



# Hughston Health Alert

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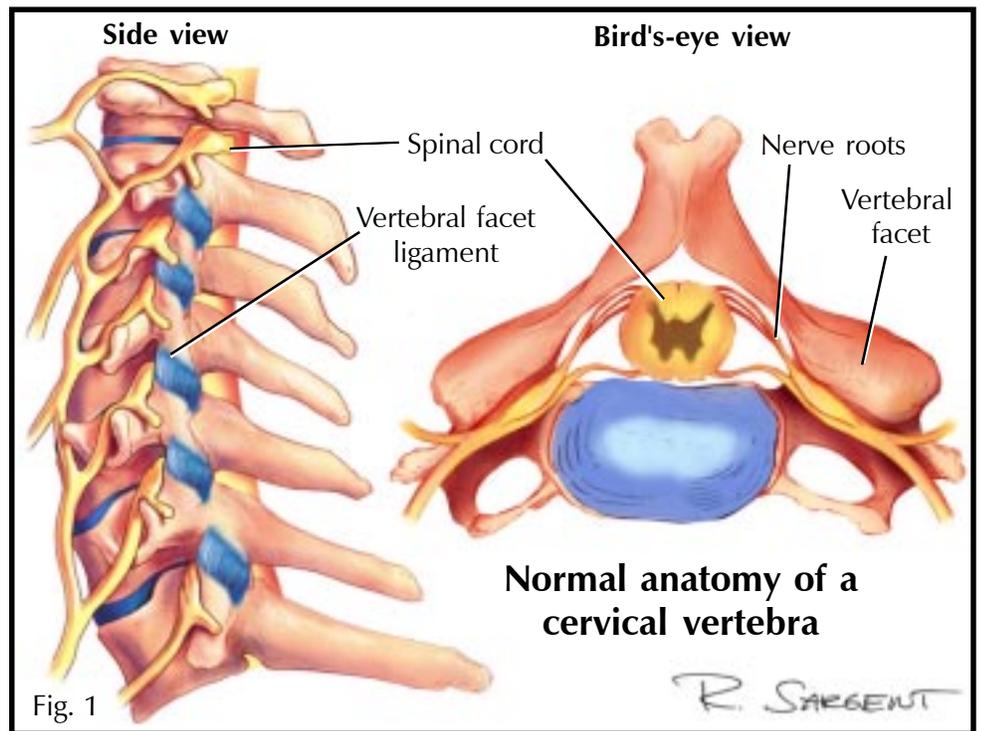
## Cervical Spine Injuries in Olympic Athletes

Although Olympic athletes are among the best trained and achieve the highest state of physical conditioning, they are still susceptible to sport-related injuries. When these well-conditioned athletes subject their musculoskeletal systems to the extreme physical requirements of Olympic competition, they increase the risk of injury to their cervical spine (Fig.1).

Approximately 10,000 severe cervical spine (neck) injuries occur annually in the United States, with about 1,000 of these injuries resulting from sport-related events. Olympic-level athletes share the rare but potentially catastrophic risk

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- Winter Hydration



of severe cervical spine injury. For example, in the fall of 2001, German ski coach Markus Anwanda underwent spinal surgery after he sustained spine and head injuries in a collision with World Cup champion Regine Cavagnoud. Tragically, Cavagnoud, a French Olympic hopeful, died from her head injuries two days after the accident.

Many Winter Olympic sporting events have an increased risk of cervical spine injury because of the speed at which the athlete travels and the potential for contact with other athletes or the surrounding terrain.

High-velocity events, such as downhill skiing, ski jumping, and toboggan racing, carry a greater risk for cervical spine injury than lower-velocity events, such as ice hockey, figure skating, or curling.

### Cervical sprain or strain

The most common cervical condition occurring in the athletic and nonathletic populations is the muscle sprain or ligament strain. Symptoms from cervical sprains or strains include localized (restricted to one area) tightness on one side of the neck that is associated with pain and

FOR A HEALTHIER LIFESTYLE

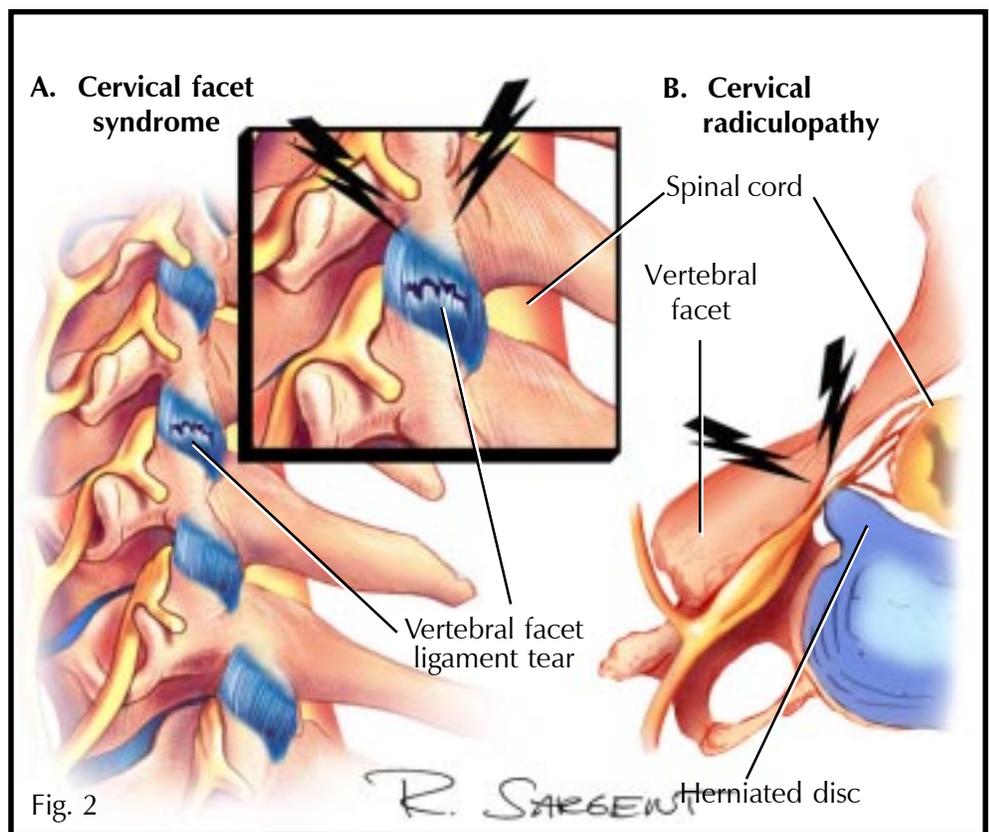
limited motion in the neck. This condition often becomes noticeable 12 to 24 hours after an injury. This condition is known by many as a "crick" in the neck. It usually subsides with ice or moist heat, gentle stretching exercises, and anti-inflammatory medications, such as aspirin or ibuprofen. Athletes with cervical sprains or strains are rarely limited from returning to their sport.

### Cervical facet syndrome

A more serious cervical sprain or strain affects the small facet joints that connect one cervical vertebra to another. Cervical facet injury occurs when the joint capsule and spinal ligaments are stretched and the small muscles that attach to the vertebra are strained (Fig. 2A). Symptoms include localized neck pain; pain that extends to the shoulder, arm, or upper back; limited movement; and, sometimes, headaches. The symptoms often occur immediately after a traumatic injury, such as a sudden neck rotation in a whiplash injury or sideways bending that can occur from a fall. Physical therapy or chiropractic treatments and anti-inflammatory medication or muscle relaxants will usually resolve the symptoms of cervical facet syndrome.

### Cervical radiculopathy

Cervical nerve root impingement (pinching of the cervical nerve) results from a disc herniation (a protruding disc) or from a nerve entrapped between bony structures (Fig. 2B). Forced hyperextension (extension beyond normal limits) of the cervical spine or axial (rotation around a straight line) loads can contribute to this condition. Symptoms include localized pain or pain that extends from the neck into an extremity. For example, an injury to a vertebra or disc in your neck could cause pain, numbness, or weakness in your shoulder, arm, or hand. This condition



occurs because the nerves that extend from between the cervical vertebrae provide sensation and trigger movement in these areas. An injury near the root of the nerve can cause pain at the end of the nerve, where the sensation is felt. Patients often feel relief by holding the affected extremity over their head, taking pressure off the irritated nerve root. X-rays of the cervical spine rarely show the source of the pain; however, the **magnetic resonance imaging (MRI)** scan, a test that shows soft tissue, can easily confirm the diagnosis. Cervical traction and a brief dose of oral corticosteroids to reduce inflammation and analgesics to relieve pain are usually effective treatment. Athletes with signs and symptoms of cervical radiculopathy (sensory or motor abnormality), such as numbness or weakness of a limb, are closely monitored by their athletic trainer and physician. Improvement usually occurs within 2 to 3 months in 65% to 70% of

patients with cervical radiculopathy. Surgery is reserved for those patients whose symptoms persist beyond this point. Return to sport is possible when the athlete's symptoms resolve and nerve function returns to normal.

### Transient quadriplegia

Transient quadriplegia results from a more serious but temporary injury to the cervical spinal cord. Nerve dysfunction can occur in one or both arms, one or both legs, all four extremities, or an arm and leg on the same side of the body. Patients can have numbness or pain, with or without weakness, or complete paralysis. The typical episode of transient quadriplegia lasts less than 15 minutes but can take up to 48 hours to gradually resolve. There is complete return of motor function and sensation and full, pain-free range of motion of the spine. When this dramatic condition occurs, the athlete should be treated with all the precautions for a cervical spine injury,

including immobilization of the head and neck and transport to an emergency facility. X-rays and MRI can reveal the presence of a fracture, disc herniation, or congenital (present at birth) narrowing of the central spinal canal. However, the imaging studies are usually normal in transient quadriplegia. Once an athlete has experienced an episode of transient quadriplegia, there is a 40% chance of a second episode. As long as there is no evidence of abnormal motion between the vertebrae or spinal cord compression, athletes are allowed to return to sporting activities without increased risk of permanent nerve injury.

### Cervical spine fracture

Athletes with high-energy trauma to the head or neck must be assumed to have a cervical spine injury until proven otherwise. Proper management begins on the scene with examination and treatment of these patients by emergency personnel, such as athletic trainers. Although they are rare, catastrophic cervical spine injuries during athletic events require prompt treatment to prevent further nerve injury and to improve the chances for recovery.

Nearly 50% of patients with acute spinal cord injury have other significant skeletal or organ injuries. The radiographic evaluation of these patients includes x-rays, computed tomography (sectional x-rays), and MRI to confirm the presence of a cervical spine fracture or other injuries and to determine fracture stability. Many cervical spinal fractures are treated with a neck brace, while some patients with unstable injuries and persistent symptoms require surgery.

### Return to sport

Most athletes who sustain a minor cervical strain, cervical facet syndrome, or cervical radiculopathy

are able to return to competitive sports once their symptoms improve. However, patients with cervical spine fracture with resulting instability, those with congenital narrowing of the cervical spinal canal, and those who have had surgical fusion rarely return to competitive sports because of the risks of reinjury to the cervical spine.

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## Hand and Wrist Injuries in Winter Sports

Snow and ice can be hazardous enough, but add speed to the equation, and the chance of injury increases considerably. With or without speed, most hand and wrist injuries occurring in winter sports are caused by falls. It's not surprising that we injure our hands, thumbs, fingers, and wrists because when we begin to totter or stumble, we automatically try to break the fall with our hands. Unfortunately, breaking a fall with an outstretched hand can lead to strained or torn ligaments (tissue connecting bone), fractures, and contusions.

### Skier's thumb

Injury to the thumb ligament has become one of the more common skiing injuries over the past 20 years.

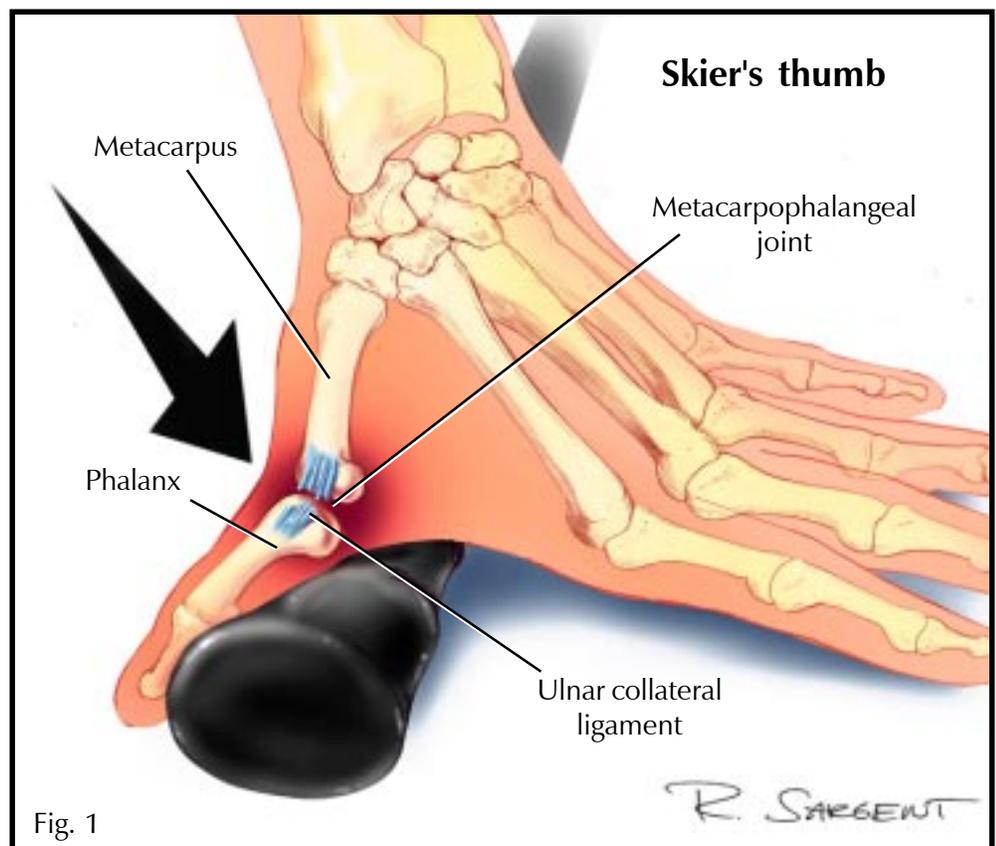


Fig. 1

It ranks second only to knee sprains. **Skier's thumb** is a strain or tear to the thumb's major stabilizing ligament—the ulnar collateral ligament of the metacarpophalangeal joint of the thumb (Fig. 1, pg. 3). The ulnar collateral ligament assists us in grasping, pinching, and stabilizing items in our hands. Injury to the thumb while skiing usually results from a fall on an outstretched hand that continues to hold the ski pole. At impact, the thumb is driven directly into the snow and is bent back or to the side, away from the palm and index finger, straining or tearing the ligament. When injured, the ulnar collateral ligament and other ligaments cannot support the thumb bone, making grasping or pinching with the thumb difficult.

Thumb injuries require evaluation to establish the correct diagnosis and initiate proper treatment. Physical signs include pain, swelling, and tenderness on the inner side of the metacarpophalangeal joint and loss of strength in the thumb. X-rays should be taken to rule out damage to the bone. Sometimes, a small piece of the bone is torn off with the ligament. Treatment for a torn ligament usually consists of a brief period of wearing a splint or cast for immobilization. Occasionally, however, with complete tears or displacement of the ligament, surgery is required to repair the injured ligament. Long-term problems can result from instability of the thumb. With proper treatment, however, the patient can regain full function and return to activity.

To avoid injury, skiers can use various types of safety devices that include strapless poles with a hand protection device, or an already injured thumb can be protected with gloves that have built-in splints. The best protection, however, is skiing lessons that help you learn to fall properly.

### Ice-skating falls

Ice-skating injuries usually are the result of a fall, rather than a collision, and beginners are much more likely to be injured than experienced skaters. As for skiers, a lesson on how to fall will greatly decrease the risk of

injury. By then, the healing process causes the fracture line to widen, making it more visible. If left untreated, a scaphoid fracture can lead to chronic pain in the wrist and the inability to extend the wrist backward.

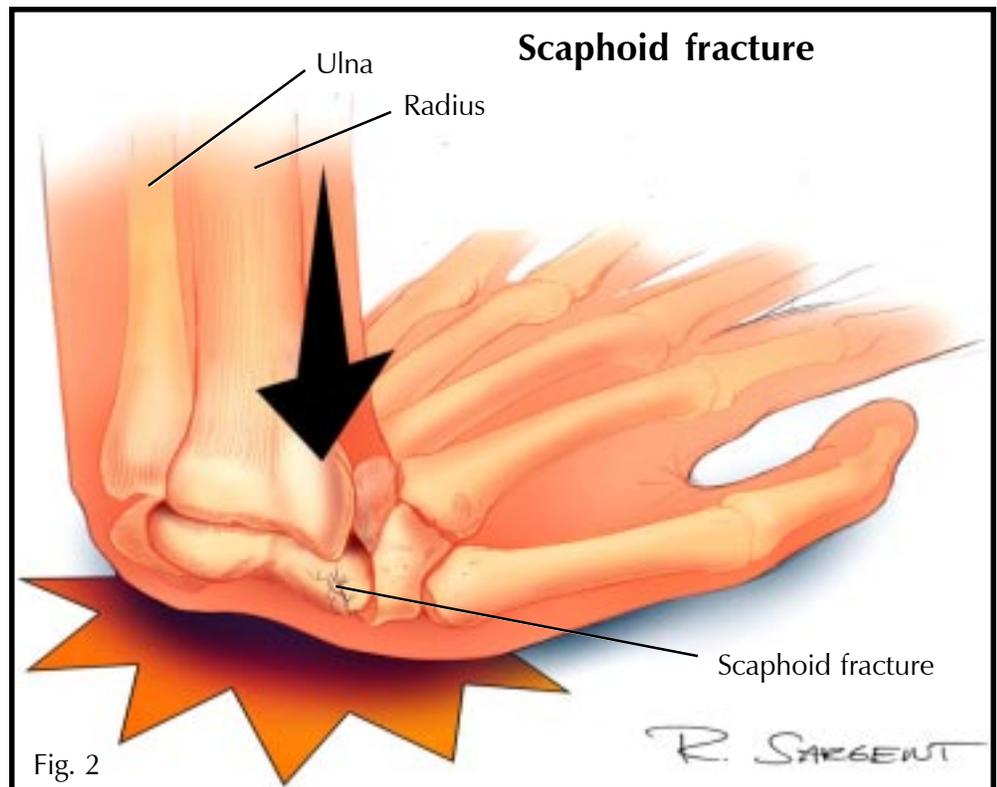


Fig. 2

injury. A common injury that occurs while ice skating is a wrist fracture. The wrist is often fractured during a fall on an outstretched arm. In this position, the arm remains straight and the wrist takes the full force of the fall.

A physician should examine a person with severe wrist pain after a fall, and x-rays should be taken to rule out a fracture. While the two bones in the forearm, the radius and the ulna, are the most likely to fracture, it is also possible that the small bone in the wrist just behind the base of the thumb, the scaphoid bone, can fracture. A **scaphoid fracture** is difficult to find even with x-rays because the fracture line is very fine (Fig. 2). If wrist pain persists after a negative x-ray, then the wrist should be x-rayed again about 10 days after

Prevention is the best protection against winter injuries. Being in shape and having the proper equipment can help to reduce injuries, but learning how to fall correctly and safely can be your best bet for preventing injury.

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# Surviving Sudden Cardiac Arrest

Approximately 1,000 Americans die each day from sudden cardiac arrest (SCA). The condition is caused by life-threatening arrhythmias, which are abnormalities in the heart's electrical system. SCA occurs when the heart's electric signals are disrupted, causing the heart to stop beating or to quiver (ventricular fibrillation). During cardiac arrest, the heart is unable to pump blood through the body to the brain and other vital organs. Usually, an SCA victim loses his or her pulse, then consciousness, and finally the ability to breathe. Without immediate treatment, the victim almost always dies.

SCA is not the same as a heart attack. Although a person suffering from a heart attack often develops an abnormal heart rhythm and SCA, there is a difference. A heart attack occurs when blood flow to the heart is blocked, causing damage to the heart muscle. Before and during a heart attack, most victims complain of chest, arm, abdominal, or jaw pain. In addition, a heart attack victim usually remains conscious, whereas an SCA victim always loses consciousness. SCA has no warnings, and is unpredictable, and although preexisting heart disease is a common cause, many victims have never had previous heart problems.

Coronary artery disease is often the source of SCA. In an athlete 35 years old or younger, the most common cause of SCA is an unknown cardiac abnormality. A rare cause of cardiac arrest that often attracts media attention is commotio cordis, or cardiac concussion. Commotio cordis is caused by a blunt trauma to the chest that interrupts the heartbeat, such as when an athlete is hit in the chest with a baseball. The most common cause of SCA, however, is ventricular fibrillation. An automated external defibrillator

(AED) can restore the chaotic heartbeat caused by ventricular fibrillation if it is used early enough. A bystander who witnesses the onset of SCA can save a life if an AED is available and if the chain of survival is followed.

## What is the chain of survival?

The critical difference between life and death for a victim of SCA can be measured in minutes. Each minute of delay in returning the heart to its normal pattern decreases the victim's chance of survival by 7% to 10%. The chain of survival is a **4-step process** that effectively directs at-the-scene emergency care in the first moments of SCA to increase the patient's chances of survival.

### 1. Early activation

The first step in the chain of survival is to recognize the emergency and call 911. Anyone who is unresponsive should receive emergency care, and regardless of the condition causing it, will benefit from activation of the chain of survival.

### 2. Early CPR

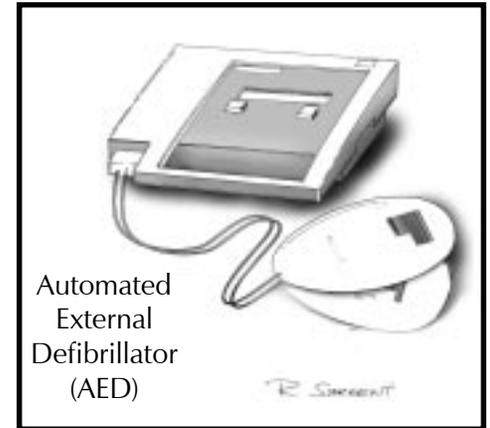
The next step is to begin cardiopulmonary resuscitation (CPR) immediately. CPR circulates oxygen-rich blood to the victim's brain and other vital organs. Whenever possible, one person should stay on the phone with 911, while one or two others perform CPR.

### 3. Early defibrillation

In step 3, an AED is used to administer an electric shock through the chest wall to the heart. Its built-in computers can assess the patient's heart rhythm, judge whether defibrillation is needed, and then administer the shock. Audible or visual prompts guide the user through the process.

An AED strengthens the chain of survival because it can restore a person's normal heart rhythm. The new portable defibrillators are designed to be used by nonmedical personnel, such

as police, firefighters, flight attendants, security guards, and other lay rescuers, who have been properly trained. Having more people in the community



trained to use an AED in response to a medical emergency will greatly increase SCA survival rates. The American Heart Association and the Red Cross recommend that AEDs be made available to nontraditional rescuers and placed in public areas such as airports, malls, businesses, and government buildings.

### 4. Early advanced care

The final step in the chain is early advanced care. Emergency management service personnel continue basic life support and further defibrillation, if necessary. They can also administer medications to help the heart maintain a normal rhythm while the patient is transported to a hospital.

SCA can happen to anyone at any time. To increase the survival rate in the victims, AEDs should be readily accessible in public areas. Having an AED in one's home and workplace would also drastically increase the survival rate in those who are at a higher risk for SCA.

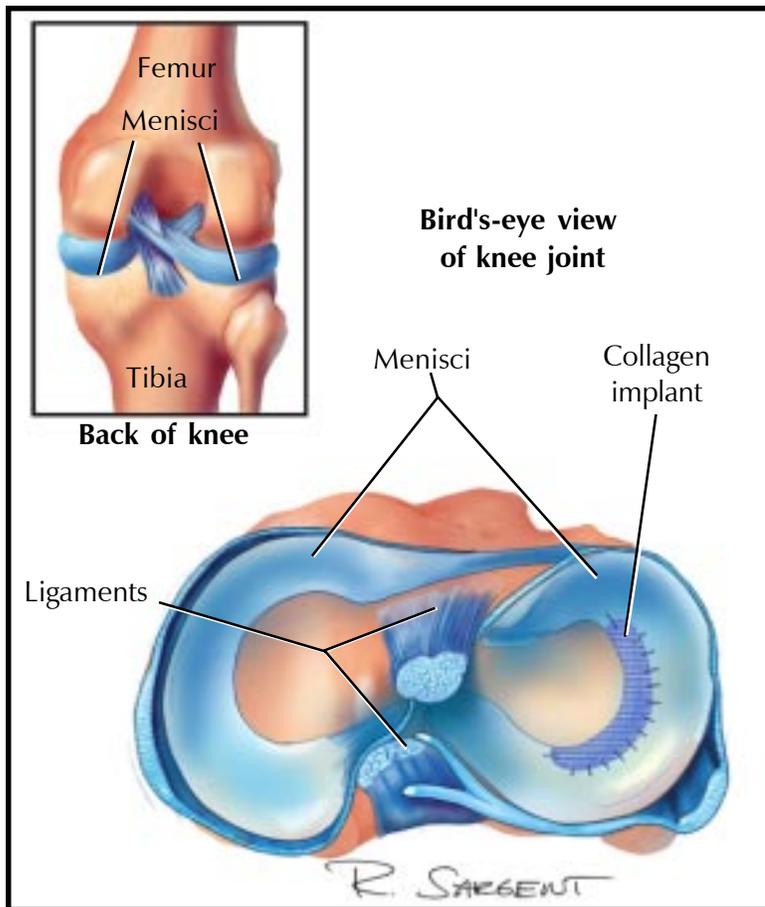
To learn more about AEDs and how you can be trained to carry out the chain of survival, visit the website of the American Heart Association at [www.americanheart.org](http://www.americanheart.org) or the Red Cross at [www.redcross.org](http://www.redcross.org).

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# Collagen Implants For Meniscal Regeneration

Each year, nearly one million Americans injure a meniscus in their knee. The menisci (plural of meniscus) are crescent-shaped wedges of tough, fibrous tissue that

swelling, and occasional giving way and locking of the knee. The blood supply aids in healing these injuries. The blood supply is good around the outside rim of the meniscus, which aids the healing process; however, the interior portion of the meniscus has a minimal blood supply. Because of its poor blood supply and inability to repair itself, an injury to the inner portion of the meniscus usually requires a meniscectomy, or removal



of the damaged or torn part of the meniscus. Without the protection of the meniscus, the knee joint can become unstable, and the articular cartilage covering the femur and tibia may begin to deteriorate, resulting in degenerative osteoarthritis ("wear-and-tear" arthritis). If a torn meniscus is causing symptoms, it should be treated. In years past,

act as cushions between the ends of the femur (thighbone) and the tibia and fibula (lower leg bones). Each meniscus acts as a shock absorber and helps to protect the articular cartilage that covers the ends of the femur and tibia. The meniscus also assists in lubricating the joint and stabilizing the knee during rotation.

The meniscus can tear during sudden twisting of the knee or from blunt or repetitive forces. Injury to the meniscus can result in pain,

surgeons often removed the entire meniscus. We now know that this practice can also result in osteoarthritis, so today, only the torn portion is removed.

Currently, physicians at 13 sites in the U.S., including the Hughston Clinic, are involved in a study to determine the safety and effectiveness of the collagen meniscus implant (CMI) as an alternative to removing the meniscus. The CMI is an investigational device

manufactured by ReGen Biologics, Inc. (Franklin Lakes, NJ), and is only available to patients participating in the study. The CMI is made of bovine (cow) collagen and is a biocompatible (compatible with living tissue), resorbable (absorbed by living tissue) material that is arthroscopically (surgery through small incisions in the skin) sewn into the area where the meniscus tissue is missing. Once in place, the CMI provides a scaffold or bridge onto which the body's own meniscus cells can begin to migrate and form new meniscus tissue. Over time, as the regeneration takes place, the body naturally absorbs the CMI, leaving the new meniscus tissue. The CMI provides an alternative to the removal and permanent loss of meniscus tissue that occurs during a meniscectomy.

To be eligible to participate in the CMI research study you must be between 18 and 60 years of age and have had at least one but no more than three previous surgeries involving the meniscus in your knee. Candidates will be examined and evaluated by participating physicians before entering the study group.

You can find more information about the CMI research study on the ReGen website at [www.regenbio.com](http://www.regenbio.com), or call Cynthia Wolfe, clinical coordinator for the Hughston Sports Medicine Foundation, for more details at (706) 576-3333.

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## Be Aware of the Cold!

If you are not careful, cold weather can be dangerous to your face, ears, fingers, and feet. Whether you are outside exercising or hunting or a spectator at a sporting event, you need to consider not only the air temperature, but the wind chill factor as well. The wind chill factor is the combined effect of the air temperature and wind speed on the body's heat loss. For example, a 40°F day with 15-mph wind translates into a wind chill temperature of 22°F (Table). In the cold, you are in jeopardy because your skin and the tissues below the skin's surface are made up of cells that contain water. In freezing temperatures, the water in the cells can freeze and the cells can die. Frostnip and frostbite are two problems that can result from prolonged exposure to the cold.

### Frostnip

Frostnip is a whitening of the tips of the ears, nose, cheeks, chin, fingertips and toes—parts of the body that are often left unprotected. It is slow to develop, usually painless, and

seldom causes permanent tissue damage.

Treatment of frostnip focuses on rewarming. Apply steady, firm pressure with a warm hand or blow on the affected area with warm breath. If the fingers are affected, hold them in the armpits. **DO NOT RUB!** Rubbing the skin can cause friction, which can lead to additional injury to the tissue. After the skin thaws, it may turn red and tingle, and peeling may occur. If the tissue has been damaged, it may be sensitive to re-exposure to the cold and require more protection than before.

### Frostbite

Frostbite is a more serious cold injury than frostnip. It can occur in temperatures of less than 44°F. Think of it as similar to a burn, in that cold can kill skin tissue in the same way that heat does.

Superficial frostbite affects the skin and tissue just below the skin's surface. The skin is pale, waxy, cold, and firm to touch. There may be swelling, and blisters may form. The skin may throb and burn for a long time. It may remain red and permanently sensitive to the cold.

Rapid rewarming, similar to what should be done for frostnip, is important, as well as getting indoors as soon as possible. If available, a warm (not hot) water bath can thaw the affected area quickly and thoroughly. Try to maintain body temperature with warm, nonalcoholic drinks.

Deep frostbite is very serious and affects the skin and deeper tissues and sometimes bone. The hands and feet are most commonly involved. The skin is pale, cold, solid, and numb. As the skin begins to thaw, it turns purplish-blue and can be very painful. Large blisters may appear. Depending on how long the skin remains frozen, there is a chance of permanent tissue damage and gangrene (tissue death). Emergency treatment with immediate transport to a hospital is vital.

Protect your skin from the cold and wind. Pay particular attention to the ears, nose, cheeks, chin, fingers and toes—areas that are vulnerable to extreme cold. Dress warmly in loose layers. Wear a hat pulled down over the ears, and consider a hat with a facemask. Wear gloves or mittens and socks made of wool or down. Choose fabrics that are good insulators and that do not lose their ability to insulate when wet. Wear loose-fitting socks and shoes to avoid cutting off the circulation to your feet.

Be mindful of the dangers with exposure to cold temperatures and wind. Be smart, and take the necessary precautions for protection and prevention. When in doubt, seek prompt medical attention.

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Wind speed (mph)	Actual Temperature (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	9	-24	-33	-46	-58	-70
15	36	22	9	-5	-18	-32	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-21	-35	-51	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Equivalent chill temperature (°F)										

## A Fluid Winter

In the crisp dry air of winter, our skin often becomes dry and cracked. The evidence of winter's harshness is clearly visible on the outside, but imagine what happens to us on the inside. Fluid intake is always an important health issue during the summer heat, but it is actually just as important during the cold, dry winter months.

We need just as much fluid in the winter as we do in the summer. When our bodies are exposed to extreme temperatures—hot or cold—fluids help us to maintain a normal body temperature. During winter activities, we often wear layers of clothing that heat up our bodies, causing water loss through perspiration. Even when we don't exercise, our bodies use fluids to digest food, absorb nutrients, lubricate joints, and process waste.

We need to regularly replace the fluids our bodies consume. These fluids can come from a variety of sources. Of course, drinking water will do the trick, but we can also enjoy a nice warm bowl of soup before a meal, drink a cup of hot chocolate or warm apple cider, or dine on an assortment of fresh fruits and vegetables. Beware of highly caffeinated beverages and alcohol because they are diuretics, which promote urination. Instead, enjoy a hot cup of caffeine-free tea or coffee.

This winter, as you reach for the hand lotion to soothe your dry skin, remember that your inside needs moisture too!

The *Hughston Health Alert* is a quarterly publication of the Hughston Sports Medicine Foundation, Inc. The Foundation's mission is to help people of all ages attain the highest possible standards of musculoskeletal health, fitness, and athletic prowess. Information in the *Hughston Health Alert* reflects the experience and training of physicians at The Hughston Clinic, P.C., of physical therapists and athletic trainers at Rehabilitation Services of Columbus, Inc., of physicians who trained as residents and fellows under the auspices of the Hughston Sports Medicine Foundation, Inc., and of research scientists and other professional staff at the Foundation. The information in the *Hughston Health Alert* is intended to supplement the advice of your personal physician and should not be relied on for the treatment of an individual's specific medical problems.

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## Health Hint

Washing your hands is the single healthiest thing you can do. You should wash your hands after using the bathroom, before eating and drinking, after petting an animal, and anytime you handle raw meat. To wash away germs, use warm water, apply soap and lather well for 15 to 20 seconds, rinse hands thoroughly, then dry, and turn off the water with your arm. If you are in a public restroom, turn off the water with a paper towel and then use the paper towel to open the door.



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