PSST!

Plan to Stay in Shape Today

HEALTHY BONES

A guide to preventing osteoporosis and reducing your risk of fractures

familiprix

Your bones are important because they help you move, walk, and stand upright as well as protect your vital organs. When they are strong and healthy, they are able to withstand trauma.

Genetics, gender, and age have an impact on your skeleton, and there's nothing much you can do about that aspect. For example, women generally have smaller bones than men. While these factors are beyond your control, this guide will show you what an important role you can play in developing and maintaining your bone mass.

This guide will help you learn more about strategies for healthy bones.

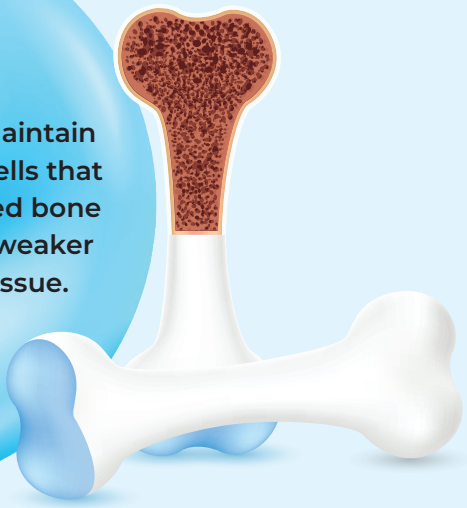
In this guide

Your bones are alive!

Your bones evolve and renew themselves throughout your life, so it's never too early or too late to take care of them.

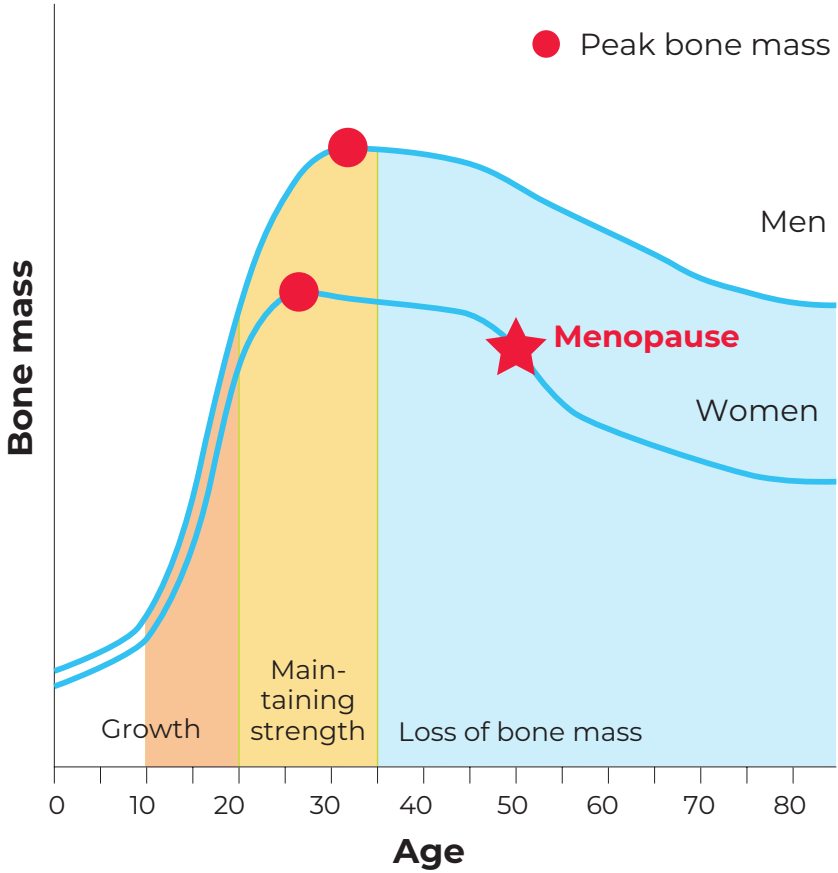
Childhood and adolescence are major periods of bone formation. The skeleton grows and becomes increasingly solid: this is the period of growth and acquisition of bone capital. Bone mass reaches its peak in the late twenties. The strength of your bones later in life depends on your bone mass at this time.

As you age, your bones maintain their strength thanks to cells that continually repair damaged bone tissue and replace older, weaker bones with new bone tissue.



After age 35, this bone restoration and formation process is less efficient, and your bone mass decreases. Your bones gradually become more fragile and brittle. During menopause, women experience an accelerated rate of bone loss due to a fall in the levels of female hormones (estrogen) that contribute to bone health.

BONE MASS DEVELOPMENT AT DIFFERENT AGES



Calcium

Just about every cell in your body relies on calcium to function. If you don't get enough in your diet, your cells will take the calcium they need from your bones, causing them to become more fragile.

Teenagers need a lot of calcium because their bones are growing. A calcium-rich diet during this time increases their chances of reaching peak bone mass.

Once bone growth has been completed, it is essential to continue to consume calcium; this will help to repair your bones and ensure healthy new bone tissue is formed. An adequate daily intake is even thought to slow bone loss associated with aging. Dairy products such as milk, cheese, and yogurt are the main and best sources of calcium because they contain high amounts of calcium that are easily absorbed by the body.

Choose dairy products that are low in saturated fat, sodium and sugars.

Low-fat products contain just as much calcium as others.

HOW MUCH CALCIUM SHOULD YOU CONSUME EACH DAY?

Age	Daily calcium intake*
4 to 8 years	1,000 mg
9 to 18 years	1,300 mg
19 to 50 years	1,000 mg
51 to 70 years	Men: 1,000 mg Women: 1,200 mg
Over age 70	1,200 mg
Pregnant or breastfeeding women	14 to 18 years: 1,300 mg 19 to 50 years: 1,000 mg

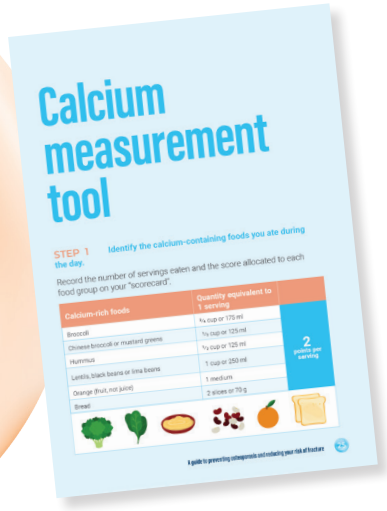
* It is best to meet these daily calcium needs through diet. Supplements may be taken as needed.

Source: Health Canada

Want to find out if you are getting enough calcium?

Use the calculator we have included at the end of this guide.

Don't seem to be meeting your daily calcium requirement? Talk about it with your healthcare professional.



Did you say lactose intolerance?

Lactose is the main sugar in milk. Some people have difficulty digesting it because they lack or have insufficient quantities of **lactase**. Lactase is an enzyme (a protein that facilitates certain chemical reactions) typically found in the intestine that helps digest lactose. Without this enzyme, lactose remains in the intestine and is eventually broken down by bacteria, leading to symptoms such as diarrhea, flatulence and abdominal discomfort.

If you can't drink milk, one of the main sources of calcium, you may lack this essential nutrient for good bone health and need to get it from other food sources.

Here are a few examples of calcium sources other than milk:

- **Canned sardines and salmon with bones**
- **Soybeans**
- **Calcium-enriched orange juice or soy beverages**

Because symptoms often depend on how much lactose is ingested, you can also try consuming smaller amounts with each meal. Firm cheeses and yogurts are generally well tolerated. In addition, there are over-the-counter products you can take for better absorption when consuming lactose-based foods. Think you suffer from lactose intolerance? Consult your healthcare professional for advice on the right steps to take.

Allergy or intolerance?

A food intolerance is not the same as a food allergy. As mentioned previously, lactose intolerance is caused by difficulty digesting the sugar in milk, called lactose.

The symptoms of **lactose intolerance** are limited to the digestive system:

- **Gas**
- **Bloating**
- **Diarrhea**
- **Abdominal pain**

An **allergy**, on the other hand, is an entirely different phenomenon that results in an abnormal immune reaction to the proteins contained in milk.

Allergy symptoms affect several systems, including:

- **The digestive system (nausea, diarrhea, abdominal cramping)**
- **Skin (itching, swelling, redness)**
- **Respiratory tract (nasal congestion, cough, difficulty breathing), but can even lead to anaphylaxis (a serious allergic reaction)**

Did you know...

A wide range of lactose-free dairy products is available in supermarkets.

Read labels carefully.

Vitamin D

Vitamin D is essential for healthy bones and teeth. It promotes the absorption of dietary calcium and, therefore, plays an important role in skeletal development.

The skin is capable of synthesizing vitamin D when exposed to the sun. Exposing your arms and face without sun protection for a period of 10 to 15 minutes between 11 a.m. and 2 p.m., two or three times a week, can provide around 80 to 90% of the vitamin D required for cell function.

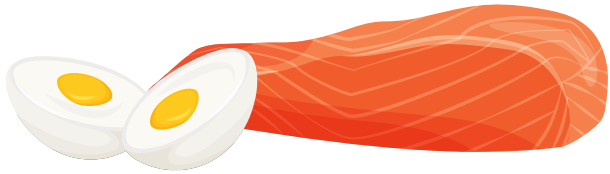
WARNING!

Prolonged exposure to the sun without sunscreen is controversial and generally not recommended because of the risk of skin cancer.

In Canada, during the winter months, sunlight does not contain enough UV rays to meet daily vitamin D needs.

Furthermore, the ability to produce vitamin D through sun exposure deteriorates with age.

In Canada, all cow's milk and margarine must be fortified with vitamin D. Although cheese and yogurt may be prepared from vitamin D-fortified milk, the final product does not contain as much vitamin D as milk itself. The only natural sources of vitamin D in the Canadian food supply are **fatty fish** and **egg yolk**.



FOODS CONTAINING VITAMIN D

Food	Vitamin D intake
A glass of milk (250 ml)	100 IU
A glass of fortified soy beverage (250 ml)	80 IU
A serving of fatty fish (e.g.: salmon, tuna)	200 to 400 IU
An egg	80 IU

However, these foods are low in vitamin D, so even with a healthy and balanced diet, it can be difficult to get the recommended amount of vitamin D each day. Since few foods contain vitamin D, sunlight is not a safe and reliable source, and cutaneous production of vitamin D declines with age.

Note that this recommendation applies only to those 19 years and over. Your healthcare professional will be able to provide information on the daily vitamin D needs of children and adolescents under age 19 and determine whether a supplement is necessary.

RECOMMENDED VITAMIN D INTAKE

Age	Daily vitamin D Intake
19 to 50 years*	400 to 1,000 IU
Over age 50	800 to 2,000 IU

* For individuals who do not have osteoporosis or a health condition affecting vitamin D absorption.

Source: Osteoporosis Canada

DID YOU KNOW THAT CERTAIN LIFESTYLE CHOICES CAN AFFECT YOUR BONE HEALTH?

Because **caffeine** consumption increases calcium loss, it may weaken bones. It is therefore best to limit your daily intake of coffee to three caffeinated beverages a day (cola, hot chocolate, coffee, tea).

Smoking can also lead to loss of bone mass. Various tools are available to help you quit smoking. Talk about it with your healthcare professional.

Regular consumption of three or more **alcoholic** drinks a day* promotes the development of osteoporosis by reducing bone formation and calcium absorption. Alcohol consumption can also increase the risk of falls. Abstinence is the best course, but moderation is also a good option.

Salt (sodium) increases the excretion of calcium by the kidneys. Avoid adding salt to your food and eating salty meals to ensure you do not exceed the maximum daily intake of 2,300 mg for people 14 and over.

* A consumption equivalent to 341 ml or 12 ounces of beer, 142 ml or 5 ounces of wine or 43 ml or 1.5 ounces of 40% alcohol spirits.

You have to be active to have healthy bones

Bones adapt to the demands placed upon them. When they are highly stimulated by physical activity, they respond by taking up more calcium and accelerating the formation of new bone tissue. Just as muscles increase in size when used, this process also increases bone strength. On the other hand, if your bones are continually at rest, bone tissue deteriorates, and calcium content decreases. So, the more you move, the stronger your bones will be!

Not all activities have the same impact on bones

Activities that exert force or pressure on the bone structure are the most beneficial for your bone health. These are weight-bearing or muscle-strengthening exercises. Running and repeated jumping exert force on the bones of the legs, hips, and vertebrae, while muscle contraction exerts force on the bone by pulling on the bony attachments.

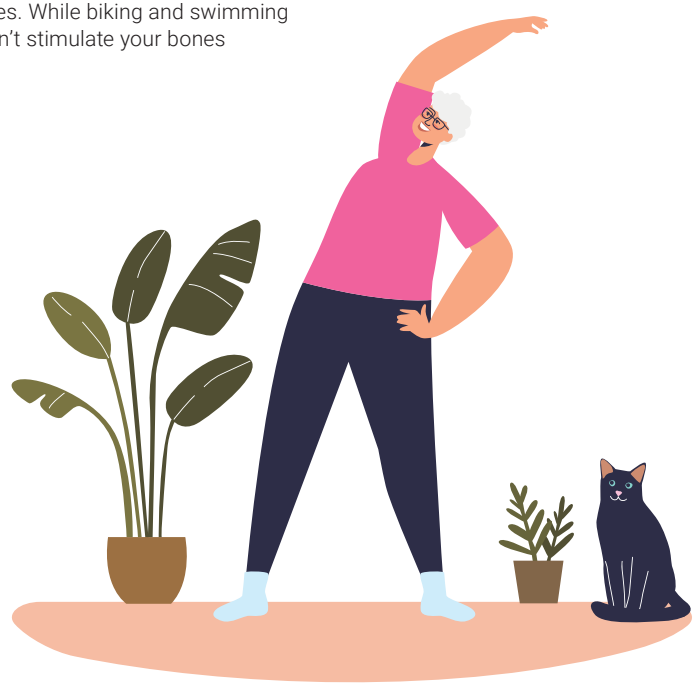
During a person's **growth period**, these types of activities are especially important and must be practiced daily since it is during this time that bones respond best to exercise. The objective is to reach the highest possible peak bone mass. It is vital to encourage young people to become more active.

As an adult, practicing these types of activities will help maintain bone strength and delay or slow bone loss. When the bones become more fragile, it is preferable to gradually limit activities with a high risk of fractures (e.g.: hockey with body checking) and do more exercise that develops muscle strength, balance, reflexes, and flexibility, in order to prevent falls. Before starting or stopping a sport or activity that interests you, discuss the risks and benefits with your health-care professional.

Examples of physical activities that improve bone health*	
Activities that exert force or pressure on the bone structure	• Jumping rope • Jogging • Basketball, volleyball, soccer • Racket sports • Aerobics • Weight training (can be introduced gradually during adolescence under the supervision of an expert)
Activities that develop balance, reflexes and flexibility	• Yoga, tai chi, cross-country skiing, Swiss ball exercises, stretching

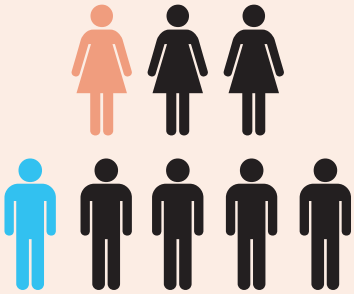
* Frequent, regular exercise is necessary to have a beneficial effect on bones. While biking and swimming will keep you fit, they don't stimulate your bones mechanically.

Source: Kino Québec



What is osteoporosis?

Osteoporosis is a common disease. It is characterized by loss of bone mass. Over time, the bone structure becomes more porous and more fragile, increasing the risk of fracture, particularly of the hip, wrist, shoulder, and spine.



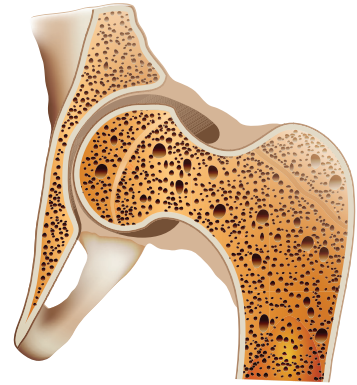
Did you know...

At least one in three women and one in five men will experience an osteoporotic fracture in their lifetime.

Loss of bone mass is a normal part of the aging process. However, in the case of osteoporosis, the bones break down faster than usual. In addition to fractures, osteoporosis may cause pain, height loss, curvature of the back, decreased independence and mobility, and death—which can result from complications following hip fracture.

NORMAL BONE

BONE WITH OSTEOPOROSIS



Osteoporosis or osteoarthritis?

Osteoporosis is often confused with osteoarthritis, a form of **arthritis** characterized by a breakdown of the cartilage protecting the tips of bones. This deterioration of the cartilage may then cause pain, inflammation, and even joint deformity. Osteoporosis, on the other hand, is characterized by a breakdown of bone mass that increases the risk of fracture. Osteoporosis is a **silent disease** because it is usually asymptomatic until the first fracture occurs.

What is arthritis?

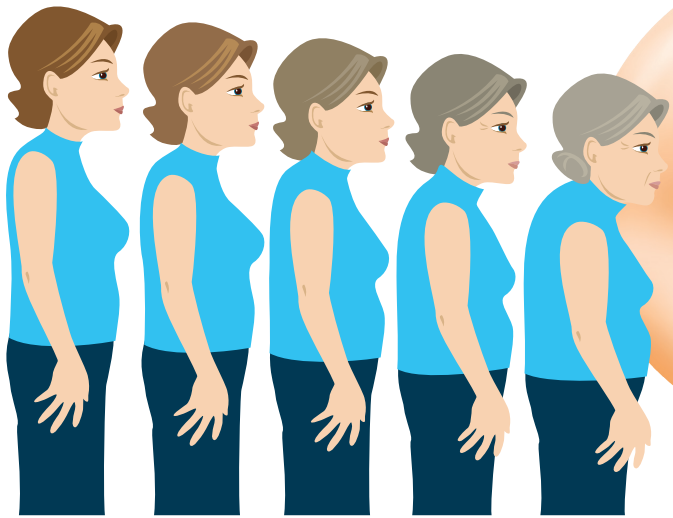
The word *"arthritis"* is derived from the Greek *"arthro"* (joint) and *"itis"* (inflammation). The term means "swelling of one or more joints," and is used to refer to a range of disorders that cause pain in the musculoskeletal system (joints, ligaments, bones, tendons, etc.).

Are you at risk of osteoporosis?

On the next page, you'll find a list of some of the risk factors for osteoporosis and fractures. Depending on these factors, your age, and an assessment of your overall health, your doctor may recommend a bone mineral density (BMD) test. The test takes 10 to 20 minutes, is painless, and measures the amount of light that passes through your bones, making it possible to determine whether you have osteoporosis.

Osteoporosis Canada recommends BMD screening for women and men age 65 and over. Those aged 50 to 64 with certain risk factors should also be tested.

In some cases, your healthcare professional may prescribe this test before age 50.



If you have lost 4 cm or more (about 1.5 inches) in height since 25, or 6 cm (about 2.5 inches) for people over 60, it may be a sign of osteoporosis.

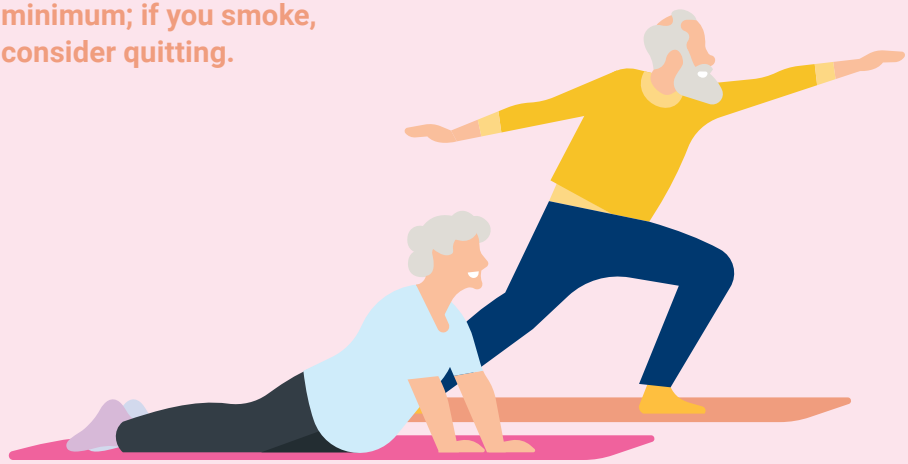
Risk factors

- [ ] Age 65 and older
- [ ] Vertebral compression or fracture
- [ ] Fracture with minimal trauma after age 40
- [ ] Hip fracture of a parent
- [ ] Taking cortisone pills for more than three months
- [ ] Menopause before age 45
- [ ] Low testosterone (in men)
- [ ] Loss of menstrual periods for several months (reasons other than pregnancy)
- [ ] Disease affecting nutrient absorption (e.g.: celiac disease or Crohn's disease)
- [ ] Smoking
- [ ] Low body weight (less than 60 kg (132 lb.) or significant weight loss (>10% below weight at age 25)
- [ ] Certain diseases: rheumatoid arthritis, chronic obstructive pulmonary diseases (COPDs)
- [ ] Lack of physical exercise
- [ ] Calcium-poor diet since childhood

Preventing fractures

Not everyone who has osteoporosis is prone to fractures. But these two problems often go hand-in-hand. If you have osteoporosis, your objective should be to prevent fractures, which weaken bones and may have other negative health repercussions. As mentioned in this guide, healthy lifestyle choices play an important role:

- **Nutrition: Maintain a balanced diet with adequate calcium and vitamin D intake.**
- **Exercise: Regularly perform exercises to work on your strength, balance, and flexibility. WARNING: Make sure the exercises you choose are suited to your fitness level.**
- **Lifestyle choices: Keep alcohol and caffeine consumption to a minimum; if you smoke, consider quitting.**



Preventing falls!

The risk of bone fracture is closely tied to the risk of falls. Seniors fall much more frequently than younger people: close to 30% of seniors fall at least once a year, and 4% of these falls lead to injury.

Certain medications can increase the risk of falls. You should always consult your health professional to ensure your medications are well-suited to your situation. Other risk factors include age, balance and mobility problems, impaired vision, loss of muscle strength, and cognitive difficulties. Here are a few tips to reduce the risk of falls in your daily life:

- **Avoid leaning forward when lifting something. Instead, bend your knees and keep your back straight. And don't be afraid to ask for help.**
- **Avoid physical activity that carries the risk of injuries, or that may involve spinal cord impacts.**
- **Change position gradually when moving(E.g.: when you get out of bed or into your car).**
- **Don't try to speed things along by moving more quickly. Doing so increases the risk of dangerous maneuvers and injury. Take your time!**
- **Keep your environment free of unnecessary clutter, to avoid tripping.**
- **If you have balance problems, always keep a mobility aid on hand in case you lose your balance.**

In order to limit fractures, it is necessary to adopt fall-prevention strategies.

- **If you have a vision impairment, always make sure your glasses are properly adjusted and wear them at all times.**
- **Stay away from very crowded places, where you may be bumped or pushed.**

If you have osteoporosis or are at risk of an osteoporotic fracture, there are now many treatments available to help you reduce your risk of fracture. Some can increase bone mass others slow bone loss. You can maximize the efficacy of these treatments by making sure you get enough calcium and vitamin D every day. Even if you've been diagnosed with osteoporosis, maintain your physical activities. By staying active, you'll slow bone loss, maintain your motor skills, and reduce the risk of falls or fractures, because you'll be stronger on your feet.

Whatever your age, investing in your bone health is a must. Each period of bone mass development is influenced by healthy lifestyle habits. Physical activity, just like a calcium-rich diet and vitamin D supplementation, helps build bone mass and prevent bone loss.

It's never too early or too late to start looking after your bones!

Calcium measurement tool

STEP 1 **Identify the calcium-containing foods you ate during the day.**

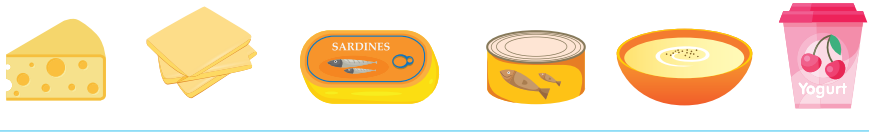
Record the number of servings eaten and the score allocated to each food group on your "scorecard."

Calcium-rich foods	Quantity equivalent to 1 serving	
Broccoli	3/4 cup or 175 ml	**2 points per serving**
Chinese broccoli or mustard greens	1/2 cup or 125 ml	
Hummus	1/2 cup or 125 ml	
Lentils, black beans or lima beans	1 cup or 250 ml	
Orange (fruit, not juice)	1 medium	
Bread	2 slices or 70 g	

Calcium-rich foods	Quantity equivalent to 1 serving	
Almonds	1/4 cup or 60 ml	**3 points per serving**
Ice cream, frozen yogurt	1/2 cup or 125 ml	
Dessert tofu	100 g	
Cottage cheese – regular or low fat	1/2 cup or 125 ml	
Parmesan cheese	1 tbsp or 15 ml	
Bok choy, kale, rapini, okra – cooked	1/2 cup or 125 ml	
Chickpeas, kidney beans, pinto beans, romano beans – cooked	1 cup or 250 ml	

Collards – cooked	1/2 cup or 125 ml	**6 points per serving**
Pancake or waffle	1 large or 2 small	
Cheese – soft and semi-soft (blue, feta, mozzarella)	25 g	
Blackstrap molasses	1 tbsp or 15 ml	
Pudding – made with milk	1/2 cup or 125 ml	
Soybeans, Baked beans, White beans – cooked	1 cup or 250 ml	
Tofu – made with calcium	100 g	

Calcium-rich foods	Quantity equivalent to 1 serving	
Cheese – firm (cheddar, Swiss, gouda)	25 g	**8 points per serving**
Cheese – processed	2 slices, 21 g each	
Sardines – canned with bones	1/2 can	
Salmon – canned with bones	1/2 can	
Soup – made with milk	1 cup or 250 ml	
Yogurt, fruit flavoured – regular or low fat*	3/4 cup or 175 ml	



Calcium-fortified beverages (soy milk, rice milk, orange juice)	1 cup or 250 ml	**12 points per serving**
Milk – skim, 1%, 2% whole, buttermilk, flavoured*	1 cup or 250 ml	
Skim milk powder	1/3 cup or 75 ml	
Yogurt – plain, regular, or low fat*	3/4 cup or 175 ml	

** Add four points for each serving of calcium-fortified milk or yogurt.*

Scorecards

Add up the points for the day and consult the "conversion table" (on Page 30) to find out your calcium intake (Step 2).

E.g.: Today I had the following calcium-rich foods:

1 slice of bread = 1/2 serving x 2 points = 1 point
1 orange = 1 serving x 2 points = 2 points
2 glasses of milk = 2 servings x 12 points = 24 points

Total for the day = 27 points (equivalent to 675 mg according to the conversion table).

My total calcium intake for the day is 675 mg.

Day: _____

Number of servings	Points per serving	Total points
	x 2	
	x 3	
	x 6	
	x 8	
	x 12	

My total calcium intake for the day is: _____ **mg**

Total for the day:

Day: _____

Number of servings	Points per serving	Total points
	x 2	
	x 3	
	x 6	
	x 8	
	x 12	

My total calcium intake for the day is: _____ **mg**

Total for the day:

Day: ______________________________

Number of servings	Points per serving	Total points
	x 2	
	x 3	
	x 6	
	x 8	
	x 12	

My total calcium intake for the day is: __________ mg

Total for the day:

Day: ______________________________

Number of servings	Points per serving	Total points
	x 2	
	x 3	
	x 6	
	x 8	
	x 12	

My total calcium intake for the day is: __________ mg

Total for the day:

Day: ______________________________

Number of servings	Points per serving	Total points
	x 2	
	x 3	
	x 6	
	x 8	
	x 12	

My total calcium intake for the day is: __________ mg

Total for the day:

Conversion table

STEP 2 Calculate your daily calcium intake.

Use your scorecard to calculate the number of points you have obtained. The number of points corresponds to your calcium intake.

Points	Mg of calcium	Points	Mg of calcium	Points	Mg of calcium	Points	Mg of calcium
1	25	14	350	27	675	40	1000
2	50	15	375	28	700	41	1025
3	75	16	400	29	725	42	1050
4	100	17	425	30	750	43	1075
5	125	18	450	31	775	44	1100
6	150	19	475	32	800	45	1125
7	175	20	500	33	825	46	1150
8	200	21	525	34	850	47	1175
9	225	22	550	35	875	48	1200
10	250	23	575	36	900	49	1225
11	275	24	600	37	925	50	1250
12	300	25	625	38	950	51	1275
13	325	26	650	39	975	52	1300

STEP 3 How much calcium do you need?

Check if your calcium intake for the day is adequate for your age.

Age	Daily recommended calcium intake
4 to 8 years	1,000 mg
9 to 18 years	1,300 mg
19 to 50 years	1,000 mg
51 to 70 years	Men: 1,000 mg – Women: 1,200 mg
Over 70 years	1,200 mg
Pregnant or breast-feeding women	14-18 years: 1,300 mg – 19-50 years: 1,000 mg

Source: Health Canada

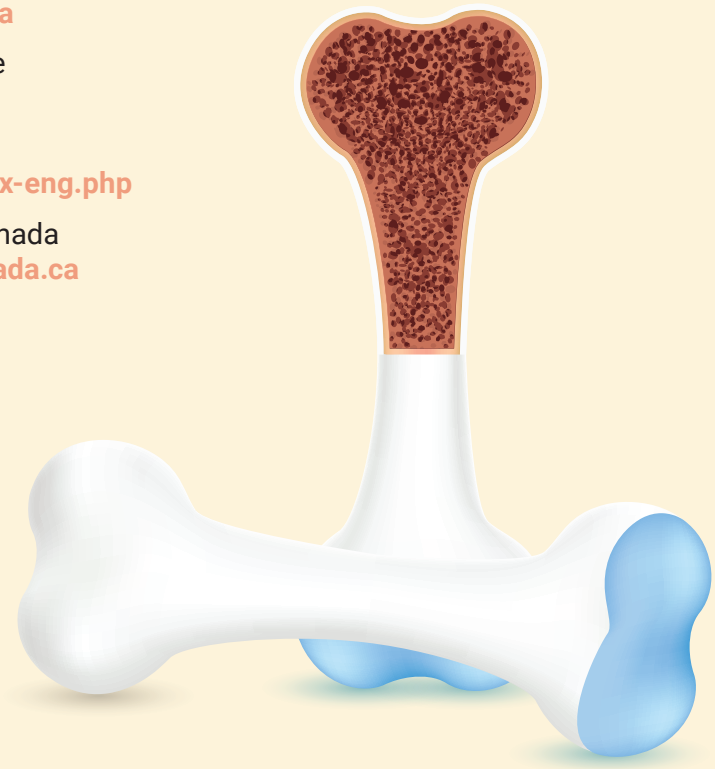
Useful sources and links

Bone health
healthandbone.ca

Familiprix website
familiprix.com

Health Canada
hc-sc.gc.ca/index-eng.php

Osteoporosis Canada
osteoporosecanada.ca



PSST!

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In this guide

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Pharmacists are solely responsible for the professional activities practiced within the pharmacy. They use various tools, such as the PSST! (Plan to Stay in Shape Today) program.

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