



Hughston Health Alert

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Shoulder Injuries in Children and Adolescents

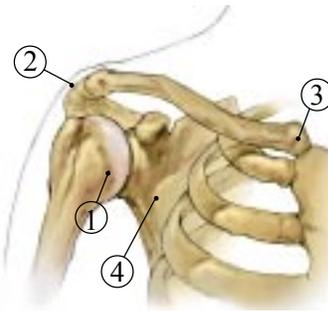
The human shoulder complex comprises four joints; three bones; and many ligaments (tissues connecting two bones), tendons (tissues connecting muscle to bone), and muscles. Both acute (sudden, traumatic) and chronic (long-term) injuries are common in this area. Children are prone to shoulder injuries because of their frequent involvement in sporting activities, their immature bones and joints, and the high demands that sport participation places on the shoulder. Early recognition and treatment of these problems can lead to more successful treatment and earlier return to sport participation.

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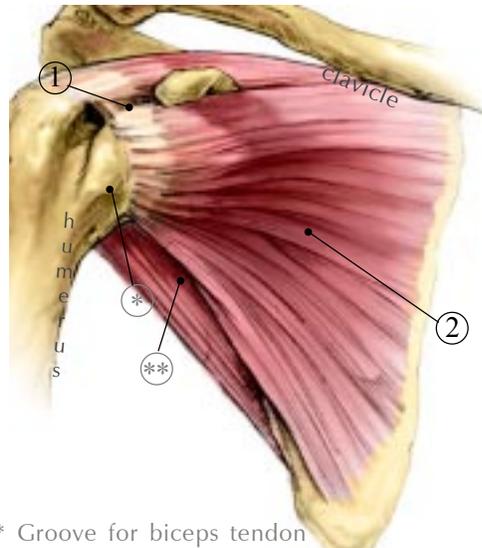
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Joints of the Shoulder

1. Head of humerus/glenoid of shoulder blade
2. Acromion of shoulder blade/clavicle
3. Clavicle/sternum of rib cage
4. Shoulder blade/rib cage



Front of Shoulder



- * Groove for biceps tendon
- ** Teres minor (as seen from front)

The Shoulder

Muscles of the Rotator Cuff

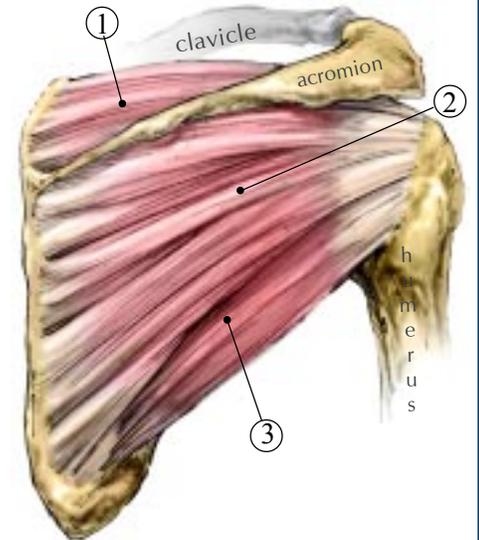
Front of Shoulder

1. Subscapularis m.
2. Supraspinatus m.

Back of Shoulder

1. Supraspinatus m.
2. Infraspinatus m.
3. Teres minor m.

Back of Shoulder



Acute injuries

Acute injuries include fractures, dislocations of joints, and damage to ligaments, tendons, and muscles. Fractures of the shoulder in children and adolescents usually involve the clavicle (collar bone) or the humerus

(upper arm bone). The clavicle is the most frequently fractured bone in the shoulder. Because it is located just under the skin, it is not well protected by fat and other tissue; therefore, it is especially prone to injury. The injury commonly occurs when a child falls

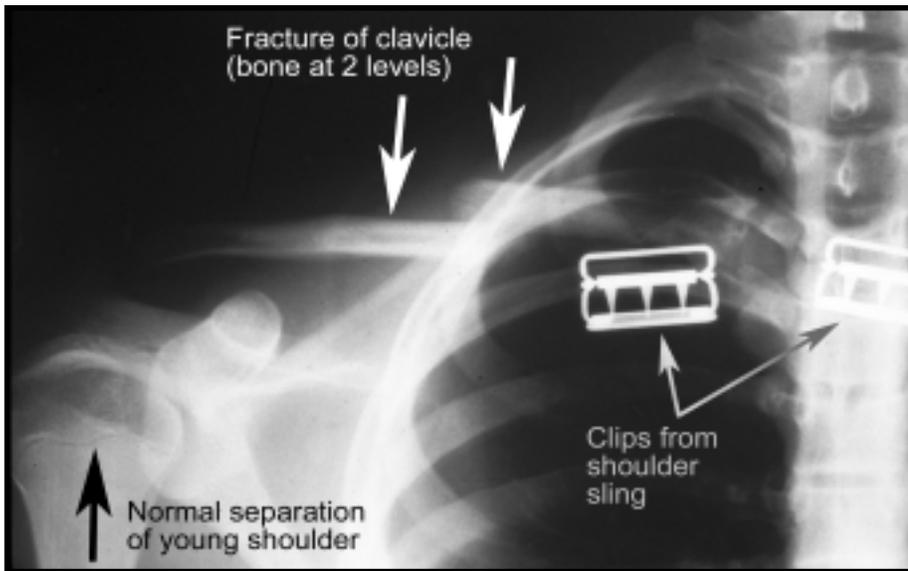


Fig. 1. X-ray of an 8-year-old with a clavicle fracture. Notice the break in the collar bone (white arrows). The black arrow shows the normal separation seen at the epiphysis (growth plate) in young children. This is normal.

on the outstretched arm or receives a direct blow to the clavicle. The doctor takes an x-ray to verify the presence of a fracture and to see the extent of the damage (Fig. 1). Nearly all clavicle fractures can be treated with a sling or brace, and the child usually can return to sport participation within four to eight weeks.

Fractures of the upper humerus are also relatively common injuries in children, especially in adolescents. Like clavicle fractures, they may be caused by a fall or by a direct blow to the shoulder. The growth plate (soft area at the end of an immature bone where growth occurs) may be affected. The doctor takes x-rays to verify that the child has fractured the upper humerus (Fig. 2). Most of these fractures are treated without surgery. How-

ever, surgery may be necessary if the fractured ends of the bone cannot be aligned for proper healing. Recovery usually takes four to eight weeks, at which time the child can return to sport participation.

Shoulder dislocation is extremely rare in young children but occasionally occurs in adolescents, especially due to a fall or to an injury during contact sports. When the shoulder is dislocated, the ball (top of the humerus) of the shoulder usually slips out of socket completely and sits in front of the joint. The adolescent must have an x-ray, and an experienced doctor must put the shoulder back in joint. Dislocation stretches the soft tissues that hold the shoulder in place, making another dislocation more likely. Therefore, to prevent recurrent dislocation, the adoles-

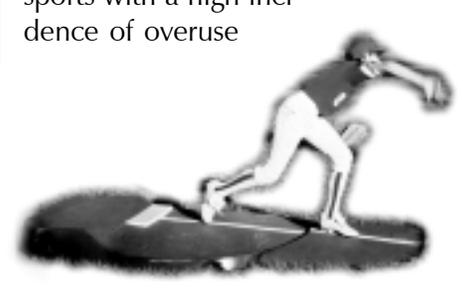
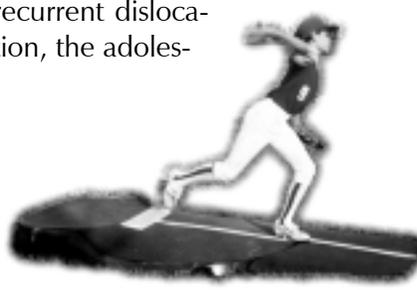
cent needs extensive rehabilitation after the initial injury to strengthen the muscles around the joint. In addition, a sling is worn for a short period.

Sometimes, the joint between the shoulder blade and clavicle (acromioclavicular joint) is dislocated. This injury, commonly known as a separated shoulder, most often affects adolescent athletes who receive a blow to the tip of the shoulder during participation in contact sports. The injury may look like a dip in the contour of the shoulder. Most separated shoulders are treated with a sling. They usually heal completely by four to six weeks. When healing is complete, the child can return to sport participation.

Injuries to the muscles are known as strains. Injuries to the ligaments are known as sprains. These injuries can occur in contact sports or in other activities that place high demands on the shoulder muscles (such as baseball pitching). Early diagnosis and proper treatment are important so that these acute injuries do not turn into chronic problems. To treat a sprain or strain, the doctor directs the injured child to rest, ice the shoulder, and participate in a structured physical therapy program.

Overuse injuries

In many sports, athletes repeat the same motion over and over with the shoulder. This type of repetitive motion can cause injury over time. Baseball, tennis, and swimming are sports with a high incidence of overuse



During the baseball pitch, the arm moves through an extreme range of motion, predisposing the young athlete to shoulder injury.

injury of the shoulder. These sports can place very high demands on the immature structures of the shoulder and may eventually result in symptoms that prevent athletes from participating. Athletes may experience pain in the shoulder during throwing or swimming, stiffness in the shoulder, or weakness in the arm. Overuse injuries generally include throwing injuries, shoulder tendinitis (inflammation of the tendons), and chronic shoulder instability.

Throwing injuries are most common in baseball and softball pitchers and in football quarterbacks. They are increasingly common among young athletes participating in year-round baseball. During throwing, the shoulder moves through an extreme range of motion that causes gradual stretching of the capsule and ligaments of the joint. Over time, these structures loosen and cannot hold the joint in place (instability). Instability exists when the ball of the shoulder can slip partially out of the socket. The muscles and tendons around the shoulder must work harder to keep the ball in the socket, which can result in inflammation of these structures. Excessive throwing can also cause inflammation of the growth plate of the upper arm, which is a condition known as epiphysitis. Practicing proper warm-up and throwing techniques and taking adequate time to rest between innings pitched in competition are important ways to minimize the risk of developing overuse injuries. Children and adolescents should pitch no more than six innings in competition each week and must ensure that they warm up properly before these innings. In addition to these innings pitched in competition, they can participate in practice and can pitch for batting practice. If the child develops symptoms of overuse, he or she needs to rest, ice the shoulder, and participate in an aggressive

physical therapy program before returning to sport participation.

In sports, such as baseball, tennis, and swimming, athletes use their arms over their heads many times



Fig. 2. X-ray of a 12-year-old patient with complete displacement of the humeral head from the humeral shaft at the epiphyseal, or growth, plate (A). The black arrows show the fractured head of the humerus. It is surgically corrected using pins to hold the head in its correct position until it heals (B). The pins will then be removed.

during practice and competition. This repetitive overhead use of the shoulder can lead to rotator cuff tendinitis. The rotator cuff is a group of muscles that surround the shoulder joint and help hold the ball of the shoulder in its socket. With overhead activity, the rotator cuff can get pinched under the shoulder blade, causing impingement or tendinitis. It usually gets better when the athlete rests, ices the shoulder, and participates in physical therapy.

Repetitive shoulder instability may result from a traumatic shoulder dislocation or from chronic stretching of the joint capsule. The latter injury is commonly seen in swimmers, who repeatedly move their shoulders through an extreme range of motion. Instability in this situation may also lead to tendinitis and can severely limit a swimmer's performance. Rest, ice, modification of swimming strokes, and physical therapy can help

the athlete return to sport participation.

Children and adolescents who participate in sports are prone to shoulder injury. Parents and coaches

should pay attention when a young athlete has significant shoulder pain. The athlete should not be encouraged to "play through" the pain. Prompt recognition of the problem and treatment by a doctor are important to help the athlete heal as quickly as possible. Delaying treatment can lead to long-term damage that prevents the child from participating in sports.

Mike Lauffenburger, MD,
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Further reading
 Nicholas JA, Hershman EB, Posner MA, eds. *The Upper Extremity in Sports Medicine*. 2nd ed. St. Louis, Mo: Mosby; 1995.
 Reider B. *Sports Medicine: The School-Age Athlete*. 2nd ed. Philadelphia, Pa: WB Saunders; 1996.
 Rockwood CA Jr, Wilkins KE, Beaty JH, eds. *Fractures in Children*. 4th ed. Philadelphia, Pa: Lippincott-Raven; 1996.

despite your athletic abilities, you should seek the advice of your health care professional. Follow these guidelines with regard to frequency, intensity, and time when performing FAST program activities:

1. The exercises are most beneficial when performed daily; however, the athlete can gain benefits when performing them at least twice each week.
 2. Beginning participants should start with two to three sessions each week and increase to five to seven sessions as the activities become easier.
 3. FAST program activities should be performed at the end of practice sessions to reduce muscle fatigue and technique breakdown that occurs during practice.
 4. The athlete should choose a resistance band that allows smooth performance and good technique while challenging muscular endurance.
 5. Each exercise should be performed for one set of 15 to 20 repetitions.
- The FAST program emphasizes injury prevention through traditional strengthening of the shoulder, and it can be used to enhance performance through its additional concentration on strengthening the core of the body. Strengthening the legs, pelvis, and trunk can help to produce more force and reduce the stresses placed on the shoulder and upper extremity during participation in overhead sports.
- For more information on the FAST program, contact your local athletic trainer or hospital.

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References

1. Wilk KE, Arrigo C. Current concepts in the rehabilitation of the athletic shoulder. *J Orthop Sports Phys Ther.* 1993;18(1):365-378.
2. McCluskey GM, Levy RS. Multidirectional instability of the shoulder. *J South Orthop Assoc.* 1994;3(Fall):205-215.

Further Reading

- Gambetta V. *Stretching the truth. Training and Conditioning.* 1997;June:25-31.
- Gambetta V, Clark M. *A formula for function. Training and Conditioning.* 1998;August:24-29.
- Rutherford M. *Strength and flexibility: preventive care for the rotator cuff. National Strength and Conditioning Association Journal.* 1985;7:45, 71-73.

Epilepsy

Epilepsy is a group of disorders rather than a single disease. It is a chronic (long-term), recurrent medical condition characterized by sudden, abnormal electrical discharges in the brain. These discharges may result in abnormal motor (muscle movement), behavioral, or sensory activity. About 3% to 10% of us will experience it at some time in our lives.

There are many types of epileptic seizures. Some only cause your sense of taste or smell to change

momentarily. Some cause you to “blank out” for a few moments. Others result in unconsciousness and convulsions. You can be affected by only one type or by more than one type of seizure. People who develop epilepsy as children may have different types of seizures than people who develop it as adults.

About 125,000 cases of epilepsy are diagnosed annually. Of these, 30% occur in people under 18 years of age. Causes include genetic disorders, head injury, nutritional

disorders, environmental toxins, blood sugar disturbances (such as diabetes), brain tumor, and stroke. The causes of many seizures remain unknown.

For most people, the prognosis is good. About 70% go into remission, which means that they have not had a seizure for at least 5 years. The remaining 20% to 30% of people develop chronic epilepsy, which often must be treated with medication.

How is epilepsy treated?

The primary treatment for epilepsy is seizure-controlling medication. Although it does not cure the condition, this treatment controls seizures in most people. Recent studies have shown that treating an initial seizure reduces the risk of further seizures by about half. However, some people continue to have seizures from time to time even when treated with medication.

More than 20 medications are available to control seizures. Effectiveness and side effects vary from drug to drug. When choosing the appropriate medication for you, your doctor considers many factors including your age, type of seizure (not all medications treat all types of seizures), his or her experience with the medication, and your reaction to a trial on the medication (for example, does it cause side effects or does it prevent your seizures effectively?). The doctor also determines whether you need to take one or more than one medication to control your seizures. You may need to try several different medications and several different dosages of a particular medication to find the appropriate one for you.

Other treatments include special diets (primarily for children), surgery, and electrical stimulation of the vagus nerve in the brain.

How can I help someone having a seizure?

Problems that can accompany a seizure include choking, pneumonia, aspiration (choking on fluid), and trauma. Drowning is the most frequent cause of accidental death in a person having a seizure. When offering help to someone who is having a seizure, you should follow the usual "ABCs" (check airway, breathing, and circulation), focusing special attention on protecting the airway and ensuring that breathing is unobstructed. If you see someone who is having a convulsive-type seizure (loss of muscle control and consciousness), look for medical identification, such as jewelry or a card, that says "epilepsy" or "seizure disorder." Help the person lie down on one side, but do not try to restrain him or her. Cushion the person's head to help prevent injury. Do not

For more information on epilepsy, contact the following organizations:

American Academy of Pediatrics,
141 Northwest Point Boulevard, Elk
Grove Village, IL 60007-1098, 847-
434-4000 (telephone),
847-434-8000 (fax)
<http://www.aap.org>

American Medical Association, 515
North State Street, Chicago, IL
60610, 312-464-5000 (telephone)
<http://www.ama-assn.org>

Epilepsy Foundation of America,
4351 Garden City Drive, Landover,
MD 20785, 800-332-1000
(telephone), 301-459-3700 (fax),
<http://www.efa.org>

The National Institute of
Neurological Disorders and Stroke,
National Institutes of Health,
Bethesda, MD 20892
<http://www.ninds.nih.gov>

put anything in the person's mouth or try to hold the tongue; he or she cannot swallow the tongue. If the seizure occurs in the water, keep the person's head above the water and remove him or her from the water immediately.

Call an ambulance if this is the first time the person has had a seizure; if the seizure lasts more than 5 minutes or occurs in the water; if the person is hurt, starts having a second seizure shortly after the first one, is pregnant, or has diabetes; or if you cannot find medical identification that says "epilepsy" and you do not know whether the seizure is caused by epilepsy.

Can I play sports?

People with epilepsy may participate in most sports if they do not have evidence of progressive neurologic disease, do not have abnormalities of motor function or coordination that might hinder performance, and have not had a seizure within the last 12 to 24 months. There is no evidence that seizure-related injuries are increased in people with epilepsy who participate in sports. All-inclusive lists of sports in which the epileptic athlete may participate are not available. Each case must be judged on its own merits. Talk to your doctor about what sports you can participate in safely. In addition, the Committee on Children and Handicaps of the American Academy of Pediatrics; the Committee on Children with Handicaps and Sports Medicine of the American Medical Association; and the Professional Advisory Board of the Epilepsy Foundation of America; publish thoughtful recommendations on this subject.

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Winter Fitness

Before beginning an exercise program this winter, consult your personal physician, especially if you have experienced chest pain, dizziness, or muscle or joint pain, or if you are taking medication to regulate your blood pressure or to treat a heart condition. People more than 40 years old should also have a check up before beginning a program. Your doctor can help you plan an exercise program that best suits your needs and abilities. A good program includes exercises to increase cardiorespiratory (heart and lung) endurance, muscular strength and endurance, and flexibility. A fitness professional can help you get started.

If your program will involve exercising outdoors, pay attention to the actual temperature and speed of the wind (wind chill factor). For example, 30° plus a 5-mph wind feels like 27°, and 30° plus a 10-mph wind feels like 16°. Dress for the weather by layering your clothing. The first layer should be made of a material that allows the skin to stay as dry as possible. The new synthetic blends, such as polyester microfiber, transfer moisture away from your skin. Fabrics

combining silk and wool also help you stay dry. If you already participate in an outdoor exercise program, slowly acclimate yourself to cold weather by reducing your workout by 50% for the first two weeks. If the weather is very cold, new and long-time exercisers should both consider exercising in a climate-controlled environment.

Follow commonsense tips for exercise. Start slowly to warm up your muscles and joints. Exercise with a partner. Get enough sleep. Eat a balanced diet. Drink at least 8 glasses of water each day, and drink as needed during exercise. Remember, if you are thirsty, you are already dehydrated. Do not stop an activity abruptly; cool down for five to 10 minutes. By 10 minutes after completing the activity, your heart rate should be less than 100 beats per minute. If it is not, then you were exercising too strenuously. When running in the winter, begin your run facing the wind and end it with the wind at your back to prevent chilling.

Beginning an exercise program requires personal commitment and behavior modification. To ensure success, schedule your exercise for the same time 3 to 5 days each week. Participate in an aerobic activity for 20 to 30 minutes at 65% to 75% of your maximum heart rate. To calculate your maximum heart rate, subtract your age from 220. You can also take the "talk test." If you cannot carry on a conversation with your exercise partner, then you are exercising too vigorously. Slowly work up to exercising for one hour (including your warm up and cool down).

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Columbus, Georgia*

ATC CORNER

The First-Aid Kit

Every home should have some first-aid supplies readily available in case of an injury. Whether it is a true "first-aid kit" or just a special place for the supplies, you should know what is available to care for your family and how to use these things. The support staff at your doctor's office or your local pharmacist can tell you how to use various equipment and supplies. Consider the following items when creating a first-aid kit for your home:



Equipment

- Callus file or pumice stone
- Crutches
- Eyecup
- Flashlight or penlight
- Tweezers
- Forceps
- Hair clippers
- Medicine dropper
- Eye dropper
- Hand-held mirror
- Thermometer
- Safety pins
- Scissors (all purpose and bandage)
- Magnifying glass
- Ring cutter
- Eyeglass repair kit
- Nail clippers (finger, toe, and pliers)
- Fingernail file

Supplies

- Adhesive tape (various sizes)
- Bandages
 - Adhesive strips (1 x 3 inches)
 - Extra large (2 x 4 inches)
 - Fingertip
 - Knuckle
 - Four corner
 - Telfa pads
- Butterfly strips or Steri-Strips
- Sterile gauze (2 x 2, 3 x 3, and 4 x 4 inches)
- Cotton balls
- Cotton-tipped applicators
- Elastic bandages (3, 4, and 6 inches)
- Eye wash
- Gauze rolls (1, 2, and 3 inches)
- Rubbing alcohol
- Hydrogen peroxide
- Sterile saline solution
- Ice bags
- Aspirin
- Acetaminophen (Tylenol)
- Ibuprofen
- Antacid tablets and liquid
- Zinc oxide
- Triple antibiotic ointment
- Arm slings or triangular bandages
- Latex gloves
- Contact lens solution
- Contact lens case
- Antifungal foot powder
- Blister tape or Dermiclear
- Second Skin (blister care)
- Moleskin (blister care)

Your family may need specific items that are not on this list, or there may be items listed that you may not ever need; however, it is better to be prepared in case that you do. Please review the status of your family's health to be sure that you are prepared for first-aid needs that arise.

*Bruce Getz, ATC
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Exchanging Foods

Using a food-exchange plan can add variety to your diet. Exchange lists are groups of foods that have approximately the same number of calories, carbohydrates, protein, and fat. Each food can be exchanged for any other food in that group. The six major exchange groups are milk and dairy, vegetable, fruit, grains, meat, and fat. Nutrition labels on these foods often give the exchanges for one serving. For example, one cup of fat-free or 1% fat milk (90 calories) can be exchanged for three-fourths cup of plain nonfat or low-fat yogurt or for one cup of artificially sweetened yogurt. One serving of lean protein (55 calories and two to three grams of fat), such as one ounce of dark-meat chicken with the skin removed, can be exchanged for one ounce of salmon or for one ounce of low-fat cheese (with three grams or less of fat per ounce).

For more information about food exchanges, contact the American Dietetic Association, 216 West Jackson Boulevard, Chicago, IL 60606-6995, (312) 899-0040, <http://www.eatright.org>, or visit the website of the National Heart, Lung, and Blood Institute (<http://www.nhlbi.nih.gov>).

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Suggested readings and classic references for articles contained in this issue can be found at www.hughston.com

Health Hint

Aspirin, ibuprofen, and naproxen are nonsteroidal anti-inflammatory drugs (NSAIDs). NSAIDs reduce inflammation and pain caused by injury and immune reactions. Some musculoskeletal problems treated with NSAIDs are back pain, rheumatoid arthritis, osteoarthritis, tendinitis, sprains, and strains.



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