There is no better place to live and raise a family than western North Carolina. Asheville and surrounding communities boast in excellent schools, quality athletic programs, and a plethora of fun activities for children. With mild weather that is rarely extremely hot or cold, residents of mountain communities spend a lot of time outdoors. There are thousands of miles of hiking and mountain biking trails within a short drive from downtown Asheville. Whitewater rafting, kayaking, and tubing are popular water sports throughout the summer. During winter, you can find quality ski slopes in the area as well. Whether they are playing soccer or football or exploring nature, there are plenty of reasons for children to be outside year-round.

Some children require an orthotic device to control biomechanics, reduce pain, rehabilitate from or prevent further injury, and improve their mobility. If you are researching orthoses for your child know the importance of finding the right device manufacturers and suppliers. For nearly sixty years, we have worked with parents, children, and rehabilitation doctors and specialists to develop the best orthotic devices for each child’s specific needs. In this guide, we will walk you through various orthotic devices to provide you with a better understanding of orthoses and how they can improve your child’s lifestyle.

We have structured this book in three parts:

I. Pediatric Upper Limb Orthoses
II. Pediatric Spine and Neck Orthoses
III. Pediatric Hip and Lower Limb Orthoses
Observing your child learning how to use his or her hands and arms is one of the most rewarding and challenging parts of early parenthood. Everything is new and different and sometimes dangerous. Whether it is learning to draw and write, or reaching for something they shouldn’t touch, children use their arms, hands, and fingers a lot. Meanwhile, they are perpetually growing and changing. That is why it is critical to find the right custom-manufactured upper limb orthoses provider for your child. Upper Limb Orthoses include:

1. Wrist and Hand orthotic devices
2. Shoulder and elbow orthotic devices
3. Fracture Bracing

**Wrist and Hand Orthotic Devices**

If your child was born with a biomechanical alignment or deformity, his or her pediatrician may recommend wrist or hand orthoses. These orthotic devices may also be used to protect a child’s hand while he or she is recovering and rehabilitating from a wrist or hand injury. We provide three types of wrist and hand orthoses:

**Resting Hand Splint:** This device is used to treat flexibility and mobility issues with a child’s hand, thumb, or wrist.

**Carpal Tunnel Brace:** An uncomfortable injury for a child or adult, this device helps Carpal Tunnel Syndrome.

**Thumb Spica Splint:** This device is utilized to treat tendonitis, sprains, fractures, and other thumb conditions.
Shoulder and Elbow Orthotic Devices

From poor posture to bicycle and playground falls to automobile accidents, sometimes children experience injuries or biomechanical alignment issues within their upper arms and shoulders. Shoulder and elbow orthoses help improve mobility and correct injuries to the child’s upper arm, shoulders, collar bone, and neck.

**Figure 8 Clavicle Brace:** These braces are used to immobilize and help a child recover from injuries to the clavicle (collar bone) and issues related to poor posture.

**Shoulder Abduction Brace:** Supporting the arm and preventing the elbow from lowering, these devices are utilized to help a child recovering from shoulder injuries.

**Range of Motion Brace:** A ROM brace limits motion in a child’s elbow, allowing him or her to recover from surgery, sports-related conditions like tennis elbow, and other injuries.

**Fracture Bracing**

There are a number of ways a child might fracture a wrist, arm, or elbow. From falling off the monkey bars to soccer and basketball collisions, fracture bracing helps a child recover from Injuries to the wrist and forearm.

**Ulnar Fracture Brace:** The ulna is the bone in your child’s arm stretching from their pinkie to their elbow. Ulnar Fracture braces are rigid on the outside while providing soft tissue compression with foam inside the brace, to prevent arm movement between a child’s wrist and elbow.

**Humeral Fracture Brace:** The humerus is the bone between a child’s elbow and shoulder. In order to recover from a painful and inconvenient fracture, Humeral Fracture Braces stabilize and prevent movement in your child’s upper arm.
If your child has a condition or injury that affects or restricts the way in which their spine moves, their pediatrician may recommend a spinal or cervical orthotic device. These devices are key to helping your child’s overall mobility. As your child grows, these orthotic devices will need to adapt to their specific needs. In this part of the guide, we will discuss a few key spinal and cervical orthotic devices.

1. **Thoracolumbosacral Orthosis (TLSO)**
2. **Lumbosacral Orthosis (LSO)**
3. **Cervical Thoracic Orthosis (CTO)**
4. **Hyperextension Orthosis**
5. **Scoliosis Orthoses**

**Thoracolumbosacral Orthosis (TLSO):** These devices are typically custom-fabricated to fit your child’s specific needs. A TLSO is a two-piece clamshell that extends from just below the collar bone to the pelvis. These devices are used to immobilize the spine and decrease pain. These braces are often worn to manage scoliosis.

**Lumbosacral Orthosis (LSO):** Like TLSOs, Lumbosacral Orthosis is used to immobilize a child’s lower spine. The brace usually starts around the xiphoid process, extending to the pelvis.

**Cervical Thoracic Orthosis (CTO):** If your child sustains an injury or undergoes surgery to his or her spine, a CTO may be used to stabilize and reduce the motion of their head and neck.

**Hyperextension Orthosis:** These devices help a child improve their spinal posture by applying three points of pressure, preventing flexion in the lumbar and thoracic spine.

**Pediatric Scoliosis Orthoses:** Scoliosis orthoses are plastic jackets designed to accommodate the sideways spinal curve associated with scoliosis. Depending on the severity of the scoliosis, children may wear these devices all day, or only at night while sleeping.
Running, jumping, kicking, and playing are fundamental aspects of childhood that may be affected by injuries or biomechanical issues with a child’s hips or lower extremities. There are many unique orthotic devices that can help improve a child’s leg and foot mobility. If your child’s pediatrician or rehabilitation specialist has recommended one of these devices, we can help.

**Hip Abduction and Knee Ankle, and Foot Orthosis (KAFO)**

**Hip Abduction Brace:** These braces are used to stabilize the femur to the hip socket after a dislocation, allowing a child’s hip to fully heal from injury.

**Femoral Fracture Brace:** If your child breaks their femur, a femoral fracture brace will likely be used to limit motion in the entire legs. These braces stabilize the femur and tibia to allow the fracture to heal.

**Stance Control Braces:** If your child experiences quadricep weakness, multiple sclerosis, spinal cord injuries, unilateral paralysis, etc., stance control braces are used to stabilize your knee and provide confidence when you step.

**Single and Double Upright KAFO:** If your child requires support for multiple sclerosis or spinal cord injuries, this orthotic device spans the entire lower leg, from the foot to the knee, providing stability for joints and support for muscles in the leg. These orthotic devices may be used to help for anything from multiple sclerosis to spinal cord injuries.

**Therapeutic Ambulatory Orthotic System (TAOS):** These walkers help children with neuromotor impairments such as cerebral palsy gain a measure of independence by providing support as they stand and walk without requiring their hands to be engaged.

**Reciprocal Gait Orthoses (RGO):** These braces aid walking by reducing hip flexion, providing support for children with spinal cord injuries, spina bifida, cerebral palsy, muscular dystrophy, or myelomeningocele.
Ankle Foot Orthoses (AFO)

**Posterior Leaf Spring AFO:** Used to aid with dorsiflexion during the swing of a person’s gait, Posterior Leaf Spring AFO’s help people with conditions ranging from drop foot to multiple sclerosis, spinal cord injuries, and other lower extremity weakness.

**Metal Double Upright AFO:** For children with conditions such as foot deformities or plantar ulcers, these aluminum, titanium, or stainless steels devices help support the foot and provide mobility.

**Spiral Carbon Fiber AFO:** For children with dorsiflexion weakness this orthotic device is a lightweight brace attaching to the foot and ankle, providing unobtrusive support.

**Controlled Ankle Motion Walker Boots (CAM Boots):** From soccer to dance, children are often on their feet and susceptible to ankle injuries. These walking boots allow children to walk without crutches while healing from severe ankle sprains, fractures, and tendon/ligament damage.

**Pressure Relief AFO:** If a child is healing from plantar and heel ulcerations, a pressure relief AFO might be employed to reduce plantar flexion.

**Tibial Fracture Brace:** For children recovering from an unfortunate tibial fracture, these braces help protect the leg and upper ankle.

**Dorsiflexion Assist AFO:** For children with dorsiflexor weakness, this AFO helps support their feet so they can walk more naturally.
Knee Orthosis

**Range of Motion Knee Braces:** As your child ages, if he or she is prone to knee injuries or experiences a knee surgery, these braces reduce motion in the knee, allowing it to heal effectively.

**ACL/MCL/PCL Braces:** For a child recovering from an unfortunate ACL, MCL, or PCL injury or surgery, these braces help protect the anterior, medial, or posterior cruciate ligaments.

**Knee Immobilizers:** To prevent unwanted movement after surgeries or knee injuries, a child might wear knee immobilizer braces to lock the knee in place while walking.

Foot Orthosis

**Custom Semi-Rigid Functional:** These devices are used to control motion in the foot joints, but since they are less rigid, they can be more comfortable and provide better comfort for a child.

**Custom Accommodative Orthoses:** For children with an injury to the bottom of his or her foot, these devices are used to cushion and relieve pain from the bottom of the foot.

**Foot Abduction Orthosis/Denis Browne Splint:** For a child who experiences clubfoot, improper foot rotation due to cerebral palsy, scissors gait, or other foot mobility issues, FAO or the Dennis Browne Splint can help adjust their gait and improve the position of the foot.

**Plantar Stop AFO:** For a child with perpetual drop foot or dorsiflexor weakness, this brace may be utilized to provide foot and ankle support.

**Supra Malleolar Orthosis (SMO):** A child suffering from tibial weakness, hypotonia, chronic ankle sprains, low tone, or ankle instability may benefit from this device as it provides foot and ankle support.
If you are researching orthotic devices, you probably have a lot of questions. Orthopedic Appliance Company is dedicated to providing the highest quality custom orthotic devices for children and adults throughout western North Carolina and the foothills. We are here to help answer your questions and walk with you through the process of developing the right orthoses for your child. Furthermore, we can help ensure that your child’s devices grow with them if necessary, providing comfort and stability for your family. Give us a call today for more information about pediatric or adult orthoses.
Orthopedic Appliance Company

1-800-972-5168 • (828) 254-6305
OrthopedicApplianceCo.com

Asheville, North Carolina
75 Victoria Road
Asheville, NC 28801
(828) 254-6305
Fax: (828) 254-6110
1-800-972-5168

Fletcher, North Carolina
235 St. Johns Road
Fletcher, NC 28732
(828) 483-5781

Hickory, North Carolina
910 Tate Blvd SE Suite 103
Hickory NC 28602
(828) 348-1960