

TONE

Tone is the medical word for stiffness. Think about a piece of yarn and a piece of wire. The yarn bends easily. It is limp and floppy. A wire, however, is more difficult to bend and is firmer when compared to the yarn. The wire resists being bent more than the yarn. When muscles are stiff and don't bend due to an issue with the nervous system, the medical term is high muscle tone. The wire has more "tone" than the yarn – it is more difficult to bend.

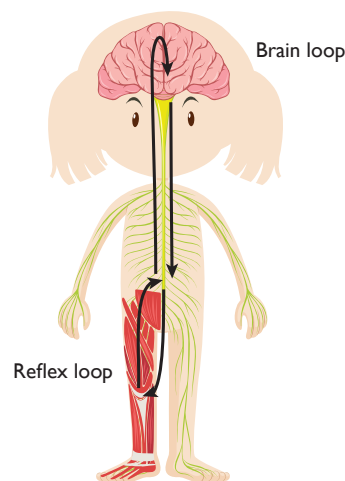
HIGH MUSCLE TONE

Next, compare the wire to a metal rod. The metal rod has more "tone" than the flexible wire. The medical term for muscle stiffness is "high muscle tone." High muscle tone can also be called **hypertonia**, as both terms describe a group of muscles that are stiff.

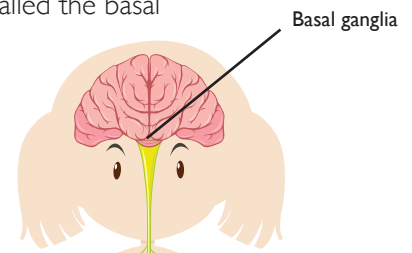
DIFFERENT TYPES OF STIFF MUSCLES

There are different causes of hypertonia or tight muscle tone. Determining the type of hypertonia is important so that the treatment addresses the cause. Many children have more than one type of hypertonia and will need more than one treatment. This is especially true over time as they grow. Common types of hypertonia are spasticity and dystonia.

Spasticity is caused by the reflex loop involving a muscle, nerves, the spinal cord and the brain. In a person with spasticity, caregivers can feel the resistance from the muscles when trying to force a movement.



Dystonia is caused by a specific area in the brain, called the basal ganglia. This type of muscle stiffness comes and goes. Dystonia can sometimes cause a person to be in uncomfortable body positions or have repetitive motions.



IDENTIFYING TYPES OF STIFF MUSCLES

Identifying the type of high muscle tone your child has is important when choosing treatments for the patient. A health care team that is experienced in recognizing the different types of high muscle tone should evaluate each child. Children can have more than one type of high muscle tone, muscle shortening or bone issues. A detailed examination by trained physicians or therapists helps to identify the types of high muscle tone that a patient may have. A gait study in a motion lab provides even more information about motion restriction caused by high muscle tone, weakness, shortened muscles or joint issues.

STIFF MUSCLES AFFECT MOVEMENT AND GROWTH

There is a delicate balance between muscle growth and bone growth in children. Bones grow at a speed and size that is determined by a child's genes. Muscles need to move and stretch in order to grow. If a child isn't active, muscle growth can be limited and can keep bones from growing into their best position or alignment.

Children with hypertonia (stiff muscles) have to work harder to move. Their activity may be limited. When their muscles aren't stretched and exercised, muscle growth can be slower than bone growth. The stiff muscle becomes short over time, and the joint gets stuck. This imbalance results in a contracture, a joint that stays bent.



If a muscle stays the same length while bones grow, the joint appears bent.