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Osteoporosis affects 1 in 5 men, 1 in 2 women over 50 and children can also be affected

Osteoporosis: Maintaining bone health through diet

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What is Osteoporosis?

Osteoporosis basically means porous bones. It is a silent disease that is usually not diagnosed until a fracture (broken bone) occurs.

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 bones to become fragile and therefore they break easily e.g. through a minor bump or fall from a standing position. A broken bone as a result of a trip or fall as an adult is not considered normal at any age. If bones are healthy they should not break easily.

The only signs and symptoms of osteoporosis are:

- Loss of height (more than 2cm), which, if caused by osteoporosis, is due to the vertebrae (bones in spine) collapsing
- A broken bone from a trip or fall from a standing position as an adult
- If a hump develops on the upper back and/or a change in body shape and size occurs
- Sudden, severe episodes of upper, middle or low back pain. **Note:** most people experience no pain until they have a fracture

Osteoporosis can affect the whole skeleton, but the most common areas to break are the wrist, spine and hip. It is not just an old lady's disease. One in two women and one in five men over the age of 50 in Ireland will fracture a bone as a result of osteoporosis and children can also be affected. 90% of hip fractures in senior citizens are due to osteoporosis.

It is a preventable and treatable disease in the majority of cases, but early diagnosis is essential for the best prognosis. A DXA scan of your spine and hips is the gold standard for diagnosing osteoporosis and is highly recommended if you are at risk.

If you have osteopenia (the early stages of osteoporosis), the IOS recommends that you find out if it is mild, moderate or marked osteopenia. The cause(s) of why you developed it is also essential as they need to be found and addressed as well as the osteopenia/osteoporosis.

Depending on the cause(s), people who have moderate or marked osteopenia may need to be placed on an osteoporosis medication as well as calcium, vitamin D and daily weight-bearing/strengthening exercises, to prevent further bone loss and reduce their risk of fracture or re-fracture.

If you have osteoporosis, the above combined with an osteoporosis medication is usually the recommended treatment to prevent further bone loss and reduce the risk of a fragility fracture.

Osteoporosis Risk Factors

There are many reasons as to why a person can develop osteoporosis. Below is a list of **some** of the risk factors. You will notice that some of these are diseases and some are treatments/medications used to treat other diseases while others are the secondary effects of a disease or lifestyle choice.

Family History

Research has shown that a family history of osteoporosis is a very strong risk factor for the disease. 60% of your bone is determined by genetics, therefore, if a parent, grandparent or a close family member suffers/suffered from osteoporosis or had a sign or symptom, then you may be at a higher risk yourself.

Other Diseases/Illnesses

- Rheumatoid Arthritis
- Eating disorders: People with a past or present eating disorder are at extremely high risk of developing osteopenia/osteoporosis at a very young age.
- Gastrointestinal disorders such as Coeliac disease, Crohn's, Ulcerative Colitis or Primary Biliary Cirrhosis.

- Endocrine disorders such as high levels of Cortisol, Cushing syndrome, Thyroid Hormone problems
- Asthmatics on steroid inhalers
- Diabetics
- Turner's Syndrome
- Klinefelter's Syndrome
- Haemochromatosis
- Bone Marrow disorders
- Connective Tissue disease
- Multiple Sclerosis
- Parkinson's disease
- Scoliosis

Treatments for other illnesses

- Chemotherapy or Radiation: Any adult or child who has received or who will be receiving either treatment is recommended to have a DXA scan and be monitored
- Aromatase inhibitors for cancer of the breast and prostate
- GnRh Analogues used in treatment of endometriosis, or cancer of the prostate
- Corticosteroids such as prednisolone, prednisone or cortisone
- Some Anticonvulsants for epilepsy
- Post organ transplant therapy
- Diuretics such as Lasix & Burinex
- Chronic Heparin or Warfarin
- Antipsychotic medications such as long term Lithium therapy

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 nutritionist
- Elite athletes can develop osteoporosis due to amenorrhoea (loss of periods for more than 4 months, not due to pregnancy) This can be due to a variety of causes which include over training, inadequate nutrition and below normal body weight for their height
- Lack of regular weight bearing exercise
- Low daily intake or poor absorption of calcium and/or vitamin D

- Intolerance to dairy products
- Vegetarians/vegans who have excessive fibre in their diet and who do not take the daily recommended amount of calcium, vitamin D and protein
- Excessive fibre intake – over 40 grams daily
- Excessive caffeine intake
- 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-bound, bed-bound or who have impaired mobility for more than six weeks e.g. people with Cerebral Palsy, amputees or those who have had a stroke
- Children who were bed-bound/wheelchair-bound or had impaired mobility in prepuberty and teenage years
- Sudden, severe episodes of upper, middle or low back pain or loss of height (more than 2cm) should be investigated

Additional Risk Factors for Women

The most common risk factor for women is oestrogen deficiency. This may be due to a variety of causes:

- First period after age 15
- Irregular or no periods for more than four months, not due to pregnancy
- All women who have gone through the menopause, particularly those who have experienced premature menopause (before 45 years)
- Surgical menopause i.e. – ovary/ovaries removed/hysterectomy
- Endometriosis

Additional Risk Factors for Men

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

Diet 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
- At least 2 litres of fluid (preferably water) a day. Even if you are trying to lose weight, it is essential to have a diet containing sufficient calories, protein, fat and carbohydrates as well as calcium and vitamin D

Calcium and vitamin D are essential nutrients in the prevention and treatment of osteoporosis. Both help to prevent as well as treat osteoporosis, in tandem with appropriate weight-bearing/strengthening exercises and a suitable osteoporosis medication.

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

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 rely on calcium.

It has been said that osteoporosis is a childhood disease that manifests itself in adult years. As children, it is necessary to grow a strong healthy skeleton that will last a lifetime. Typically we reach our peak bone mass by age 25-30, and the density of our bones will depend in part upon the calcium and vitamin D intake in childhood and teen years.

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

Studies on older adults show that adequate calcium intake and vitamin D can lower the risk of fracture.

You need to ensure that the food you eat is rich in calcium. Calcium is best absorbed from dairy products. The best sources of calcium are milk, cheese and yoghurt. Bread, almonds and tinned fish also contain calcium, as do some dark green vegetables. Some brands of orange juice and most breakfast cereals have added calcium. Mineral water can often contain calcium, but check the details on the label as the amounts can vary.

Note that calcium alone is not enough to treat bone loss and is not a substitute for drug therapies that treat bone loss.

How much 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

* Teenagers & pregnant/breastfeeding mothers may need to increase to 1500 mg calcium per day if they have osteopenia or osteoporosis.

CALCIUM CHART

The table below gives an indication of the calcium content in everyday foods. Choosing calcium rich foods will help maintain a healthy skeleton.

| Food | Weight | Calcium (mg) |
|-------------------|--------|--------------|
| Whole milk | 190ml | 224 |
| Semi-skimmed milk | 190ml | 231 |
| Skimmed milk | 190ml | 235 |
| Soya milk | 190ml | 25 |
| Goat's milk | 190ml | 190 |
| Low-fat yoghurt | 150g | 225 |
| Cheddar cheese | 28g | 202 |
| Cottage cheese | 112g | 82 |
| Boiled broccoli | 112g | 45 |
| Baked beans | 112g | 59 |
| Large orange | 1 | 58 |
| Dried apricots | 100g | 170 |
| Brazil nuts | 100g | 170 |
| Whitebait (fried) | 56g | 482 |
| Salmon (tinned) | 56g | 52 |
| Tofu | 100g | 480 |
| Milk chocolate | 56g | 123 |
| Dried apricots | 100g | 170 |
| Ice Cream | 112g | 134 |

Milk, cheese and yoghurt are some of the best sources of calcium. The servings below, each contain between 250-300 mg of calcium. Pregnant women and teenagers require 1200mg/day of calcium and will need at least 5 of these servings to get the recommended daily intake.

- A glass of milk: 'Fortified milk' is fortified with added calcium and vitamin D and is low fat
- A matchbox-sized piece of cheese
- A carton of yoghurt

Calcium Supplements

To avoid constipation problems while taking calcium supplements, make sure to take plenty of fluids throughout the day (2 litres is recommended, preferably water). Always consult your doctor before taking any new medication or supplement.

Vitamin D

Vitamin D is often referred to as the “sunshine vitamin”. It is critical for calcium absorption as it increases the body’s ability to absorb calcium by 30-80%.

The most important source of vitamin D is from the action of sunlight on the skin. About 15-20 minutes of sunlight a day, on the face and arms 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 also that wearing sun block continuously will stop vitamin D absorption.

Vitamin D can also be found in some foods. Fish oils and species of fish such as salmon, tuna, sardines, mackerel, halibut and herring are all excellent sources of vitamin D.

Eating oily fish once a week should meet your vitamin D requirements.

Other dietary sources include dairy products, margarine, eggs and chicken livers. A lot of 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

People who become deficient in vitamin D, such as senior citizens living in nursing homes, who rarely spend time outside, may require supplements of vitamin D and calcium.

If you do not like eating oily fish then a supplement may be recommended. Always consult your doctor before taking any new supplement.

How much do I need?

10ug or 800 international units (iul) is the recommended dose of vitamin D for adults and children. The upper limit of vitamin D is not well established, but medical supervision is recommended at doses greater than 30ug per day.

Remember also to take plenty of fresh fruit and vegetables that contain other vitamins and minerals.

Other Useful information

Caffeine

Excessive intake of caffeine can contribute to calcium loss through the kidneys. Caffeine is contained in coffee, tea, chocolate, stimulant drinks and cola-based soft drinks. Decaffeinated beverages are recommended as a substitute or alternatively, adding extra calcium to counteract the effect of the caffeine. Choosing lattes, cappuccinos or hot chocolate made with milk will also help boost calcium intake.

Magnesium

Magnesium is often combined with calcium in supplements, even though it is not necessary for calcium absorption. It can however counteract the constipating effect some calcium supplements can have.

Protein

Protein is necessary for building and repairing all body tissue. Protein foods (meat, fish, poultry, eggs, dairy and some legumes e.g. peas, beans, lentils) contain amino acids that are building blocks for repair and maintenance. Note that the amino-acid profile of vegetarian sources of protein are not as good, and many vegetarians therefore do not consume enough protein. A lot of women and seniors also do not consume enough protein daily.

High fibre foods

High fibre foods such as cereals and legumes contain phytates and/or oxalates that hinder absorption by binding with calcium. Although vegetables such as spinach, rhubarb and beet greens are nutritious foods, they are not considered a good source of calcium.

Wheat bran can also inhibit absorption. Oat bran does not have the same inhibiting effect. A good rule of thumb when eating high fibre foods is to include extra calcium, that will balance the inhibiting activity.

Vegetarians/Vegans

Vegetarians with a low intake of calcium, as well as vegans, need to calculate their average daily intake of calcium from food sources and may have to maximise their intake by taking a calcium supplement. Vegans should use milk substitutes that are fortified with calcium like soya and rice milk. A vitamin D supplement should also be taken if intake is low.

Coeliac

Coeliacs have problems with calcium absorption. If you have symptoms such as diarrhoea (foul odour), stomach pain and bloating, constipation, chronic tiredness, anaemia, chronic mouth ulcers, indigestion, bone pain, moodiness or depression you may need to be checked for coeliac disease. Seek medical advice.

DXA Scanning

If you have one or more risk factors, we recommend that you speak to your doctor about your risk of breaking a bone. A DXA scan of your spine and hips is the gold standard for diagnosing osteoporosis and is highly recommended if you are at risk. Otherwise you will not know whether or not you have osteoporosis as it is a silent disease. Based on your results, you can then help prevent its onset or if you have osteopenia/osteoporosis, you can prevent further deterioration and increase your bone strength.

For further information on osteoporosis please contact the charity at Lo-call 1890 252 751 or www.irishosteoporosis.ie
For further information on nutrition: www.indi.ie

Aims of the Irish Osteoporosis Society

- To prevent the incidence of osteoporosis in Ireland, by increasing the awareness of the risk factors for osteoporosis
- To provide support, advice and information for people suffering from osteopenia/osteoporosis
- To distribute up-to-date information 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
- Osteoporosis Awareness Groups
- Lectures
- Public meetings
- Awareness campaigns
- Health promotions

Membership and Donation form

(PLEASE PRINT)

Mr/Mrs/Miss/Ms/Dr _____

Address _____

Company (if relevant) _____

Telephone No. _____

Mobile No. _____

Email: _____

Date of Birth: _____

I received this leaflet from _____

I wish to join the society

I wish to renew my membership

I enclose the following subscription

€25 Charity member

€40 Healthcare Professional

Please consider making a donation, which would help the Irish Osteoporosis Society continue it's work:

I wish to make a one off donation of:

€5000

€50

€1000

€25

€500

€10

€100

other _____

I would be interested in:

Volunteering

Promoting osteoporosis awareness

Information on legacies

Payment:

Please make cheque/PO payable to:

The Irish Osteoporosis Society and crossed 'Account payee only'

Payment by Credit Card/Laser

Visa MasterCard Laser

Card Number _____

Expiry Date _____

Total Amount (membership plus donation) _____

Signed _____ Date _____

Please send form and payment to:

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