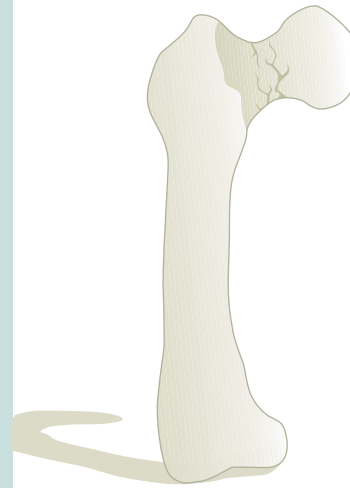


Healthy Bones

Begin With You



What Is Osteoporosis?

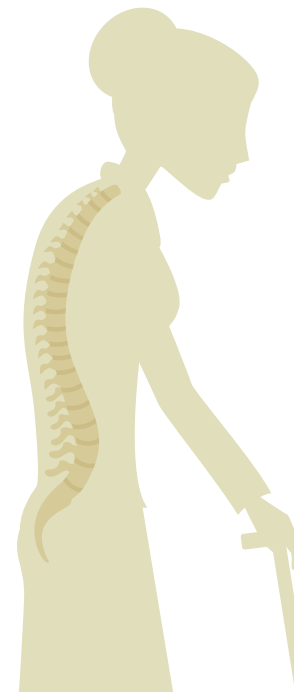


Osteoporosis, which means porous bones, is a condition where your bones become weak, brittle and fracture (crack or break) more easily than normal bones. Even a minor bump or fall can cause a serious fracture. Fractures from osteoporosis can occur in any bone, but the most common sites are bones at the hip, spine, wrist, ribs, pelvis and upper arm.

1 in 3 persons with hip fractures suffer considerable loss of function and become dependent on others. 1 in 5 people die within a year of sustaining a hip fracture.

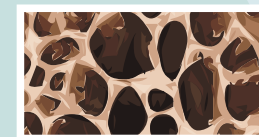
Osteoporosis is fast becoming a common problem in Singapore especially with an ageing population. So start protecting your bones today!

What Are The Signs Of Osteoporosis?

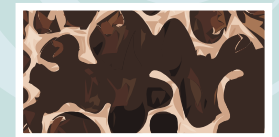


Osteoporosis is a 'silent' disease. There are usually no signs and symptoms during the early stages. But during the later stages, you may experience:

- back pain
- loss of height over time, with a stooped posture usually associated with a rounded 'hump' (Dowager's hump) seen on the upper back of older people.
- Fracture of the spine, wrist, hip or other bones.

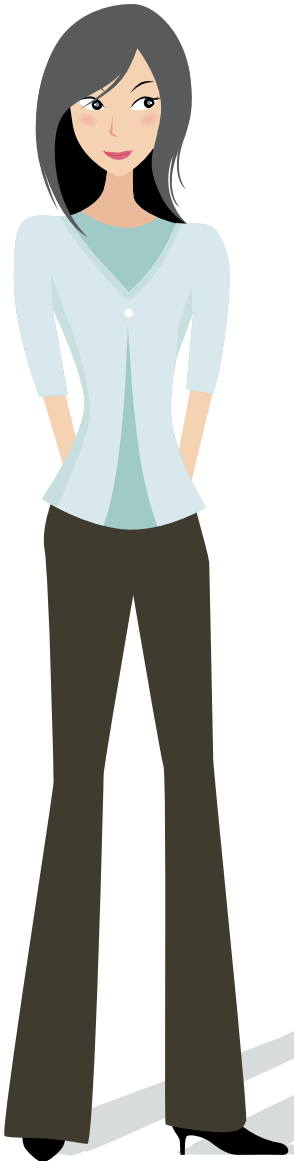


Normal Bone



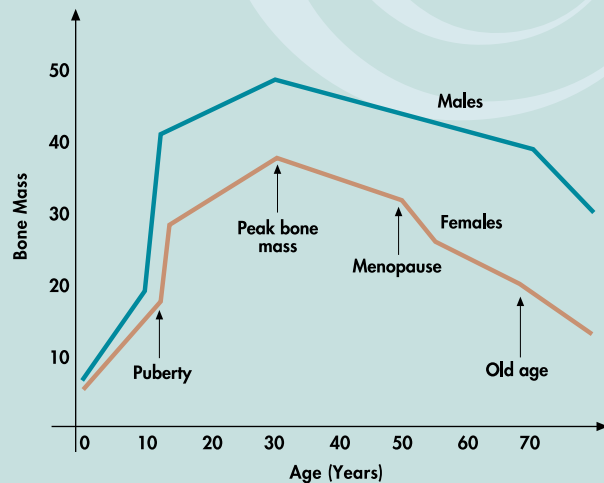
Osteoporotic Bone

How Does Osteoporosis Occur?



It occurs when bone loss is greater than bone production.

Bones are living tissues that change constantly. New bone cells are made to replace and repair old bone cells that are worn out. During childhood and adolescence, more bone tissue is deposited than it is broken down. Hence it is important to achieve your maximum bone growth (commonly referred to as **Peak Bone Mass**) before the age of 30.



Between the ages of 30 to 50 years, your bone mass does not change significantly but it is still important that you consume a diet high in calcium. The reverse is true, after the ages of 50 years for women and 65 years for men, substantial bone loss starts to occur and it is important to maintain a high calcium diet to keep your bones strong and healthy.

The risk of osteoporosis increases with age. Protect your bones before it is too late!

Are You At Risk?



You are more likely to develop osteoporosis if you:

- are over 65 years of age and have a family history of osteoporosis
- are thin and of small build
- are a woman who is post/peri menopausal or have had your ovaries removed before the age of 45 years
- are not consuming enough calcium in your diet
- have poor nutrition
- do not exercise regularly
- smoke
- drink excessive alcohol
- use medicines such as corticosteroids, certain diuretics, (e.g. frusemide), and blood-thinning medicines.



Certain risk factors such as poor nutrition, irregular exercise, smoking and excessive alcohol are modifiable.

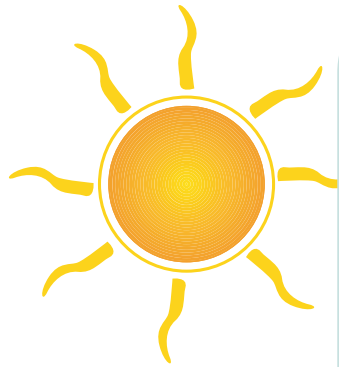
Although women are more prone to getting osteoporosis, **men can get osteoporosis too.**

If you are concerned that you may be at risk, take a minute to complete the Osteoporosis Self-Evaluation Test on page 16.



For **women** aged 45 years and above, there is an additional test known as the Osteoporosis Self-Assessment Tool for Asians (OSTA) that can further help you assess your risk of osteoporosis. You can find this Tool on page 15.

How Can You Start Protecting Your Bones?

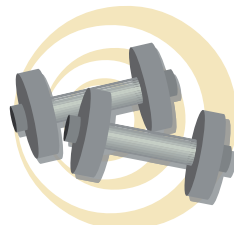


The best time in life to build strong bones is during childhood and adolescence. Up to 30 years of age, more bone tissue is deposited than broken down. The maximum bone mass is known as **Peak Bone Mass** (refer to page 2). By achieving your maximum bone growth, you are reducing your risk of developing osteoporosis.

However, this does not mean that you will be unable to contribute positively to your bone health later in life. Exercise, good nutrition with calcium-rich food and a regular dose of sunshine will help build strong bones. Sunshine is needed for the production of vitamin D in your body which in turn helps in calcium absorption.

Your journey to strong bones begins with:

- eating a balanced diet with adequate calcium and vitamin D
- doing regular weight-bearing exercise
- staying smoke-free
- limiting alcohol intake.



How You Can Have A Balanced Diet

Having sufficient calcium in your diet is not as difficult as it seems. The key is to eat a variety from the different food groups and in moderation.

- Brown Rice & Wholemeal Bread
- Vegetables
- Fruit
- Meat & Others









My Healthy Plate guides you to:

- Fill half of your plate with fruits and vegetables
- Fill a quarter of your plate with whole-grains
- Fill a quarter of your plate with meat and others
- Use healthier oils
- Choose water
- Be active

A balanced diet will provide your body with enough nutrients including calcium to build strong bones. So, remember to include food rich in calcium as part of your daily needs. You can find a list of common food and their calcium content on the next page.

Calcium Content Of Some Common Food

Source	Serving Size	Calcium per serving (mg)	
Milk & Milk Products			
	Low-fat yoghurt	1 carton (200g)	340
	Low-fat milk	1 glass (250ml)	300
	Cheese	1 piece (20g)	130
Fish/ Meat/ Beans/ Nuts			
	Dried ikan bilis (with bones)	2 tablespoons (40g)	630
	Beancurd, silken (tofu) with HCS 	2 squares (170g)	300
	Soya beans (cooked)	1 mug (180g)	185
	Canned sardines (with bones)	1 fish (50g)	185
	Beancurd, firm (tau kwa)	1 small cake (90g)	150
	Almonds	1/4 mug (40g)	100
	Dhal (raw)	1/4 mug (50g)	85
	Soya beancurd with syrup (tau huay)	1 bowl (540g)	80
	Beancurd, silken (tofu)	2 squares (170g)	50
	Roasted peanuts, without shell	1/4 mug (60g)	35
	Egg	1 (50g)	30
	Soya bean drink	1 glass (250ml)	20
Fruit/ Vegetables			
	Kailan (cooked)	3/4 mug (100g)	195
	Dried figs	5 whole (95g)	155
	Spinach (cooked)	3/4 mug (100g)	135
	Chye Sim (cooked)	3/4 mug (100g)	125
	French beans (cooked)	3/4 mug (100g)	75
	Broccoli (cooked)	3/4 mug (100g)	45
	Apricot, dried	1/4 mug (60g)	55
	Papaya	1 wedge (130g)	35
	Raisins	1/4 mug (60g)	30
	Green peas (cooked)	3/4 mug (100g)	25
Calcium-Fortified Products			
	High-calcium milk powder	4 scoops (25g)	700
	Low-fat high-calcium milk	1 glass (250ml)	450
	Soya bean milk with HCS 	1 glass (250ml)	450
	Bread	2 slices (60g)	110

Why Is Calcium Important For You?



Calcium is the building block for your bones.

Calcium is required for bone, muscle and nerve health. The main store for calcium in your body are the bones, where it contributes to bone structure and strength. If you do not have adequate calcium in your diet, your body will take the calcium from your bones to maintain adequate levels for your muscle and nerve functions.

The amount of calcium that is absorbed from your diet will depend on several factors. These include:

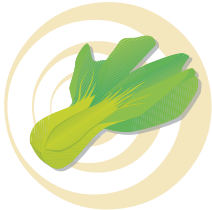
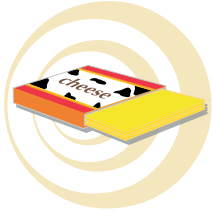
- amount of calcium consumed daily
- amount of vitamin D in the body
- age
- menopause (for women only).

This is why it is very important to consume enough calcium daily, at the recommended level for your age and stage of life.

Tips to increase calcium in your diet:

1. Add skimmed milk powder or low-fat milk to soups, smoothies, milkshakes and sauces.
2. Choose low-fat dairy products. They have just as much calcium and are heart healthy too!
3. If you take soy drinks, look out for the ones labelled as fortified with calcium.

What If You Are Lactose Intolerant?



Lactose intolerance refers to a person's inability to digest lactose, a sugar found in milk and dairy products. You may be lactose intolerant if you suffer from the following unpleasant symptoms:

- Bloating
- Gas
- Nausea
- Abdominal cramps
- Diarrhoea.

But do not worry, there are other ways to maintain a diet high in calcium. Try these suggestions:

- Stir in some milk into soups and breakfast cereals.
- Choose cheeses that are low in lactose, e.g. cheddar, cottage, ricotta, swiss or parmesan.
- Try yoghurt. The 'good' bacteria help digest lactose.
- Choose lactose-reduced or lactose-free milk and dairy products.
- 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.

What About Vitamin D?

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

Although there are dietary sources of vitamin D such as salmon, liver, eggs, cod liver oil and fortified food such as margarine and some low-fat milk, they are unable to contribute sufficient amounts of vitamin D.

So, the best way then to obtain sufficient vitamin D is to take a walk outdoors when the sun is up. Just **15-30 minutes** of daily sunlight exposure is all you need. However, avoid outdoor activities during the hottest period of the day.



How Much Calcium And Vitamin D Do You Need?

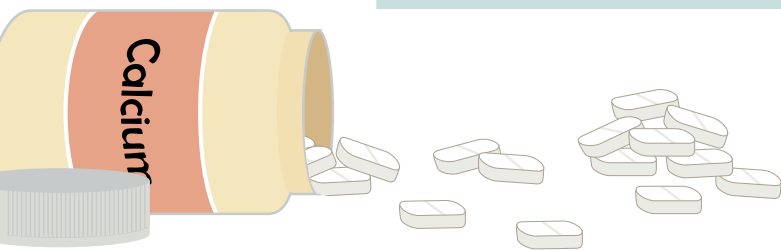
The table below shows the amount of calcium and vitamin D required for different ages and stages in life:

	Boys & Girls	Men & Women	Men & Women	Pregnant or Breastfeeding
Age (yrs)	10 - 18	19 - 50	51 and above	-
Calcium (mg/day)	1000	800	1000	1000
Vitamin D (IU)	100	100	100	400

Are Supplements Necessary For You?

If your dietary intake of calcium and vitamin D is low and you are unable to increase it to the recommended levels, your doctor may suggest that you take supplements.

Always discuss medication or supplements with your doctor before taking them.



Why Is Physical Activity Important?



Nutrition alone is not enough to promote strong and healthy bones in the long run.

Physical activity is just as important in reducing the risk of developing osteoporosis. 30 minutes of moderate-intensity physical activity for 5 days a week or more can improve your health. You may accumulate the 30 minutes of activity in 10-minute-bouts. Bone building exercises are crucial for building and maintaining bone mass. These include weight-bearing and resistance exercises (strength training).

Weight-Bearing Exercise

These are activities you do while your body weight is supported by your legs. There needs to be enough impact to benefit bone health. Include these exercises as part of your daily exercise routine:

- tai chi
- brisk walking
- jogging
- dancing
- stair climbing
- racquet sports.

Why Is Physical Activity Important?

Resistance Exercise (Strength Training)

These are exercises that build up strength in your muscles by working the muscles against resistance. When you do these exercises, your muscles and bones become stronger and your metabolism increases. Include these exercises as part of your daily exercise routine:

- push-ups
- weight training
- using free weights or weight machines.

For older adults, it is important that the exercise you choose is suited for your age and health condition. Consult your doctor before embarking on an exercise programme.



Is Smoking and Alcohol Harmful To The Bones?



Smoking causes bone loss and early menopause in women.

If you do not smoke, don't start. If you do smoke, consider quitting. For friendly, practical advice on giving up smoking and where you can find help close to home, call our experienced quit advisors at 1800 438 2000 (QuitLine).

Alcoholic drinks are also damaging to your bones. Excessive amounts can reduce:

- bone formation
- 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).

1 standard drink is:



Beer
2/3 small can of beer
(220ml)



Shots
1 nip of spirits
(30ml)



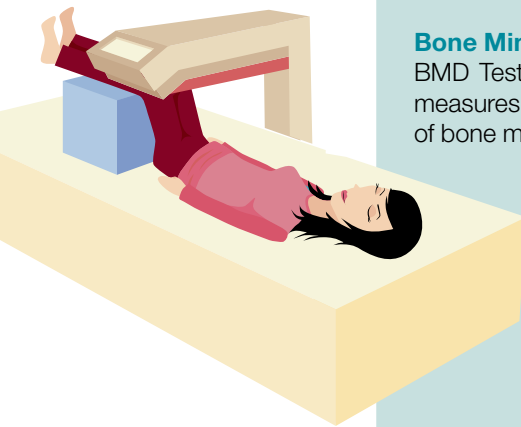
Wine
1 glass of wine
(100ml)

How Will You Know If You Have Osteoporosis?

Routine X-rays cannot detect osteoporosis until it is quite advanced and there is a lot of bone loss. The best way to detect osteoporosis is to carry out a Bone Mineral Density (BMD) Test to measure bone density at various sites (e.g. hip, spine).

Bone Mineral Density (BMD) Test

BMD Test is a simple and non-invasive procedure that measures bone calcium content to help detect early loss of bone mass.



Men and women over 65 years are at a higher risk of osteoporosis than younger people. Nonetheless, it is possible to have low bone mass at a much earlier age. As osteoporosis has no obvious symptoms until a fracture occurs, it is important to go to the doctor if any of the following risk factors apply to you.

You should go for a BMD Test if:

- you are on prolonged use of steroids (i.e. cortisone and dexamethasone)
- you have a family history with a hip fracture
- you are immobilised for a long period of time, e.g. bed-ridden due to illness, hospital care
- you have a thin or small frame
- you had a previous fracture due to a fall
- you reached menopause before the age of 45.

Consult your doctor for advice, if you think you need a BMD Test.

What Is the OSTA?

The Osteoporosis Self-Assessment Tool for Asians (OSTA) is a guide to help assess an Asian woman's risk of osteoporosis. This is done simply by comparing her weight (in kilograms) to age. For example, if you are 60 years of age and weigh 50 kilograms, you can come under the moderate-risk group (indicated in orange).

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

Understanding your OSTA score

Risk Category	What does it mean?	What must you do?
High	Your risk of having osteoporosis is HIGH . About 61% 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 MODERATE . About 15% 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 LOW . Only about 3% 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.

Osteoporosis Self-Evaluation Test: Are You At Risk?

Notes

Use this questionnaire to assess your risk of osteoporosis.

1. Are you aged 65 years and above?
 Yes No
2. Do you have a family history of hip fractures?
 Yes No
3. Do you have a thin or small body frame?
 Yes No
4. Have you broken a bone after a fall?
 Yes No
5. Do you smoke?
 Yes No
6. Do you consume less than the recommended level for calcium? (see page 10)
 Yes No
7. Do you engage in less than 30 minutes of physical activity daily (e.g. jogging, brisk walking, dancing, stair-climbing)?
 Yes No
8. Do you drink more than 2-3 standard drinks of alcohol a day?
 Yes No
9. Have you taken steroid medications for more than 3 months?
 Yes No
10. Men only: Has your doctor ever told you that your level of sex hormones (testosterone) is low?
 Yes No
11. Women only: Have your periods stopped for 12 months or more (other than because of pregnancy, lactation and removal of womb)?
 Yes No
12. Women only: Did you undergo menopause (naturally) or had your ovaries surgically removed before the age of 45 years?
 Yes No

If your answer is 'yes' to more than one question it does not mean that you have osteoporosis, but it does indicate that you may be at risk. Consult your doctor for more advice.

Osteoporosis is preventable. Make simple changes to your lifestyle to reduce your risk.

- Eat a well-balanced diet with adequate calcium and vitamin D
- Do regular weight-bearing exercise
- Stay smoke-free
- Limit alcohol intake.

For more information on osteoporosis:

- See your family doctor
- Call HealthLine at 1800 223 1313 (personal advice during office hours)

or

Log on to the following websites:

- HealthHub @ www.healthhub.sg
- Osteoporosis Society (Singapore) @ www.osteoporosis.sg
- International Osteoporosis Foundation @ www.iofbonehealth.org