

EATING FOR BONE HEALTH

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Osteoporosis

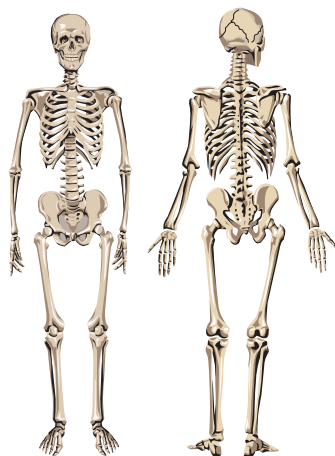
Osteoporosis is a silent disease that weakens bones, making them fragile and more likely to fracture or break. Bone fractures occur mainly in the spine, hip, and wrist. Osteoporosis risk factors that cannot be changed are:

- Being female
- Postmenopausal
- Having a small skeleton
- Being Caucasian/Asian
- Family history of osteoporosis and fractures
- Advanced age

Osteoporosis risk factors that can be changed:

- Medications with negative affects on bone
- Inadequate or excessive intake of nutrients
- Sedentary – no weight bearing activity
- Excessive exercise
- Low body weight
- Cigarette smoking
- High level of alcohol consumption

It is never too late to make positive changes to your lifestyle and eating habits to help prevent osteoporosis. One of the easiest ways to reduce your risk of osteoporosis, is to consume adequate amounts of vitamin D and calcium in your daily diet.



Vitamin D

Adequate vitamin D helps increase the absorption of calcium. Vitamin D is made in the skin after exposure to sunlight. It only requires 10 - 15 minutes of sun exposure three times a week on the face, hands and arms to meet vitamin D needs. Sunscreens will decrease the formation of vitamin D in the skin. If you regularly use sunscreens, you will need to get vitamin D from your diet or take a supplement. Good dietary sources of vitamin D are fortified foods, fortified milk, egg yolks, liver, sardines and salmon. If a vitamin D supplement is necessary, follow these guidelines:

The current recommendation of the amount of vitamin D an individual should not consume more than is 4000 IU a day. It is difficult to get too much vitamin D unless a person is taking a prescription dose of the vitamin. Very high amounts of vitamin D can be harmful and may result in kidney stones and other kidney problems.

Recommended Vitamin D Intakes	
Age	International Units (IU)/Day
1 - 70 years of age	600
>70 years of age	800
Pregnancy and Lactation 14 - 50 years of age	600

Source: Institute of Medicine, National Academy of Science, 2011.

How Much Calcium Do You Need Each Day?

Recommended Calcium Intakes		
Age	Milligram (mg) per day	Tolerable Upper Intake Level (UL) mg/day
Infants 0-6 months	200	1,000
Infants 6-12 months	260	1,500
Children 1-3 years old	700	2,500
Children 4-8 years old	1,000	2,500
Adolescent 9-18 years old	1,300	3,000
Adult Males and Females 19-50 years old	1,000	2,500
Adult Males 51-70 years old	1,000	2,000
Adult Females 51-70 years old	1,200	2,000
Adults >70 years old	1,200	2,000
Pregnancy and Lactation		
14-18 years old	1,300	3,000
19-50 years old	1,000	2,500

Source: Institute of Medicine, National Academy of Science, 2011.

Calcium

Adequate calcium intake throughout life is important to maximize calcium storage in the bones during the growing years and to minimize bone loss in later years. It is recommended that an individual does not consume more than the tolerable upper intake level of calcium per day.

Too much calcium may not be a good thing. Consuming too much calcium may lead to dizziness, kidney problems, constipation, fatigue, and poor absorption of iron, zinc and other nutrients.

If you cannot get enough calcium from what you eat and drink, supplements are a safe alternative. When taking a calcium supplement, remember, the body can only absorb about 500 mg of calcium at one time. This amount of calcium should be taken 4 to 6 hours apart.

Start with Foods

Increasing your daily calcium intake is best accomplished by eating foods that are good sources of calcium (provide at least 100 mg of calcium per standard serving size). Try to get 3 to 4 servings of calcium rich foods a day. By eating a variety of foods from the MyPyramid.gov food groups, you can meet your daily calcium requirements. Some examples of high calcium foods from each of the MyPyramid.gov food groups are:

Grain Group:

spoonbread, English muffin, calcium fortified cereal, and waffles.

Vegetables Group:

broccoli, kale, and beet greens

Fruits Group:

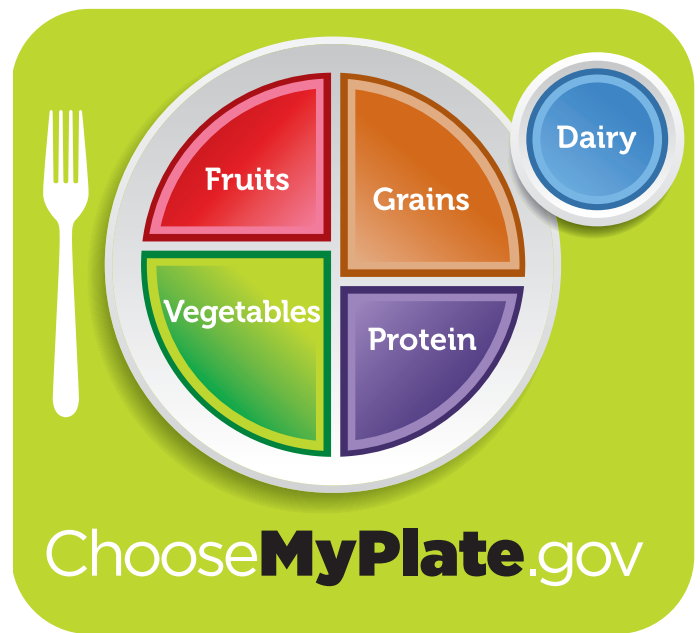
figs, and calcium fortified fruit juices

Milk Group:

milk and milk products

Meat and Beans Group:

tofu products fortified with calcium, sardines and canned salmon with bones, and almonds



EXAMPLES OF HOW TO MEET YOUR DAILY CALCIUM NEEDS FROM FOOD

Example 1	Calories	Calcium (mg)
Orange juice, fortified, 1 cup	110	500
Fat-free milk, 1 cup	80	300
Cream of tomato soup, 1 cup	100	150
Cottage cheese, 1%, 1/3 cup	50	40
Waffles, 8 grain, 2 each	180	100
Pudding, chocolate, ½ cup	150	150
TOTAL	670	1240

Example 2	Calories	Calcium (mg)
Salmon w/bones, 3 oz*	130	200
Beans, navy, 1 cup	250	150
American Cheese, light, 1 oz	50	200
Combread, 2"X2" square	170	150
Potato, sweet, 1 medium	100	40
Greens, Turnip, 2/3 cup	20	150
Orange, 1 large	90	80
Almonds, dry roasted, 2 oz	340	150
Ice cream, chocolate, ½cup	150	80
TOTAL	1300	1200

Example 3	Calories	Calcium (mg)
Soymilk, calcium fortified, 1 cup	130	200
Cereal, Total™, 3/4 cup	100	1000
Spaghetti, calcium fortified, 2/3 cup*	210	300
Broccoli, ½ cup	10	20
TOTAL	450	1520

Example 4	Calories	Calcium (mg)
Fat-free milk, 3 cups	250	900
Yogurt, plain, fat-free, 1 cup	100	300
TOTAL	350	1200

How to Find the Calcium Content of a Labeled Food

The calcium content of a food can be found using the Nutrition Facts Panel of the food label. On the Vanilla Lowfat Yogurt food label, locate calcium on the Nutrition Fact Panel (the highlighted portion). This is the Percent Daily Value of calcium for an 8 ounce serving of Vanilla Lowfat Yogurt.

To find the mg of calcium in a standard serving of a food, drop the % sign from the Percent Daily Value and add a zero. For example: 40% Daily Value = 400 mg. This is the amount of calcium in an 8 oz serving of Vanilla Low fat Yogurt. *Note: this only works for finding the mg of calcium in a serving.*

Nutrition Facts Panel

Vanilla Lowfat Yogurt

Nutrition Facts			
Serving Size 8 oz (277g)			
Serving Per Container			
Amount Per Serving			
Calories 250	Calories from Fat 30		
% Daily Value*			
Total Fat 3g	2%		
Saturated Fat 2g	10%		
Cholesterol 15mg	5%		
Sodium 160mg	7%		
Total Carbohydrate 36g	12%		
Dietary Fiber 0g	0%		
Sugar 34g			
Protein 10g			
Vitamin A 2%	Vitamin C 4%		
Calcium 40%	Iron 0%		
*Percentage Daily Values are based on a 2,000 calorie diet.			
Your daily values may be higher or lower depending on your calorie needs:			
	Calories	2,000	2,500
Total Fat	Less than	65g	80g
Saturated Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400 mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g
Calories per gram:			
Fat 9	•	Carbohydrate 4	• Protein 4

Reference: The Food Processor® Version 10.2 and manufacture's labels. Some inconsistencies may occur because all figures have been rounded.

Top 10 tips for Increasing Calcium in Your Diet

- Purchase and eat foods labeled “high,” “rich in,” “excellent source,” or “good source” of calcium.
- Eat or drink 3 servings of reduced-fat milk products daily.
- Use reduced-fat cheeses as toppings and snacks.
- Add reduced-fat milk to your coffee or tea.
- Substitute reduced fat yogurt or milk for water in pancakes.
- Use reduced-fat yogurt in place of mayonnaise in salad dressings and dips.
- Fortify your foods with calcium by adding nonfat powdered milk to a variety of foods such as meat loaf, sauces, gravies, soups, stuffings, casseroles, blended beverages, puddings, breads, cookies, brownies, mashed potatoes, milk, cooked cereal, and scrambled eggs.
- Eat more vegetables that are good sources of calcium such as beet, mustard, and turnip greens.
- Use calcium fortified tofu in meatloaf, lasagna and desserts to replace part or all of the meat or cheese.
- Buy products fortified with calcium.

The inserts provide recipes for foods that can help you get the calcium you need.

Additional Resources on Nutrition and Bone Health

Organizations & Websites

National Osteoporosis Foundation

1232 22nd St., N.W.
Washington, DC 20037
<http://www.nof.org>
or 1-202-223-2226

National Dairy Council

www.nationaldairyCouncil.org/NationalDairyCouncil
3030 Airport Road
LaCrosse, WI 54603
1-800-426-8271

Dairy Council of Arizona

PO Box 26877
Tempe, AZ 85285
480-966-7211

Arizona Osteoporosis Coalition

www.fitbones.org
PO Box 6776
Chandler, AZ 85246
602-749-1008

Bone Builders

www.bonebuilders.org
The University of Arizona
Maricopa County Cooperative Extension
4341 East Broadway Road
Phoenix, AZ 85040
602-470-8086 Ext. 316

National Institutes of Health - Osteoporosis & Related Bone Diseases National Resource Center

http://www.niams.nih.gov/Health_Info/Bone/
1-800-624-BONE

Nutrition, Exercise & Wellness

University of Arizona, College of Agriculture & Life Sciences, Cooperative Extension, Department of Nutritional Sciences
<http://ag.arizona.edu/nsc/new>
www.whymilk.com - calcium information and recipes

Publications

Misner S, Farrell V. *Osteoporosis*. Tucson, AZ: University of Arizona Cooperative Extension; 2011. Posted on the College of Agriculture & Life Sciences, Cooperative Extension Website and available for download at: <http://ag.arizona.edu/pubs/health/az9712.pdf>

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Lohman T., Going S., Houtkooper L., Melcalfe L., Antoniotti-Guido T., Stanford V. *The Best Book Exercise Program for Osteoporosis Prevention*, Second Edition. DSWFitness: Tucson, AZ: 2008. <http://cals.arizona.edu/cpan/>

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RECIPES

CHEESE AND VEGETABLE PASTA

1 12-ounce can evaporated skim milk
4 teaspoons all-purpose flour
1/4 teaspoon salt
1/8 teaspoon pepper
1/8 teaspoon ground nutmeg
3/4 cup shredded Jarlsberg or Swiss cheese
1 - 7.25-ounce jar roasted red sweet peppers, drained and chopped
10 ounces pasta (fettuccine, rotini, or bow ties)
1 16-ounce package (4 cups) loose-pack frozen mixed vegetables, such as Italian or California blend
1/4 cup toasted sliced almonds (optional)

In a screw-top jar shake together milk, flour, salt, pepper, and nutmeg. Pour into a saucepan. Cook and stir over medium heat until bubbly. Cook and stir 1 minute more. Remove from heat; stir in cheese until just melted. Stir in roasted sweet peppers.

Meanwhile, in a 4-quart Dutch oven or large pot cook pasta according to package directions, adding vegetables the last 5 minutes of cooking time; drain. Place pasta mixture on a serving platter; spoon cheese mixture on top. Sprinkle with almonds, if desired. Makes 4 main course servings.

Nutrition Information per Serving:

Calories	480
Carbohydrates	79 gm
Fat	7 gm
Protein	25 gm
Sodium	530 mg
Fiber	7 gm
Calcium	500 mg

COTTAGE MUFFINS

2 cups all-purpose flour
1 cup yellow cornmeal
4 teaspoons baking powder
1/4 teaspoon salt
3 Tablespoons sugar
2 eggs
1 cup 1% buttermilk
1 cup low fat cottage cheese
1/3 cup salad oil

Pre-heat oven to 400°F. In a large bowl, combine flour, cornmeal, baking powder, salt, and sugar; mix well. In blender or food processor, place eggs, buttermilk, cottage cheese and salad oil. Blend until smooth. Make a well in center of flour mixture and add liquid ingredients all at once. Stir with a fork just enough to blend ingredients. Spoon into two well-greased muffin pans, filling two-thirds full. Bake until golden brown (about 20 minutes). Yield 24 muffins.

Nutrition Information per Serving:

Calories	220
Carbohydrates	32 gm
Fat	7 gm
Protein	7 gm
Sodium	340 mg
Fiber	1 gm
Calcium	100 mg

CHEF'S SALMON SALAD

1 lb. canned red sockeye salmon
6 cups salad greens (romaine, spinach, Bibb lettuce)
2 hard cooked eggs, quartered
1 large tomato, wedged
½ cucumber, sliced
¼ red onion, sliced
4 Lemon wedges, 4 sprigs fresh parsley
8 teaspoons low-calorie dressing

Drain salmon well; place in medium size bowl. Remove visible salmon skin and discard. Crush salmon bones with your fingers and add back to the bowl. Chunk salmon into large pieces with a fork. Line one large or individual salad bowls with salad greens. On top of greens make an arrangement of eggs, tomatoes, cucumbers and salmon. Top with onion rings, parsley leaves and lemon. Serve with your favorite French or mayonnaise-type dressing. Yield: 4 servings.

Nutrition Information per Serving:

Calories	280
Carbohydrates	8 gm
Fat	16 gm
Protein	28 gm
Sodium	610 mg
Fiber	2 gm
Calcium	250 mg

STRAWBERRY SMOOTHIE

1½ cups strawberries
8 oz vanilla low fat yogurt
¾ cup skim milk
1 Tablespoon brown sugar
⅛ teaspoon cinnamon

In a blender container combine yogurt, strawberries, milk, brown sugar, and cinnamon. Cover and blend till smooth. If desired, garnish each glass with a whole strawberry. Makes 4 (6-ounce) servings.

Nutrition Information per Serving:

Calories	110
Carbohydrates	21 gm
Fat	1.5 gm
Protein	4 gm
Sodium	55 mg
Fiber	1 gm
Calcium	150 mg

CREAMY POTATO KALE CASSEROLE

2 Tbsp all-purpose flour
1 ½ cup skim milk, or unsweetened soy milk
¾ cup cheddar cheese, lowfat, sharp, shredded*
3 medium Idaho potatoes, peeled and sliced 1/8 inch-thick
1 Tbsp extra-virgin olive oil
2 cloves garlic, chopped
1 pound kale, washed, coarse stems removed and chopped
½ tsp sea salt
¼ tsp red pepper flakes
2 Tbsp grated parmesan cheese

Preheat oven 350 degrees. Spoon flour into a medium-sized, heavy-duty saucepan. Gradually whisk in milk until blended. Bring to a boil. Cook over medium heat 5-8 minutes, or until thickened. Remove from heat and stir until cheese is melted. Place potato slices in a separate saucepan with enough lightly salted water to cover, bring to a boil and cook for 5-7 minutes. Drain potatoes in colander. Return saucepan to medium heat and add olive oil. Sauté garlic 1 minute. Add kale, salt, and red pepper flakes. Cover and cook over medium heat until kale wilts. Drain off accumulated liquid.

Lightly spray an 8x8 or 7x9-inch baking dish with olive oil spray. Arrange 1/3 of potatoes on the bottom; top with half of the kale mixture, then 1/3 of the cheese mixture. Repeat in the following order: potatoes, kale, cheese, potatoes, kale, cheese. Sprinkle the top with parmesan cheese. Bake in preheated oven for approximately 35 min, or until golden brown on top and kale is tender. Serves 8

Nutrition Information per Serving:

Calories	200
Carbohydrates	29 gm
Fat	51 gm
Protein	10 gm
Sodium	214 mg
Fiber	2.4 gm
Calcium	270 mg

*Low-fat soy cheese can be substituted for cheddar if desired

Source: © The Regents of the University of Michigan, Ann Arbor, Michigan 48109.

TURKEY ENCHILADAS

2 cups cooked turkey, shredded
2 10 1/2 oz cans of 98% fat free condensed cream of mushroom soup
16 ounces fat free sour cream
4 ounces diced green chili
1 cup diced onion
1 cup nonfat milk
16 corn tortillas
2 cups low fat cheese, shredded

Preheat oven to 350o F. Lightly coat a 13- by 9-inch baking dish with vegetable cooking spray. In a large bowl combine turkey, soup, sour cream, chilies, onion and milk. Heat each tortilla in microwave for a few seconds just to soften. Spoon about 3 tablespoons of turkey filling onto softened tortilla. Top with about 1 tablespoon shredded cheese. Roll. Place seam-side down in the baking dish. Fill remaining tortillas. Spoon any leftover filling over the top of enchiladas. Sprinkle with cheese. Bake uncovered 35 to 45 minutes or until bubbly and cheese is melted. Yield: 8 servings.

Nutrition Information per Serving:

Calories	340
Carbohydrates	43 gm
Fat	7 gm
Protein	26 gm
Sodium	800 mg
Fiber	4 gm
Calcium	350 mg

Nutrient information calculated using, The Food Processor® Version 10.2. Some inconsistencies may occur because all figures have been rounded.



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