



Journey through Health: Bones

EXTENSION

April 2021

Janice Hermann
Extension Nutrition Specialist

Seung Eun Jung
Assistant Professor

Oklahoma Cooperative Extension Fact Sheets
are also available on our website at:
extension.okstate.edu

Age-Related Bone Changes

Aging is associated with a decline in bone mass. Throughout life, the bones are constantly changing. From birth to about age 20 to 30, the body builds bone mass faster than it breaks it down. After about age 40 to 50, the body starts to break down bone mass faster than it builds it. This is part of the natural aging process. Both men and women experience bone loss with age. However, after women experience menopause, bone is broken down at even a faster rate due to the loss of estrogen.

Loss of bone mass over time can result in the bones becoming porous, thin, and weaker. This can lead to increased risk of osteoporosis. Osteoporosis is a condition where the bones become so thin and weak they easily fracture or break. The bones that tend to break easily are in the spine, hip, and wrist. Osteoporosis is called a “silent disease.” Someone may not know their bones have been losing strength for years until they break or fracture a bone. Bone fractures, particularly of the hip, and the resulting complications can have a major role in decreased independence and quality of life.



Diet, Physical Activity and Bone Health

A healthful diet and regular physical activity can help maintain bone mass and prevent bone loss.

Diet. Bones are a calcium “bank” for the rest of the body. Even after growth stops, the bones are constantly being broken down and rebuilt. This means the need for calcium never ends. Bones release calcium when the body needs it and they absorb calcium to rebuild and strengthen themselves. If there is not enough calcium in the diet, the body will pull more calcium out of the bones than is put back. Over time, if too much calcium is pulled from the bones they will become porous, thin, and weak. In addition, absorption of calcium from the intestine tends to decrease with age. This is one reason the recommended intake for

calcium increases with age. By eating enough calcium rich foods, the body will not have to pull as much calcium from the bones.

Vitamin D helps the body to absorb and use calcium. However, the ability of the kidneys to convert vitamin D to its active form decreases with age. This is one reason the recommended intake for vitamin D increases with age.

In addition to calcium and vitamin D, the body needs many other nutrients to build and maintain healthy bones. These nutrients include vitamin C, vitamin K, phosphorous, zinc, copper, magnesium, fluoride, manganese and boron.

The role of multiple nutrients in bone health highlights the importance of a healthful diet including fruits, vegetables, low-fat dairy, whole grains and lean protein foods.

Further recommendations are to abstain from smoking and not consume alcohol in excess, which can increase bone loss.

Physical activity. Not being physically active can cause bone loss. Regular physical activity, particularly weight bearing activity, can help build and strengthen bones. Some weight-bearing activities are weight-lifting, walking, jogging, aerobics, dancing, hiking and racquet sports.

In addition to strengthening bones, regular physical activity can strengthen muscles and improve balance and flexibility. This can help prevent falls which can also lower the risk of breaking bones.

MyPlate Messages Promoting Bone Health

Several of the MyPlate messages can help promote bone health.

Build a Healthy Plate

- Make half your plate fruits and vegetables.
 - Choose a variety of colorful fruits and vegetables.
- Switch to skim or 1% milk.
- Make at least half your grains whole.
- Vary your protein choices.

Eat the Right Amount of Calories for You

- If you drink alcoholic beverages, do so sensibly.

Be Physically Active Your Way

- At least 150 to 300 minutes of moderate-intensity physical activity a week, or 75 to 150 minutes of vigorous-intensity physical activity, or an equivalent combination of moderate and vigorous-intensity physical activity.
 - If you cannot meet this guideline, be as physically active as your abilities and conditions will allow.
- Include muscle-strengthening activities that involve all major muscle groups on two or more days a week.
- Do activities that maintain or improve balance if you are at risk of falling.

Sources

Bernstein M, Luggen A.S. *Nutrition for the Older Adult*. Sudbury, MA: Jones and Bartlett publishers; 2010.

Brown JE. Nutrition in Older Adults. In: *Nutrition Through the Life Cycle* 4th ed. Belmont, CA: Wadsworth, Cengage Learning; 2011.

Chernoff R. *Geriatric Nutrition*, 3rd ed. Sudbury, MA: Jones and Bartlett publishers; 2006.

National Institute on Aging. AgePage: Osteoporosis: The Bone Thief.

Rolfes SR, Pinna K, Whitney E. *Understanding Normal and Clinical Nutrition*, 7th ed. Thomson/Wadsworth Publishing Co., Belmont, CA., 2008.

U.S. Department of Agriculture and U.S. Department of Health and Human Services. Let's eat for the health of it. 2011. United States Department of Agriculture. *Dietary Guidelines for Americans 2020-2025*.

United States Department of Agriculture. ChooseMyPlate.gov. Accessed at www.choosemyplate.gov

United States Department of Health and Human Services. 2018. *Physical Activity Guidelines For Americans*. 2nd ed.

Oklahoma State University, as an equal opportunity employer, complies with all applicable federal and state laws regarding non-discrimination and affirmative action. Oklahoma State University is committed to a policy of equal opportunity for all individuals and does not discriminate based on race, religion, age, sex, color, national origin, marital status, sexual orientation, gender identity/ expression, disability, or veteran status with regard to employment, educational programs and activities, and/or admissions. For more information, visit <https://eeo.okstate.edu>.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 20 cents per copy. Revised 04/2021 GH.