



*Children's Brain Institute*

# Cerebral Palsy

Cerebral means having to do with the brain. Palsy means weakness or problems with using the muscles. Cerebral palsy (CP) is a group of disorders that affect a person's ability to move and maintain balance and posture. CP is the most common motor disability in childhood. CP related to abnormal brain development or damage that happened before or during birth is called congenital CP. The majority of CP (85%–90%) is congenital.



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Cerebral palsy is caused by damage or abnormal development in the parts of the brain that control movement. These events can happen before, during, or shortly after birth or in the first few years of life, when the brain is still developing. In many cases, the cause or causes of congenital CP aren't entirely known, which means that currently, little can be done to prevent it.

## **Causes**

While the exact causes of CP are not known, research has identified risk factors for Congenital CP.

**Low oxygen - Lack of oxygen during the birth process**

**Low birthweight - Children weighing less than 3 pounds, 5 ounces (1,500 grams) have a greater chance of having CP.**

**Premature birth - Children born before the 32nd week of pregnancy have a greater chance of having CP. Babies born very early are more likely to have medical problems.**



# Causes

**Multiple births - Multiple births have a higher risk for CP because children born from multiple pregnancies often are born early or with low birth weight or both. If a baby's twin or triplet dies before birth or shortly after birth, chances of CP are increased.**

**Infertility treatments - Children born from pregnancies resulting from some infertility treatments have a greater chance of having CP.**

**Pregnancy infections - Infections can lead to increases in specific proteins called cytokines that circulate in the brain and blood of the baby during pregnancy.**

**Jaundice and kernicterus - Jaundice is the yellow color seen in the skin of many newborns. Jaundice happens when a chemical called bilirubin builds up in the baby's blood.**



# Causes



**Males - Males are at greater risk of having cerebral palsy.**

**Cerebral palsy cannot be detected before birth.**



# Types

Depending on which areas of the brain are affected, one or more of the following movement disorders can occur:

- **Stiff muscles (spasticity)**
- **Uncontrollable movements (dyskinesia)**
- **Poor balance and coordination (ataxia)**

There are five main types of CP. Spasticity is increased muscle tone or abnormal muscle tightness due to prolonged muscle contraction. The tightness is felt with specific stretches. The tightness exists even when the muscles are at rest. Spasticity can make legs stiff with trouble bending, or arms stay tight and close to the body.



# Types

**Hypotonia is an abnormally low level of muscle tone. Hypotonia may show up as floppiness in the muscles. Healthy muscles are never fully relaxed. Children with hypotonia have reduced muscle strength and may have trouble holding up their heads or sitting up.**

**Diplegia is a form of paralysis that affects both sides of the body. Children with the condition have stiffness, weakness, or lack of mobility in muscle groups on both sides of the body. Diplegia usually involves the legs, but the arms and face might also be affected in some people.**

**Hemiplegia is trouble moving one side of the body. Children experiencing hemiplegic cerebral palsy may have difficulty using their legs and arms on either left or right sides.**

**Dystonia is involuntary muscle contractions that cause repetitive or twisting movements. Muscles contract in an uncontrolled way. This can cause muscle spasms or involuntary movements.**



# Treatments

No cure can make CP go away completely, but there are ways to help a child with cerebral palsy do their best. In treating cerebral palsy, a variety of therapies are employed. Physical and occupational therapy, medications, and assistive devices such as braces can help a child reach their best potential.

There are new and emerging therapies for CP. Stem cell therapy is a newer treatment for cerebral palsy. New medical devices are demonstrating their effectiveness. Devices are available that stimulate specific nerve circuits in the spine, suppressing those causing muscles to be spastic. Another critical and emerging treatment for cerebral palsy is called deep brain stimulation, and it helps with dystonia, the involuntary twisting and repetitive movements that often characterize the condition. Botox, a toxin that can be used to paralyze and relaxes hypertonic muscles, is another therapy. Botox is used on hypertonic muscles. Hypertonic muscles are common in cerebral palsy.

