



Vitamin D for Healthy Bones

Sharon Hoelscher Day and Vanessa A. Farrell

What is vitamin D?

Vitamin D is a nutrient required for good bone health. Vitamin D helps the body absorb calcium and keep normal calcium levels in the blood.

Children and adults need vitamin D to keep their bones strong and healthy. When people do not get enough vitamin D, they can lose bone and become at risk for breaking bones. This condition is called osteoporosis.

Two other conditions, different from osteoporosis, caused by a severe shortage of vitamin D in the body can make bones very soft. These conditions are called osteomalacia in adults and rickets in children.

Some research shows that not getting enough vitamin D may be linked to illnesses such as some cancers, diabetes, and heart disease.

How much vitamin D does a person need?

The amount of vitamin D people need changes with their age (Table 1).

Table 1. Recommended Intakes for Vitamin D

Life stage	Recommended Intake (IU/day)
Birth to 12 months	400
1 – 70 years old	600
>70 years old	800
Pregnant and Breastfeeding women	600

International Units=IU
Source: National Academy of Science (2010)

Taking too much vitamin D can lead to health problems. Table 2 shows the Tolerable Upper Intake Levels for vitamin D, which is the highest level of vitamin D that shows no bad health effects.

Table 2. Tolerable Upper Intake Levels for Vitamin D

Life stage	Tolerable Upper Intake level (IU/day)
Birth to 6 months	1000
6 to 12 months	1500
1 – 3 years	2500
4 – 8 years	3000
All other groups	4000

International Units=IU
Source: National Academy of Science (2010)

Where can a person get vitamin D?

1) Exposure of skin to sunlight

The body makes vitamin D when the skin is exposed to the sun. Most people meet their vitamin D needs by getting 10-15 minutes of sun exposure on their face and arms for two or three days a week. The amount of vitamin D the body makes due to sun exposure depends on the time of day, time of year, and where a person lives. Less vitamin D is made in the skin in the winter (less skin is exposed to the sun) and the farther north of the equator a person lives (the angle of the sun).

Low vitamin D levels are linked to low sun exposure, aging skin, and low maternal stores. People with low sun exposure include those who stay indoors, have dark skin tones, cover

their skin, and use sunscreen. Older adults (50+ years), cannot make as much vitamin D in their skin as younger people. And a fully breastfed infant past 6 months may have low levels of vitamin D because the mom's stores of vitamin D may be low.

2) Food and Beverages

There are very few foods that have vitamin D (Table 3).

Table 3. Food Sources of Vitamin D

Egg yolk, cooked, 1 large	41
Cereal, fortified, ¾ - 1 cup	40 or more
Liver, beef, cooked, 3.5 ounces	49
Orange juice, fortified with vitamin D, 1 cup	137
Milk, nonfat, reduced fat, and whole, fortified, 1 cup	115-124
Tuna fish, canned in water, 3 ounces	154
Sardine, canned in oil, 3.5 ounces	332
Salmon (sockeye), cooked, 3 ounces	447
Mackerel, cooked, 3 ounces	388
Source: U.S. Department of Agriculture	

3) Pills

If a person does not get enough vitamin D from the foods they eat or are not in the sun they may need to take a vitamin D pill.

Vitamin D pills come in two forms, vitamin D2 and vitamin D3. Both work well for bone health. A doctor should be asked before starting to take any new pills.

If a person thinks they are at risk for low vitamin D, they can talk to their doctor about checking their vitamin D levels.

Summary

Vitamin D is a key nutrient for bone health. Vitamin D can be made by the skin, is found in some foods, and may be taken in pill form. Getting enough vitamin D, calcium, and exercise will help a person have healthy bones.

Sources

Hollis BW. Short-term and long-term consequences and concerns regarding valid assessment of vitamin D deficiency: comparison of recent food supplementation and clinical guidance reports. [Review] *Curr Opin Clin Nutr Metab Care*. 14(6):598-604, 2011 Nov.

The Institute of Medicine www.iom.edu/vitaminD and Vitamin D: What You Need to Know, Purdue University, HHS 759-W: 11-2010.

National Academy of Sciences. Institute of Medicine. Food and Nutrition Board. Report Brief on New DRIs for calcium and vitamin D, revised in November 2010.

National Osteoporosis Foundation. Vitamin D and Bone Health. Available at: <http://nof.org>. Accessed April 2011.

Office of Supplements, National Institute of Health, <http://ods.od.nih.gov/factsheets/vitaminD/> Accessed April 2011.

U.S. Department of Agriculture, Agricultural Research Service. 2010. USDA National Database for Standard Reference, Release 23.



THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE & LIFE SCIENCES

Cooperative Extension

THE UNIVERSITY OF ARIZONA
COLLEGE OF AGRICULTURE AND LIFE SCIENCES
TUCSON, ARIZONA 85721

SHARON HOELSCHER DAY, M.A.

*Area Extension Agent, Family & Consumer Sciences Regional Specialist,
Department of Nutritional Sciences*

VANESSA A. FARRELL, PhD, RD

Associate in Extension, Department of Nutritional Sciences

CONTACT:

VANESSA A. FARRELL

stanford@email.arizona.edu

**This information has been reviewed
by University faculty.**

extension.arizona.edu/pubs/az1570-2017.pdf

Originally published: 2012

**Other titles from Arizona Cooperative Extension
can be found at:**

extension.arizona.edu/pubs

Any products, services or organizations that are mentioned, shown or indirectly implied in this publication do not imply endorsement by The University of Arizona.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Jeffrey C. Silvertooth, Associate Dean & Director, Extension & Economic Development, College of Agriculture Life Sciences, The University of Arizona.

The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities.