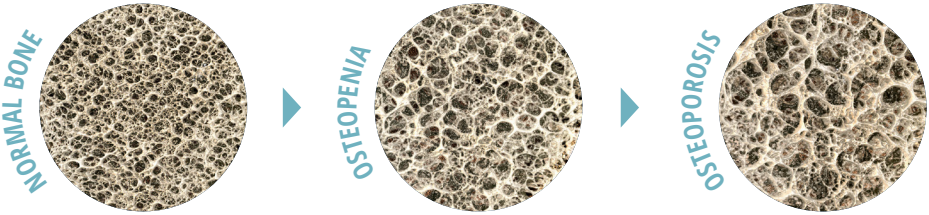
www.osteoporosis.foundation

OSTEOPOROSIS

What you need to know

IOF
International Osteoporosis Foundation

WHAT IS OSTEOPOROSIS?



Osteoporosis is a disease which causes the strength of your bones to diminish leading them to become more fragile.

The result is a higher risk of broken bones, known as fragility fractures. These fractures can occur after a fall from standing height, a minor bump, or everyday activities, such as bending or lifting, that would not normally cause a healthy bone to break. Osteoporosis is often called a "silent" condition because there are usually no obvious signs or symptoms until a fracture occurs.

Osteoporosis-related fractures are most likely to occur in the hip, spine, wrist or upper part of the arm, but other bones can break too.

Osteoporosis-related fractures affect **one in three women and one in five men aged 50 years or older** worldwide.[1]

Postmenopausal women are at increased risk because estrogen levels drop rapidly after menopause. Estrogen helps protect bone, so this decline accelerates bone loss.

1. *https://www.osteoporosis.foundation/facts-statistics/epidemiology-of-osteoporosis-and-fragility-fractures*

A DISEASE WITH SERIOUS CONSEQUENCES

Although osteoporosis itself is painless, the fragility fractures it causes can have serious, **life-changing consequences**:

SPINAL FRACTURES

When osteoporosis affects the bones of the spine, it often leads to **pain, height-loss and a stooped or hunched posture**.

PAIN AND LOSS OF QUALITY OF LIFE

Pain and limited mobility lead to **loss of quality of life, dependence on caregivers**, inability to carry out daily tasks and activities, and feelings of isolation or depression.

LOSS OF INDEPENDENCE

Hip fracture survivors experience significantly worse mobility, independence in function, health, quality of life, with **10-20% requiring nursing home care**.[2]

CAN BE LIFE-THREATENING

Around 30% of deaths after a hip or spine **fracture are linked to the fracture itself**.[3]

CAREGIVER TIPS

If you are a caregiver, visit the *www.buildbetterbones.org* for tips on how to care for yourself and your loves ones.

2. Dyer SM, et al., A critical review of the long-term disability outcomes following hip fracture. BMC Geriatr. 2016;16:158
3. Kanis JA, et al., SCOPE 2021: a new scorecard for osteoporosis in Europe. Arch Osteoporos. 2021;16:82

ONE FRACTURE CAN LEAD TO ANOTHER

A first broken bone **approximately doubles the risk of having another fracture**, with the likelihood of a following fracture being highest during the first two years after the initial fracture.

This is why doctors often say that **a first fracture is a warning sign for future fracture risk.**

1ST FRACTURE OCCURS → **TALK WITH YOUR DOCTOR** → **AVOID MORE FRACTURES**

Without treatment, repeated fractures can create a cycle of pain, disability, and loss of independence. Yet far too many **(around 65-85%) of men and women with fractures do not receive treatment after the fracture**.[4]

Early treatment after a first fracture can help prevent future fractures.

4. Borgström F, et al., Fragility fractures in Europe: burden, management and opportunities. Arch Osteoporos. 2020;15:59

COULD YOU BE AT RISK?

The risk of osteoporosis increases with age. People over 60 are at higher risk than younger adults, and women are generally more likely to develop osteoporosis than men. However, depending on individual risk factors, osteoporosis can occur in younger adults too.

As osteoporosis has no obvious symptoms, it's important to discuss bone health with your doctor if any risk factors apply to you. **Common risk factors for osteoporosis and fragility fractures include:**

- A broken bone after the age of 50
- Height loss of 4 cm (1.5 inches) or more, stooped back
- Family history of hip fractures or osteoporosis
- Lifestyle choices such as smoking and/or excessive drinking
- Being underweight (BMI below 19)
- Certain medical conditions such as cancer, rheumatoid arthritis or digestive diseases
- Early menopause
- Certain medications such as long-term daily use of glucocorticoids (steroids)

TAKE THE IOF OSTEOPOROSIS RISK CHECK

Take the IOF Osteoporosis Risk Check on the following pages to check whether any risk factors apply to you.
Or scan the code and take the online Risk Check, available in more than 34 languages.

OSTEOPOROSIS RISK CHECK

1. Are you aged 60 or older?

○ Yes ○ No

2. Did you break a bone after age 50?

○ Yes ○ No

3. Are you underweight?

○ Yes ○ No

To calculate your BMI in case you do not know it	BMI Value	Meaning
Metric units	Below 19.0	Underweight
$\text{BMI} = \frac{\text{weight in kilograms}}{\text{height in meters}^2}$	19.1 to 24.9	Normal/Healthy
	25.0 to 29.9	Overweight
	Above 30.0	Obese

> If you have ticked yes to 2 or more of the above questions, **your replies suggest that you may have major risk factors for osteoporosis and fractures. We encourage you to ask for assessment and to discuss strategies to reduce your risk for osteoporosis-related fractures with your doctor.**

4. Do you have any of the following disorders?

- ○ Rheumatoid arthritis
- ○ Digestive tract diseases (inflammatory bowel disease (IBD), coeliac disease)
- ○ Prostate or breast cancer
- ○ Diabetes
- ○ Chronic kidney disease
- ○ Thyroid or parathyroid gland disorders (hyperthyroidism, hyperparathyroidism)
- ○ Lung disorder (chronic obstructive pulmonary disease (COPD))
- ○ Low testosterone (hypogonadism)
- ○ Early menopause, periods stopped, ovaries removed (low estrogen due to hypogonadism)
- ○ Prolonged immobility (unable to walk unaided)
- ○ HIV
- ○ I do not know, but I will ask my doctor
- ○ None of the above

5. Have you been treated with any of the following medications?

- ○ Glucocorticoids, or "steroids", used to treat inflammation (e.g. prednisone tablets for 3 months or longer)
- ○ Aromatase inhibitors used to treat breast cancer
- ○ Androgen deprivation therapy used to treat prostate cancer
- ○ Thiazolidinediones used to treat diabetes (e.g. pioglitazone)
- ○ Immunosuppressants used after transplantation surgeries (e.g. calmodulin/calcineurin phosphatase inhibitors)
- ○ Antidepressants used to treat depression, obsessive compulsive disorder etc. (e.g. selective serotonin reuptake inhibitors (SSRI))
- ○ Anticonvulsant or antiepileptic drugs used to treat seizures (e.g. phenobarbital, carbamazepine and phenytoin)
- ○ I do not know, but I will ask my doctor
- ○ None of the above

6. After the age of 40, have you lost more than 4 cm in height (ca. 1.5 inches)?

○ Yes ○ No ○ I do not know

7. Have either of your parents had a hip fracture?

○ Yes ○ No

8. Do you drink excessive amounts of alcohol (> 3 units a day) and/or smoke?

○ Yes ○ No

If any risk factors apply to you, it does not mean that you have osteoporosis, just that you may have a greater chance of developing this condition. In this case, be sure to discuss bone health with your doctor, who may advise a bone health assessment. If you have not identified any risk factors, we encourage you to lead a bone healthy lifestyle and keep monitoring your risks in the future.

QUESTIONS TO ASK YOUR DOCTOR

Bone health is often overlooked, and osteoporosis is called the **"silent disease"** for good reason. Because it **can develop without symptoms until a fracture occurs**, it's important to be proactive at your next check-up.

Here are some key questions you can ask your doctor, especially if you have risk factors, are a woman over 50, or a man aged 70 or older.

- **Do I have any risk factors for osteoporosis?** (for example family history, medical conditions, or medicines, that cause bone loss).
- **Do I need** a bone mineral density **(BMD) test?**
- If you have had a BMD test: **What do the results mean, and do I need medicine to protect my bones?**
- How can I get **enough calcium, vitamin D and protein**? Do I need supplements?
- What kind of **exercise** should I do to help strengthen my bones and muscles?

A broken bone after the age of 50 following a minor fall is a sign of osteoporosis. Talk to your doctor and ask for assessment and treatment!

DIAGNOSING OSTEOPOROSIS

A **bone health assessment** will typically include a fracture risk assessment (such as FRAX® *https://fraxplus.org*) to determine your risk of fractures. Based on your age or level of risk of osteoporosis, your doctor may also decide that you should have a **bone mineral density (BMD) test.**

The most commonly recommended technique to measure BMD is known as DXA (dual-energy X-ray absorptiometry). This fast, non-invasive, low radiation scan usually measures bone density at the hip and spine.

The results are expressed as a T-score, indicating the distance, expressed in standard deviation (SD) units, by which an individual's BMD lies above or below the average BMD of a young, healthy reference population.

The thresholds used to classify an individual's BMD using the T-score are shown in the table:

Status	BMD (Bone Mineral Density)
Normal	T-score of -1 SD or above
Osteopenia	T-score lower than -1 SD and greater than -2.5 SD
Osteoporosis	T-score of -2.5 SD or lower
Severe Osteoporosis	T-score of -2.5 SD or lower, and presence of at least one fragility fracture

UNDERSTANDING YOUR BMD RESULTS

Osteopenia means that your bone mineral density is lower than normal.

If the results of your BMD test **show either osteopenia** (low bone mass) **or osteoporosis**, then you are at increased risk of breaking a bone. This risk is also dependent on other risk factors that you may have.

SIGNS OF POSSIBLE SPINE FRACTURES

Signs of spine (vertebral) fractures, particularly in people over 50 years of age, may include:

HEIGHT LOSS

Of **more than 4 cm** or just over 1.5 inches

STOOPED BACK

Curvature of the spine

SUDDEN, SEVERE **BACK PAIN**

In the **mid or lower spine**

If you suspect you could have spine (vertebral) fractures, **be proactive in seeking help.**

Not all spine fractures cause pain. Don't just assume that a stooped back or sudden back pain is due to ageing, arthritis, muscle strain or other causes.

Discuss the need for a spine X-ray or DXA scan (which can also image the spine to detect vertebral fractures) **and get checked for osteoporosis.**

OSTEOPOROSIS CAN BE TREATED

For patients at high risk of fractures, drug treatments are needed to effectively reduce the risk of broken bones due to osteoporosis.

Today there is a wider variety of osteoporosis treatment options than ever before. Generally, treatments have been shown to reduce the risk of hip fracture by up to 40–50%, spine fractures by 40–70%, and non-spine fractures by 25–40%.[5]

Together with **drug treatment**, your doctor will often prescribe **calcium and vitamin D supplements**, when needed, and recommend an **exercise and nutrition plan.**

The type of treatment you are prescribed by your doctor will depend on your individual risk profile and other factors, including:

TYPE OF FRACTURE

What type of fracture you have had, or are at risk of having (e.g. spine versus hip fractures)

MEDICAL CONDITIONS & TREATMENTS

Other medical conditions you may have, or medications you may already be taking

TREATMENT AVAILABILITY

Treatment availability, cost considerations, insurance plans and reimbursement policies in your country.

5. Lorentzon M, Treating osteoporosis to prevent fractures: current concepts and future developments. J Intern Med. 2019; 285:381

DIFFERENT TYPES OF TREATMENT

Treatments for osteoporosis can be divided into two categories: those that prevent bone loss (antiresorptives) or those that can build more bone (bone forming treatments).

Antiresorptive medications slow down or prevent bone loss by reducing the rate of bone turnover (the process by which old bone is replaced by new bone) and preserve or slightly improve bone mineral density (BMD). Examples in this category include:

- **Bisphosphonates** (e.g. alendronate, zoledronic acid)
- **Menopausal Hormone Therapy** (MHT, previously known as HRT)
- **Selective Estrogen Receptor Modulators (SERMs)** (e.g. raloxifene)
- **RANK ligand inhibitor** (e.g. denosumab)

Bone-forming treatments increase bone density by altering the balance of bone turnover in favour of more bone formation than bone resorption. Examples in this category include:

- **Parathyroid Hormone (PTH)** (e.g. teriparatide)
- **PTH-related protein (PTHrP) analogues** (e.g. abaloparatide)
- **Anti-sclerostin antibody** (e.g. romosozumab)

For many medications, generics (chemical molecules) or biosimilars (biological drugs such as denosumab and teriparatide) are available. Regardless of the medication prescribed, it is important to ask your doctor, pharmacist, or nurse about the right way to take the medicine before you start using it.

Like all medication, osteoporosis treatments can only work if they are taken as advised. **Do not stop the medication without first discussing any concerns or alternative options with your doctor.**

6 LIFESTYLE ESSENTIALS FOR STRONG BONES

Whether or not you have osteoporosis, you should follow these lifestyle tips to support good bone health:

1. AVOID SMOKING AND EXCESSIVE ALCOHOL INTAKE

Both are proven risk factors for osteoporosis and there is good evidence, particularly for **smoking**, that avoiding the habit can reduce your risk of fracture in the future.

2. EXERCISE REGULARLY

Aim for at **least 30–40 minutes, three to four times per week**, including **weight-bearing and resistance** (muscle-strengthening) exercises. Weight-bearing exercises include activities such as walking, dancing, stair climbing, or jogging, while resistance exercises include weights, resistance bands, or body-weight exercises that help strengthen muscles and bones.

If you've been diagnosed with osteoporosis, or **if you are vulnerable to spine fractures**, it is important to exercise safely and **avoid excessive bending or twisting of the spine**. Consult a doctor, or a physiotherapist specializing in osteoporosis, before staring a new exercise plan.

EXERCISE AND SPINE SPARING TIPS

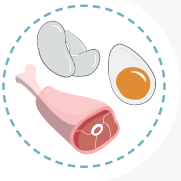
Read more about exercise tips, spine sparing strategies, and other helpful information on *www.buildbetterbones.org*

3. EAT A BONE-HEALTHY DIET

Aim for a **nutritious, balanced diet** that includes adequate calcium and protein, rich in vitamins (e.g. vitamin K), other minerals such as magnesium and trace elements (e.g. selenium) to help keep bones strong.

Calcium

Good sources of calcium include dairy products, certain mineral waters, calcium-fortified foods, and some green leafy vegetables.



Protein

Protein is found in dairy products, eggs, fish, meat, beans, lentils, tofu, and nuts.

Older adults often struggle to meet their protein and caloric needs, and it is important to include small amounts of protein-rich foods in most meals.

4. MAINTAIN A HEALTHY BODY WEIGHT

Being underweight (generally, a BMI below 19 kg/m^2) is a risk factor for osteoporosis. It is now increasingly recognised that obesity, and its association with type 2 diabetes, can also increase the risk of broken bones. Thus, a body weight within the normal range is generally considered optimal for bone health.

5. BOOST YOUR VITAMIN D INTAKE

Vitamin D helps your body absorb calcium. It can be obtained through safe **sun exposure**, with at least 10-20 minutes of sun exposure every day (face, hands and arms). Vitamin D is found in foods such as oily fish, eggs, mushrooms, as well as fortified foods, or supplements if needed.

RECOMMENDED DAILY CALCIUM INTAKES* mg/DAY AT DIFFERENT AGES

Age	Quantity of Calcium mg/day
Youth (9-18)	1300
Adults (19-50) & Men (51-70)	1000
Women (+51)	1200
Over 70 years	1200

If you are unsure whether you are getting enough calcium and/or vitamin D, speak to your doctor. They can assess your intake and, if needed, prescribe supplements or refer you to a nutritionist.

6. PREVENT FALLS

Even a minor fall can cause a serious fracture when bones are weakened, so it's important to reduce your risk of falling. Make your home safer by removing tripping hazards such as loose rugs and installing safety features like grab bars in the bathroom. Wear well-fitting shoes with slip-resistant soles, have your eyesight checked regularly, and make sure your home is well lit.

If you are prone to falls, discuss this with your doctor or physiotherapist to get recommendations for exercises that can improve your balance and strength.

**Recommended daily calcium intake according to IOM/National Academy of Medicine (USA) - may vary in your country.*

LIVING WELL WITH OSTEOPOROSIS

With the right treatment, support, and lifestyle choices, many people who are diagnosed with osteoporosis continue to live fracture-free, active and independent lives.

PRACTICAL AND EMOTIONAL SUPPORT

Having emotional and practical support is an important part of living well with osteoporosis. This can come from healthcare professionals, osteoporosis patient support groups, family, and friends. Such support can help you manage your condition and reduce feelings of isolation or low mood that some people may experience.

CONTACT YOUR LOCAL OSTEOPOROSIS SOCIETY

For further information and support, **contact your local osteoporosis society** to learn more about available resources and support groups in your area.
Visit: *www.osteoporosis.foundation/patients#who-is-fighting-with-us*

IOF International Osteoporosis Foundation

WorldOsteoporosisDay October20

©2026 **International Osteoporosis Foundation**
9 rue Juste-Olivier, CH-1260 Nyon - Switzerland
T +41 22 994 01 00 • info@osteoporosis.foundation
www.osteoporosis.foundation • www.worldosteoporosisday.org

FRESENIUS KABI

This educational material was independently developed by the International Osteoporosis Foundation and made possible through an educational grant from Fresenius Kabi Swiss BioSim GmbH. The funder had no influence or control over the content.