Early breast cancer and bone health:

What you need to know

> ***Each patient must take charge of their care.***
> *– Medical Oncologist*

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Table of contents

This brochure was developed in collaboration with medical oncologists, nurses and breast cancer patients.

An introduction to

bone health in breast cancer

Being diagnosed with breast cancer can be overwhelming. There is so much information to take in—so much to think about. Understandably, the possible effects on your bones may be the *last* thing on your mind at a time like this. But the fact is that, once you're diagnosed with breast cancer, you have even *more* reasons to think about bone health.

This booklet will help you understand why focusing on bone health is important now that you have had a breast cancer diagnosis. It will introduce you to the types of bone loss that can accompany your cancer, the tests your doctor may perform to check the health of your bones, and some of the ways you can take care of your bones.

It's important to keep in mind that not all women with breast cancer will have problems related to their bones. The key is to learn as much as you can about how to keep your bones healthy while treating your breast cancer.

Before discussing bone health in breast cancer in more detail, let's take a step back to learn about *healthy* bones...

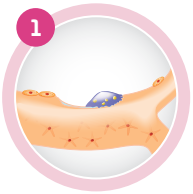
Did you know...?

Being aware of good bone health habits and making some important lifestyle changes can lower bone loss by about 1%–2% a year, bringing down the risk of breast cancer treatment-related bone loss.

A quick look at healthy bones

Although people generally think of bone as a static material, our bones are actually **living tissue**. They are made up of different types of living cells and have their own blood vessels.

Our bones are constantly being broken down and remade (or "remodeled") to keep them strong and healthy. In bone remodeling, there are two main types of bone cells that work together to create new bone:



"Osteoclasts" are cells that **break down old bone**.

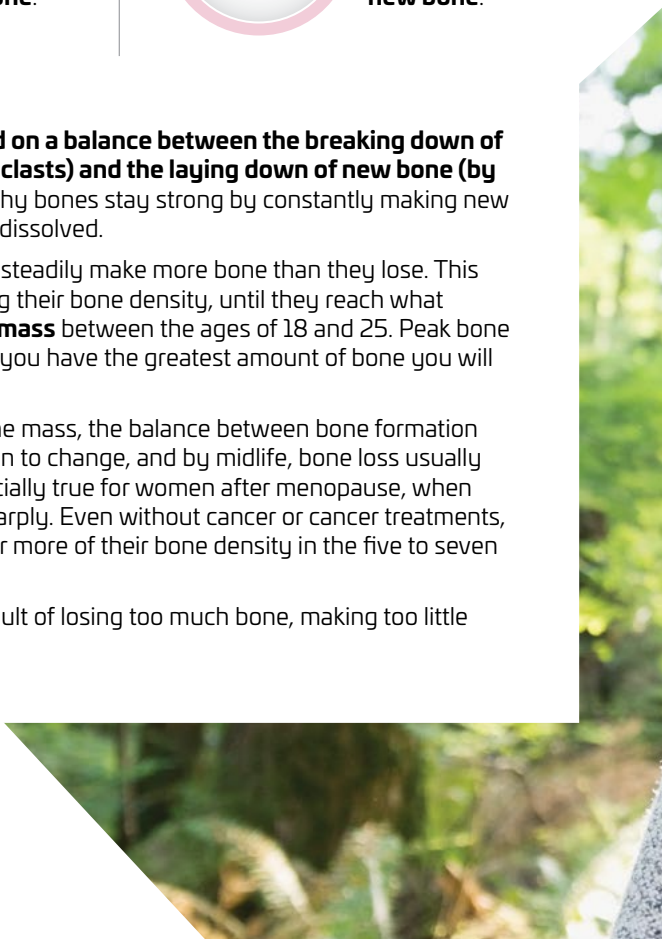
"Osteoblasts" are cells that **lay down new bone**.

Healthy bones depend on a balance between the breaking down of old bone (by the osteoclasts) and the laying down of new bone (by the osteoblasts). Healthy bones stay strong by constantly making new bone as the old bone is dissolved.

Children and teenagers steadily make more bone than they lose. This contributes to increasing their bone density, until they reach what experts call **peak bone mass** between the ages of 18 and 25. Peak bone mass is the point when you have the greatest amount of bone you will ever have.

After reaching peak bone mass, the balance between bone formation and bone loss may begin to change, and by midlife, bone loss usually speeds up. This is especially true for women after menopause, when estrogen levels drop sharply. Even without cancer or cancer treatments, women can lose 20% or more of their bone density in the five to seven years after menopause.

Osteoporosis is the result of losing too much bone, making too little bone, or both.

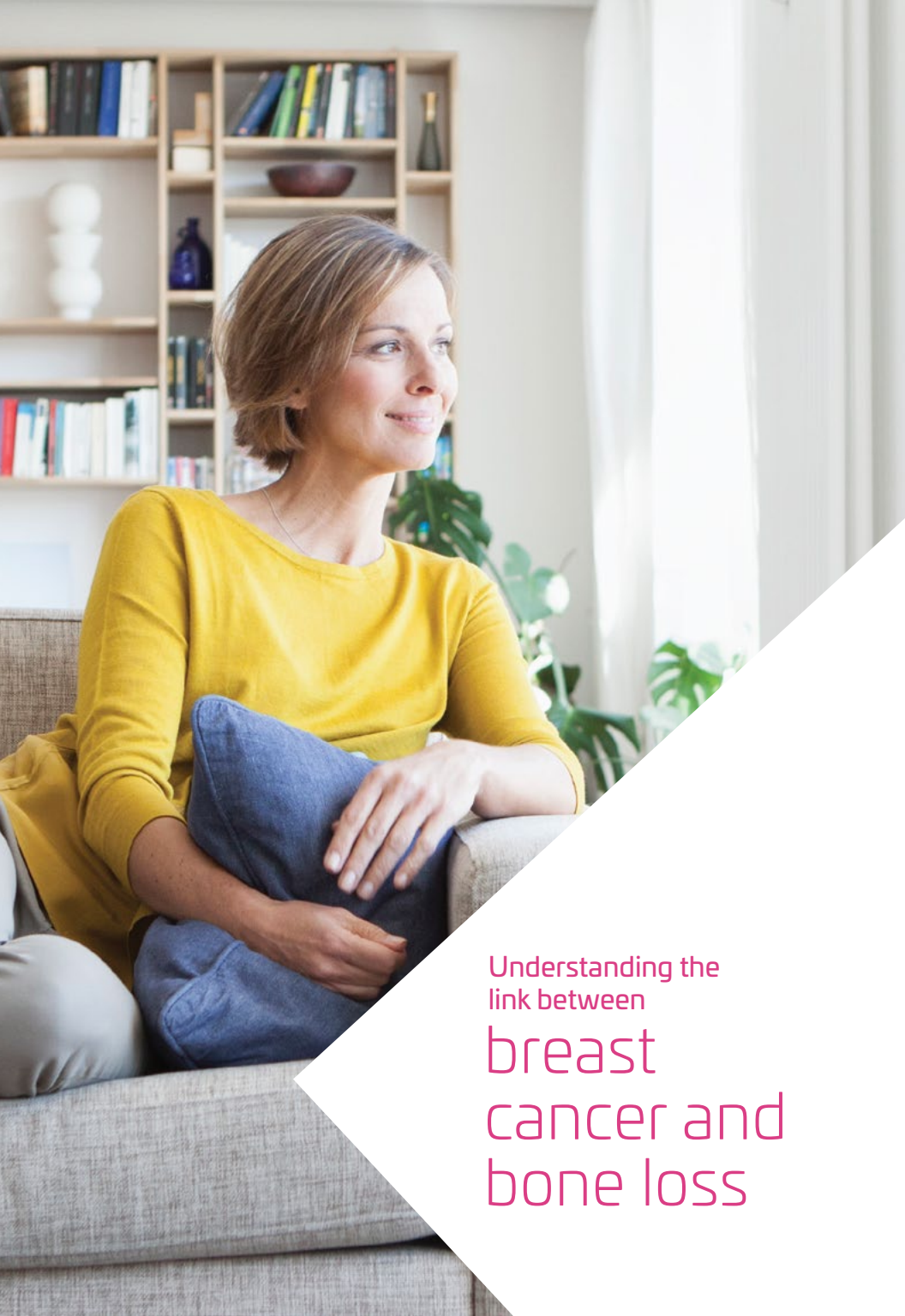


Causes of bone loss in breast cancer

In people with early breast cancer, there is an additional factor that can contribute to bone loss:

Some **cancer treatments**, such as chemotherapy and hormone therapy, can cause bone loss.

In the next section, we'll take a closer look at these causes to better understand the link between breast cancer and bone loss...



Understanding the link between

breast cancer and bone loss

As we've discussed, there are different factors that put you at risk for bone loss when you're diagnosed with early breast cancer. These include:

- The aging process—specifically, menopause;
- Some cancer treatments, including both chemotherapy and hormone therapy.

In this section, we'll take a closer look at each of these risk factors.

> **Remember:** It's never too late to think about your bone health. Talk to your doctor or another healthcare provider about how you can start to strengthen your bones today.

Menopause and bone health

Bone health can be affected by the natural aging process. All women will eventually reach **menopause**, and some chemotherapies can bring on menopause earlier than expected. Whenever and however it happens, one thing is for sure: it will **cause your body to make less of a hormone called "estrogen"** than it had been making before menopause.

Estrogen helps to keep the balance between breaking down old bone and laying down new bone. So, when there is a **drop in estrogen**, this balance may be thrown off. More old bone may be lost while less new bone is formed, leaving you with **weaker bones**.

Cancer treatments and your bones

Some breast cancer treatments can cause **bone loss**, leading to weakened bones that are **more likely to fracture** (or break). These treatments include both chemotherapy and hormone therapy for breast cancer.

Luckily, the bone loss and subsequent fractures caused by cancer treatments can be minimized by adding **vitamin D** and **calcium** to your regular diet or by taking supplements. Doing more **exercise** may also help strengthen your bones. Anything you do on your feet (e.g. walking, climbing stairs) helps strengthen your bones and slow down bone loss.

Chemotherapy

Some types of chemotherapy used to treat breast cancer can have a negative effect on bone health. This is because, in some situations, women who are close to menopause when they begin treatment may **go into menopause** as a result of the chemotherapy, due to premature suppression of the ovaries. Menopause **causes estrogen levels to drop** sharply, which can lead to **bone loss**.

Hormone therapy

Many hormone therapies used to treat breast cancer work by preventing the formation of estrogen. This **drop in estrogen levels** in the body can lead to **bone loss**. It is important to note, however, that not all hormone therapies lead to bone loss.

If you are on hormone therapy, ask your doctor if it could potentially be harmful to your bones and find out what steps you can take to help keep your bones strong.

> **Take action:** Talk to your doctor about ways to help protect your bones while you are receiving cancer treatment.
>
> **Never hesitate to ask your oncologist questions or validate your understanding:** Am I at risk? Will the procedures I undergo contribute to my risk of bone loss?

> *I want to know information, but I don't want information that hasn't been approved by my oncologists or even my doctor.*
> *– Breast Cancer Patient*

Monitoring bone health

Bone densitometry tests

If you are undergoing chemotherapy or hormonal therapy that can potentially harm your bones, your doctor may request that you undergo tests to measure the density of your bones. These tests are safe and painless. They can help you and your doctor make decisions to help your bones stay strong.

The most common bone density test in use today is called dual energy X-ray absorptiometry (DXA).

Bone density (DXA) scan

A bone density scan is an imaging test that **measures bone density using X-rays and computer technology**. This type of scan can be used to:

- measure the amount of minerals (such as calcium) in your bones;
- assess your risk of bone fractures; and
- check for bone loss.

Your **bone density test results** are reported using a measurement called a "**T-score**". Your T-score indicates how much higher or lower your bone density is compared to the bone density of a healthy 30-year-old. The **lower your T-score (bone density)**, the **higher your risk of breaking a bone**.

Your T-score	What it means
-1.0 or higher (e.g. -0.7)	Your bone density is normal
Between -1.0 and -2.5 (e.g. -1.7)	Your bone density is low
Lower than -2.5 (e.g. -2.8)	You have bone loss

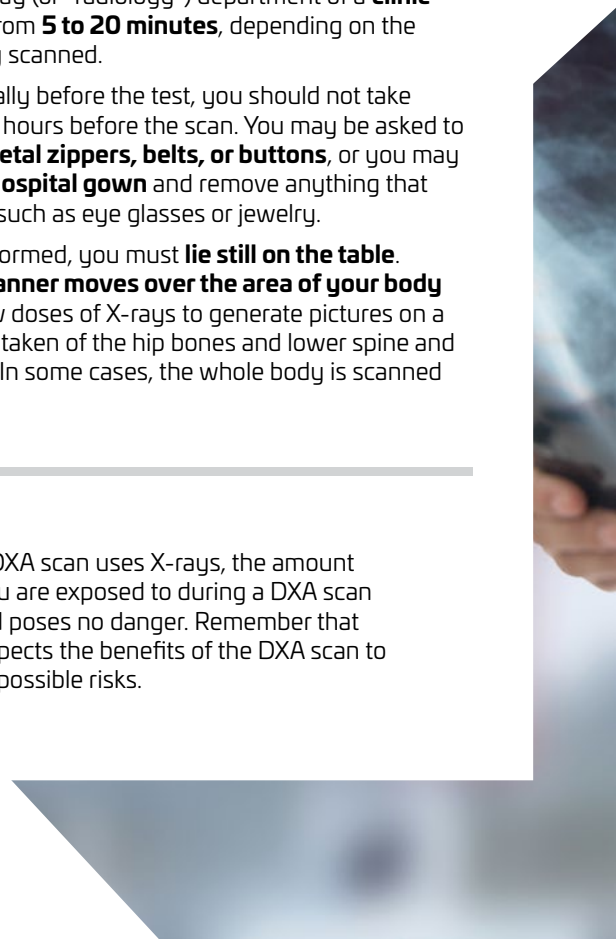
A DXA scan is usually done as an outpatient procedure (not requiring an overnight stay) in the X-ray (or "radiology") department of a **clinic** or **hospital**. The test takes from **5 to 20 minutes**, depending on the number of body areas being scanned.

Although you can eat normally before the test, you should not take calcium supplements for 24 hours before the scan. You may be asked to wear clothing that has **no metal zippers, belts, or buttons**, or you may be asked to **change into a hospital gown** and remove anything that may interfere with the test, such as eye glasses or jewelry.

While the scan is being performed, you must **lie still on the table**. During the test, the **DXA scanner moves over the area of your body to be scanned** and uses low doses of X-rays to generate pictures on a computer screen. Scans are taken of the hip bones and lower spine and sometimes of the forearms. In some cases, the whole body is scanned by the DXA machine.

Take note:

Although the DXA scan uses X-rays, the amount of radiation you are exposed to during a DXA scan is very low and poses no danger. Remember that your doctor expects the benefits of the DXA scan to outweigh any possible risks.



> ***I needed to know what was happening and what was going on, what the test results were going to tell me and show me.***
> *– Breast Cancer Patient*

Protecting your bones

In this section, you'll learn what factors may be putting you at risk for bone loss and get helpful tips so you can take action to keep your bones as healthy and strong as possible.

Factors putting you at risk for bone loss

As you know, people with *early* breast cancer are at an increased risk for bone loss because of some treatments. However, there are other risk factors for broken bones and bone loss you should be aware of.

Use the following checklist to find out what factors may be putting you at risk for bone loss.

Part A

- ◯ Are you aged 65 years or older?
- ◯ Have you broken a bone as the result of a simple fall or bump since the age of 40?
- ◯ Has your mother or father had a hip fracture?
- ◯ Do you smoke?
- ◯ Do you regularly drink three or more alcoholic drinks per day?
- ◯ Do you have a condition that requires you to take a glucocorticoid medication such as prednisone?
- ◯ Do you take any other medication that can cause bone loss?
- ◯ Do you have a condition that can cause bone loss or fractures, such as rheumatoid arthritis, celiac disease, chronic obstructive pulmonary disease (COPD), or chronic liver disease, or have you had gastric bypass surgery?
- ◯ Did you experience early menopause (before age 45)?
- ◯ Have your periods ever stopped for several months or more (other than as a result of pregnancy or menopause)?
- ◯ Do you currently weigh less than 60 kg (132 lb)?
- ◯ Have you lost more than 10% of your body weight since the age of 25?
- ◯ Have you recently had an X-ray that showed a spinal fracture?
- ◯ Have you had an X-ray that showed low bone mineral density?

If you are over the age of 50 and checked off one or more factors on the previous page, you may talk to your doctor about having a bone density test (DXA scan) and about having a fracture risk assessment.

Part B

- ◯ Have you lost 2 cm (3/4") in height as measured by your healthcare provider or 6 cm (2 ½") overall from when you were younger?
- ◯ Do you have kyphosis (a forward curvature of the back)?

If you are over the age of 50 and checked off one or both of the above, you may talk to your doctor about getting checked for a possible spinal fracture. This is done using a regular back X-ray.

Tips to take charge of your bone health

Watch your diet

Making smart food choices can help you **get more bone-boosting calcium and vitamin D**. Start by checking to see how much calcium and vitamin D you are getting from your current diet, then increase your intake if needed. People undergoing breast cancer treatment should aim to get **1,200–1,500 mg of calcium** per day and **400–800 IU (international units) of vitamin D** per day.

Good sources of calcium include:

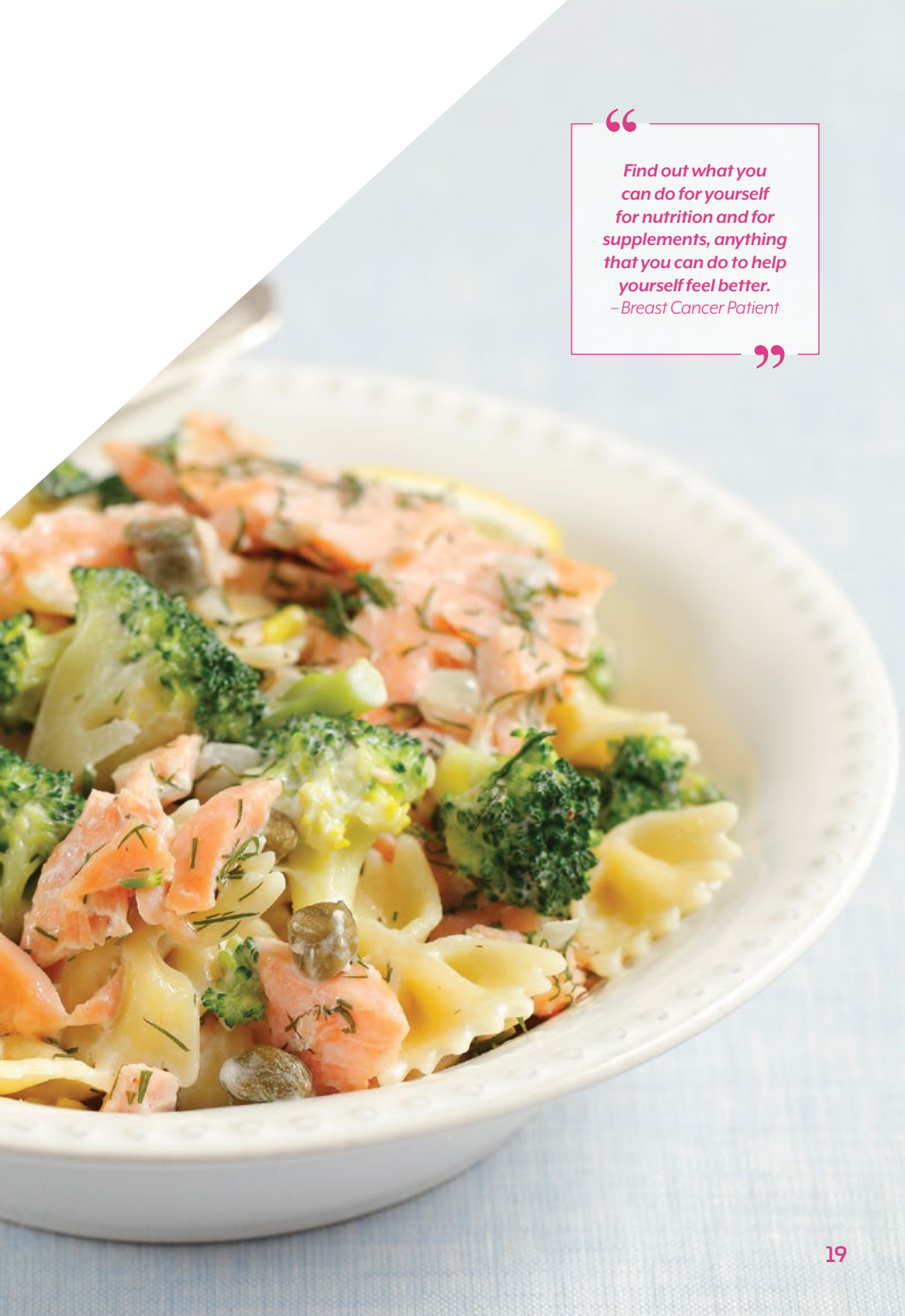
- Milk
- Yogurt
- Cottage cheese
- Broccoli

Good sources of vitamin D include:

- Milk
- Canned or cooked salmon
- Egg yolks

If you are not getting enough calcium or vitamin D from your diet, you should talk to your doctor or a registered dietician to determine whether you should be taking **supplemental calcium and/or vitamin D** (such as regular or chewable tablets available at the pharmacy), and to determine the amounts you need. Supplements can be purchased at your local drugstore.

> **Important note:** Always consult your healthcare team before taking any supplements, including vitamins or calcium tablets.



> ***Find out what you can do for yourself for nutrition and for supplements, anything that you can do to help yourself feel better.***
> *– Breast Cancer Patient*

Get (and stay) active

Weight-bearing and strength training (resistance) exercises are very good for your bones because they increase bone strength. But the reality is that anything you do **on your feet** helps to **strengthen your bones** and slow down bone loss.

Try to do 30 minutes of weight-bearing exercises three to four times a week.

Activities you might consider include:

- Walking
- Hiking
- Dancing
- Climbing stairs
- Weight lifting
- Playing tennis
- Yoga

Due to the elevated risk of lymphedema—a localized swelling of the hand, arm, or underarm due to damage to the lymphatic system—after surgery or radiation therapy for breast cancer, make sure that you gradually increase exercise under the supervision of a certified therapist.

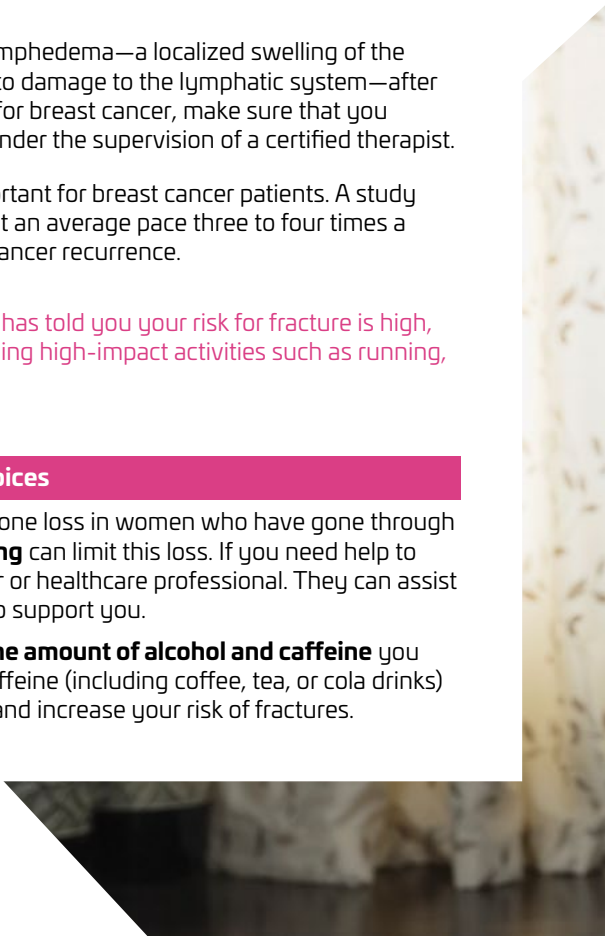
Regular exercise is very important for breast cancer patients. A study suggested that just walking at an average pace three to four times a week can reduce the risk of cancer recurrence.

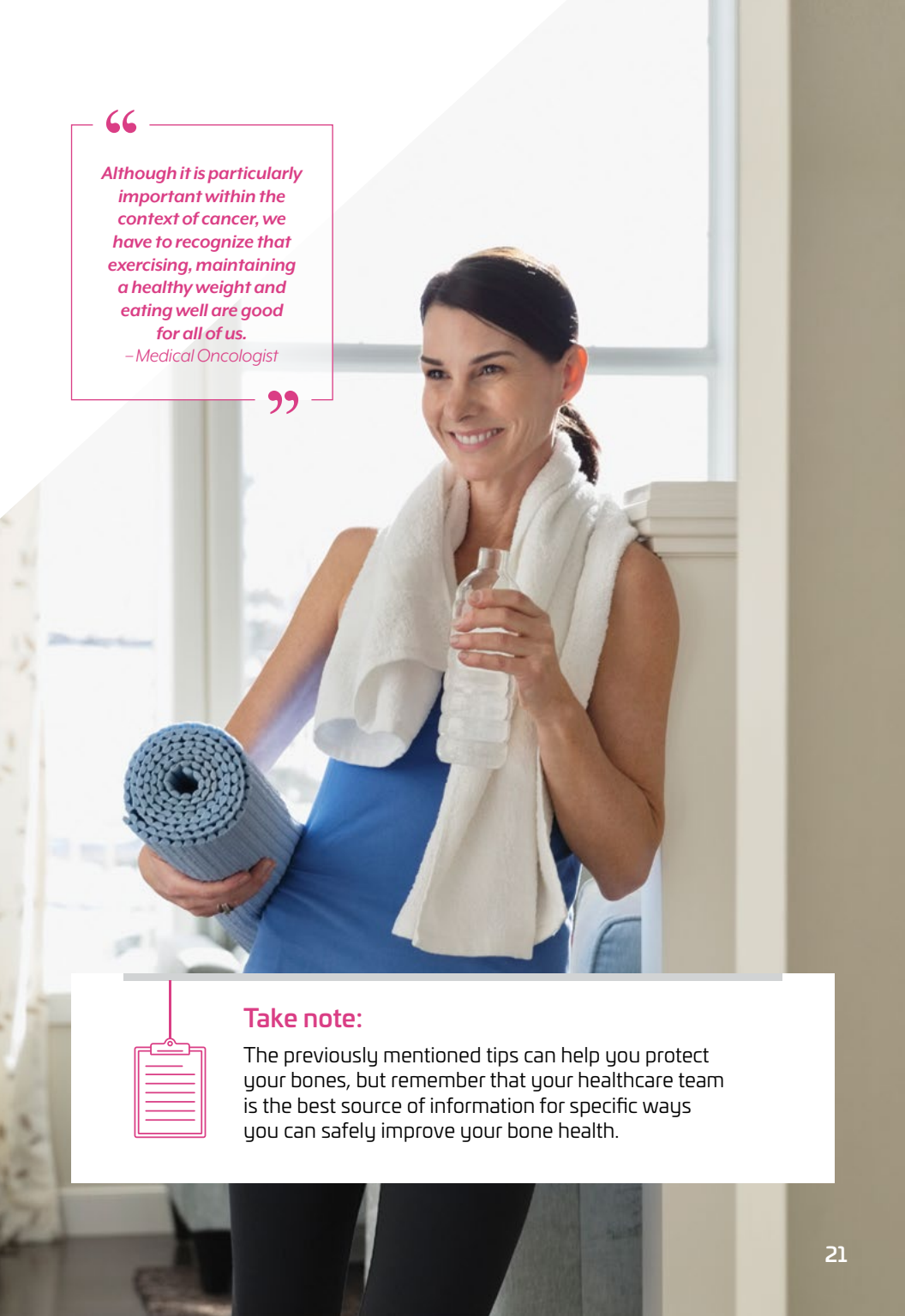
> **Remember:** If your doctor has told you your risk for fracture is high, talk to him or her before doing high-impact activities such as running, skipping, or jumping.

Make healthy lifestyle choices

Smoking is associated with bone loss in women who have gone through menopause. **Quitting smoking** can limit this loss. If you need help to quit smoking, ask your doctor or healthcare professional. They can assist you and suggest resources to support you.

You should also try to **limit the amount of alcohol and caffeine** you drink. Too much alcohol or caffeine (including coffee, tea, or cola drinks) can reduce your bone mass and increase your risk of fractures.





> *Although it is particularly important within the context of cancer, we have to recognize that exercising, maintaining a healthy weight and eating well are good for all of us.*
> – *Medical Oncologist*

Take note:

The previously mentioned tips can help you protect your bones, but remember that your healthcare team is the best source of information for specific ways you can safely improve your bone health.

Frequently asked questions

What kind of exercise is best for my bones?

Weight-bearing and strength training (resistance) exercises increase bone strength. Good activities to try include walking, hiking, dancing, climbing stairs, weight lifting, and playing tennis—anything you do on your feet. Aim to do 30 minutes of weight-bearing exercises three to four times a week. **If your doctor has told you your risk for fracture is high, you must talk to him/her before doing activities that involve running, skipping, or jumping, or before doing any other high-impact exercises. Also, if you underwent surgery or radiation, and developed lymphedema, consult a lymphedema specialist to know which exercise is right for you.**

How does aging cause bone loss?

Throughout our lives, we constantly lose old bone that is replaced by new bone. Peak bone mass is reached between the ages of 18 and 25. Once this period is attained, the balance between bone loss and bone formation may start to change. For most women, bone loss increases after menopause, when estrogen levels drop sharply. This can lead to **osteoporosis**, a condition that happens when you lose too much bone, make too little bone, or both. Women with a family history of broken bones or osteoporosis are at higher risk of developing this condition.

How much calcium and vitamin D do I need every day, and what is the best way to get it?

The adult recommended dietary allowance is 1,000–1,200 mg of calcium per day and 600–800 IU of vitamin D per day depending on your age and sex. Patients undergoing breast cancer treatment should aim to get 1,200–1,500 mg of calcium per day and 400–800 IU of vitamin D per day. It is good to make smart choices and choose the right kind of food that provides your body with calcium and vitamin D. Good dietary sources of calcium are milk, plain yogurt, cottage cheese and broccoli. Good sources of vitamin D are milk, salmon and egg yolk. Vitamin D is also formed in our body after exposure to sunlight, so spending time outside can help your bones. If your doctor thinks that you are not getting enough calcium or vitamin D, he may ask you to take supplements.

How does a bone densitometer measure bone density?

Think about the sunlight passing through the curtains of a window: if the fabric is very thick, very little sunlight passes through them; if the fabric is thinner, more light will pass through the curtains. Similarly, a bone densitometer uses a detector to measure the amount of X-rays (light) which pass through your bones (the curtains), thus providing a radiologist with a picture that indicates how dense (thick or thin) your bones are.

> You can always ask questions. Every question is relevant, even if sometimes it can seem repetitive.

Additional resources

While this guide has provided you with information about bone health, you may still have questions. Medical organizations regularly publish guidelines for people like you who are dealing with breast cancer or bone loss. The websites listed below can provide you with more information. If you can't find the answer you are looking for, be sure to ask your doctor.

- **The National Comprehensive Cancer Network (NCCN)** has published a number of guides for people with breast cancer. You can access the information at: www.nccn.org/patients/guidelines/cancers.aspx#breast.
- **The European Society for Medical Oncology** has also published a guide for people with breast cancer. It is available at: www.esmo.org/Patients/Patient-Guides/Breast-Cancer.
- If you are looking for more information on bone health, you may want to consult the Osteoporosis Canada website (www.osteoporosis.ca) or the National Osteoporosis Foundation website (www.nof.org).

Other websites that can offer helpful information on bone health and breast cancer include:

- **The Canadian Cancer Society** (www.cancer.ca)
- **The American Cancer Society** (www.cancer.org)
- **The Canadian Breast Cancer Network** (www.cbcn.ca)
- **The Breast Cancer Society of Canada** (www.bcsc.ca)
- **Rethink Breast Cancer** (www.rethinkbreastcancer.com)

> Your healthcare team is the best resource for information that's specific to you.

> ***You need to eliminate the stress related to 'not knowing'. Ask questions, take notes. Do not rely on your memory. Ask your healthcare practitioner to repeat information.*** – *Nurse*

Glossary

- **Lymphedema** – a painful swelling that appears when the body's lymphatic fluid is unable to circulate properly
- **Osteoblast** – a type of bone cell responsible for bone formation
- **Osteoclast** – a type of bone cell responsible for bone breakdown (resorption)
- **Osteoporosis** – a condition in which bone mass and bone density are below normal
- **Peak bone mass** – the point when you have the greatest amount of bone you will ever have

Notes

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