



*Have you broken a bone  
from a trip and fall?*

*Have you lost height?*



# FALL PREVENTION

Irish  
Osteoporosis  
Society



## Fall Prevention and Osteoporosis

Reducing your risk of falling and preventing or treating osteoporosis will help you maintain your independence. People work their whole life looking forward to retirement. All it can take is one fall that can prevent a person from enjoying their golden years.

Most falls happen in the home, therefore making your home environment safe is essential. The good news is that many falls can be prevented by making simple changes in your home and lifestyle. In an ideal world, everybody would ensure that their homes were safe environments for all members of the family.

Undiagnosed osteoporosis leads to broken bones which can lead to loss of independence. Since only 15% of people with osteoporosis are diagnosed, the risk of a senior citizen having undiagnosed osteoporosis is very high. 1 in 5 men and 1 in 2 women over 50 will break bones due to osteoporosis, as you age your risk of developing osteoporosis increases.

Fall prevention is linked to osteoporosis because of the high risk of broken bones from a fall.

### Who should read this booklet?

- All senior citizens who want to reduce their risk of losing their independence.
- Those who are concerned about a spouse, parent, grandparent or friend.

### What is Osteoporosis?

Osteoporosis basically means porous bones. Bone is a living tissue that is constantly being removed and replaced. Bones need normal sex hormones, calcium, vitamin D, proteins and weight bearing / strengthening exercise to keep them healthy. As we get older, more bone is naturally lost than is replaced, but people with Osteoporosis lose more bone than people who do not have the disease. Osteoporosis causes bone to become fragile and therefore, break easily. A simple sneeze can cause ribs to fracture (break) due to severe undiagnosed Osteoporosis.

The disease affects both sexes and all age groups, even children can be affected. Osteoporosis is the leading bone disease in the world, even though it is preventable and treatable in the majority of people. Research has found that every 30 seconds, someone in the EU has a

hip fracture as a result of Osteoporosis. The most common bones to fracture are the hip, spine and wrist, however it can affect any bone.

## Why is it called the silent disease?

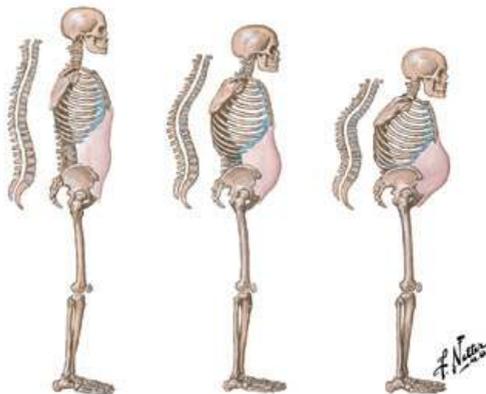
Osteoporosis is known as the silent disease because people with osteoporosis cannot feel their bones getting weaker. Typically the first sign/symptom that a person may already have osteoporosis is a broken bone from a trip and fall. If a person's bones were healthy they would not break so easily.

## What is Osteopenia?

Osteopenia is the early stages of Osteoporosis and can develop into Osteoporosis unless prevention methods are put in place. Research shows that the majority of broken bones occur in the moderate to marked osteopenia range.

## Signs and Symptoms of Osteoporosis

- A "low trauma fracture" is a broken bone due to a trip and fall or less.
- Sudden, severe episodes of upper, middle or low back pain.
- Loss of height (2-16cm), which can be due to the vertebrae (bones in spine) collapsing. Many people believe that it is normal to lose height as you get older. However, if a person loses more than two centimeters, it is a red flag that they should get a DXA scan to rule out osteoporosis.
- A hump developing and/or a change in body shape and size occurs. Speak to your doctor, as the cause of a hump on a person's back should be investigated.
- A person's head protruding forward from their body.



**EFFECTS OF UNDIAGNOSED OSTEOPOROSIS**

## Who is at risk of developing Osteoporosis?

There are many reasons why a person can develop osteoporosis. Below is a list of some of the most common risk factors. You will notice that some of these are other diseases, some are treatments used to treat other diseases and some are secondary effects of a disease or lifestyle choices.

**Family History:** 80% of your bone is due to genetics therefore genetics is a strong risk factor especially, if there is a history of a hip fracture.

**Eating disorders:** Past or present history of anorexia and/or bulimia

**Gastrointestinal Disorders:** such as Coeliac, Crohn's, Ulcerative Colitis or Primary Biliary Cirrhosis.

**Rheumatoid Arthritis:** the disease itself and steroid treatments.

**Endocrine Disorders:** such as High levels of prolactin, cortisol or Thyroid hormone problems.

- Asthma
- Diabetes
- Turner's Syndrome
- Klinefelter's Syndrome
- Haemochromatosis
- Bone Marrow Disorders
- Connective Tissue Disease
- Multiple Sclerosis
- Parkinson's disease

## Treatments

**Chemotherapy or Radiation:** Any adult or child who has received or who will be receiving either of these should have a DXA scan and be treated preventively..

**Corticosteroids:** such as prednisolone, prednisone or cortisone

- Some Anticonvulsants
- Post Organ Transplant Therapy
- Diuretics such as Lasix can increase calcium loss
- Chronic Heparin or Warfarin
- Antipsychotic medications such as long term Lithium Therapy
- Aromatase inhibitors for the treatment of breast and prostate cancer.

## Lifestyle Factors

- Excessive Physiological or Psychological stress
- Low Body weight. If you are unsure if you are underweight for your height, check with your doctor or a dietician
- Lack of regular weight bearing exercise
- Diet: Low daily intake of Calcium and /or Vitamin D. Intolerance to dairy products or vegetarians / vegans who do not take the daily amount of Calcium, Vitamin D and protein. (Supplements are available for those who can not get the required amounts from food.)
- Smoking
- Alcohol. Women who regularly consume more than 14 units of alcohol per week and men who regularly consume more than 21 units of alcohol per week are at higher risk. 1 unit is equivalent to a half pint of beer, 1 small glass of wine or 1 measure of spirits.

## Secondary Effects

- Those who are wheelchair, bed bound or who have impaired mobility for six weeks or longer, especially in childhood. Example: Cerebral Palsy, amputees or those who have had a stroke (CVA)
- Sudden, severe episodes of upper, middle or low back pain or loss of height (2-16cm).

## Additional Risk factors for Women

The most common cause in women is Oestrogen Deficiency. This may be due to a variety of causes:

- All women who have gone through the Menopause, particularly those who have experienced premature menopause which is before 45 years.
- Natural or Surgical menopause i.e. - ovary/ovaries removed/ hysterectomy
- Endometriosis

## Additional Risk factors for Men

The most common cause in men is testosterone deficiency (Hypogonadism). Symptoms of this include loss of sex drive, loss of erections, depression, and/or fatigue.

## If you are at risk:

If you have one or more risk factors, we recommend that you speak to your Doctor about the possibility of a DXA scan. Based on your results, you can then help prevent its onset or if you have

osteopenia/osteoporosis, you can prevent further deterioration, reduce your risk of fracture and possible loss of independence.

## Diagnosis of Osteoporosis

A DXA scan is a simple, painless test that takes approximate 10 minutes and is not claustrophobic. A DXA scan of the spine and hips is the only test the Irish Osteoporosis Society recommends for the diagnosis of osteoporosis. The IOS does not recommend heel scans for the diagnosis of osteoporosis.

If a person is positive, rescanning is usually every two years and the new results should be compared to the last. A decline should not have occurred, if this happens the cause/s should be investigated.

### DXA Results

The IOS has divided osteopenia results, to make it easier for people to understand their diagnosis from a DXA scan of the spine and hips:

- Mild Osteopenia is a T score of -1 to -1.49
- Moderate Osteopenia is a T score of -1.5 to -1.99
- Marked Osteopenia is a T score of -2 to -2.5
- Osteoporosis is a T score of -2.5 or higher

**OR**

a low trauma fracture.

All individual T score results should be looked at, not just the total/average of L2-L4. and both areas of the hips. Research shows that the majority of fractures happen between moderate and marked Osteopenia.

Example: T score for L1 = -1.6 = Moderate Osteopenia  
T score for L2 = -1.1 = Mild Osteopenia  
T score for L3 = -2.5 = Osteoporosis  
T score for L4 = -4.4 = Severe Osteoporosis  
T score for Right hip (Neck) = -1.2 = Mild Osteopenia  
T score for Right hip (total) = -1.0 = Mild Osteopenia  
T score for Left hip (Neck) = -4.3 = Severe Osteoporosis  
T score for Left hip (total) = -4.1 = Severe Osteoporosis

### Treatment of Osteoporosis

There are many treatments for osteoporosis and it is important that you speak to your doctor about a treatment plan that is right for you. All cause/s of Osteoporosis should be investigated and addressed.

**A treatment plan should be based on:**

- A person’s risk of fracture or re-fracture
- A person’s DXA results of spine and hips
- The cause(s) of why the person developed it.
- The person’s age
- The person’s medical history

**Prevention**

Awareness of osteoporosis and following a lifestyle that promotes bone health is the greatest form of prevention. Calcium, Vitamin D and appropriate weight bearing exercise, all help to reduce your risk of developing osteoporosis.

An educational osteoporosis package for 12-18 years of age is available through the charity. The package consists of a DVD, with questions and answers, and a 140 power point presentation which can be adjusted for all age groups.

“Bones” by Brent Pope is a book for 8-12 year olds to promote healthy bones and is also available from the osteoporosis charity.

A nutrition leaflet is available from the charity.

A guide to weight bearing exercise leaflet is available from the charity.

A Calcium and Vitamin D leaflet is available from the charity.

**Nutrition and Osteoporosis**

Healthy eating is essential for healthy bones. Bones are living tissue and therefore need certain foods to stay strong and healthy. A well balanced diet should contain a variety of foods providing adequate calories, which should be made up of:

- 50-55% carbohydrates i.e., bread, cereal, pasta, rice, potatoes, fruit and vegetables
- 30% fat, which should be poly & mono unsaturated e.g. low-fat milk, yogurt, low-fat cheese
- 10-15% protein e.g. fish, poultry and some red meat
- It should also contain 30 grams of fibre e.g. from wholegrain cereals, fruit and vegetables
- 2 litres of fluid (preferably water) a day, unless otherwise instructed by your doctor.

Substantial clinical evidence demonstrates that low calcium and vitamin D intake or poor absorption are linked to an increased risk of hip fractures in senior citizens and that calcium and vitamin D supplements in this age group can help prevent bone loss.

## Vitamin D

Vitamin D is critical for calcium absorption, as it increases the body's ability to absorb calcium by 30-80%. There is a world wide Vitamin D deficiency and low levels of Vitamin D have been linked to not only Osteoporosis but multiple forms of Cancer, TB and Multiple Sclerosis.

The most important source of vitamin D is from the action of sunlight on the skin. About 15-20 minutes of sunlight a day, during the summer months will enable the body to store vitamin D. However, it is very important to avoid over-exposure resulting in sunburn, as we are all aware of the damaging effects of the sun, especially in terms of skin cancer.

**NOTE:** Wearing sun block or make up continuously can hinder vitamin D absorption from the sun.

Vitamin D can also be found in fish oils and species of fish such as salmon, tuna, sardines, mackerel, halibut and herring.

Many milk products and margarines are fortified with vitamin D, but check labels for specific nutrient information. Breakfast cereals, soya milk and rice milk may also be fortified with vitamin D. Again, please refer to the individual brand labels for nutrient information.

## Vitamin D Supplements

Calcium and vitamin D supplements are usually combined, as Calcium should always be taken with the recommended amounts of vitamin D.

Always consult your doctor before taking any new medication or supplement.

## How much do I need?

10ug or 800 international units (iul) is the recommended dose of vitamin D for adults and children.

## Calcium

Calcium is the most abundant mineral found in our bones and helps to give bones strength and rigidity. Every cell in our body, including those in the heart, nerves and muscles relies on calcium.

Calcium is also particularly important at the time of menopause, because calcium absorption slows down, due to low levels of oestrogen.

Calcium can be found in milk, cheese and yoghurt to name a few. Fortified Milks have calcium and vitamin D, please check labels for amounts.

**NOTE:** Calcium alone is not enough to treat bone loss and is not a substitute for drug therapies that treat bone loss. Vitamin D is essential for calcium absorption.

### How much calcium do I need?

Adults (Men)	1000 mg per day
Adults (Women)	1000 mg per day
Pregnant Women (second half)*	1200 mg per day
Breastfeeding Women (first 6 months)*	1500 mg per day
Children (1-10 years)	800 mg per day
Teenagers (11-18 years)*	1200 mg per day

### Calcium and Vitamin D Supplements

Calcium and vitamin D supplements are usually combined, as Calcium should always be taken with the recommended amounts of vitamin D.

Always consult your doctor before taking any new medication or supplement.

#### Calcium and Vitamin D supplements

- Calcichew D 3 Forte
- Osteofos D 3
- Ideos
- Caltrate Plus

### Exercise and Bone Health

Exercise can play an important part in helping to reduce your risk of Osteopenia/ Osteoporosis and it is also an important aspect of treatment.

If you have been diagnosed with either, we recommend that you be assessed when possible by a chartered physiotherapist with a special interest in bone health. A physiotherapist can assess what exercises are safe and appropriate for you to do at home. They can also tell you which exercises should be avoided, such as regular sit-

ups, kickboxing or any stretch that puts additional stress on your vertebrae. Example: bending forward to touch your toes (flexion of spine). If you are participating in a class or attending a gym, a physiotherapist can also advise you in this regard.

Walking is a weight bearing exercise however it is important to change your pace intermittently and do not walk the exact same route every time.

It is important to speak to your doctor before starting any form of exercise, especially if you have health problems or have not exercised in a long time.

## Coeliac disease

People with Coeliacs disease have problems with absorption. Do you have any of the following symptoms after eating food, especially white bread, pasta or beer:

- diarrhoea (foul odour)
- stomach pain and/or bloating
- constipation
- chronic tiredness
- anaemia
- mouth ulcers
- indigestion
- bone pain
- moodiness
- depression

If you have one or more of the above symptoms, speak to your doctor as malabsorption is one of the major causes of bone loss. Ireland has one of the highest rates of celiac disease in the world.

If the coeliac test is negative but you still have any of the above symptoms, ask your doctor about trying a gluten free diet. You may be sensitive to gluten but not a true Coeliac.

## Nursing home residents

Research shows that people living in nursing homes are much higher risk of developing osteoporosis and/or of fracturing their hip. In an ideal world, all residents should be on the daily amounts of calcium, vitamin D, a daily exercise programme and those with risk factors screened for osteoporosis.

## Fall prevention

Fall prevention and osteoporosis are closely associated and both should be addressed in all senior citizens. You may have to put your pride aside to prevent yourself becoming a statistic. It is essential that you take responsibility for your bone health. Your bones are scaffolding to help keep you upright and mobile, therefore you need to make sure they are healthy.

The following are statistics which show why fall prevention is so important.

- 20% of people over the age of 60 who fracture a hip, will pass away within six months to one year due to secondary complications.
- 50% of people over 60 years of age, who fracture a hip, will become dependent on family or friends to take care of them or will need to go into a nursing home.
- Only 30% of people over the age of 60, who fracture a hip actually regain their Independence.
- 90% of hip fractures are due to Osteoporosis
- From age 70 and older, a person is 25 times more likely to sustain a hip fracture.
- Between the ages of 65 to 74, 62% of accidents are related to people falling.
- 82% of accidents to people over the age of 75 are fall related.

## Causes and Prevention

The causes of falls are known as risk factors. No single risk factor causes all falls, however the greater the number of risk factors, the higher the risk of the person having a fall. Many people believe that because they are active, they will always be independent.

There are multiple causes of falls, this booklet will give you information on some of the major causes.

### Risk Factor: Osteoporosis

The secondary effects of Osteoporosis (a fracture) can cause a person to lose their independence. Poor posture or a dowager's hump from osteoporosis can place a person at higher risk to fall, as the person's centre of gravity has been altered.

### Risk Factor: Health conditions

There are many health conditions that can place a person at a higher risk of having a fall. Some are the disease itself, the treatment

for the disease or the secondary effects of the disease. Example: Dementia, High or low blood pressure, Arthritis, heart conditions and Parkinson's.

### **Risk Factor: Lack of Physical Activity**

Lack of regular exercise can result in decreased strength, muscle tone, flexibility and bone strength.

### **Risk Factor: Impaired Vision**

Age-related vision diseases can increase the risk of a person falling. Cataracts and glaucoma can alter a senior citizen's depth perception and peripheral vision.

### **Risk Factor: Medications**

All medicines have possible side effects and some side effects can increase the risk of falling. Therefore if you have been put on a new medication and experience side effects, contact your doctor immediately.

### **Risk Factor: Environmental Hazards**

Approximately one-third of all falls in senior citizens are due to environmental hazards in the home.

#### **All Living Areas**

- Remove or secure rugs with nonskid tape as well as carpet edges.
- Remove all throw rugs.
- Have phone extensions placed up and downstairs and have emergency numbers programmed into them.
- Have regularly used electrical outlets raised to hip level.
- Reduce clutter, if you have not worn or used an item for 5 years, will you ever?
- Assistive devices can help with activities of daily living. **Example:** A long-handled reacher device to pick up light items without reaching or bending.
- Do not use chairs with wheels.
- Place non skid rugs by every sink.

#### **Kitchen**

- Have your kitchen de-cluttered of all items you have not used in years!
- Have all regularly used items placed within hip and eye level.
- A travel kettle is much lighter than a regular kettle.

- To save energy sit in a chair while preparing food
- Avoid using floor polish or wax in order to reduce slick surfaces.

### **Living and Dining Rooms**

- Electrical cords should not be running across floors.
- Arrange furniture so that you can easily move around the room.
- Use chairs with armrests, as they are easier to get up from.

### **Bedroom**

- A bedside light with a switch that is easy to turn on and off or a touch lamp.
- Use a nightlight, especially if you get up during the night.
- A telephone within easy reach of your bed.
- A firm chair to sit and dress.
- Do not walk around in bare feet, especially if you have diabetes, poor circulation or decreased sensation, you may stand on a sharp object.
- A pair of walking shoes/runners to wear in the house instead of slippers, especially at night time. Velcro closures and elastic laces are available.
- Open back shoes and/or slippers should not be worn.

### **Bathrooms**

- Grab bars installed on walls around the bath and shower.
- A raised toilet seat can be attached to your toilet. You should never pull up on a sink, as they are not strong enough to hold a person's weight.
- Place a non-skid mat in the bath or shower.
- A battery operated bath lift eliminates standing on a wet surface when you take a bath or shower.

### **Stairways, Hallways and Pathways**

- Keep free of clutter
- Never open the door to strangers.
- Install tightly fastened hand rails running the entire length and along both sides of stairs.
- Handrails should be 34 inches high and have a diameter of about 1.5 inches.
- Optimal stair dimensions are 7.2 inch riser heights with either an 11 or 12 inch tread width.

- Have adequate lighting in stairways, hallways and pathways, with light switches placed at each end.

### **Outside Your Home**

- Have all holes or uneven surfaces in your path fixed.
- Install handrails on stairs and steps.
- Keep walkways free of clutter.
- Adequate lighting is essential by the front and back door.
- Never stand or walk on wet surfaces. Walking on wet grass, wet leaves or a wet floor can be detrimental, avoid it at all costs.

### **How you can reduce your risk of falling**

A chartered physiotherapist can assess you and put an appropriate exercise/physical activity programme together. Daily exercise can help maintain/increase your strength, endurance and balance and therefore reduce your risk of falling.

To stay independent you may need to put your pride aside and be assessed by a physiotherapist for the most appropriate assistive device. Using a cane or rollator is better than suffering from a fractured hip and possibly losing your independence. If you have had a fall in the past or tend to use furniture for support, be assessed before it is too late.

**N.B.** A person should be measured for a cane or rollator. If either is too high or too low, it could place a person at higher risk of falling or cause a shoulder, neck or back problem.

If at this time you can know that you could not get yourself up from the floor, you should consider getting a life alert pendant. This device is worn around your neck or on your wrist. If you have a fall you press a button which is connected to a telephone service that can contact help even if you can not reach the phone.

### **Lifestyle choices:**

- Quit smoking, we all know that smoking damages your health especially bone.
- Drinking too much alcohol can impair a person's judgment and coordination. Alcohol should be taken in moderation and you should also check with your doctor if drinking is safe for you depending on what medications you are taking.

### **If you fall:**

Do not try to get back up from the floor until you have assessed if you have any injuries.

If you think that you can get up, take your time and if possible get onto all fours. Crawl over to a sturdy piece of furniture to help you push up from the floor.

Contact a friend or phone for an ambulance right away, do not ignore falls. A life alert pendant is a device that can be used in this situation.

**Go through the questions below to see if you or a family member are at risk of falling.** By reducing your risk of falling you can greatly reduce your risk of a fracture or losing your independence. Please do not let your pride be the cause of you losing your independence.

1	Have you ever had a 'near' fall or fallen in the past?	Y	N
2	Do you ever hold on to furniture when walking?	Y	N
3	Have you broken a bone from a trip and fall?	Y	N
4	Do you find stairs becoming more difficult or that you are becoming apprehensive using them?	Y	N
5	Do you find it difficult to pick up objects from the floor?	Y	N
6	Do you find that you are not able to walk as far as you used to, without having to take a rest?	Y	N
7	Do you have difficulty sitting down or getting up from a chair or couch?	Y	N
8	Have you lost height, developed a hump on your back or is your head protruding forward from your body?	Y	N
9	Do you get apprehensive at times regarding losing your independence?	Y	N
10	Do you find that keeping track of your medications is difficult at times?	Y	N
11	Are you taking three or more medicines such as sleeping tablets?	Y	N
12	Do you do less than 30 minutes of weight bearing exercise a day?	Y	N
13	Have you experienced dizziness, light headedness, or blurred vision?	Y	N
14	Are you apprehensive getting in or out of the bath or shower?	Y	N
15	Has it been over one year since you had your vision or prescription glasses checked?	Y	N

**If you answered yes to one or more of these questions you may be at risk of falling and losing your independence. Speak to your doctor, family member or a friend about what issues you are concerned**

about. A physiotherapist, occupational therapist or community nurse can advise on safety in the home, services available and what simple changes you can do, to make your home safer.

## **Aims of the Irish Osteoporosis Society**

- To prevent the increase of Osteoporosis in Ireland by increasing awareness of this silent disease.
- To provide support, advice and information for people suffering from Osteoporosis or concerned they may be at risk.
- To make up-to-date information available to doctors and health care workers on current methods of prevention and treatment.
- To encourage research into this area in Ireland.

## **Services available to IOS members**

- Helpline • Website • Newsletter • Awareness groups • Lectures • Public meetings • Awareness campaigns

## FP Membership and Donation Form SS

(PLEASE PRINT)

Mr/Mrs/Miss/Ms/Dr

Company (if relevant):

Address:

Telephone No:

Mobile No:

Email:

Date of Birth:

- I wish to join the society
- I wish to renew my membership
- Receive more information from the Irish Osteoporosis Society
- Attend a 1-evening information class on Osteoporosis
- Volunteer time for the Irish Osteoporosis Society
- Promoting Osteoporosis awareness in my area
- Participating/selling raffle tickets for the Irish Osteoporosis Society
- Information on Legacies

**I enclose the following subscription:**

- €25 Charity Member

Name:

Address:

Telephone No:

Email:

In addition, I would like to make a donation to the Irish Osteoporosis Society in the amount of:

- €1000   
  €500   
  €250   
  €100  
 €50   
  €25   
  €10

Other €







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