

# Osteoporosis

## What is osteoporosis?

Osteoporosis is a medical condition where bones become porous, weak, brittle, and prone to fracture (crack or break) as compared to normal bones. Even a minor injury or fall can cause a serious fracture. The most common osteoporosis fracture sites are bones at the hip, spine, wrist, ribs, pelvis and upper arm.

1 in 3 persons with hip fractures suffer significant functional decline and become dependent on others. 1 in 5 person dies within a year after sustaining a hip fracture. Osteoporosis is becoming a common problem with the ageing population. So start protecting your bones today!

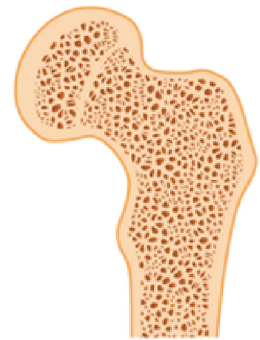
(Data source: Health promotion board)

## How does osteoporosis occur?

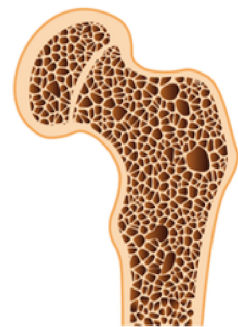
Osteoporosis occurs when bone loss is faster than bone production.

During childhood and adolescence, bone production is more active than bone loss.

Your bone will achieve peak bone mass at the age of 30.

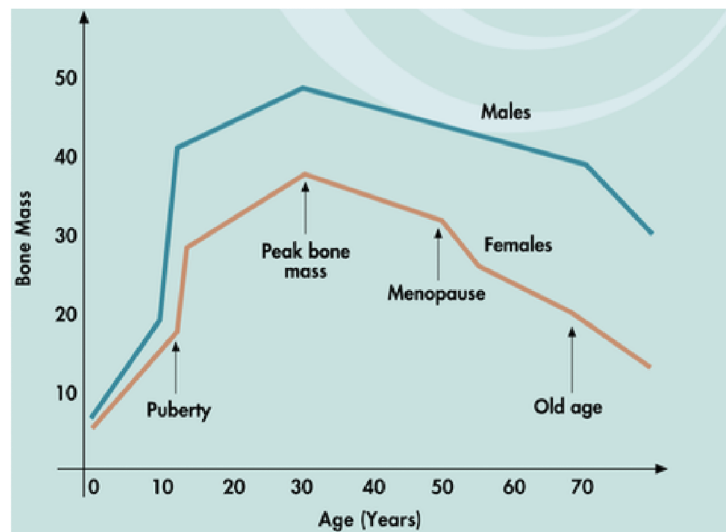


Healthy Bone



Osteoporosis





(Source: Health Promotion Board)

Between ages 30 to 50, your bone mass does not change significantly but it is still important to maintain adequate calcium intake. After the age of 50 years in women and 65 years in men, bone loss starts to occur rapidly and it is important to maintain a high calcium diet and keep bones strong and healthy.

## Who are at risk?

You are more likely to have osteoporosis if you have the following risk factors. Women have higher risk for osteoporosis, however men can get osteoporosis too!

<b>Modifiable risk factors</b> (You can control the risk factor)	<ul style="list-style-type: none"> <li>• Poor nutrition</li> <li>• Lack of calcium and Vitamin D in the diet</li> <li>• Lack of regular exercise</li> <li>• Smoking</li> <li>• Alcohol</li> </ul>
<b>Non-modifiable risk factors</b>	<ul style="list-style-type: none"> <li>• Age more than 65 years old</li> <li>• Family history of osteoporosis</li> <li>• Women who is post/ peri-menopause</li> <li>• Women who had ovaries removed before the age of 45 years old</li> <li>• Medications such as corticosteroids, gastric medications that contain aluminum or proton pump inhibitor, seizure medications</li> </ul>

## What are the signs of osteoporosis?

Osteoporosis is a “silent” disease that usually has no warning during the early stage. But during the late stages, you may experience:

- Back pain
- Loss of height over time, with a stooped posture
- Fracture of the spine, wrist, hip or other bones



## How do you protect your bones?

You can protect your bones by doing the following:

- Eating a balanced diet with adequate calcium and vitamin D
- Regular weight-bearing exercise
- Avoid smoking
- Limiting alcohol intake

### Balanced diet

A balanced diet will provide your body with enough nutrients including calcium to build strong bones. The key is to eat variety of different food groups in moderation.



(Source: Health Promotion Board)

## Calcium-rich food

Your body requires calcium for bone, muscle, and nerve health. Calcium is mainly stored in your bones. If you do not have enough calcium in your diet, your body will use the calcium from your bones to maintain adequate level of muscle and nerve function.

The amount of calcium requirement depends on your age/ menopause state and vitamin D level in the body. Therefore it is important to consume enough calcium daily, at the recommended level of your age and stage of life.

1 calcium ★ = 100mg.

You can consider calcium supplements if you are unable to meet this amount from diet alone. Always speak to your doctor or dietitian before starting calcium supplements as they can cause side effects like constipation.

Food	Serving Size	Calcium content ★ = 100mg
<b>Dairy Products</b>		
High-calcium milk powder	4 scoops (25 g)	★★★★★ (500mg)
Low-fat milk	1 glass (250ml)	★★★★ (380mg)
Full-cream milk	1 glass (250ml)	★★★ (300mg)
Low-fat yoghurt	1 carton (150g)	★★½ (240mg)
Low-fat cheese*	1 slice (20g)	★★ (200mg)
<b>Non-dairy foods</b>		
Canned sardine (with bones)	1 fish (80g)	★★★ (270mg)
Dried ikan bilis (with bones)	2 tablespoons (40g)	★★★ (270mg)
Silken tofu	package (150g)	★ (100mg)
Tau Kwa	1 small cake (90g)	★★ (150mg)
Dhal (raw)	2.5 tablespoons (30g)	½ (85mg)
Baked beans, canned*	can (210g)	★★ (110mg)
Kai Lan, cooked	1 mug (100g)	★★ (195mg)
Spinach, cooked	1 mug (100g)	★★ (140mg)



Calcium-fortified products		
High-calcium soybean milk	1 glass (250ml)	★★★★★ (450mg)
Enriched bread	2 slices (60 g)	★ (100mg)
Calcium-fortified orange juice	1 serving (250 ml)	★★★★ (350mg)



### Tips to increase calcium in your diet:

- Add skimmed milk powder or low-fat milk to soups, coffee, milo and soya drinks.
- Choose low-fat dairy products that contains as much as calcium.
- If you take soy drinks, look out for the ones labelled as fortified with calcium.

### If you have lactose intolerance (unable to take milk/ dairy products), try these suggestions:

- Choose cheese that are low in lactose, e.g. cheddar, cottage, ricotta, swiss or parmesan
- Try yogurt. The "good" bacteria help digest lactose.
- Choose lactose-reduced or lactose-free milk and dairy product.
- Include in your diet, other calcium-rich food, e.g. calcium-fortified soya bean milk, green leafy vegetables, tofu, almonds, beans, ikan bilis and sardines with bones.



KALE



SOY MILK



RICE MILK



ORANGE JUICE



BROCCOLI

## Calcium For vegans and vegetarians



SESAME SEEDS



TOFU



CHIA SEEDS



SPINACH



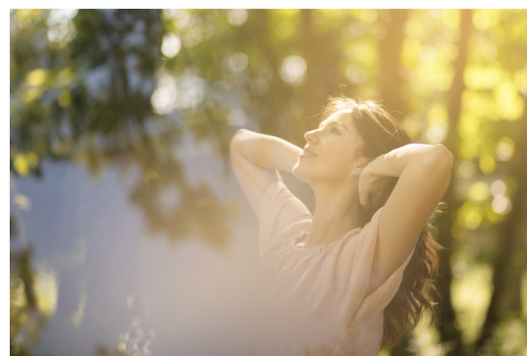
ALMOND BUTTER

## Vitamin D

Vitamin D strengthens your bones by increasing the absorption of calcium and regulating the amount of calcium in your blood.

There are few ways that you can increase Vitamin D in your body:

- Food such as salmon, liver, eggs, cod liver oil, margarine, low-fat milk
- Daily 15-30 minutes of sunlight exposure is the best way to obtain sufficient vitamin D. However, avoid outdoor activities during the hottest period of the day.
- Vitamin D supplement if you are unable to go outdoors and have insufficient Vitamin D level in your body.



## How much calcium and Vitamin D do you need?

	Boys & girls	Men & women	Men & women	Pregnant or breastfeeding
Age	10-18	19-50	51 and above	-
Calcium (mg/day)	1000	800	1000	1000
Vitamin D (IU)	600	600	800	600

Please discuss with your doctor whether you require calcium and vitamin D supplementation.

### Physical Activity

Nutrition alone is not enough to promote strong and healthy bone in the long run. Physical activity is just as important in reducing the risk of developing osteoporosis. You are encouraged to exercise 5 days a week for at least 30 minutes of moderate intensity exercise to maintain good health.



Bone building exercises such as weight bearing and resistance exercises (strength training) are important in maintaining good bone health.

#### **Example of weight bearing exercise including:**

- Tai chi
- Brisk walking
- Jogging
- Dancing
- Stair climbing
- Racquet sports

#### **Example of resistance exercise including:**

- Push-ups
- Weight training
- Using free weights or weight machines

Please choose appropriate exercises that suit your age and health condition. Consult your doctor on exercise program if you are unsure.



## Smoking

Smoking causes bone loss and early menopause in women. If you do not smoke, don't start. If you are considering to quit smoking, please call HPB's experienced quit advisor at 1800 438 2000 (QuitLine).



## Alcohol

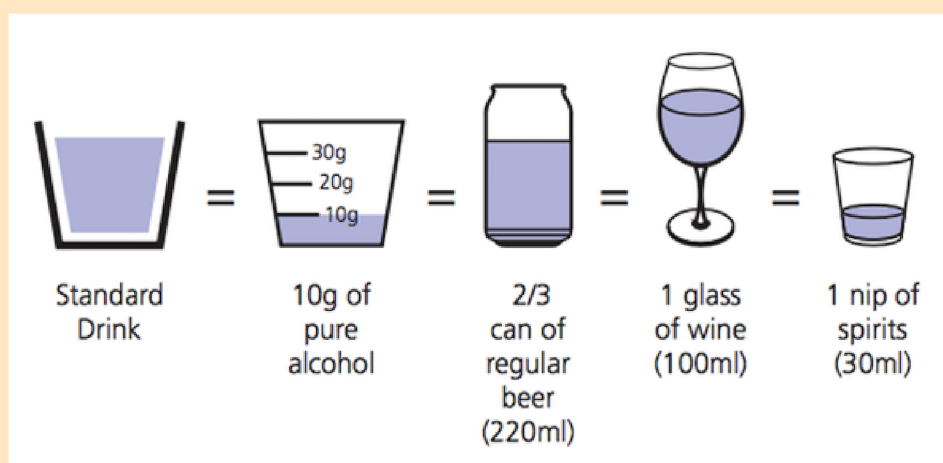
Alcohol is also harmful to your bones. Excessive amounts can reduce bone formation and the body's ability to absorb calcium.

If you do drink, limit your drink to

- Not more than 3 standard drinks/ day (for men)
- Not more than 2 standard drinks/ day (for women)

Example of 1 standard drinks (10g of pure alcohol)

- Beer - 2/3 small can of beer (220mls)
- Shots- 1 nip of spirits (30mls)
- Wine- 1 glass of wine (100mls)



(Source: Health Promotion Board)



## How is osteoporosis detected?

Routine X-rays cannot detect osteoporosis unless it is quite advanced or the bone fractured. The best way to detect osteoporosis is to carry out a Bone Mineral Density (BMD) test to measure bone density at various site (i.e. hip, spine).



**BMD test is a simple and non-invasive procedure like X-ray to measure bone mass. You should go for BMD test if:**

- You are on prolonged use of steroids (i.e. prednisolone and dexamethasone)
- You have a family history of hip fracture
- You are immobilised for a long period of time
- You have a thin and small frame
- You had a previous fracture due to a fall
- You reached menopause before age of 45
- You are over 65 years old

Please speak to your doctor if you think you need a BMD test.

## Osteoporosis Self Assessment

You may use Osteoporosis Self Assessment Tool (OSTA) to assess your risk for osteoporosis. For example, if you are 62 years old with weight of 53kg, you can come under the moderate risk group (orange colour).

Age (Yr)	Weight (kg)							
	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79
45-49								
50-54						Low Risk		
55-59								
60-64								
65-69			Moderate Risk					
70-74								
75-79	High Risk							
80-84								
85-89								

## Understanding your OSTA score

Risk Category	What does it mean?	What must you do?
High	Your risk of having osteoporosis is <b>HIGH</b> . About <b>61%</b> of individuals in the high-risk group have osteoporosis. Consult your doctor to have your bone mass checked.	In addition to a diet with adequate calcium and regular weight-bearing exercises, you may require medicine/supplements to strengthen your bones.
Moderate	Your risk of having osteoporosis is <b>MODERATE</b> . About <b>15%</b> of individuals in the moderate-risk group have osteoporosis. See your doctor to determine whether you have any other risk factors.	In addition to a diet with adequate calcium and regular weight-bearing exercises, you may need to change your lifestyle (quit smoking, drink less alcohol) to reduce your risk.
Low	Your risk of having osteoporosis is <b>LOW</b> . Only about <b>3%</b> of individuals in the low-risk group have osteoporosis. However, if you have any of the risk factors listed on page 3, please see a doctor.	You still need to maintain a diet with adequate calcium and do regular weight-bearing exercises to maintain bone mass.

(Source: Health Promotion Board)

## Osteoporosis is preventable!

### Make Simple Change to your lifestyle to reduce your risk.

- Eat a well-balanced diet with adequate calcium and vitamin D
- Do regular weight-bearing exercise
- Avoid smoking
- Limit alcohol intake



## Where can I get help?

HPB HealthLine: 1800 223 1313

Woodlands Health

General enquiries hotline: 6363 3000

Woodlands Polyclinic

Appointment hotline: 6355 3000

10 Woodlands Street 31, Singapore 738579



Contributed by Nursing

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