Hughston Health Alert

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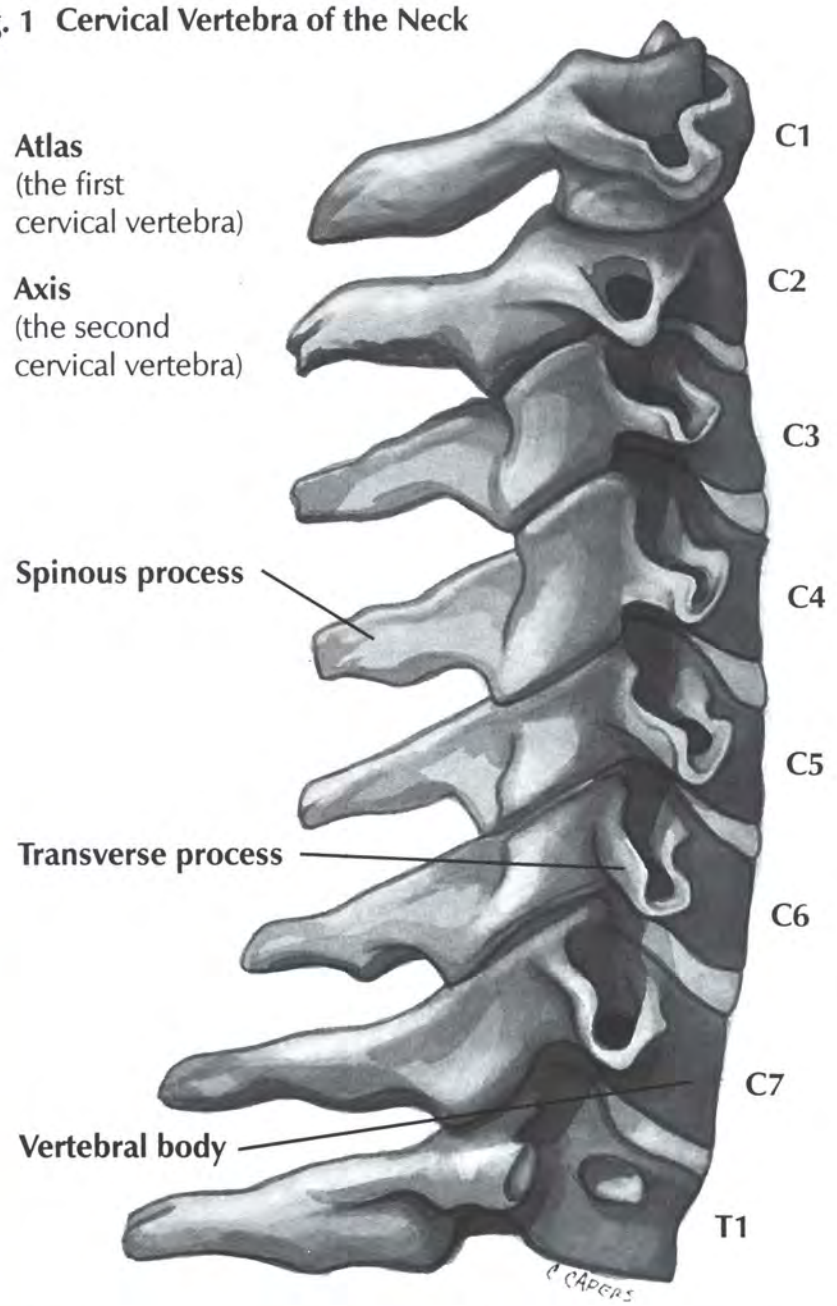
Cervical Spine Fractures

The human spine comprises 24 vertebrae, or small bones containing the spinal cord. These vertebrae are grouped into three sections according to location: cervical spine (neck), thoracic spine (middle back), and lumbar spine (lower back). Soft tissues, such as ligaments (tissues that connect bones), muscles, and skin, surround and support the spine. Seven vertebrae form the cervical spine (Fig. 1). This section of the spine connects the base of the head to the thorax (trunk and shoulders) and, with the help of soft tissues, supports the head. A fracture (break) of the cervical spine is commonly referred to as a broken neck.

Fig. 1 Cervical Vertebra of the Neck



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Most injuries that involve the neck or cervical spine are the result of a violent collision that compresses the cervical spine against the shoulders. This force can be so great that a vertebra fractures or even bursts into small fragments (Fig. 2, normal C-spine; Fig. 3, fractured C5). For example, striking your head against the bottom of a pool in shallow water or "spear" tackling using the crown of your helmet to stop an opposing football player can fracture the cervical spine (Fig. 4).

Cervical spine injuries may also occur during motor vehicle accidents when the head is violently jerked either backwards or forwards. This type of accident may not cause a fracture but instead injure the muscles and ligaments of the neck. The resulting injury is a neck sprain, which is commonly called whiplash.

Regardless of the cause, cervical spine fractures are serious injuries; they may involve spinal cord damage that can result in partial or complete paralysis or even death.

Fig. 2

Fig. 3

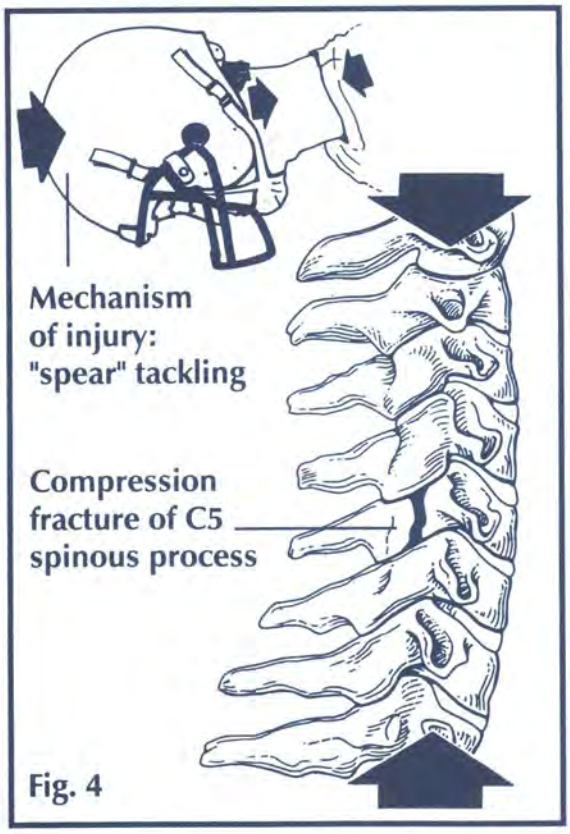

Fig. 4

If you suspect that someone has a neck injury, immediately contact emergency medical services. **Do not move the person yourself** — no matter how uncomfortable they look. Emergency medical technicians are trained in the proper treatment of people who have neck injuries. If you move a person who has a cervical spine fracture, you risk further injurying that person.

The surgeon will x-ray the injured person's spine to find out if the cervical spine is fractured. To treat the fractured spine, the surgeon first reduces it through traction. This process involves inserting tongs into the skull, attaching a pulley to the tongs, and attaching small weights to the other end of the pulley. The weights pull the head away from the shoulders just enough to enable the soft tissues around the spine to push the fractured bone back into place. After the fracture is reduced, the surgeon examines the spinal cord for damage. Because the spinal cord is soft tissue, it cannot be seen on an x-ray. Therefore, the surgeon injects a dye into the damaged area that coats the spinal cord and other soft tissues so they can be seen on an x-ray.

Most cervical spine fractures must be treated surgically. The surgeon chooses the treatment method based on the severity of the fracture. For example, the fractured vertebra may be fused to the healthy vertebra next to it, or it may be removed and replaced with a bone graft that is fused to the vertebrae on either side.

Cervical spine fractures and other neck injuries occur less frequently because people are more educated about how fractures occur and about how to prevent them. Protect yourself and your family by always wearing a seatbelt, supervising children and adolescents who are swimming and diving in lakes and pools, and using the proper equipment and training during athletic participation. If a significant neck injury does occur, be sure to contact your local emergency medical services for help.

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Aquatic Exercise for People with Arthritis

Regular exercise is an important part of improving and maintaining your health. However, for people who have arthritis, regular exercise may not only be painfully difficult, but nearly impossible.

Arthritis is a general term used to describe inflammation of the joints. This disease causes the joints to ache, stiffen, weaken, and swell. Everyday activities, such as using your hands, walking, going up and down stairs, and standing up from a seated position may be difficult. Your doctor may prescribe a treatment plan comprising medication, rest, proper diet, stress relief, and exercise. Proper exercise helps to keep joints mobile, keep muscles strong, regain lost motion and strength, make daily activities easier, and improve general physical and mental fitness. However, if activities, such as walking in the park or participating in aerobics classes are too painful, you may be able to exercise in a warm-water pool.

Exercising in warm water has many benefits. The warm temperature of many therapeutic pools (95° to 98° F) increases blood flow to muscles, which helps the muscles relax. As your muscles relax, you will be able to exercise more comfortably. The buoyancy (what causes you to float) helps support the arms as you slowly move them through the water in an almost effortless fashion. Buoyancy also greatly decreases the amount of body weight placed on the back, hips, knees and feet. When you stand in waist-deep water, only 50% of your body weight is put on the lower part of your body; in neck-deep water, only 10%. Therefore, walking and leg exercises may be done with little or no weight on the painful joints of your lower body.

Water is 600 to 700 times more resistive than air. The even distribution of water's resistance affords a safe means to exercise to gain strength without soreness or risk of serious injury to arthritic joints. Strengthening and range of motion exercises performed in a warm pool are less painful and safer than other forms of exercise.

When you stand waist-deep in water, only 50% of your body weight is put on the lower part of your body; in neck-deep water, only 10%.

Many rehabilitation and community facilities offer organized aquatic arthritis programs. These exercise programs offer a support-group atmosphere that fosters increased self-esteem, socialization, and emotional well-being. People who exercise regularly look and feel better. Many times, the group activity will encourage you to continue exercise on a regular basis.

But I can't swim.

If you are involved in a supervised exercise program, you don't have to know how to swim. Swimming is not the only form of exercise you can do in the water. An aquatic arthritis exercise program can include exercises, such as gentle range of motion; gentle strengthening; and cardiovascular activities, such as walking laps.

Before you begin any exercise program, talk with your doctor. This consultation is especially important if you have severe cardiovascular disease, a history of seizures, uncontrolled high or low blood pressure, severe respiratory problems, or allergies to chlorine or bromine. Together, you and your doctor can create the best program for you.

Don't forget that rest and proper hydration are important parts of an aquatic exercise program. A general guideline to follow is to drink a glass of water before and after exercising in a warm pool. Including regular aquatic exercise can be a very important part of the treatment of all types of arthritis. Exercise will help you maintain or improve your quality of life and sense of well-being. The warmth and comfort of the water will keep you coming back for more.

Dana Bridges P.T., A.T.,C.
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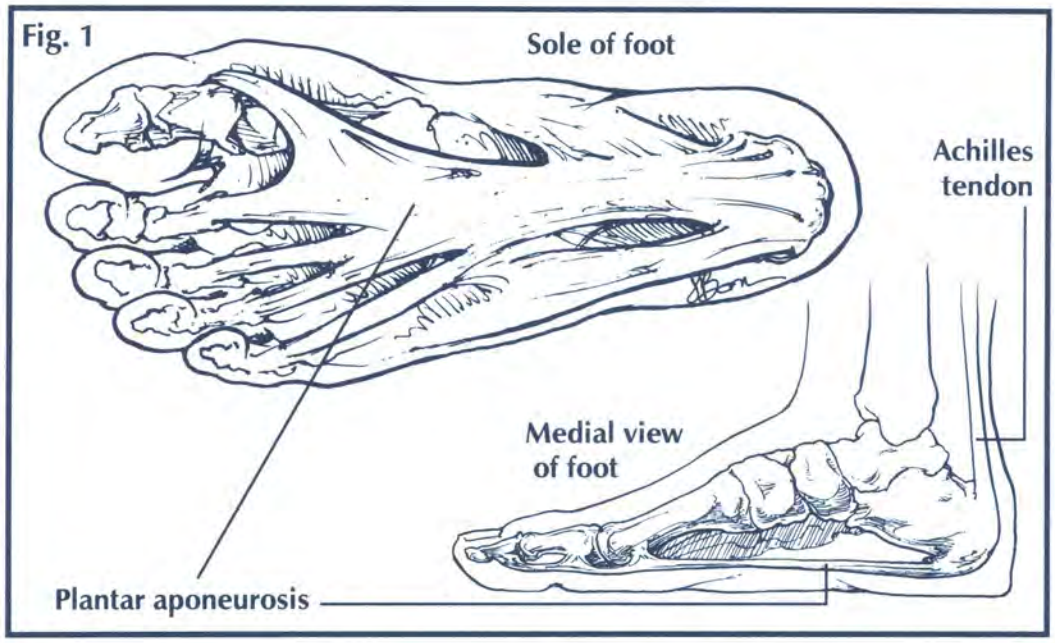
Plantar Fasciitis

Painful Heel Syndrome

Painful heel syndrome is most commonly caused by a condition known as plantar fasciitis, or inflammation of the plantar fascia. The plantar fascia is a ligament that connects the heel bone (calcaneus) to the ball of the foot. The ligament splits into four parts at the ball of the foot and joins in the toe area (Fig. 1). Its function is to maintain a proper arch in the foot.



Symptoms

Plantar fasciitis is one of the most prevalent orthopaedic problems among athletes. As many nonathletes as athletes have the condition. The pain is greatest in the morning but lessen after a few steps. However, the symptoms gradually increase during the day and may become greater after you climb stairs, participate in a weight-bearing activity, or sit for a long period of time.

Cause

The most common cause of plantar fasciitis is overload. Obesity and prolonged standing promote the condition. For runners, wearing inadequate running shoes or running up steep hills leads to plantar fasciitis. Tightness in the Achilles tendon predisposes you to this condition.

Prevention

People of all activity levels can work to prevent plantar fasciitis by wearing shoes that provide excellent arch support. In addition, you need to warm up before participating in any activity that may be stressful to your feet. For example, stretch the plantar fascia and Achilles tendon by leaning forward against a wall while keeping your heels flat on the ground (Fig. 2).

Treatment

If you already have plantar fasciitis, nonoperative treatment will most likely relieve your symptoms. This treatment begins with decreasing activities and stress on the arch and wearing supportive shoes (often with arch supports purchased at your local pharmacy). Stretching the Achilles tendon is very important. Deep massaging the tendon may also help. You may need to take an anti-inflammatory medication, such as aspirin or ibuprofen. Other possible treatments include having injections of cortisone (a strong anti-inflammatory medicine), wearing a night splint, using therapy modalities, and wearing a cast. Surgery is only occasionally necessary.

Finally, be patient. Improvement takes time — often several months. However, treating plantar fasciitis as soon as you detect if will help prevent severe, and often long-term, foot problems.

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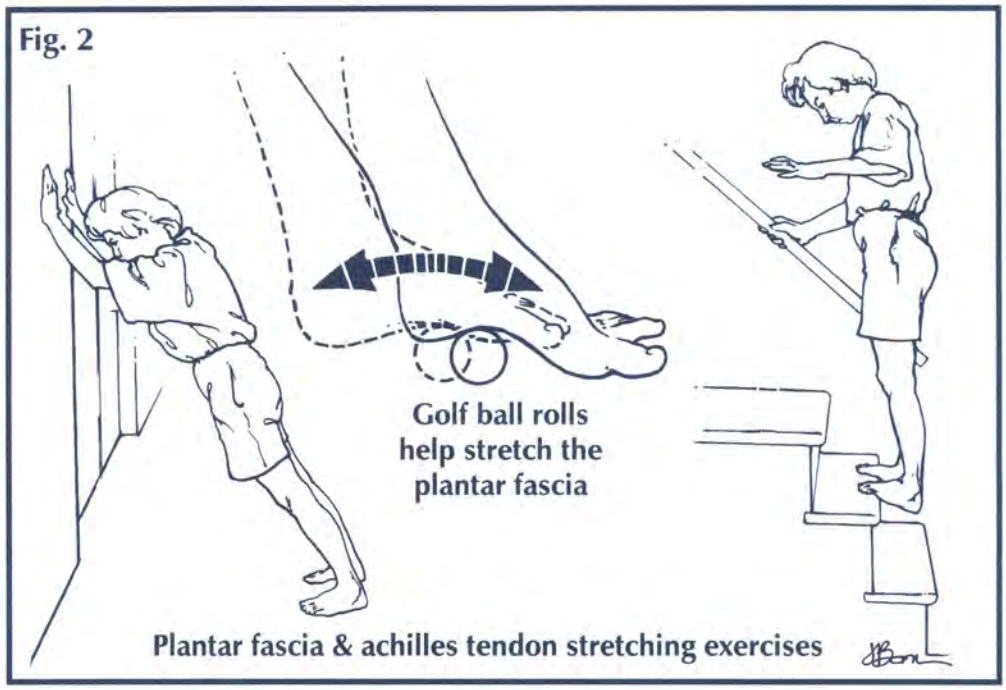

Plantar fascia & achilles tendon stretching exercises

Wrestling Injuries

With winter upon us, most of our interests and activities have moved to the shelter of the indoors. For many high school and collegiate athletes, this means competing in an indoor winter sport, such as wrestling. Athletes have wrestled competitively for thousands of years. In fact, high school wrestling currently ranks as the fifth most popular sport in the United States and is one of the fastest growing sports in the world.

Anatomy of wrestling

Most people are familiar with the sport through television broadcasts of professional wrestling, which is aimed at entertaining an audience. However, the true sport of wrestling is a much different type of competition and includes three styles: international freestyle, intercollegiate freestyle, and Greco-Roman. Each style has certain holds or moves that are permissible and are counted as points. High school and collegiate wrestlers participate in intercollegiate freestyle wrestling. A match between two opponents comprises three rounds that last 2 to 3 minutes each. During the first round, both wrestlers start in an upright position. During the second and third rounds, one opponent begins in a position of advantage. Points are given for take-downs, escapes, reversals, and near pins. A match ends if time has expired or if one opponent is pinned. Pinning means both shoulder blades are pinned against the mat for a period of 3 consecutive seconds.

Injuries in wrestling

As with other competitive athletes, wrestlers are not injury-free. Because taking an opponent down and pinning his shoulders to the mat often requires enormous amounts of leverage and effort, injuries to the upper extremities (hands, arms, and shoulders) are common. Shoulder injuries are particularly common in the opponent who is taken down hard, especially onto an old or inadequate mat. Some of the more common injuries include glenohumeral dislocation (dislocated shoulder) and acromioclavicular (AC) joint separation (separated shoulder). The forces generated, the position of the arm, and the direction of the body during the fall dictate whether the glenohumeral or AC joint will be injured. To treat these injuries, the wrestler may need to wear a sling to protect the shoulder, take an anti-inflammatory medication (such as aspirin or ibuprofen), and do range-of-motion and strengthening exercises.

Skin infections

Another common problem in wrestlers is skin infection. Because a wrestler's uniform essentially covers only the middle section of the body, it leaves most of the skin surface exposed. Thus, most of the skin is susceptible to the spread of a contagious disease that is on the mat or an opponent's skin. Impetigo, which is caused by strains of streptococcal or staphylococcal bacteria, can be spread by contact with an opponent's infected skin or by contact with fomites (dormant forms) on the mat. The streptococcal strain of impetigo usually causes crusted sores; the staphylococcal strain usually produces blisters. Both of these infections are treated with an antibiotic, such as erythromycin or penicillin.

Another common skin infection of wrestlers is a type of the herpes virus. Because it is associated with wrestlers (or gladiators), the scientific name of this virus is *Herpes gladiatorium*. This virus is usually spread by contact with an open, draining sore on the opponent's skin. To treat the infection, the doctor prescribes drying agents (such as benzoyl peroxide) and antiviral agents (such as Acyclovir). The virus cannot be cured; therefore, prevention is essential. Athletes who have open sores caused by herpes should be restricted from play until the sores have dried up and healed.

Wrestlers must be aware of injuries and skin infections that can keep them from participating. If they are injured or have an ailment during sports participation, these athletes should be treated by a doctor as soon as possible.

Reuben Sloan, M.D.
Columbus, Georgia

Winter Wellness and Fitness

Regardless of the time of year, fitness and wellness goals remain the same. These goals are to achieve cardiorespiratory (heart and lungs) fitness; to increase muscular strength, endurance, and flexibility; and to maintain optimal body composition. Getting fit can also help you reduce your blood pressure; increase your HDL (good cholesterol); control diabetes; and kick unhealthy habits, such as cigarette smoking.

Burn, baby, burn

You can achieve cardiorespiratory fitness by participating in aerobic activities that exercise large muscle groups. For example, you can walk, jog, swim, hike, or participate in aerobic dance. These activities must be done for a 20- to 60-minute period at 65% to 75% of your maximum heart rate. (To calculate your maximum heart rate, subtract your age from 220.) The longer you participate in an aerobic activity, the more chance you have of losing weight.

The intensity at which you exercise dictates whether your body uses fat or uses carbohydrates or protein for energy. Fats are used as a source of energy when you exercise at 65% to 75% of your maximum heart rate. However, when you exercise at a higher heart rate, fats cannot be converted into energy quickly enough so the body must convert carbohydrates or protein.

Building muscle strength

Many basic exercises, such as calisthenics, can help you strengthen your muscles. If you are just starting a muscle-strengthening program, try exercises, such as push ups, sit ups, and activities that strengthen the quadriceps (muscles in the front of the thigh). Remember, there is no such thing as spot reducing; overexercising in one area will not reduce the fat in that area. Therefore, doing more than 25 repetitions of a certain exercise is probably a waste of time. Fitness is a total body program.

Stretch

You can increase your flexibility through a daily program of stretching. A good warmup is necessary for any form of exercise because it prepares the muscles (including the heart) for more strenuous work. The warmup should consist of 3 to 6 minutes of low intensity exercise. When deciding the type of stretching exercises to do during your warmup, consider your activity. In addition to doing general stretching exercises, you should concentrate on the muscles used the most in your activity. If you walk, stretch hamstrings (muscles in the back of the thigh), Achilles tendons, quadriceps, hip flexor muscles, and low back muscles. If you swim, stretch your shoulder muscles.

Remember, there is no such thing as spot reducing.... Fitness is a total body program.

The ideal body

Ideal body composition is a by-product of a good exercise program. Men of any age should maintain a body fat between 12% and 16%. Women should maintain a body fat between 22% and 26%. Your body fat must be reduced if it exceeds 22% (in men) or 30% (in women). Reducing your percent body fat is even more important if you have a family history of high cholesterol and cardiovascular disease.

Following a diet low in saturated fat helps reduce fat and cholesterol in most people; however, some people may need to take a cholesterol-lowering medication. When dieting, you need to remember to eat balanced meals. Include food from all of the food groups, concentrating on lean meats, vegetables, fruits, and whole wheat products. Learning to read labels is very important. Remember, 1 gram of fat equals 9 kilocalories, and 1 gram of carbohydrate or protein equals only 4 kilocalories. People who have hypertension problems should also avoid a diet high in salt.

All fitness and wellness programs require behavior modification. You have to decide that this is something that you want to do, not what a spouse or friend wants you to do. Without full commitment, no wellness, fitness, or weight loss program will ever be effective. Before you start an exercise and wellness program, you should discuss your plans with your doctor.

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Exercising in the Cold

Your outdoor exercise program should not end because it is winter. You can exercise at any time during the year. Just prepare yourself for the cold weather.

Dress for the weather

Layers of clothing help trap warm air around your upper body and offer more effective insulation than one thick layer of clothing. The first layer should be made of a material that will allow the skin to stay as dry as possible. As a rule, cotton is not a good first layer. There are many new products that reduce the sweat accumulation and allow the skin to remain dry. Consult your local athletic store.

You should also cover your head. About 30% of the body's heat is lost from your head.

The wind-chill factor

The wind-chill factor plays a very important part in outdoor exercise. Wind chill means that when the wind blows, your body senses that the air temperature is lower than it actually is (Table). Pay attention to the actual temperature and to the speed of the wind. Warm up your muscles and dress accordingly.

Make sure that you exercise with the wind in your face when you start out and with the wind on your back when you return. This technique will prevent chilling. Exercising with the wind at your back on your way out will cause you to sweat and returning with the wind in your sweaty face will cause you to become more chilled than you would have been normally.

Acclimating

Give your body time to adjust from warm weather to cold weather. If you have been normally exercising for an hour each outing in warm weather, your exposure to cold weather each outing should be reduced in half for 2 weeks. This period should be long enough to acclimate your body to the cooler temperatures.

Before exercising in cold weather, consult your doctor. This consultation is especially important if you have cardiovascular disease, if you are an older adult, or if you have a young child who is getting involved in exercise. Consider exercising in a climate-controlled area, such as a health club, when the temperature is too low for you to exercise comfortably outside.

You need to take precautions to protect yourself when you exercise. If you exercise alone, make sure you tell someone where you have gone. Always exercise where there are other people. You can avoid many cold-weather injuries by avoiding alcoholic beverages, getting enough sleep, eating a balanced diet, getting fit, and drinking plenty of liquids. When you stop exercising, get out of the wind and get into a place where you can cool down comfortably and safely. Never stop an activity abruptly.

Exercising outdoors in the winter can be an exhilarating way to maintain the fitness level you achieved during the warmer months. The winter can also be a good time to start a program. Work with your physician and an individual who is educated in exercise science to develop a safe and reasonable program.

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Table

Temperature	Wind speed	How cold it feels
30°	5 mph	27°
	10 mph	16°
	15 mph	9°
20°	10 mph	4°
	15 mph	-5°

Prepare Now for Springtime Activities

Following a good nutrition, flexibility, and conditioning program can help prevent painful injuries that often occur when we rush into spring sports and outdoor activities. A well-balanced diet may include fewer calories if your activity level is not as vigorous as it was last summer. Your physician can measure your body fat composition and can provide you with accurate dietary guidelines.

Sticking with a fitness program can be difficult. However, there are things you can do to help establish your routine. Set aside a certain time each day for your program. Vary your activities among exercising outdoors (with weather protection), going to a health club, and working out in the house to help make exercising more interesting and fun.

Be sure to include exercises to stretch and condition the major muscle groups that you will use most in your springtime activities. Just remember where you hurt last year and concentrate on exercising those muscles now.

Since warmer weather will eventually return, you should take steps now to help avoid a painful return to outdoor physical activity.

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Ask the Doctor

Q What is an epidural injection and how does it help low back pain?

A Epidural injections have become an integral part of the nonoperative management of neck and low back pain syndromes. They are used most frequently to treat, and sometimes diagnose, radiating pain. The injection mixture includes a combination of a local anesthetic (similar to Novocain) and a corticosteroid (a strong anti-inflammatory medication). The anesthetic works within minutes and the steroid works within a day or so. The mixture is injected into a precise location in the spine known as the epidural space. The medication flows in this space to the inflamed area around the nerve root that is causing the radiating pain. Specialists including anesthesiologists, spine surgeons, and physiatrists (physical medicine and rehabilitation doctors) can give the injections. Epidurals are reported to help 60% to 75% of recipients. For best results they should be combined with a prescribed therapeutic exercise program. Additionally, they may be used to predict the outcome of back surgery. That is, if you have even temporary relief with an epidural injection, you are more likely to benefit from surgery if it becomes necessary later. Given their good rate of success and surgical predictive value, epidural injections should be given before a person has back surgery.

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Health Hints

Stress, dwelling on an injury, and fatigue can make pain feel worse. Pain signals can be blocked, however, by chemicals called endorphins that are produced by the brain. Simply thinking positive thoughts can prompt your brain to produce endorphins.

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