

Vitamin D for Good Bone Health

Vitamin D is necessary for strong bones and muscles. Without Vitamin D, our bodies cannot effectively absorb calcium, which is essential to good bone health.

Children who lack Vitamin D develop the condition called rickets, which causes bone weakness, bowed legs, and other skeletal deformities, such as stooped posture.

Today, doctors are seeing an increase in the number of children with rickets. This article focuses on the reasons for the increase and things parents can do to improve their children's bone health — as well as their own.

What is Vitamin D all about?

Vitamin D is really not a vitamin. Vitamins are special nutrients that the body needs but cannot make, so they must be obtained from what we eat or by supplements. Because our bodies can make Vitamin D in our skin when it is exposed to good sunlight, Vitamin D is considered a hormone.

How did we learn about Vitamin D and its importance?

When our ancestors stopped working in the fields and entered factories or schools, rickets began to be a problem—in fact, it was commonly seen during winter months, especially in northern locations.

In about 1920, people noticed that children who took cod liver oil rarely got rickets. This led to the discovery of Vitamin D and the beginning of Vitamin D supplementation of the diet.

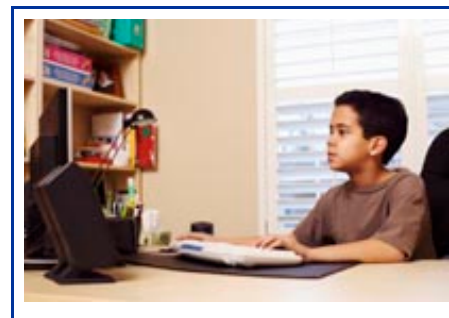
Why Is There a New Focus on Vitamin D Today?

Recent research has stressed the importance of Vitamin D — not just for good bone health, but also for possibly preventing chronic disease when we are older. Yet, many children today are not getting enough Vitamin D.

There are several reasons children today do not get enough Vitamin D. An important one is that very few foods contain substantial levels of the vitamin. Even the healthiest of diets will probably not provide a child with adequate Vitamin D.

Changes in lifestyle have also played a part. Several aspects of modern-day childhood impact Vitamin D intake:

- Children today spend hours in front of a computer or a television, rather than playing outdoors.
- Few children walk to school on a regular basis.
- Many popular sports, such as basketball, volleyball, and gymnastics, are indoor sports.
- Milk intake by children has steadily decreased in favor of soda or juice.



Children today spend a lot of time being indoors and inactive. It is well-documented that fitness levels among children are on the decline and obesity levels are rising. Children should have at least 35 to 60 minutes of physical activity each day. Without it, they cannot build healthy bodies (or healthy bones!).

In addition to affecting kids' fitness levels, spending so much time indoors has affected the amount of Vitamin D their bodies make. Our skin makes a lot of Vitamin D when we spend time in the sun. However, the American Academy of Dermatology cautions against overexposure from the sun or indoor tanning because ultraviolet (UV) radiation from the sun and tanning beds can lead to the development of skin cancer.



It is very important to protect our skin by using sunscreen when we are outdoors, and parents should apply sunscreen to their children when they play outside. Sunscreen does, however, block our skin's ability to make Vitamin D.

If a healthy diet and playing outside will not provide children with enough Vitamin D, then how do we make sure they get it?

The best way for today's children to safely get the Vitamin D their bodies need is to take Vitamin D supplements.

How much Vitamin D do we need?

Vitamin D is measured in units called "International Units," or IUs. According to the Institute of Medicine—Food and Nutrition Board, and the National Institutes of Health—Office of Dietary Supplements, the Recommended Daily Allowances for Vitamin D among children is:

- 400 IU/day for children aged 0-12 months
- 600 IU/day for children aged 1-18 years

This is the amount that seems to prevent rickets, not the amount that will result in the healthiest bones.

Recent research supports that children over age 5, adolescents, and adults needs at least 1000 IU per day for good health — depending on age, weight, and growth. Indeed, many people need much more than 1000 IU to keep Vitamin D levels in a good range.

What are food sources of Vitamin D?

Not many foods naturally contain Vitamin D — it is found in substantial levels only in fish.

Some foods have Vitamin D added to them ("fortification"). For example, milk is fortified, but an 8-ounce glass of milk provides only 100 IU of Vitamin D. Some other foods, like breakfast cereal, are fortified, but at very low levels. Eggs can have small amounts of Vitamin D if the chicken was fed the vitamin.

Other dairy products — such as yogurt and cheese — are typically not fortified with Vitamin D.

How do I make sure my child gets enough Vitamin D?

Taking a Vitamin D supplement is the most effective way for your child to get 1000 IU of Vitamin D every day. To get Vitamin D from food, your child would need to eat fish every day and drink 10 glasses of Vitamin D fortified milk each day. Most children do not do this, so the most practical way for children to get enough Vitamin D is to take a supplement, at least in the winter time.

What supplements should I give my children?

Children's multivitamins contain between 60 and 400 IU of Vitamin D. Taking several multivitamins each day to get more Vitamin D is not a good idea, because too much of other vitamins (such as Vitamin A) can be bad for bone.

Vitamin D is now readily available by itself in child-friendly forms, such as gummy vitamins or liquid. Unlike calcium supplements, which are not absorbed if taken in doses greater than 500 mg at one time, Vitamin D can be taken all at once, so it need be given only once daily.

Do some children have special Vitamin D requirements?

Some children need extra Vitamin D to maintain good bone health. These children should have their Vitamin D levels regularly checked, if possible. Low Vitamin D levels can be easily treated by your pediatrician.

Obese children. Heavier children require extra Vitamin D. This is because Vitamin D goes straight to body fat and accumulates there. The more fat tissue the body has, the less Vitamin D there is in the bloodstream where it is needed. So, obese children are prone to low Vitamin D levels and need extra Vitamin D intake.

Children who are prone to seizures. Medicines that are taken to prevent or treat seizures increase the body's need for Vitamin D, so children who take anti-seizure medicines must increase their daily Vitamin D intake.

Children with disabilities. Children who use wheelchairs or have chronic illnesses often do not play outside in the sun and should take Vitamin D.

How do doctors test Vitamin D levels?

The best way to know a person's Vitamin D status is to have a blood test which checks the level in the blood. It is important that the correct blood test is done: the "25 hydroxy Vitamin D test" shows the level in the blood from both diet and sunlight.

When your doctor knows the exact level of Vitamin D in your bloodstream, he or she can make a more accurate recommendation of how much Vitamin D to take.

A blood level less than 20 ng/mL can result in rickets, and more than 150 ng/mL can be harmful. Most experts suggest that blood levels between 40 and 70 ng/mL would not only prevent rickets, but result in good absorption of calcium for healthy bones.

Can we overdo Vitamin D?

Our skin cannot make too much Vitamin D — it stops when there is enough in the blood — but it is possible to overdose on Vitamin D supplements.

Because too much Vitamin D can be harmful, doses greater than 2000 IU/day should be taken cautiously, as advised by your doctor and based upon the results of blood tests.

Does Vitamin D do more than help us absorb calcium?

Vitamin D is important for good muscle health. People with very low Vitamin D blood levels may be more likely to experience muscle cramps, bone, or joint pain.

Studies suggest that older people who take Vitamin D seem to fall less often, probably due to better muscle function.

Vitamin D is very important in many aspects of our health. Children and adults alike should eat Vitamin D-rich foods, such as milk and fish, and take Vitamin D supplements to enjoy good bone health!



For More Information

If you found this article helpful, you may also be interested in Rickets ([topic.cfm?topic=A00577](http://orthoinfo.aaos.org/topic.cfm?topic=A00577)).

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Last reviewed: November 2016



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