



Individuals diagnosed with [hypoxic-ischemic encephalopathy \(HIE\)](#) are often at higher risk for motor disorders and limitations in coordinating movement. Sometimes they may need orthotic devices, which help brace, stabilize, align, correct, and support the moveable parts of a person's body in order to help them maximize their mobility and independence (1).

Orthotics can take many forms, ranging from limb braces to sets of progressive shoe inserts designed to help children walk. Some children will need orthotics for the duration of intensive therapy only, while in other circumstances they will need them throughout their lives. These braces are sometimes prefabricated, but in certain situations can be modified or customized to address a child's specific health needs.

Orthotics can also be preventative in nature. When properly applied, they can help prevent flexible deformities, stop progressive deformities from worsening, decrease the effects of spasticity on the body, and help children strengthen muscles and joints to help them ambulate more stably or successfully (2).

Types of orthotics

Orthotics are divided up by the type of body part they support (1):

- Lower limb orthoses: Support the lower limbs, including the legs, knees, and ankles
 - Foot orthoses: Shoe inserts made to support the arches and foot joints; also include orthopedic shoes, shoe modifications, arch supports, and heel modifications
 - Ankle-foot orthoses (AFOs/foot drop braces): External braces made to support the ankle and foot, correct deformities, correct foot drop, or immobilize fractured limbs
 - Knee-ankle-foot orthoses (KAFOs): Orthoses designed to limit or assist the plane of motion of the sagittal, coronal, or axial planes of motion of the lower limbs; often used to help individuals who have limited range of motion in the legs
 - Hip-knee-ankle-foot orthoses (HKAFOs): Help position a person upright while centering



knees

- Knee orthoses (KOs): Knee braces designed to support or align the knee, prevent extension instability, or relieve pressure on the joint due to inflammatory conditions
- Trunk-hip-knee-ankle-foot orthotics (THKAFOs): THKAFOs work with spinal orthoses to help with trunk control and spinal alignment; often used by individuals with paraplegia
- Spinal orthoses (back braces): Used to treat scoliosis and abnormal spinal curvatures, as well as spinal fractures. Sometimes used to provide support for children with limited trunk control.
- Cervical braces: Neck braces that support the back of the head and the chin.
- Lumbosacral orthosis (LSO): A device that circles the lower back to treat low back pain, often after spinal surgery.
- Upper-limb orthoses: Orthotic devices applied to the arms to help restore or improve function
 - Clavicular and shoulder orthoses
 - Arm orthoses
 - Elbow orthoses
 - Forearm-wrist orthoses
 - Forearm-wrist-thumb orthoses
 - Forearm-wrist-hand orthoses
 - Hand orthoses

What happens when a child receives an orthotic device?

During an initial appointment, the child is evaluated by a pediatric orthopedist for possible issues that orthotic devices can correct. Once they identify such issues, they can refer the child to a licensed orthotist who specializes in orthotic devices. These professionals are certified by the [National Commission on Orthotic and Prosthetic Education \(NCOPE\)](#) or the



American Board for Certification in Orthotics, Prosthetics & Pedorthics.

The orthotist develops a treatment plan in conjunction with the child's primary care provider and orthopedic surgeon or pediatric orthopedist, and they can make recommendations for certain types of devices. They also design, fit, and monitor the devices to ensure that they provide the best support for the patient (3). Some devices might be off-the-shelf, while some might need some customization. For custom devices, the orthotist may make a cast or take measurements, and the amount of time it takes to receive the device can vary.

Once the device is made or provided, the orthotist will request the child come back for a fitting, where the device is adjusted and the child and family are shown how to properly use, adjust, and remove the device. After fitting, the child will be given a schedule for wearing the device that includes break-in time, followed by a follow-up appointment where the orthotist will determine if the orthotic device is effective or needs further adjustment. It is important to adhere to all follow-up guidelines because a child's needs and abilities can change over time, necessitating further evaluation, modification, or replacement of devices.

It is also important to check in with the orthotist about ways to help your child become comfortable with an orthotic device, especially since they can be uncomfortable at first. Ways to improve your child's experience include (4):

- Making sure the device is not too tight or too loose
- Making sure there is a barrier (such as socks or sleeves) between skin and device when the orthotist recommends it
- Checking the skin frequently for redness or brokenness
- Making sure the child adheres to the wear schedule
- Making sure the device is well-maintained, clean and in good repair (but avoiding the use of bleach or disinfecting wipes to clean, as these can cause skin irritation)
- Making sure barrier clothing is dry to prevent irritation and discomfort
- Avoiding lotions or creams on the skin under the brace



- Making sure the child understands why they are wearing a device and how it will help them

Learn more:

- [Orthopedic Health](#)
- [Orthotics for Hypotonia](#)
- [Orthopedic Surgery](#)
- [Assistive and Adaptive Technologies](#)

Sources

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