Top Ten Sports Injuries

Learning Objectives

In this unit you will learn that:

- The most common sports-related injuries primarily are overuse injuries. As the name implies, an overuse injury results from wear and tear on the body, particularly on joints subjected to repeated activity.
- By far, the most common sport that leads to injury is running. "Running jars the body from the foot all the way up into the back," says James Garrick, MD, director of the Center for Sports Medicine at St. Francis Hospital in San Francisco. He has seen more runners than any other recreational athletes in his clinic, followed by those who participate in dance (including aerobics), tennis, skiing, basketball, gymnastics, football, soccer and figure skating.
- Certain types of injuries plague sports participants. Most of them, however, are minor. Knowing the early signs and what to do can help prevent them from becoming nagging problems.

1. Muscle Pull

Probably the most common sports injury is a muscle pull, which can happen to almost any muscle in the body. No matter how diligently you warm up and stretch, or cool down and stretch, you may pull a muscle from overuse, fatigue or taking a fall. There is little you can be done to prevent a muscle pull except to stay limber and work your muscles regularly. A muscle pulls when a sudden, severe force is applied to the muscle and the fibers are stretched beyond their capacity. If only some of the fibers tear, that is a muscle pull. If most of the fibers tear, that is a muscle tear.

Muscle Pull Treatment

The universally held treatment for a muscle pull or tear is to apply ice and rest until the pain and swelling subside. The ice relaxes the muscle and helps relieve any spasm. Ice should be applied for about 20 minutes on, then 20 minutes off, as much as possible for a few days. The dull ache of a muscle pull usually disappears within a few days.

As soon as tolerable, begin gently stretching the muscle. A pulled muscle may go into spasm as a reaction to being overstretched. If the muscle fibers are not gradually re-lengthened, the muscle will pull again with return to activity because it will have healed in a shortened state. In general, you can return to action when the injured body part can be stretched without pain as far as the healthy one on the other side of the body. That may take a week for a calf muscle or more than a month for a hamstring pull.

2. Neck Pain

A pulled muscle or a muscle spasm in the neck can happen when a tennis player looks up to serve or hit an overhead smash. The pain is on one side of the neck, and the neck may be pulled over slightly to that side. It is particularly painful to turn the head in the direction of the pain. That is, if the pain is on the left side of the neck, the player can turn to the right, but not to the left. Cyclists who use racing handlebars may also feel neck stiffness. With your back bent low over the handlebars, you have to tilt your neck up to see ahead. After a long ride, the neck muscles may tighten up and go into spasm from this awkward position.

Neck Pain Treatment

The proper treatment for neck stiffness is to apply ice for 20 minutes at a time and gently stretch the neck. Sit in a chair and hold onto the seat with the hand on the painful side of your neck. Bend your trunk and head to the opposite side. Hold the stretch for 20 seconds. Or gently drop your chin to your chest and move the chin in a semicircle from shoulder to shoulder five times. The same exercises can strengthen the neck and prevent pain.

Severe pain may require prescription medication, such as a muscle relaxant or anti-inflammatory agents, and physical therapy. Pain radiating down the arm and into the hand may be due to a pinched or stretched nerve, and should be seen by a doctor immediately.

3. Shoulder Impingement

The shoulder bones are held together by a group of muscles known as the rotator cuff muscles. These muscles (supraspinatus, infraspinatus, subscapularis and teres minor) are responsible for the shoulder's fine movements, such as throwing a ball. Because of the shoulder's shallow socket and lack of ligament strength, any weakness of the small, rotator cuff muscles makes it easy for the head of the shoulder to slide around in the joint.

If the shoulder joint is continually stressed with the arm in an overhead position, as it is in softball, tennis, volleyball, swimming and weight training, the small rotator cuff muscles begin to stretch out. This allows the head of the joint to become loose within the shoulder socket. If the head of the shoulder is loose, when the arm is extended backwards over the shoulder the head will slide forward, catching the tendon of short head of the biceps between the ball and the socket. The same thing happens when the arm is raised to the side above parallel to the ground. The head will drop in the socket and the tendon of the long head of the biceps or the supraspinatus becomes impinged. This impingement causes the tendons to become inflamed and painful. Tennis players feel the pain when they try to hit an overhead or serve. The same thing can happen to golfers in both the backswing and the follow-through when their shoulders are above parallel to the ground.

Shoulder Impingement Treatment

Many doctors overlook the true problem with a shoulder impingement. They treat the tendinitis with anti-inflammatory agents or corticosteroid injections. But the anti-inflammatories soon wear off, and the next time the shoulder is used, the tendon is impinged again. The pain recurs, requiring another injection or more anti-inflammatories.

If shoulder pain lasts for more than a day or two after practicing the serve or hitting a bucket of balls, a program of range-of-motion exercises can help strengthen the rotator cuff muscles. Strengthening these muscles will help hold your shoulder firmly in place, then the head will not slip out of the socket and the tendons will no longer become inflamed or irritated. Physical therapy, ultrasound, moist heat and electrical muscle stimulation followed by rehabilitative exercises are also recommended. If the shoulder exercises do not help ease the pain, or there is numbness or tingling in your hand, consult a doctor.

4. Lower Back Strain

Almost everyone who participates in sports experiences lower back strain at one time or another, usually from twisting awkwardly, lifting a heavy weight or doing some unpracticed activity. Virtually all lower back injuries are due to weak or tense muscles or muscle strain. Suddenly overloading muscles may pull or tear muscle fibers, sending the back muscles into spasm and causing pain. Weightlifters, golfers, martial artists and tennis players are prone to back injuries because these sports involve unilateral motions. A golfer rotates the lumbar spine in only one direction, which is the equivalent of lifting weights with only one side of body. Martial artists generally have one dominant leg and kick with that one more than the other.

Lower Back Strain Treatment

Fortunately, most simple backaches go away within a few weeks, with or without treatment. After about a week, start a workout that strengthens the lower back, hamstring and abdominal muscles to help support the back to prevent any back pain from recurring.

When back muscles go into spasm, the excruciating pain may be disabling. Rest for a few days and take medication such as aspirin or other anti-inflammatory agents. Ice the back for 20 minutes at a time for as long as the pain persists.

Physical therapy may also be necessary if these symptoms do not quiet down in about 10 days. This includes ice, then heat, electrical stimulation of muscles, stretching and deep-finger massage. This should be followed by exercises to strengthen the back and abdominals. These same exercises can also help head off future back pains.

5. Tennis Elbow

Tennis elbow is really an inflammation of the muscles of the forearm and the tendon that connects the muscles to the bones in the elbow. These muscles bend the wrist backward and cause the wrist to turn the palm face up. When the muscles and tendon become inflamed from overuse, the pain is felt on the outside of the elbow (lateral epicondylitis). A tennis player most often aggravates the elbow by hitting the ball late on the backhand side, straining the forearm muscles and tendon. Constantly turning the wrist to put more spin on the serve also can cause pain. Golfers also suffer from tennis elbow, but on the non-dominant side, that is, a right-handed golfer will feel the pain in the left elbow. Pulling the club through the swing with the left wrist causes irritation in the left elbow. A second type of tennis elbow is known as medial epicondylitis. This causes pain on the inside of the elbow. It is most often seen among golfers, baseball pitchers, tennis players who hit topspin forehands and weight lifters.

Tennis Elbow Treatment

Tennis elbow is cured with lessons more than medicine. Tennis players need to learn how to move the feet to put the body in position to hit with full body weight behind the ball. This takes the stress off the elbow. Golfers with chronic elbow problems should also consider taking a lesson to smooth out any swing problems.

Cortisone injections, once the standard treatment, may reduce the inflammation around the elbow and ease the pain, but they do not address the cause of the problem, which is over-stressing the forearm tendon. Exercises can help improve forearm strength. These exercises include wrist curls, flexing the wrist forward while holding a light dumbbell at the side with the palm facing forward, and reverse wrist curls, the same exercise with the palm facing backward. Squeezing a soft rubber ball until the hand is fatigued also strengthens the forearm muscles.

6. Runner's Knee

The most common cause of knee pain is runner's knee, known medically as chondromalacia patella. This is due to misalignment of the kneecap in its groove. The kneecap normally goes up or down in the groove as the knee flexes or straightens out. If the kneecap is misaligned, the kneecap pulls off to one side and rubs on the side of the groove. This causes both the cartilage on the side of the groove and the cartilage on the back of the kneecap to wear out. On occasion, fluid will build up and cause swelling in the knee. Runners are not the only ones who develop runner's knee. Pain can develop around the back of the kneecap or in the back of the knee after participating in any running sport.

Runner's Knee Treatment

Treatment involves strengthening the quadriceps muscle, which hooks into the kneecap and helps align it into the center of the groove. Isometric exercises are recommended to begin strengthening the quadriceps by contracting and relaxing the muscle. Strengthening progresses to less than full range-of-motion leg extensions. Do not attempt full leg extensions with the knee bent because this will cause the kneecap to rub more and worsen the symptoms.

Treatment also includes stretching the quadriceps, and soft tissue massage to work on the center of the quadriceps. Work from the upper part of the thigh towards the knee, stroking downward. This helps stretch muscle fibers and alleviates the muscle contraction, which is pulling the kneecap up. A large dose of aspirin, two plain or buffered aspirin pills four times a day until the knee improves, also may help reduce inflammation within the kneecap cartilage.

7. Shin Splints

Shin splints are pains in the muscles near the shin bones. They can be caused by running or jumping on hard surfaces or simply overuse. They occur most often in people unaccustomed to training, although they can also plague experienced athletes who switch to lighter shoes, harder surfaces or more concentrated speed work. The pain occurs on the inner side of the middle third of the shin bone. The muscle responsible for raising the arch of the foot attaches to the shin bone at that spot. When the arch collapses with each foot strike, it pulls on the tendon that comes from this muscle. With repeated stress, the arch begins to pull some of its muscle fibers loose from the shin bone. This causes small areas of bleeding around the lining of the bone, and pain. If the irritated area is about the size of a 50-cent piece or smaller, or shin pain suddenly increases, you may have a stress fracture. The twisting of the tibia can cause the bone to crack. A stress fracture may not show up on an x-ray, and therefore a bone scan is indicated.

Shin Splints Treatment

The key element of treatment is an arch support to prop up the foot and prevent excessive pronation and pull on the tendon. Many people do well with a simple commercial arch support. This usually solves the problem almost immediately. Others who have a more serious problem may need an orthotic device to control the pronation.

To help prevent shin splints, start exercising slowly to warm up the leg muscles, wear athletic shoes with good support and run on a softer surface, for example, changing from asphalt to grass every few runs.

8. Ankle Sprain

The most common ankle sprain happens when the foot rolls to the outside and sprains the ligaments on the outside of the ankle. The outside of the ankle swells up and throbs, and may turn black and blue around the injury. When a jogger steps gently off a curb and "twists" an ankle, this simply stretches the ligaments, with no real tearing, and is considered a mild sprain. When a tennis player lunges out over a poorly planted foot, partially tearing the fibers of the ligament, that is considered a moderate sprain. When a volleyball player

jumps and lands on another player's foot, twisting and forcing the ankle violently to the court, most or all of the fibers tear, and this is a severe sprain. If weight-bearing is possible on the ankle after a sprain, the ankle probably is not broken. If you feel pain on the inside of the ankle, then it should be x-rayed to rule out a hair-line fracture.

Ankle Sprain Treatment

The tried-and-true treatment for any ankle sprain is RICE: Rest, Ice, Elevation and Compression. The goal is to limit internal bleeding and cut down on swelling.

As soon as tolerable, begin range-of-motion and strengthening exercises. These can help overcome stiffness and restore mobility. To do this, sit in a chair and cross the affected leg over the other leg at the knee. Using the big toe as a pointer, trace the capital letters of the alphabet from A to Z. Hold the big toe rigid so all the motion comes from the ankle. Repeat this exercise hourly, if possible. The letters will be very small at first but they will increase in size as range of motion improves. A good strengthening exercise is light kicking in a pool with a kick board or swim fin to create resistance.

Balance training is an important part of rehabilitation. Practice balancing on one foot with the arms extended to the sides without swaying, first with the eyes open, then eyes closed.

9. Achilles Tendinitis

The Achilles tendon in the back of the ankle is the largest tendon in the body. It transfers the force of muscle contractions to lift the heel. Achilles tendinitis is an inflammation of the tendon, usually due to overuse, such as frequent jumping in basketball or volleyball. The most common cause is excessive pronation of the ankle and foot, which causes the Achilles tendon to pull off center. The pain of a torn Achilles tendon feels like a gunshot in the leg. A partial tear is harder to spot. If the width of the injured Achilles tendon is smaller than the healthy one, or you feel intense pain when standing on your toes, see a doctor for treatment, and possibly surgery.

Achilles Tendinitis Treatment

The treatment is to minimize physical activity until it feels better and to ice the tendon several times a day during this time. Anti-inflammatory agents help to relieve swelling and pain. Stretch the tendon as well by doing toe raises--stand on your toes for 10 seconds and then put your heels flat on the floor. Work up to doing three sets easily, then raise up on one foot at a time.

When the tendon has healed, do heel drops. Stand with your forefeet on a raised surface, such as the edge of a step. Let your heels down below the level of the surface so that the back of the calf is stretched. Hold for 10 seconds. Repeat until the calf is fatigued.

Runners who simply slough off Achilles tendinitis can develop an acute avulsion where the Achilles tendon pulls right off the bone. This is a medical emergency and requires surgical reattachment within 24 hours.

10. Arch Pain

The elastic covering on the sole of the foot--the plantar fascia--runs the length of the foot and holds up the arch. When this shock-absorbing pad becomes inflamed, this is called plantar fasciitis, causing a dull ache along the length of the arch.

The ache is due to over-stretching or partially tearing the arch pad. This happens most often to people with rigid, high arches. They feel the pain when they put weight on their foot or when pushing off for the next stride. Pain is particularly intense upon arising or after sitting for a long while. Plantar fasciitis is particularly

common among middle-aged people who have been sedentary and who suddenly increase their level of physical activity. Runners are most susceptible, but almost any sport that keeps the athlete standing can lead to arch pain. Inappropriately fitting shoes or a weight gain of 10 to 20 pounds can also contribute to the condition.

Arch Pain Treatment

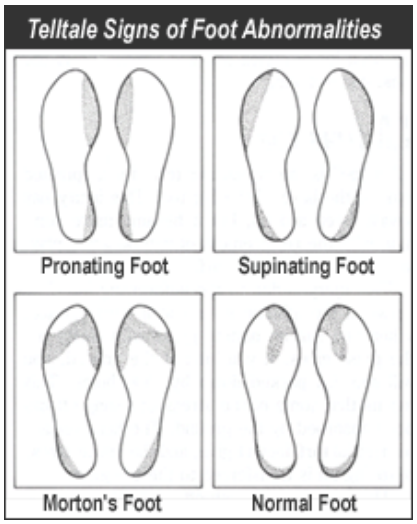
The treatment is to put an arch support under the foot immediately to prevent the arch from collapsing and the plantar fascia from stretching. Also, put an arch support in your slippers and wear them as soon as you rise. Even a few steps barefoot without support can stretch the plantar fascia. Arch supports usually relieve pain within a few days.

To head off arch pain, begin an exercise routine slowly, take off any excess weight and wear arch supports in your athletic shoes.

Arch pain commonly smoulders for months because people do not take the proper precautions. Continuing to do weight-bearing exercises will perpetuate the pain. While the foot is recovering, swim or do water workouts. Or work the upper body only. Some people are able to use a stationary bicycle by placing only the front part of the foot on the pedals.

The Foot

The foot is the most complex structure in the lower body. It is made up of many bones that interact with each other, unlike the rest of the structures of the lower body, in which only two or three bones interact. The main function of the foot is to soak up the shock of the body's weight landing on it. The foot supports up to four times your body weight when you are running fast and it must bear up under at least 1,800 foot strikes for every mile you walk or run. Nearly all overuse injuries of the lower extremities are due to an abnormality in the way the foot hits the ground.



Telltale signs of foot abnormalities

One of the best ways to diagnose foot problems is to look at the wear pattern in a pair of athletic shoes (see drawing, right). A pronating foot wears out the inside of the heel and toe, and the shoe breaks over to the inside. If the shoe is placed flat on a table top, it will lean to the inside, particularly the heel counter. A supinating foot wears out the outside of the shoe, from the heel all the way down to the toes. This shoe will lean to the outside. A Morton's foot wears out the shoe on the outside of the heel and midsole, and then straight across the sole to the inside of the big toe.

SUMMARY

A muscle pulls when a sudden, severe force is applied to the muscle and the fibers are stretched beyond their capacity. If only some of the fibers tear, that is a muscle pull. If most of the fibers tear, that is a muscle tear. A pulled muscle or a muscle spasm in the neck can happen when a tennis player looks up to serve or hit an overhead smash. The pain is on one side of the neck, and the neck may be pulled over slightly to that side. The shoulder bones are held together by a group of muscles known as the rotator cuff muscles. These muscles (supraspinatus, infraspinatus, subscapularis and teres minor) are responsible for the shoulder's fine movements,

such as throwing a ball. Because of the shoulder's shallow socket and lack of ligament strength, any weakness of the small, rotator cuff muscles makes it easy for the head of the shoulder to slide around in the joint.

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QUESTIONS:

1. What sports injuries can you enumerate?
2. How do you recognize a muscle pull?
3. What is plantar fascia?
4. Describe neck pain.
5. Which is the most frequent sports injury?
6. Describe injury inflicted by your chosen sport.

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Further reading:

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