

Children's Orthopedic Care

Symptoms and Treatments





Comprehensive Care for Children's Orthopedic Injuries and Spine Conditions

A hospital can be an overwhelming place, especially for children and their parents. AdventHealth for Children was designed from the ground up to be a comforting, nurturing and immersive environment that helps ease the stress and anxiety associated with a hospital stay.

At AdventHealth for Children, your child will be cared for by a highly skilled team of medical professionals with extensive experience in pediatric orthopedics. We treat a wide range of children's sports-related injuries ranging from ACL tears to concussions, fractures and joint dislocations, as well as complex spinal conditions including scoliosis, cerebral palsy and spina bifida. And, we're the only children's hospital in Florida performing robotic-assisted pediatric scoliosis surgeries using the Mazor Robotics Renaissance™ System technology.



A Healing Experience Designed for Your Child

One of the premier children's health systems in the nation, AdventHealth for Children sets the standard for innovation, quality and comprehensive care. With the help of Walt Disney Imagineering and input from patients, families and clinicians, our seven-story, technologically advanced facility features a child-centered healing environment. Each floor of the hospital is themed to natural environments inspired by classic Disney animated movies, such as *The Little Mermaid*, *The Lion King*, *Brother Bear* and *The Jungle Book*.

Our priority at AdventHealth for Children is to do everything we can to make your child – and your family – whole again. We provide the highest quality of care possible, giving your child the best chance for a full recovery. And we want you to feel absolutely confident that entrusting your child's care to our physicians and nurses is the right decision.

We care about your care.

LEARN MORE ABOUT SOME OF THE CONDITIONS AND DISORDERS WE TREAT.

Our orthopedic specialists and surgeons are experts in treating kids with sports-related (and non-sports-related) orthopedic injuries like those listed below.

Orthopedic Injuries We Treat

ACL INJURIES

The anterior cruciate ligament (ACL) is an important stabilizer of the knee, and ACL tears are among the most common sports-related injuries. These injuries may lead to an inability to return to sports, as well as damage to other structures inside the knee such as cartilage and the meniscus. Fifty percent of people who suffer an ACL injury will demonstrate signs or symptoms of arthritis in the knee within 10 years. These injuries can be life-altering, especially when they occur in younger athletes.

A major concern in treating ACL tears in children is that young athletes are still growing. Because the growth centers are located directly adjacent to the joint, this complicates what would be a routine ACL reconstruction in an adult. Damage to the growth plates can lead to limb length discrepancies as well as angular deformities, so children need specially designed techniques and surgeries to reconstruct the ACL and preserve the growth plates. Our orthopedic physicians are specially trained to monitor as well as treat these conditions. In fact, AdventHealth for Children has the only team in the region providing quad-tendon-bone ACL reconstructions in growing athletes, as well as patient-specific ACL reconstructive surgeries.

CONCUSSIONS

Concussions result from the rapid movement of the brain inside the skull that disrupts the signals of the brain, which can be caused by either a direct or an indirect blow. For young athletes – especially those engaged in contact sports – concussions usually occur due to blows to the head by an object such as a ball, stick or bat, or due to a collision with another person. They can also occur when a child falls and their head makes contact with the ground. The sudden movement causes the brain to bounce around or twist inside the skull. This leads to stretching and damaging of brain cells and chemical changes in the brain. A concussion is classified as “mild” because it is not usually life-threatening. Yet, the effects can be serious and last for days, weeks, or longer.

Some symptoms of a concussion may include headaches, nausea and vomiting, dizziness, vision problems, fatigue or a loss of consciousness. These symptoms may differ in severity and can occur immediately after the time of impact or following a delay. However, concussions in young children may be harder to recognize if the child cannot communicate what they are feeling. Nonverbal signs of a concussion include listlessness or tiring easily; irritability; changes in sleeping or eating patterns; lack of interest in a favorite toy; unsteady walking, or balancing problems.

BONE AND GROWTH PLATE FRACTURES

Active kids will sometimes things – including bones. But when a child who is still growing suffers a fractured arm, leg, foot, hand or other bone, specialized care should be provided by a pediatric orthopedist to ensure that the bone continues to develop properly as it heals. Of particular concern are growth plate fractures, which occur near the ends of long bones where cartilage is still developing. According to the American Academy of Orthopedic Surgeons, up to 30 percent of fractures in children are growth plate fractures. These are most often seen in the lower legs, forearms and fingers, and may require surgical implantation of a special pin to keep the bone in proper alignment while it heals. The good news is that kids' bones tend to heal much faster than adults' bones do. Also, they usually require only casting, whereas surgery might be needed for an adult whose bones have stopped growing.

Symptoms of a growth plate or other type of bone fracture include chronic and/or severe pain, an inability to put pressure on the injury site or move it, and the appearance of a physical deformity – all of which warrant a trip to the doctor's office, urgent care center or emergency room.

SHOULDER DISLOCATIONS

Shoulder dislocation occurs quite often in children. Typically, this type of injury happens as a result of a fall sustained while the arm is extended out in front, causing sudden, excessive force to be applied to the ligaments in the shoulder and “popping” the ball at the top of the arm bone (humerus) out of the joint socket. Additionally, shoulder dislocations can occur from a direct blow to the shoulder or as a result of instability caused by a problem with the rotator cuff. Treatment can be provided by your child's pediatrician or in the emergency room. In most cases, the shoulder is manually relocated by applying gentle traction to the arm and popping the bone back into the socket. Your doctor may then prescribe a sling to reduce stress on the shoulder while it heals. It should be noted that shoulder dislocations in young athletes have a much higher propensity to re-dislocate when managed conservatively. Whether surgery or conservative management is used to treat shoulder dislocation, it is important to complete patient-specific physical therapy to ensure long-term stability to the shoulder.



PATELLA DISLOCATIONS

Also known as the “kneecap,” the patella is the triangular-shaped bone that is normally positioned in a small groove at the end of the thighbone (femur). The patella slides forward and backward in the groove as the knee bends and straightens. But sometimes the patella slides out of place, resulting in either a complete or partial dislocation. This may occur due to falling on the knee or sustaining a direct, hard blow to it. It can also occur as the result of an abnormality in the knee’s structure that makes it unstable. Due to the looseness and flexibility of kids’ ligaments and joints, patellar dislocation happens more frequently in children than in adults. Girls are more likely than boys to experience this type of dislocation, as are children born with

Down syndrome or cerebral palsy. Symptoms of a dislocated patella may include pain and inflammation, immobility, an altered appearance to the knee, “popping” sounds with movement, and a feeling that the kneecap is sliding out of place or the knee is giving way.

Treatment for a dislocated patella involves manually repositioning the kneecap using gentle pressure to “reduce” the dislocation. Following this treatment, your doctor may prescribe a knee brace that can keep the joint stabilized over the next several weeks. Physical therapy is then a key factor in rehabilitating the knee, with specially designed exercises used to tighten the muscles that surround the knee joint. The rehabilitation process typically takes between three and six weeks.



In addition, AdventHealth is known for its leading expertise in evaluating and treating children with serious spinal conditions, including those listed below.

Pediatric Spine Conditions We Treat

SCOLIOSIS

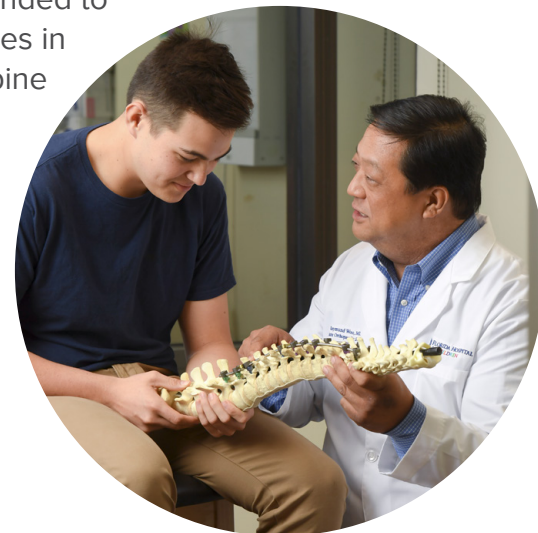
Scoliosis refers to an abnormal sideways curvature of the spine that occurs during the growing process in children and adolescents. While most cases of scoliosis are not severe, surgical correction may be required when the curvature is more pronounced. A specific cause of scoliosis has not been determined, but heredity does seem to play a role. Spine infections and neuromuscular disorders such as cerebral palsy also have a role in certain cases. The first line of scoliosis treatment is typically non-surgical and may include physical therapy along with specially designed exercises. When necessary, the abnormality can be corrected via removal of degenerating disks and surgical implantation of rods, plates, screws and bone grafts in order to fuse, straighten and stabilize the spine.

AdventHealth for Children is Florida's only children's hospital that performs robotically assisted pediatric scoliosis surgery using the Mazor Robotics Renaissance™ system. This state-of-the-art technology allows for pinpoint accuracy in placing surgical instrumentation and a minimally invasive approach that avoids large incisions, major scarring and unnecessary damage to healthy tissue layers. It also lessens the possibility of infections and results in reduced blood loss during surgery.

CEREBRAL PALSY

Cerebral palsy (CP) is the most common form of neurological disorder in children, occurring in one out of every 330 births in the United States. This disorder interferes with a person's ability to control their movements (motor control) as a result of damage or abnormal development in certain parts of the brain. More than half of all cerebral palsy cases are identified as spastic palsy, which is characterized by very stiff muscles that cause movement to be uncoordinated. Other types of cerebral palsy include dyskinetic palsy, ataxic palsy and mixed palsy.

In up to 90 percent of cases, cerebral palsy can be attributed to problems occurring before or during birth. Risk factors for CP include premature birth, a birth weight lower than 3.3 lbs., multiple-fetus births, infertility treatments, infections in the mother during pregnancy and substance abuse during pregnancy. In less than 10 percent of cases, cerebral palsy is tied to complications during labor and delivery. Occasionally, CP develops due to brain damage that occurs a month or more after birth as a result of bleeding within the brain, a brain infection (meningitis, encephalitis, etc.) or a head injury from blunt force trauma. While there is presently no cure for cerebral palsy, treatments are available to help manage the disorder and prevent or correct some of the defects it causes. Treatment requires a multidisciplinary approach and may include mobility aids, braces and anti-spasticity or anti-seizure medications. Surgery may be recommended to address deformities in the ankle, foot, spine and hips.



SPINA BIFIDA

Spina bifida is a neural tube birth defect that causes abnormal development of the spine, spinal cord, the surrounding nerves and the fluid-filled sac surrounding the spinal cord. It is one of the most common birth defects in this country and occurs when the spinal cord fails to fully close during a baby's development in the womb. The condition can range from mild to severe, with more severe effects including paralysis and bowel problems.

A mild form of spina bifida is called spina bifida occulta and occurs when the spinal cord fails to form normally but remains inside the body. In a more moderate form of the disease, a meningocele (fluid-filled sac) is visible outside the back but the spinal cord remains inside the body. In the most severe form of the condition, a myelomeningocele forms as a fluid-filled sac containing the spinal cord and nerves outside the baby's back. While no cure currently exists for spina bifida, its survivability is very high when properly treated. Treatments can help reduce the symptoms and complications of this condition, with new research and clinical trials forging progress each day in experimental fetal surgery as well as prevention methods.

OTHER CHILDREN'S ORTHOPEDIC CONDITIONS

AdventHealth for Children's comprehensive orthopedics expertise means that we also treat a wide variety of other orthopedic conditions – from the most common to the most complex – including many conditions related to growth and bone development disorders. We apply state-of-the-art technologies and therapies to care for children with the following orthopedic disorders:

- Benign soft tissue and bone tumors
- Bone and joint infections
- Bowing of the legs
- Clubfoot
- Congenital deformities of the legs
- Dwarfism
- Foot pain and deformities
- Hip conditions including hip dysplasia
- Muscular dystrophy
- Neuromuscular disorders
- Neurofibromatosis
- Leg length discrepancies
- Limping in children
- Osteogenesis imperfecta
- Osteonecrosis
- Rickets



Specialized Treatment Options for Special Patients

A child's growing body is fundamentally different than an adult's. As such, young patients require a different approach to diagnosis and treatment, including a multidisciplinary team that works closely to provide the most effective diagnoses and treatments. We are committed to providing you with the most advanced care possible in a compassionate, caring environment that is comfortable for kids and parents.

At AdventHealth for Children, our orthopedics program provides a varied and extensive range of specialized treatment options that include:

Minimally Invasive Surgical Procedures

Nationally known for our pediatric surgery program, AdventHealth for Children is a leader in minimally invasive surgery for children and adolescents. Advanced techniques including laparoscopic and robotic surgery can result in a quicker recovery with fewer complications and a shorter hospital stay for your child than with traditional surgery.

Mazor Robotic-Assisted Surgery

We're the only children's hospital in Florida performing robotic-assisted pediatric scoliosis surgeries using the Mazor Robotics Renaissance™ System technology. This advanced surgical platform allows for exact pre-surgical planning and visualization, a minimally invasive approach and extremely precise placement of instrumentation (surgical implants) designed to correct spinal deformities.



Sports Concussion Program

The AdventHealth Sports Concussion Program is dedicated to treating and preventing concussions in children and adults. Our sports-concussion experts are recognized nationally and internationally for their work in this quickly evolving field. They employ state-of-the-art technology, including the ImPACT computerized neurocognitive testing software, a 20-minute test that has become a standard tool in the clinical management of athletes' concussions. Our program partners with nearly 20 Central Florida high schools to provide student athletes with access to advanced concussion diagnostic and management protocols.

Pediatric Rehabilitation

Our pediatric rehabilitation program is staffed by caring professionals who are specially trained in a wide range of disciplines, including physical therapy, occupational therapy, speech and language therapy and audiology. The program is characterized by a family-centric style of treatment, which focuses on the unique needs of your child. We work with you and the rest of your family to develop the ongoing skills and strategies that will be needed to ensure successful healing. We are extremely proud of our legacy of diagnosing and rehabilitating children who have experienced all sorts of health problems, from adolescent sports injuries to newborns who have been born with congenital conditions that must be addressed early in their lives so they can develop normally.



An Unparalleled Network of Care

Supported by the strength, innovations and mission of the AdventHealth system, AdventHealth for Children is committed to delivering world-class programs, extraordinary patient care and clinical excellence. Our flagship hospital is the heart of a children's network that includes primary care pediatricians, specialty clinics, emergency departments and Kids Urgent Cares.

Across Central Florida, there are more than 300 dedicated pediatric beds, with 200 of them located at the tertiary children's hospital in Orlando. Four dedicated ambulances and one helicopter provide emergency transfers and are staffed with a highly trained PICU and NICU transport team who supports regional hospitals within an 85-mile radius, including 13 adjacent AdventHealth locations. The Ronald McDonald House, located on-site at the AdventHealth for Children, provides a home-away-from-home atmosphere for our out-of-town families.

Patient records are immediately accessible across our entire network, creating an efficient, seamless health care experience. And no matter which one of our hospitals you visit, you will receive the same special brand of care. We're here to heal – body, mind and spirit.



8

**PRIMARY CARE
OFFICES**



7

**SPECIALTY
CLINICS**



5

**EMERGENCY
CARE CENTERS**



5

**NEONATAL
INTENSIVE
CARE UNITS**



2

**KIDS URGENT
CARE CENTERS**



5

**SPECIALIZED
PEDIATRIC
TRANSPORT TEAMS**



We are here for your whole family.

If you have concerns about your child, give us a call. We can help you navigate normal childhood changes and catch issues early, so you can get the best treatment possible for your family.

We're here to talk.

AdventHealthforChildren.com

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This guide is provided to the general public to disseminate health-related information. The information is not intended to be used for diagnosing or prescribing. Please consult your physician before undertaking any form of medical treatment and/or adopting any exercise program or dietary guidelines.