

How Nutrition Impacts Muscle Tone



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Many children with developmental delays have low muscle tone or hypotonia, because external factors that impact the nervous system can also affect the muscles. Premature birth, heavy antibiotic use, and exposure to toxins damage all types of cells, causing generalized low tone or low tone in specific areas such as the hands or mouth. In severe cases of hypotonia, the muscles may be so weak that a child has difficulty sitting up for extended periods, chewing, or pushing out bowel movements. Milder cases, affecting the finger or eye muscles, cause fine motor delays or visual processing disorders. All children with hypotonia have reduced stamina.

Symptoms Associated with Low Tone

- **Fatigue/low arousal** – The body's inefficient processing of nutrients results in reduced available energy overall.
- **Reflux/Constipation** – Poor or reduced trunk tone can cause stomach flaps to flop, thus impeding food movement.
- **Poor sitting posture** or “slumping” can be a result of soft trunk muscles.
- **Weak chewing and poor/picky eating** – Low tone in the mouth affects mastication, causing drooling when saliva pools in the open mouth.
- **Poor visual tracking** – Weak eye muscles struggle to control and coordinate eye movements.

What You Eat versus What You Get

In hypotonia, a big gap exists between what a child consumes and healthy cellular nutrition. While neurologists often attribute hypotonia to imbalances in the parts of the brain that control tone, low tone always has a nutritional component.

Muscles suffering from nutrient deprivation remain underdeveloped, or if adequately developed, fatigue easily. Whether a youngster is born with low tone, or acquires it through cellular malnutrition, good nutrition can improve the condition, while the tendency toward hypotonia often remains. Eating the perfect diet is only the beginning in low tone. The nutrients must get to the cells, which must then convert them into usable energy.

Three basic strategies can improve inefficient energy delivery and boost output: increasing available nutrients, enhancing nutrient delivery, and improving energy production. All of these can be achieved with specific nutritional supplements. Nutritional therapy for low tone is a long term management plan, not a quick fix.

Increasing Available Nutrients through Diet

The first step is to control the intake of concentrated sugars, such as candies, sweetened drinks, and desserts, while increasing the amount of protein in the diet. People with hypotonia tire easily so they often reach for sweets and starches as quick sources of energy. Protein foods tend to contain more concentrated nutrients than sugary items, which have many calories and few vitamins and minerals. Improving nutrient density is critical because inefficient energy production result is loss of nutrients.

Enhancing Nutrient Delivery

Carnitine (as L-carnitine or acetyl-L-carnitine) carries partially digested fat molecules across the mitochondria membrane. The mitochondria convert fats and carbohydrates into adenosine triphosphate (ATP), the cells' main source of energy. Carnitine is a simple protein made up of the amino acids methionine and lysine. Children with severe hypotonia often have low levels of carnitine in their blood.

Carnitine is usually dosed at 50 to 100 mg per kg of body weight. It improves tone in the intestines, making it wonderful for constipation. It can cause loose stools or stomach distress in some cases.

R-Alpha Lipoic Acid (R-ALA) is an antioxidant with both water and fat soluble properties. It lengthens the life-span of antioxidants like vitamins C, E, and glutathione, prolonging their usefulness in the body. Studies have found it allows the mitochondria to rebuild, thereby increasing ATP synthesis. The normal range of dosing is 25-100 mg of the “R” form.

Improving Energy Production

Co-enzyme Q-10 (**Co-Q-10**), also called ubiquinone, helps to regenerate ATP. The body stores only enough ATP to provide energy for about five to eight seconds of strenuous activity, so it must constantly regenerate ATP using Co-Q-10. No Co-Q-10: no stamina. The beginning dose of Co Q-10 is 30-60 mg and can go up to 100 mg. Co Q-10 is non-toxic and well tolerated.

B vitamins are required as cofactors at different points in energy production. Imagine energy production as an assembly line. The workers along the line are the B vitamins. Adding more B vitamins is like hiring more laborers in a slow factory. That's why B vitamins have a reputation for improving energy.

Use **B vitamins** as a complex. Youngsters with low tone need a minimum of several times 100% of the daily value on vitamin bottles. While B-vitamins are non-toxic, they can make some children cranky, possibly because yeasts like them, too. Keep in close contact with your supervising medical professional to adjust the B-vitamins if a child becomes agitated.

Vitamin E helps clean up oxidative damage from inefficient energy production. Free radicals are natural and destructive by-products of metabolism produced in much higher amounts when tone is poor. The vitamin E family also protects the fats in cell membranes including the mitochondria membrane, against damage.

The **vitamin E** family has eight members: four tocopherols and four tocotrienols. Nutritionists actively debate which member of this family has the highest antioxidant activity. Best to use the entire family. Megafood Complete E 8 is a good choice. Squeeze the contents out of the capsules and mix with food, if necessary.

Low Tone Can Improve!

Up the quality of your child's diet and add supplements to increase energy efficiency and diminish hypotonia. For specific information on supplements, always confer with a health care professional.