

Childhood Sports Injuries and Their Prevention: A Guide for Parents with Ideas for Kids

You are sitting in your office and suddenly the phone rings. “Ms. Ramirez? Your son, Raoul, was injured during football practice. His knee may be badly hurt. He is going to County General. Please go to the emergency room right away.” You try to remain composed, but you can feel panic creeping through your body. With your breathing shallow and heart pounding, you drop everything and try to remember how to get to the hospital.

In the past, Raoul has only had scrapes and bruises, like most kids his age. You recall being hesitant to let him play a rough sport like football that requires considerable physical contact. But you decided not to keep him from playing his favorite sport. This is your child’s first major injury.

Preventing Injuries

Childhood sports injuries like Raoul’s may be inevitable, but there are some things you can do to help prevent them:

- Enroll your child in organized sports through schools, community clubs, and recreation areas where there may be adults who are certified athletic trainers (ATC). An ATC is also trained in the prevention, recognition and immediate care of athletic injuries.¹
- Make sure your child uses the proper protective gear for a particular sport. This may lessen the chances of being injured.
- Warmup exercises, such as stretching and light jogging, can help minimize the chance of muscle strain or other soft tissue injury during sports. Warmup exercises make the body’s tissues warmer and more flexible. Cooling down exercises loosen the body’s muscles that have tightened during exercise.² Make warmups and cool downs part of your child’s routine before and after sports participation.

And don’t forget to include sunscreen and a hat (where possible) to reduce the chance of sunburn, which is actually an injury to the skin. Sun protection may also decrease the chances of malignant melanoma—a potentially deadly skin cancer—or other skin cancers that can occur later in life. It is also very important that your child has access to water or a sports drink to stay properly hydrated while playing.

National Institute
of Arthritis and
Musculoskeletal
and Skin Diseases

NIAMS/National
Institutes of Health
1 AMS Circle
Bethesda, MD 20892–3675

Phone: 301–495–4484;
1–877–22NIAMS (free of charge)
TTY: 301–565–2966
Fax: 301–718–6366
E-mail: NIAMSinfo@mail.nih.gov
www.niams.nih.gov

Public Health Service
Department of Health
and Human Services



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Treat Injuries with “RICE”

If your child receives a soft tissue injury, commonly known as a sprain or a strain, or a bone injury, the best immediate treatment is easy to remember. “RICE” (Rest, Ice, Compression, and Elevation) the injury. Get professional treatment if any injury is severe. A severe injury means having an obvious fracture or dislocation of a joint, prolonged swelling, or prolonged or severe pain.

RICE

- *Rest:* Reduce or stop using the injured area for 48 hours. If you have a leg injury, you may need to stay off of it completely.
- *Ice:* Put an ice pack on the injured area for 20 minutes at a time, 4 to 8 times per day. Use a cold pack, ice bag, or a plastic bag filled with crushed ice that has been wrapped in a towel.
- *Compression:* Compression of an injured ankle, knee, or wrist may help reduce the swelling. These include bandages such as elastic wraps, special boots, air casts and splints. Ask your doctor which one is best.
- *Elevation:* Keep the injured area elevated above the level of the heart. Use a pillow to help elevate an injured limb.

Sprains and Strains

A sprain is an injury to a ligament—a stretching or a tearing. One or more ligaments can be injured during a sprain. A ligament is a band of tough, fibrous tissue that connects two or more bones at a joint and prevents excessive movement of the joint. Ankle sprains are the most common injury in the United States and often occur during sports or recreational activities. Approximately 1 million ankle injuries occur each year and 85 percent of these are sprains.

A strain is an injury to either a muscle or a tendon. A muscle is a tissue composed of bundles of specialized cells that, when stimulated by nerve impulses, contract and produce movement. A tendon is a tough, fibrous cord of tissue that connects muscle to bone.

Growth Plate Injuries

In some sports accidents and injuries, the growth plate may be injured. The growth plate is the area of developing tissues at the end of the long bones in growing children and adolescents. When growth is complete, sometime during adolescence, the growth plate is replaced by solid bone. The long bones in the body are the long bones of the fingers, the outer bone of the forearm, the collarbone, the hip, the bone of the upper leg, the lower leg bones, the ankle, and the foot. If any of these areas become injured, seek professional help from a doctor who specializes in bone injuries in children and adolescents (pediatric orthopaedist).

Repetitive Motion Injuries

Painful injuries such as stress fractures (where the ligament pulls off small pieces of bone) and tendinitis (inflammation of a tendon) can occur from overuse of muscles and tendons.³ These injuries don't always show up on x-rays, but they do cause pain and discomfort. The injured area usually responds to rest. Other treatments include RICE, crutches, cast immobilization, or physical therapy.

Heat and Hydration—Playing It Safe Is Cool

Playing rigorous sports in the heat requires close monitoring of both body and weather conditions. Heat injuries are always dangerous and can be fatal. Children perspire less than adults and require a higher core body temperature to trigger sweating. Heat-related illnesses include dehydration (deficit in body fluids), heat exhaustion (nausea, dizziness, weakness, headache, pale and moist skin, heavy perspiration, normal or low body temperature, weak pulse, dilated pupils, disorientation, fainting spells), and heat stroke (headache, dizziness, confusion, and hot dry skin, possibly leading to vascular collapse, coma, and death).^{4,5} These injuries can be prevented.

Playing safe in the heat is cool*

- Recognize the dangers of playing in the heat.
- Respond quickly if heat-related injuries occur.
- Schedule regular fluid breaks during practice and games.
- Drinking water is the best choice; others include fruit juices and sports drinks.
- Kids need to drink 8 ounces of fluid every 20 minutes, plus more after playing.
- Make player substitutions more frequently in the heat.
- Wear light-colored, “breathable” clothing, and wide-brimmed hats
- Use misting water sprays on the body to keep cool.

*Adapted with permission from Patient Care Magazine, copyrighted by Medical Economics.

Exercise Is Beneficial

Even though Raoul got hurt, his involvement in sports is important. Exercise may reduce his chances of obesity, which is becoming more common in children. It may also lessen his risk of diabetes, a disease that is sometimes associated with a lack of exercise and poor eating habits.

As a parent, it is important for you to match your children to the sport, and not push him or her too hard into an activity that he or she may not like or be capable of doing. Sports also helps children build social skills and provides them with a general sense of well-being. Sports participation is an important part of learning how to build team skills.



Sports Injury and Prevention

Raoul's mother may not be able to protect him from all sports injuries, but she now knows that she may be able to reduce his risk of injury by using preventive measures. She knows how important it is to know which sports are more likely to cause injury than others. In addition, she checks the condition of the athletic area where the sports are to be played. She makes sure it is properly maintained.

The following "sports scorecard" shows winning ways to help prevent an injury from occurring (so you are less likely to get that alarming phone call like Raoul's mom did).

Football

This popular sport "leads the pack" in the number of injuries, especially in boys, in organized sports.⁶

- *Common injuries and locations:* Bruises, sprains, strains, pulled muscles, soft tissue tears such as ligaments, broken bones, internal injuries (bruised or damaged organs), back injuries, sunburn. Knees and ankles are the most common injury sites.
- *Safest playing with:* Helmet; mouth guard; shoulder pads; athletic supporters for males; chest/rib pads; forearm, elbow, and thigh pads; shin guards; proper shoes; sunscreen; water.
- *Prevention:* Proper use of safety equipment, warm-up exercises, proper coaching and conditioning.

Basketball

This popular sport has the highest rate of knee injuries requiring surgery among girls.⁷

- *Common injuries and locations:* Sprains, strains, bruises, fractures, scrapes, dislocation, cuts, dental injuries. Ankles, knees, (injury rates are higher in girls,⁸ especially for the anterior cruciate ligament, the wide ligament that limits rotation and forward movement of the shin bone), shoulder (rotator cuff strains and tears, where tendons at the end of muscles attach to the upper arm and shoulder bones).
- *Safest playing with:* Eye protection, elbow and knee pads, mouth guard, athletic supporters for males, proper shoes, water. If playing outdoors, add a hat and sunscreen.
- *Prevention:* Strength training (particularly knees and shoulders), aerobics (exercises that develop the strength and endurance of heart and lungs), warmup exercises, proper coaching, and use of safety equipment.



Soccer

This sport has dramatically increased in popularity in the past two decades in the U.S.

- *Common injuries:* Bruises, cuts and scrapes, headaches, sunburn.
- *Safest playing with:* Shin guards, athletic supporters for males, cleats, sunscreen, water.
- *Prevention:* Aerobic conditioning and warmups, and proper training in “heading” the ball. (“Heading” is using the head to strike or make a play with the ball.)

Baseball and Softball

Sometimes called “America’s favorite pastime.”

- *Common injuries:* Soft tissue strains, impact injuries that include fractures due to sliding and being hit by a ball, sunburn.
- *Safest playing with:* Batting helmet, shin guards, elbow guards, athletic supporters for males, mouth guard, sunscreen, cleats, hat, breakaway bases.
- *Prevention:* Proper conditioning and warmups.

Gymnastics

The performance of systematic exercises.⁹

- *Common injuries:* Sprains and strains of soft tissues.
- *Safest playing with:* Athletic supporters for males, safety harness, joint supports (such as neoprene wraps), water.
- *Prevention:* Proper conditioning and warmups.

Track and Field

Competing at running, walking, jumping, throwing, or pushing events.¹⁰

- *Common injuries:* Strains, sprains, scrapes from falls.
- *Safest playing with:* Proper shoes, athletic supporters for males, sunscreen, water.
- *Prevention:* Proper conditioning and coaching.

How your child can prevent sports injuries*

- Be in proper physical condition to play the sport.
- Know and abide by the rules of the sport.
- Wear appropriate protective gear (for example, shin guards for soccer, a hard-shell helmet when facing a baseball or softball pitcher, a helmet and body padding for ice hockey).
- Know how to use athletic equipment.
- Always warm up before playing.
- Avoid playing when very tired or in pain.
- Get a preseason physical examination.
- Make sure there is adequate water or other liquids to maintain proper hydration.

*Adapted from *Play It Safe, a Guide to Safety for Young Athletes*, with permission of the American Academy of Orthopaedic Surgeons.

Play Safe to Stay Safe

Luckily for Raoul and his mom, his injury wasn't serious. In a few weeks, he will be fully recovered and be able to play football again before the end of the season. Raoul now knows how important it is to do everything possible to keep from being hurt so he won't have to sit on the team bench as much next season.

For More Information

For more information on sports injuries and prevention, contact:

National Institute of Arthritis and Musculoskeletal and Skin Diseases
NIAMS/National Institutes of Health

1 AMS Circle

Bethesda, MD 20892-3675

Phone: 301-495-4484; 1-877-22NIAMS (free of charge)

TTY: 301-565-2966

Fax: 301-718-6366

E-mail: NIAMS info@mail.nih.gov

Access: www.niams.nih.gov

Useful NIAMS Links

- *Knee Problems*: <http://www.niams.nih.gov/hi/topics/kneeprobs/kneeqa.htm>
- *Sprains and Strains*: http://www.niams.nih.gov/hi/topics/strain_sprain/strain_sprain.htm
- *Growth Plate Injuries*: http://www.niams.nih.gov/hi/topics/growth_plate/growth.htm
- *Shoulder Problems*:
<http://www.niams.nih.gov/hi/topics/shoulderprobs/shoulderqa.htm>
- *NIAMS Information Clearinghouse*: <http://www.niams.nih.gov/hi/index.htm>

Other Useful Links

- *Arthritis Foundation (AF)*: www.arthritis.org
- *American Academy of Orthopaedic Surgeons (AAOS)*: www.aaos.org
- *American Academy of Pediatrics (AAP)*: www.aap.org
- *American Medical Society for Sports Medicine (AMSSM)*: www.amssm.org
- *American Orthopaedic Society for Sports Medicine (AOSSM)*:
www.sportsmed.org
- *National Athletic Trainers Association (NATA)*: www.nata.org
- *American Physical Therapy Association (APTA)*: www.apta.org
- *American College of Rheumatology*: www.rheumatology.org

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8. Messina, DF; Farney, WC; DeLee, JC. *The incidence of injury in Texas high school basketball*. The American Journal of Sports Medicine. Vol. 27; No.3; 294–299; 1999.
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