

Low Muscle Tone- What Does it Mean?

Have you heard of the term “low muscle tone”? As a physical therapist, I often come across people, whether they are parents, teachers, physicians, or therapists talking about muscle tone. I am very often asked what that means. Muscle tone is the continuous passive contraction of muscles at rest. It is muscle’s resistance to passive stretch at rest. Normally, even when relaxed, muscles have a very small amount of contraction that gives them a springy feel and provides some resistance to passive movement. Muscle tone is regulated by signals that travel from the brain to the nerves and tell the muscles to contract.

Hypotonia is a medical term used to describe decreased muscle tone. Hypotonia can happen from damage to the brain, spinal cord, nerves, or muscles. The damage can be the result of trauma, environmental factors, or genetic, muscle, or central nervous system disorders.

Hypotonia is seen in lower motor neuron diseases. It can present as muscle flaccidity, where the limbs appear floppy, stretch reflex responses are decreased, and the limb’s resistance to passive movement is also decreased. The child with low tone has muscles that are slow to initiate a muscle contraction, contract very slowly in response to a stimulus, and cannot maintain a contraction for as long as his/her peers with ‘normal’ muscle tone. Because these low-toned muscles do not fully contract before they again relax, they remain loose and very stretchy, never realizing their full potential of maintaining a muscle contraction over time.

(www.wikipedia.com)

Hypotonia can also be an isolated condition called benign congenital hypotonia where a child is born with low muscle tone and it is not associated with any other neurological condition. Mild or benign hypotonia is often diagnosed by physical and occupational therapists through a series of exercises designed to assess development. Some signs to look for are hyperextension of joints or locking out the joints especially of the elbows and knees, “W” sitting, poor posture, decreased endurance, and fatigue.



Developmental delay can also indicate hypotonia. Children with normal muscle tone are expected to achieve certain physical abilities within an average timeframe after birth. Most low-tone infants have delayed developmental milestones since it takes a lot more work to get their muscles going. Hypotonic infants are typically late in lifting their heads while lying on their stomachs, rolling over, lifting themselves into a sitting position, remaining seated without

falling over, balancing, crawling, and sometimes walking. Fine motor skills delays occur in grasping a toy or finger, transferring a small object from hand to hand, pointing out objects, following movement with the eyes, and self-feeding. Speech can also be delayed as a result of hypotonia since the muscles in the face (mouth and jaw) are affected as well. Low-tone children can learn to speak later than their peers, even if they appear to understand and obey simple commands. Hypotonia is not the same as muscle weakness, although the two conditions can co-exist.

Hypertonia, the opposite of hypotonia, is a term used to describe increased muscle tone. It is seen in upper motor neuron diseases like lesions in pyramidal tract and extrapyramidal tract. Hypertonia can present as either spasticity or rigidity. Spasticity is velocity-dependent resistance to passive stretch so if you quickly passively stretch a muscle, it will elicit increased muscle tone, but passively moving the muscle slowly may not elicit increased muscle tone. Spasticity can present as 'clasp-knife' in which there is increased resistance only at the beginning or at the end of the movement. Rigidity is velocity-independent resistance to passive stretch so the increased tone is present whether there is a quick stretch to the muscle or not. Rigidity can present as 'leadpipe' where there is resistance throughout to passive movement, or it may be of 'cogwheel' type where the resistance to passive movement is in a jerky manner.

Hypertonia can be seen in many upper motor neuron diseases, most commonly seen in cerebral palsy. Physical therapy has been shown to be effective in controlling hypertonia through the use of stretching aimed to reduce motor neuron excitability by inhibiting excessive tone as far as possible. In addition to conventional therapy, there are many pharmaceutical interventions used to decrease spasticity that can be used in conjunction with a rigorous stretching program.

Physical, occupational, and speech therapy play an integral role in the treatment of tonal disorders whether it is hypotonia or hypertonia. Early intervention is crucial to limiting delay and helping each child to function optimally in his/her environment.

Elisheva Fuchs has a doctorate in physical therapy and is the owner of The Therapy Gym in Teaneck. She can be reached at 201-357-0417 or ellie@thetherapygym.com. For more information on The Therapy Gym, please visit www.thetherapygym.com.