Taking Care of Your Bones

One out of 10 Canadians reported having suffered from a fracture after the age of 40. In the majority of cases, fractures occur as the result of a fall, or a simple everyday activity like opening a window—things that would normally be of little consequence.

Fracturing a wrist, vertebra, or hip can be devastating. It can affect your quality of life, your autonomy, your morale, and your self-esteem.

Even if a fracture seems minor, it needs to be addressed because with each new one, your risk of future fractures increases. For example, it is estimated that one out of three hip-fracture patients are at risk of suffering another fracture the following year.

THIS BROCHURE ENCOURAGES YOU TO TAKE AN ACTIVE ROLE IN THE HEALTH OF YOUR BONES.

- Assess your risk of fracture
- Get the facts on bone health
- Take action for strong bones

ACTI-MENU HEALTH PROGRAM™

Santé et Services sociaux Québec

ENDORSED BY:

Association of Obstetricians and Gynecologists of Quebec
Association des physiatres du Québec
Collège des médecins du Québec
Québec College of Family Physicians
Fédération des kinésiologues du Québec
Fédération des médecins omnipraticiens du Québec
Fédération des médecins spécialistes du Québec
Médecins francophones du Canada
Ordre des pharmaciens du Québec
Ordre professionnel des diététistes du Québec

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Assess your risk

Take the test

This test will help you assess your risk of fracture. It **does not constitute a diagnosis** and should not replace a consultation with your doctor. Instead, the test is designed to make you aware of what you can do to take care of your bones.

Check the statements that correspond to your situation. If you're unsure of the answer, speak to your doctor.

- ☐ I am 65 years of age or older.
- ☐ After the age of 40, I suffered a fracture caused by a fall at standing height or by an everyday activity (without a fall).
- ☐ My biological mother or father fractured a hip.
- ☐ My height has decreased by more than 2 cm (1 inch) in the last two years.
- ☐ My bone mineral density (BMD) test results were lower than average (osteopenia or osteoporosis).
- ☐ I have one or more of the following diseases: rheumatoid arthritis, hyperthyroidism, type 1 diabetes (juvenile diabetes), Cushing's syndrome, chronic malnutrition or malabsorption, or inflammatory bowel disease.
- ☐ I have used corticosteroids or cortisone (e.g., prednisone) for more than three months.
- ☐ I am underweight for my height.
- ☐ **Women:** I started menopause or my periods stopped for more than six months before the age of 45.
- ☐ **Men:** I was once told by a doctor that I had low testosterone.

MODIFIABLE FACTORS

- ☐ I have more than two alcoholic drinks per day.
  One drink is equal to 341 mL (12 oz.) of beer (5% alcohol), 142 mL (5 oz.) of wine, or 43 mL (1.5 oz.) of spirits.
- ☐ I drink more than three cups of caffeinated beverages per day (coffee, tea, colas, or energy drinks).
- ☐ I exercise for less than 150 minutes (2.5 hours) per week (e.g., walking, dancing, skating, weightlifting, or stretching).
- ☐ I have a tendency to fall or lose my balance.

If you checked one or more statements, you may be at higher risk of suffering a fracture in the next few years. You should speak to a doctor about your results.

If you checked any of the MODIFIABLE FACTORS, you can start taking care of your bones by changing some of your habits. The following pages are filled with advice and information to help you take action.

Talk to your doctor

In order to assess your risk of **fracture** and determine whether you would benefit from treatment, your doctor will look at factors such as your general health, your personal and family history of fracture, your lifestyle, and any medication that you take.

You should also get a **physical exam** that includes a measurement of your height. If you are over the age of 50, you should get your height measured annually. A significant decrease in height could be a sign of a spinal fracture.

During the exam, you may be asked to get up from a chair without using your arms and take a few steps. This very simple test is good for evaluating your balance and determining your ability to prevent a fall.

Other assessment tools

Doctors also use two other, more specific tools to evaluate a patient's 10-year fracture risk.

- **CAROC**: An initiative of the Canadian Association of Radiologists and Osteoporosis Canada.
- **FRAX:** This short questionnaire developed by the World Health Organization measures the probability of a hip fracture, as well as the probability of a spine, forearm, or shoulder fracture. The test is effective even if you don't know your bone mineral density (BMD). **You can take the FRAX test online at www.shef.ac.uk/FRAX**. Print out your results and bring them with you to your next doctor's appointment.

If needed, your doctor may prescribe a blood test and other tests, such as an **osteodensitometry**. This test is more accurate than a regular X-ray as it measures your bone mineral density (BMD), which is the amount of calcium in your bones. A low bone density indicates a higher risk of fracture. The test is usually given to individuals over the age of 65, but it can be done earlier if there are other risk factors. Measurements are usually taken on the hip or lower spine. This is a low-radiation test that takes about 20 minutes.

Get the facts

Staggering statistics

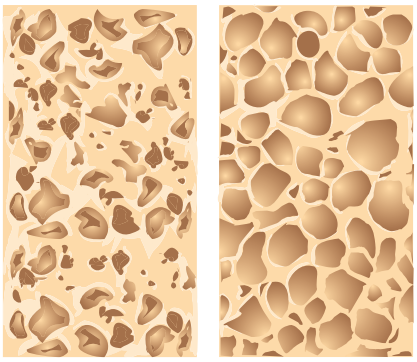
A fracture is more than just a broken bone. It can cause chronic pain or a loss of autonomy, thus reducing your overall quality of life. It can also be a blow to your self-esteem if your physical appearance is altered by a stooped back and a loss of height.

- One out of 10 Canadians reported having suffered from a fracture after the age of 40.
- It is estimated that each year 30,000 Canadians fracture their hip.
- Hip and spinal fractures are associated with an increased risk of death in the year following the fracture.
- Patients with hip fractures require longer hospitalization than those with diabetes, or those who have suffered a heart attack or stroke.

That's why it is important to take care of your bones now, *before* they break!

Not just a women's issue

Men are not immune to fractures. Even though there are 50 percent less men than women with osteoporosis, they suffer from the same amount of spinal fractures. There are half as many hip fractures among men, but the post-fracture mortality rate is higher than among women.



NORMAL OSTEOPOROSIS

Why do bones break?

BONE DENSITY AND OSTEOPOROSIS

Bone is living tissue, constantly renewing itself throughout your lifetime as small quantities of bone tissue are eliminated and then replaced. Until about the age of 35, the process remains stable, ensuring the growth and maintenance of your bone mass.

As you age, however, the bone tissue gets eliminated faster than it can be replaced. A loss of density in the bone mass is called *osteopenia* and beyond a certain point it becomes *osteoporosis*. Typically, this disease has no initial symptoms, but as the bones become increasingly porous and fragile, they can break as a result of a minor trauma. Nearly 8 out of 10 fractures in individuals over the age of 60 are linked to osteoporosis.

OTHER FACTORS

Not all fractures are caused by low bone density. In the past, treatment was prescribed based solely on this factor. Today, doctors take a number of factors into consideration when deciding whether or not treatment is necessary. The objective is not so much preventing or curing osteoporosis, but rather **preventing fractures**.

- An important factor is whether you suffered a **fracture** following a minor trauma or an activity of daily living (e.g., falling from standing height or opening a window), or if you suffered a fracture even without falling or bumping into something. Most often, fractures occur in the bones of the spinal column, hips, and wrists. With each fracture, the risk of future fractures increases, and yet only 4 out of 10 people undergo treatment to prevent it from happening again.
- A stooped back, decreased **height**, and chronic back pain can be symptoms of vertebral fractures and should be taken seriously.
- **Heredity** plays an important role in bone quality. That's why it is important to consider your family fracture history when evaluating your level of risk.
- The use of **corticosteroids** or **cortisone** (e.g., prednisone) for more than three months, as well as certain **diseases**, can also contribute to weaker bones. These diseases include rheumatoid arthritis, hyperthyroidism, type 1 diabetes (juvenile diabetes), Cushing's syndrome, chronic malnutrition or malabsorption, and inflammatory bowel disease.
- Sex **hormones** help protect your bone mass. If these hormone levels are low, it can be harmful to your bones. In women, there tends to be rapid bone loss in the years following menopause when estrogen and progesterone levels drop significantly. In men, the decrease in testosterone also causes bone loss, but it generally happens more gradually.
- With age, you experience not only bone loss but also muscle loss. If you aren't careful, you can lose **muscle mass** and become weaker. As a result, your body will be less solid and your risk of falling and suffering a fracture will increase.
- A **body weight** of less than 60 kg (132 lb.) is also a risk factor. Of course, a woman whose weight has been stable for several years and eats well has nothing to worry about. However, losing a considerable amount of weight can have a negative effect on the health of your bones.

Take action
Eat well

Eating well is essential for good health, including the health of your bones and muscles—and it's not as hard as you might think! As recommended in *Canada's Food Guide*,* be sure to include foods from each of the four food groups in your diet on a daily basis:

- Vegetables and Fruit
- Milk and Alternatives
- Grain Products
- Meat and Alternatives

It is best to eat a **variety** of foods from each group. Carrots and apples are great, but so are broccoli and cantaloupe! The more you vary your diet, the more likely you are to get all the nutrients you need, including calcium and vitamin D—a winning combination for preventing fractures.

* For a copy of *Canada's Food Guide,* call 1 866 225-0709 or visit www.hc-sc.gc.ca.

A word on protein

Protein is an **essential nutrient** for building bones and muscles. It takes 2 to 3 servings per day from the meat and alternatives group (fish, legumes, eggs, nuts, and seeds), the main source of protein in our diet, to meet our daily requirements. Some studies suggest that eating too much protein can cause a loss of bone tissue. To ensure a well-balanced diet and avoid excess, it is recommended that you eat a large amount of fruit and vegetables every day.

Calcium on the menu

Your bones are largely made up of calcium, a mineral that is essential for keeping them strong and for making sure that all your cells are working properly. It is important that you get enough calcium every day to maintain a healthy bone mass. Requirements vary according to age.

AGE	DAILY CALCIUM REQUIREMENT
19–49 years	1,000 mg
50 years and over	1,200 mg

Source: Osteoporosis Canada (2011). "Calcium Requirements." www.osteoporosis.ca

WHERE CAN I GET CALCIUM?

The easiest **sources** of calcium to incorporate into your daily diet are **milk** and its **alternatives** (yogurt, fortified soy milk, and cheese). **Two servings per day** (or **three if you are over 50 years old**) are enough to meet two-thirds of your daily calcium requirements.

Some juices are now fortified with calcium and can easily be included in your daily diet. One serving (250 mL or 1 cup) of fortified juice contains the same amount of calcium as one serving of milk.

To make up the rest of your recommended intake, eat a varied diet and include different sources of calcium:

- Canned salmon and sardines, with bones
- Dark green vegetables like spinach, kale, bok choy, and edamame (fresh soybeans)
- Sesame butter (tahini)
- Nuts and almonds
- Tofu with calcium sulfate

Vitamin D is your ally

Vitamin D is so important for bone and muscle health that you could almost call it the anti-fracture vitamin. First, it improves calcium absorption and helps bind it to the bones. It is crucial for building bones and preventing bone loss. It also plays a key role in preventing falls.

How much vitamin D do I need? That depends on your age. If you're over the age of 50, depending on your risk of fracture, your doctor may, as recommended by Osteoporosis Canada (2010), prescribe higher doses than those recommended for the general population in the following table.

AGE	DAILY VITAMIN D REQUIREMENT
1–70 years	600 International Units (IU)
71 years and over	800 International Units (IU)
Daily doses above 4,000 IU require medical supervision.	

Source: Health Canada (2010). "Vitamin D and Calcium: Updated Dietary Reference Intakes." www.hc-sc.gc.ca

Useful tips

- Choose dairy products that contain less fat, like milk and yogurt. Cream, butter, ice cream, and cream cheese are very fatty and contain almost no calcium.
- Hard cheeses such as cheddar and Swiss are usually higher in calcium than other types of cheese.

WHERE CAN I GET VITAMIN D?

- **From May to September**, you can get 1,000 IU of vitamin D just by exposing your face, arms, and legs to 15 minutes of **sunlight** (without sunscreen), between 11 a.m. and 2 p.m. Be careful—too much sun poses a health risk!
- Certain foods are also sources of vitamin D. The best **dietary sources** are fatty fish (salmon, sardines, mackerel, etc.), milk, soy milk, and fortified juice. Some yogurts contain vitamin D. It is also found in eggs, liver, and margarine.

Good to know

The percentage (%) of vitamin D indicated on food labels does not reflect current recommendations since it is based on a daily intake of 200 IU.

What if I am lactose intolerant?

Some people are intolerant to lactose, a sugar naturally found in milk. Here are some helpful tips if you are lactose intolerant:

- Try mixing milk with other foods or drinking it in small quantities.
- Opt for yogurt and cheese—they can be easier to digest than milk.
- Try fortified soy or lactose-free milk, yogurt, and cheese.
- Ask your pharmacist about drops and tablets that can help you digest lactose.

What about supplements?

It is always better to obtain your **calcium** requirements from **food sources**. In the case of **vitamin D**, combine a **healthy diet** with adequate **sun** exposure when possible. However, depending on your eating habits and the amount of sunlight you are exposed to, you may need to take supplements.

Before taking supplements, you should talk to a health-care professional (doctor, pharmacist, nutritionist, or nurse). They can help you make choices that are right for you. Recent studies show, for example, that for certain individuals, calcium supplements could pose a health risk to the heart. That's why it is important to follow dosage recommendations.

Take action
Get active

Physical activity plays a key role in preventing fractures. It improves your posture, balance, flexibility, and co-ordination which, in turn, help prevent falls.

Here are some exercises that you should do on a regular basis.

- **Weight-bearing exercises**: These are activities where your feet and legs carry your full weight (e.g., walking, tennis, and cross-country skiing). This type of exercise puts pressure on the skeleton and helps preserve bone density. It is good to do them **every day**. Activities that include jumping, like jogging or aerobics, are particularly effective as long as you are fit enough to do them.
- **Muscle-training exercises**: They tone the body and help maintain muscle mass. Strong muscles provide solid support, help you move around with confidence, and protect you if you fall. To strengthen your muscles at any age, you should pull, push, lift weights, climb stairs, or do resistance training **at least three times per week**. Focus on the muscles in your legs, back, buttocks, and abdomen.
- **Balance exercises**: Doing these **at least three times per week** will improve your posture and gait. You will have better control and will be less likely to fall. Tai chi is excellent for balance, as are skating, dancing, yoga, etc.
- **Stretching**: This type of exercise, which should also be done **at least three times per week**, improves flexibility and ease of movement—making you less likely to hurt yourself. Yoga, stretching, and taekwondo are all good examples of activities that include lots of stretching.

Overcome your obstacles

Do you lack time, motivation, confidence, or energy? Are you afraid of getting injured? Is it difficult for you to change your lifestyle? For every obstacle, there's a solution—and it's up to you to find it!

Seize your opportunities

You don't have to go to the gym to get active. Just go for a walk, ride your bike, go ice skating, or go dancing. Take the stairs rather than the escalator, park your car a little farther away than usual, or ride your bike to the grocery store. Use household chores as an opportunity to exercise (e.g., washing the windows and floors, mowing the lawn, gardening, or carrying groceries).

Go at your own pace

The first step is always the hardest. Start slowly—once you start to feel healthier, you will be motivated to keep going. After all, being physically active is one of the best ways to maintain a healthy body and mind!

If you are worried about your health or you already suffer from osteoporosis, consult your doctor, a kinesiologist, or another health-care professional before beginning an exercise program.

Take action
Prevent falls

Each year in Canada, 1 person in 20 over the age of 65 is injured as a result of a fall. A fall from standing height can easily cause a fracture if your bones are fragile. However, there are a few simple precautions that can help prevent falls.

Mind your health

- If you suffer from health conditions that affect your balance, like arthritis or low blood pressure, or if you experience light-headedness or dizzy spells, speak to your doctor.
- Get regular eye exams and make sure you have the appropriate glasses or contact lenses for your vision. It is also important to take care of your hearing.
- Get informed about your medications and their possible side effects. Some cause drowsiness and dizzy spells. Follow the recommended dosage.

Reduce hazards at home

- Clear your home of anything that you could trip over—rugs, furniture, electrical wires, etc.
- Be careful on wet floors. Use non-slip mats in the bath.
- Make sure your outdoor stairs are clear of snow and ice in the winter.
- Only walk in well-lit areas.
- If you use a stepladder, make sure it is solid.

Adopt a healthy lifestyle

- Eat well in order to adequately meet your calcium, vitamin D, and energy requirements.
- Be physically active to maintain strong bones and muscles.
- Drink in moderation! Too much alcohol is bad for your balance and your reflexes.

Walk safely

- Wear comfortable shoes with good support, non-slip soles, and reasonable heels.
- Watch out for pants that are too long or have a ripped hem. Avoid clothing that hinders your movement.
- Use a cane or a walker if you need to. They help prevent falls and allow you to keep up certain activities. Why make it harder for yourself?

Take action
Watch out for ...

Tobacco

Nowadays, most people are aware of the negative effects tobacco has on the heart and lungs. However, people don't necessarily know that smoking also causes bone and muscle loss. Smokers are more prone to fractures, and that risk increases with age. The good news is that there are now many resources available for quitting smoking—speak to your doctor or pharmacist.

Alcohol

Drinking too much alcohol can have a toxic effect on bone cells and contributes to muscle loss. It can also impede nutrient absorption. As well, alcohol impairs your balance and can cause you to fall. Make sure that your alcohol intake is not jeopardizing your health!

Caffeine

Caffeinated beverages should be limited to 3 cups per day (coffee, tea, colas, or energy drinks). Too much caffeine can cause your body to eliminate more calcium than normal. What's more, these beverages often replace other, more nutritious liquids—including a healthy glass of water!

Salt

Eating too much salt causes the body to eliminate more calcium through the urine. It's best to limit your daily intake of salt to 1 tsp (2,300 mg of sodium). To do so, you should limit foods that contain high levels of salt, such as deli meats and processed foods.

If you need to take medication

Medication is often necessary when your risk of fracture is high. The choice of medication is made in consultation with your doctor, according to your general health, treatment goals, and other medication you may already be taking, as well as the desired method of administration.

The following is a brief overview of the medication available to keep bones healthy.

Bisphosphonates

Bisphosphonates are used to prevent fractures in postmenopausal women as well as men with a high risk of fracture.

Three types of bisphosphonates are currently available in Canada: zoledronic acid (Aclasta®), risedronate (Actonel®), and alendronate (Fosamax®, Fosavance®, and other generic products).

SERMs

Selective estrogen receptor modulators (SERMs) simulate the effects of estrogen on the bones. Raloxifene (Evista®) is a SERM used to reduce the risk of spinal fractures in postmenopausal women.

Denosumab

Denosumab (Prolia®) is an inhibitor of a protein that stimulates the cells responsible for bone loss. By blocking this protein, denosumab increases bone mass and decreases the risk of fracture throughout the skeleton. It is indicated for postmenopausal women and is administered by subcutaneous injection twice yearly.

If you are prescribed medication, be sure to carefully follow the instructions of your doctor and pharmacist in order to maximize the benefits and reduce the side effects.

Hormone replacement therapy (HRT)

In women, estrogen and progesterone are largely responsible for maintaining bone density. During menopause the body produces less and less of these hormones, resulting in bone loss. HRT helps counteract this hormonal change. However, this type of treatment is **only for women for whom menopausal symptoms diminish their quality of life** (hot flashes, insomnia, etc.).

Calcitonine

This nasal spray is sometimes recommended for postmenopausal women as well as men to relieve the pain associated with spinal fractures.

Teriparatide

Teriparatide (Forteo®) increases bone density. It is prescribed for postmenopausal women and, in special cases, for men. It is given as a daily subcutaneous injection for a period of two years.

It's up to you!

You can make important choices throughout your life to improve the health of your bones and prevent fractures.

- Eat a **well-balanced diet** rich in calcium and vitamin D.
- **Exercise** every day.
- Live **tobacco-free**.
- **Limit** your intake of alcohol, caffeine, and salt.
- If you take **supplements** or **medication**, be sure to follow the prescribed dosage.

Use the practical tips and information included in this brochure to inspire you to take action.

It's worth it!

By making winning choices early in life, you give yourself the chance of reaching adulthood with a healthy bone and muscle density—it's worth it! Be sure to share this information with the young people in your life.

For more information, visit:

Osteoporosis Canada
www.osteoporosis.ca

This document was developed by **ACTI-MENU** in collaboration with members of the MSSS (the Quebec Ministère de la Santé et des Services sociaux) working group on the production of a guide for implementing a health-care system for the evaluation of osteoporotic fracture risk: **André Bélanger**, family physician, Clinique médicale de Valcartier; **Louis Bessette**, rheumatologist, Centre de l'ostéoporose et de rhumatologie de Québec; **Johanne Blais**, family physician, and **Claudine Blanchet**, kinesiologist, CHUQ, Hôpital Saint-François d'Assise; **Sylvie Dodin**, gynecologist and medical consultant, **Louise Moreault**, medical advisor, and **Denis Poirier**, medical representative, Agence de la santé et des services sociaux de la Capitale-Nationale, Direction de santé publique; **Brigitte Lachance**, research officer, and **Christine Pakenham**, planning officer, MSSS, Direction générale de la santé publique. We would also like to thank **Pierre Patry**, research officer, MSSS, Direction générale de la santé publique, and **Marie-Ève Delichy**, kinesiologist, CSSS Cavendish.

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References available upon request: actimenu@actimenu.ca.

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