

## **Osteoporosis in Eating Disorders**

### **What is Osteoporosis**

Osteoporosis is a condition in which bones are more fragile and at higher risk of breaking. It is the result of gradual loss of minerals, especially calcium, from the bones. Bones become weak and brittle and break easily. The hip, spine, and wrist bones are particularly vulnerable to breaks.

Osteoporosis typically occurs in women following menopause. However, it is also commonly found in young women with eating disorders, particularly anorexia, who are maintaining a low body weight and who consume little calcium-containing foods.

Osteoporosis is one of the only physical consequences of anorexia that does not reverse following weight restoration; the damage to bones is NOT reversible. However, osteoporosis can be slowed, and in some cases osteoporosis can be very slightly improved with restoration of weight.

A related condition is osteopenia; the stage before osteoporosis. During this stage, people have lower bone density than is usual for their age, but not low enough to be classed as osteoporosis. If you have osteopenia, there are steps you can take to keep your bones healthy and to reduce the risk of developing osteoporosis.

### **Medical Screening for Osteoporosis**

NICE guidelines state that a DEXA scan to assess bone density should be requested if a person meets either of the following criteria:

1. Over 1 year of being underweight in children and young people (unless they have bone pain or recurrent fractures)
2. After 2 years of being underweight in adults (unless they have bone pain or recurrent fractures)

People who are living at a very low weight should ask their GP to organize a DEXA scan (bone density scan) every 2 years.

GPs should make it clear to people with anorexia that weight restoration, rather than a supplement, is required in order to slow or prevent osteoporosis.

### **Risk factors for osteoporosis**

- Being female - most women have smaller bones and calcium reserves than men
- A family history of osteoporosis
- Low oestrogen levels - oestrogen, the female sex hormone, enables the bones to absorb calcium. Oestrogen levels are low during amenorrhea, menopause, women with a low body fat percentage, and underweight women.

- Smoking - smokers tend to reach menopause one to two years earlier than non-smokers and therefore lose the bone building effects of oestrogen prematurely
- Exercise extremes - moderate exercise is very important for maintaining mineralized bone. Thirty minutes of weight bearing exercise four to five times a week is optimal for bone-building, but too much exercise destroys bones.
- Low BMI - a person with a low body weight will not benefit from the bone building effects of weight bearing exercise as much as a normal weight person does
- Inadequate intakes of calcium, vitamin D and phosphorous - vitamin D is necessary for the absorption of calcium from the gut. Phosphorous combines with calcium in the bones to give strength and rigidity. Both of these substances are found in food.
- Excess protein or salt in the diet - this increases the amount of calcium that is excreted by the kidneys and causes bone loss
- Excessive intake of fibre, caffeine and alcohol – this can reduce the amount of calcium absorbed

### **Why are people with anorexia nervosa at risk for developing osteoporosis?**

- They have low oestrogen levels (shown by absent or irregular menstrual cycles)
- Low body weight decreases the beneficial effects of exercise.
- Restrictive eating means low intakes of calcium, vitamin D and other bone building nutrients.
- Purging can cause dehydration, damage the endocrine glands, and interfere with the digestion and absorption of crucial nutrients including calcium

The best way to prevent bone loss is to maximize the amount of bone laid down during the critical period of adolescence and young adulthood. Attaining an optimal peak bone mass (which usually happens around age 30) means that there are good reserves of calcium in the bone for menopause.

### **Strategies for preventing osteoporosis:**

- 1) Weight restoration results in restored oestrogen levels
- 2) An adequate calcium intake. Young women need between 800 and 1200 mg of calcium each day. Calcium-rich foods include milk products, soy milk, canned salmon and sardines with bones, oysters, shrimp, almonds, broccoli and spinach. If you are lactose intolerant acidophilus-treated milk, live culture yoghurt and cheese and soy products are good calcium sources. Two or more servings of calcium rich foods each day should ensure that your calcium intake is adequate. Eating calcium-rich foods is the best way to meet your calcium requirements because calcium from supplements is not efficiently absorbed.
- 3) An adequate vitamin D supply. Vitamin D is produced by the body when the skin is exposed to sunlight and is also in foods such as cream, eggs and fish.
- 4) Eat a variety of foods in recommended / required quantities.

Exercise is NOT a helpful strategy for improved bone density in those who are underweight.