellular space, increasing cell dehydration and promoting cell destruction. When rewarming occurs, damaged blood vessels from frostbite lead to intravascular clotting that causes further inflammation, decreased oxygenation and further tissue damage.

Superficial frostbite begins as reddened skin turns pale or white but may turn mottled, blue or purplish with rewarming. There is numbness, aching or pain at the site. The skin is still soft and retains resistance to pressure. Swelling and blister formation usually develop after rewarming within 24 to 36 hours.

Deep frostbite affects deeper skin and tissue layers. Symptoms include numbness to complete sensation loss with white, waxy skin that is hard to the touch without resistance. All sensation of cold, pain or discomfort may be lost at the affected area. Muscles and joints may be stiff or dysfunctional. Swelling with clear or blood blisters evolve with purplish-blue skin and pain at the site

with tissue rewarming. Large blisters form within 24 to 48 hours. The pain is usually dull and throbbing, and may last for days, weeks or months until dead and damaged tissue sloughs.

Treatment for frostbite includes removing the person from the causal environment and, as long as there is no risk of the area refreezing, rewarming the affected area (or the whole person if there is hypothermia). Use body heat or warm water immersion. Do not rub or massage the area as this can increase tissue damage. Remember, the affected area is probably without any sensation, so do not use radiant heat that can burn the skin. Protect any open wounds with clean bandages and seek further medical care. Medical care should include a tetanus update if necessary, pain and inflammation control, bandaging as necessary, and infection precautions. If needed, debridement of tissue is usually delayed until there is a notable delineation of

the extent of the tissue damage, which may take weeks.

Frostbite risk is increased by medical conditions that affect blood circulation such as diabetes, dehydration, vascular disease and Raynaud's. Smoking causes peripheral vascular disease and spasm, and is a risk factor for frostbite. Mental disease can affect judgment and increase risk. Alcohol is also a risk factor as those individuals may have difficulty producing or retaining heat. High altitude reduces oxygen tension and can be a risk factor. Previous history of frostbite alone is a risk factor for recurrent cold injury!

Cold injuries are preventable. Education, planning, training and attentive management practices can reduce risk and morbidity. Further information is available at [cdc.gov/niosh/topics/coldstress](http://cdc.gov/niosh/topics/coldstress) and [mayoclinic.org/diseases-conditions/frostbite](http://mayoclinic.org/diseases-conditions/frostbite). 🌿



# Three Weight-Loss Misconceptions

By James Givens, MD, FACS, Riverside Surgical Group and South Carolina Obesity Surgery Center

## “If I just work out harder, I can get this weight off!”

The truth is that you cannot work the weight off. If you need to lose more than 20 pounds, increasing your caloric expenditure in the gym will not drive your weight down to the desired level. It is all about diet. As you work out more, you need more calories and more protein to protect muscle mass. Essentially, the more you work out, the more you NEED to eat.

The key to satisfactory, sustained weight loss is a low carbohydrate and high protein diet, consisting of less than 40 grams of carbohydrates and around 100 grams of protein daily. Obviously, these numbers are individually adjusted based on age, kidney function and other underlying health issues. Exercise is indeed an important aspect of any weight-management program; however, exercise is how one keeps excess pounds off, not how you remove them in the first place. Remember, walking is a great exercise.

## “I don’t eat anything and I still can’t lose weight!”

There is nothing magic about losing weight. Although it is not a strictly calories in versus calories out equation, there are certain basic principles to keep in perspective. First and foremost is documentation. If you do not write down everything that you eat, you simply don’t know. Documentation can be a paper journal or an app on your smartphone. Everyone who does this for a week is amazed by how much they eat and, more importantly, the amount of carbohydrates they consume. Once again, it is all about “carbs” if the goal is sustained weight reduction.

Everyone is different in how they process food and DNA is a critical issue. The starting point for an intelligent evaluation of the science of weight loss, however, is precisely documenting everything one eats and the associated value in grams of

protein and carbohydrates. MyFitnessPal is one app that is readily available and free. This type of app allows you to access the caloric content of foods so that healthy, low carbohydrate choices are easier to make.

## “I will just eat once a day when I get home from work!”

This is not a good idea for a variety of reasons. It has been well documented that people who skip meals invariably eat more than they would at their next meal. Let’s take skipping breakfast. Several studies have shown that people who skip breakfast eat far more through the course of the day than those who have a healthy, low carbohydrate breakfast.

Not only do you need to eat, but choosing low carbohydrate and high protein foods further reduces hunger and increases satiety during the day. A high carbohydrate breakfast spikes the blood sugar and is gone by 10:00 a.m. The result is hunger and eating a

mid-morning snack of another high carbohydrate that burns off by noon. High protein at the start of the day negates this mid-morning slump and, in the long run, reduces the total calories consumed for the day.

Another factor to consider is that the “starvation diet” reduces the metabolic rate as your body tries to maintain muscle mass. Consequently, the healthiest eating program is frequent small meals, high in protein and low in carbohydrates.

In summary, there are three concepts worth remembering. Exercise is an important part of any weight-management program, but it’s not the key to weight loss. Document, document, document – if you don’t write it down, you don’t know. Do not skip meals, especially breakfast. 🍏



If you do not write down everything that you eat, you simply don’t know.

# Key Exercises to Keep the Ankle Healthy

By Barry Raines, MPT, Manager of Outpatient Rehabilitation for Lexington Medical Center Lexington and Lexington Medical Park Otarre Pointe and Amy McCraw, DPT, Outpatient Physical Therapist at Lexington Medical Park Otarre Pointe

The ankle may be one of the most ignored joints in terms of activity performance, flexibility and injury prevention. Strong, flexible ankles constitute a firm foundation for the human body. Think about it. Would we build our homes on weak, muddy foundations? So why does most of the population walk around on weak, stiff ankles every day?

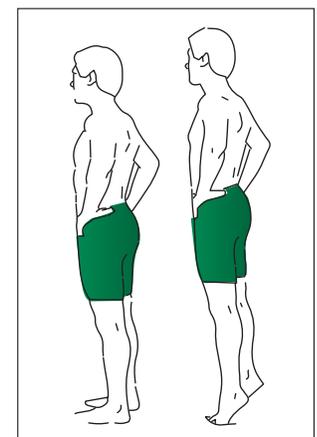
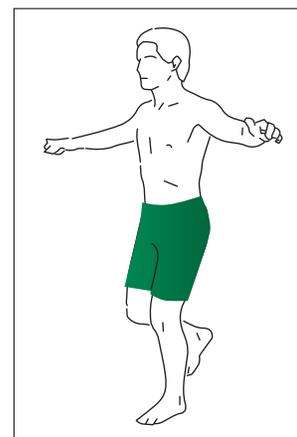
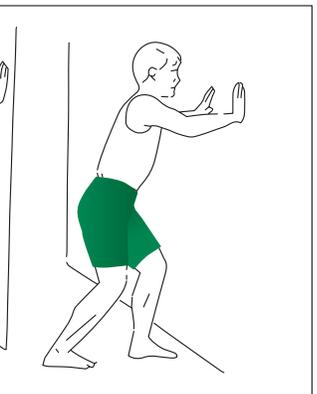
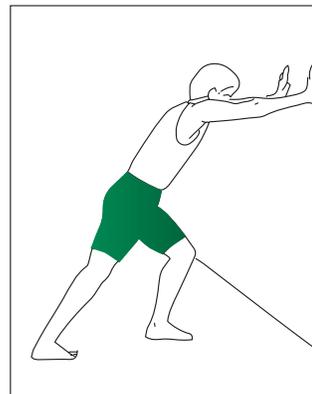
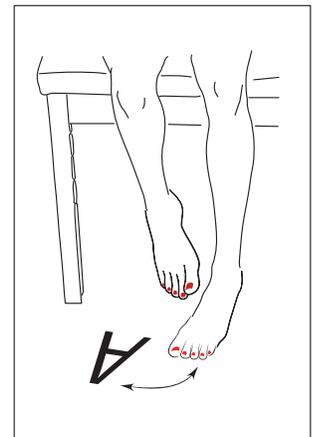
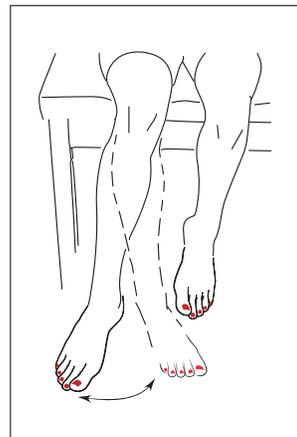
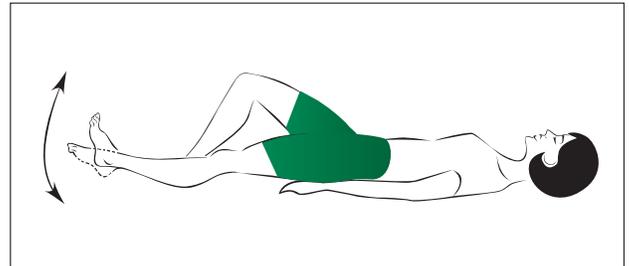
The first phase of exercise is to establish the proper range of motion of the ankle. To do this, you need to move the ankle through the entire available range of motion in each direction. Stretches and range of motion exercises can help maintain ankle mobility. Examples of range of motion exercises may include ankle pumps, ankle circles and ankle alphabet. Ankle pumps involve the simple act of flexing the ankle up and down to end range. When performing circles, you should draw a circle in the air as large as possible while only moving the ankle joint. These should be performed both clockwise and counterclockwise. The ankle alphabet is the act of writing out each letter of the alphabet with your big toe, moving only the ankle joint. This exercise, when done correctly, involves all planes of motion in the ankle joint.

Stretching is also important. Tight muscles of the lower leg

can decrease the available range of motion of the ankle. A calf stretch at a wall, often observed in runners, with one knee straight and one knee bent is one of the best stretches for the muscles in the back of the ankle.

Once you achieve a full comfortable range of motion, it is time to progress to the second phase – strengthening. This phase involves strengthening the ankle muscles to improve static and dynamic stability. Static stability exercises may include balancing on one leg in a standing position. To advance this exercise, you can perform reaching or catching activities while in this position. General dynamic stability strengthening may include heel raises in different positions (e.g., toes forward, toes turned out and toes turned in) to strengthen the back of the lower leg and toe raises to strengthen the front of the lower leg.

To some, it may seem frivolous to work to gain strength in such a small joint, but building a strong and efficient foundation can effectively translate to improving all other standing movement patterns. Once you gain control of the ankle joint, you will be able to enhance performance of work, sports and daily activities. In turn, you can give yourself the opportunity to decrease the risk of injury. ☺



# An Aging Workforce

By Dana Rawl, MD, MPH

Webster defines old age as “dating from the remote past; advanced in years; experienced; showing the effects of time.” The World Health Organization describes old age as a chronological age of 65 and older in developed countries. The United Nations considers old age as a point in time when active contribution is no longer possible, and the International Institute for Applied Systems Analysis suggests true age as determined by characteristics of health, cognitive function and disability.

No matter your definition of old age, the fact is that the workforce in the United States and globally is getting older. Per the Bureau of Labor and Statistics, the labor force is expected to be more diverse, composed of more women and older. United States workforce age demographics classify entry-level workers as those aged 16 to 24, prime workers aged 25 to 54, and older workers aged 55 and older.

Demographics show that baby boomers, born from 1946 to 1964, will be 56 to 74 years old by 2020 and will make up a large cohort of the workforce. In contrast, the baby bust generation, born from 1965 to 1975 with a demonstrated drop in birth rate, will be in the prime workforce age group. Statistics project the workforce participation rate in 2020 for those 55 and older will increase to 43 percent, which calculates to 41.4 million workers and about 25 percent of the entire workforce. There is a negative demographic effect occurring in the workforce resulting in a large segment of the population moving from a prime age group with a work participation rate of greater than 80 percent to an older age group with an increasing work participation rate, thereby creating an aging workforce.

Why don't those baby boomers retire? People are living longer and healthier lives, which affects financial needs for retirement. Older individuals desire to be productive and want to have a sense of worth. They may love their job and want to continue in their occupation or they may want to explore other careers. Some may want extra funds to help with family obligations, or to use for travel or play. With recent recessions, many of those who want to retire cannot. Of those baby boomers surveyed in 2012, 85 percent

plan to continue to work after retirement and nearly half plan to work into their 70s and 80s.

Even though the mind and the desire to work are strong in the older workforce, the aging process does affect physical function. Flexibility, strength and vision are consistent targets for Old Man Time, but it is well known that older workers possess many desirable characteristics that are attractive and valuable to employers. These include loyalty, punctuality, commitment to job and employer, quality work habits and positive attitudes. Let's not forget knowledge, experience, motivation and ability to create strong customer relations. These positive qualities and characteristics are well worth cultivating to improve company culture, mentor other workers, develop and share gained experience, and improve client relationships.

With the growing older age workforce, it is prudent for employers to embrace the value of the aging worker and their assets, and develop strategies to encourage their recruitment, engagement and retention in the workforce. Employers must first understand and accept the reality that workforce demographics are changing. They then have to adapt to that force structure change to maximize productivity and benefits for the company and its workers. Utilizing a customized approach in analyzing the workplace and workers, employers can address specific conditions or accommodation needs, identify and match skill sets with business needs, and develop policies to recruit, retain and engage valuable employees of all ages.

Some employer strategies to meet aging workforce challenges include flexible schedules, work options and retirement options. Flexibility in schedules, hours



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which affects financial needs for retirement.



or place can be attractive to those workers who need more control of their time to tend to other obligations such as caring for aging parents. Flexibility around tasks by customizing the job around the worker's skill sets could recruit or retain a valuable worker who has a significant disability. Creative retirement options may allow a retiree to continue to be productive while remaining in his or her career.

Another strategy could include proactive disability management to minimize impact and cost to the employee and employer, and promote recovery and productivity. Examples of this include engineering job functions that reduce risk for injury, utilizing ergonomic design to prevent injury, incorporating assistive technology to improve functional ability, and integrating wellness and health promotion to improve outcomes in utilization, costs and productivity.

The bottom line is that companies are faced with an aging workforce that is rapidly growing – where one in four of all workers will be age 55 and older by 2020. In order to compete and continue to support workforce demands, employers will need to adapt to this demographic change. The good news is that the aging workforce is a very valuable resource with much to offer, but customized accommodations and/or incentives to be recruited and retained may be required. The need for the employer to attract the aging worker and the need for the aging worker to remain in the workforce are apparent and inevitable. By implementing well-planned strategic policies, both the employer and the aging worker will benefit and prosper. 🌱

## References:

Toossi; Employment Outlook: 2010-2020, Labor force projections to 2020: a more slowly growing workforce, *Monthly Labor Review*, Jan 2012.

Tishman, Looy, and Bruyere; Employment Strategies for Responding to an Aging Workforce, March 2012.

North, M. and Hershfield, H., Four Ways to Adapt to an Aging Workforce, *Harvard Business Review*, April 8, 2014.

Other resources include: American Association of Retired Persons, [aarp.org](http://aarp.org); AARP Workforce Assessment Tool, [workforceassessment.org](http://workforceassessment.org); Sloan Center on Aging & Work, [bc.edu/research/agingandwork/](http://bc.edu/research/agingandwork/).

An interesting video that shows real action and results can be seen [atcbsnews.com/news/how-bmw-deals-with-an-aging-workforce/](http://atcbsnews.com/news/how-bmw-deals-with-an-aging-workforce/).

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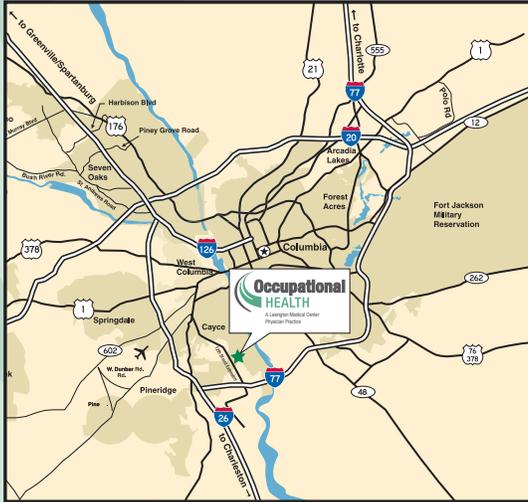


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## Nurse Practitioner Pearls

# Energy Drink Concerns

By Carol Upton, NP

**The number of emergency room visits related to energy drinks has nearly doubled in the United States**, rising from about 10,000 to almost 21,000 (from 2007–2011). The highest incidence of problems occurred in young adults age 18–25 with the second highest incidence in people age 26–39.

Results of a small research study (presented at the 2013 annual meeting of the Radiological Society of North America in Chicago) indicate that energy drinks may be too much of a boost to the heart, creating a strain on the organ. Research participants had an MRI of their hearts both before and about one hour after consuming an energy drink. These drinks showed a significant increase in the pumping action of the heart and the heart rate. It is thought that over time, energy drinks could have a detrimental effect on heart function. Study participants who only received caffeine did not show a significant increase in heart contractions. It seems that the unique blend of sugar, caffeine and taurine in energy drinks produces these effects.

While more studies are needed to further define those at greatest risk, individuals who already know they have high blood pressure or a prolonged QT interval should think twice before consuming energy drinks. People who are older and/or have existing health concerns may have more heart-related side effects from energy drinks. ☺

Source: MedlinePlus, December 2013 and March 2013

