

Anorexia nervosa and osteoporosis

What is osteoporosis?

Osteoporosis occurs when the struts which make up the mesh-like structure within bones become thin causing them to become fragile and break easily, often following a minor bump or fall. These broken bones are often referred to as 'fragility fractures'. The terms 'fracture' and 'broken bone' mean the same thing. Although fractures can occur in different parts of the body, the wrists, hips and spine are most commonly affected. It is these broken bones or fractures which can lead to the pain associated with osteoporosis. Spinal fractures can also cause loss of height and curvature of the spine.

What is anorexia nervosa?

Anorexia nervosa is an eating disorder that mainly affects women, especially young women. It is associated with low body weight, an intense fear of weight gain and an inaccurate perception of body size. People with anorexia nervosa continue to restrict eating and lose weight despite being obviously underweight and malnourished. There are other recognised eating disorders including bulimia nervosa, where people have similar anxieties about weight gain, although there is not always severe weight loss. People with bulimia follow a pattern of food bingeing and self-induced vomiting. They may also use drugs such as laxatives and diuretics (water tablets) or over exercise to help them lose weight.

Anorexia nervosa and bulimia are often perceived as a women's problem, however ten per cent of people with eating disorders are male. Sometimes the condition is not recognised or diagnosed so readily in this group and may appear differently with affected boys and young men often combining restricted eating with excessive exercise. There is often a preoccupation with having a muscular body, which can result in an unhealthy level of body building, muscle toning or weight lifting activity.

What happens during childhood and normal puberty to build strong skeletons?

Childhood and the early adult years are a very important time for our skeletons as it is during this period that rapid bone growth occurs increasing both its size and strength. This increase is most marked during puberty. At this time there are hormonal changes with increases in both sex and growth hormones which contribute to the pubertal growth spurt and physical changes that the adolescent undergoes in order to reach sexual maturity. For girls this leads to the start of menstruation.

The increase in bone mass which occurs during growth and particularly during puberty is critical, and alongside genetic factors determines an individual's peak bone mass – that is, the maximum bone mass a person can achieve.

Does anorexia nervosa cause osteoporosis and fractures?

Many people with anorexia nervosa (and to a lesser extent bulimia nervosa) will have low bone density and consequently reduced bone strength and their risk of breaking a bone (fracture) is increased. The low bone density in anorexia nervosa has several causes. The body changes its hormone production in response to low body weight and these changes can affect bone density. Levels of insulin-like growth factor I (IGF-1), a hormone related to "growth hormone" and levels of oestrogen are reduced (which may cause women to stop having periods), and levels of cortisol (a steroid) are increased. Also, poor nutrition and reduced muscle mass contribute to low bone density. Similarly, low hormone levels, weight loss and malnutrition may be responsible for the low bone density found in men with the condition.

What may indicate that I am at risk of osteoporosis?

If you have low body weight due to an eating disorder, and especially if you have gone without menstrual periods for months or years, you may well have low bone density and be at risk of fractures.

Should people with anorexia nervosa have a bone density scan?

Your doctor or specialist may refer you for a DXA (dual energy x-ray absorptiometry) bone density scan, to establish if you have low bone density and may be at higher risk of fracture. A scan can help you and your doctors to understand if you are developing problems with your bones, and what can be done to reduce your risk of fractures.

Should people with anorexia nervosa take osteoporosis drug treatments to strengthen their bones?

The best treatment for low bone density in anorexia nervosa is treatment of the underlying eating disorder, to restore body weight and hormones to normal. Effective treatment of eating disorders usually needs experienced help and support from a multidisciplinary team. An eating disorders team includes nursing and medical staff, psychiatrists, family therapists, psychologists and a dietitian.

Vitamin supplements may also be recommended, as adequate amounts of calcium and vitamin D are required for bone health. Some studies have tried using combined contraceptive pills to replace oestrogen and improve bone density. This approach has not however been shown to be effective because the pills can reduce growth factor (IGF-1) levels. Oestrogen skin patches may be a more effective treatment because they do not affect IGF-1 levels. The National Institute for Health and Clinical Excellence (NICE) have recommended in their clinical guideline on eating disorders (January 2004), that hormones should not be used to treat bone density problems in children or adolescents as this may interfere with their natural process of bone formation and growth.

Currently there are no approved treatments (including the use of hormones) to help with the bone loss associated with anorexia nervosa. Some small research studies have tried using bisphosphonate treatments, but not all of them have had positive results. Bisphosphonates are not generally recommended for women with anorexia nervosa due to the lack of data about both the benefits and also safety, particularly in women of child-bearing age.

Occasionally a specialist may decide to treat a woman who has had spinal fractures with a bisphosphonate, but these decisions need to be made on an individual basis.

Another treatment approach currently being studied is to use oestrogen in combination with other hormones such as IGF-1 or DHEAS (a male hormone, which healthy women produce in small amounts). This is because the low bone density in anorexia nervosa is caused by several hormone imbalances. Combined hormone treatment may therefore be a promising approach, although more research is needed before it can be recommended.

What about over-exercise?

Although regular exercise is known to be protective for bone density, excessive exercise particularly if body weight falls and loss of normal periods occurs, will affect bone in a similar way to the effect of anorexia nervosa. The intensity of exercise should be reduced and, if possible, calorie intake increased until body weight improves.

For those recovering from anorexia nervosa, advice about suitable activity levels and exercise should be sought from the team who is treating them and where ever possible under the direct supervision of a physiotherapist. The level of activity and exercise advised will depend on how stable an individual's medical condition is currently, how well they are maintaining their target weight and whether dietary intake is sufficient to support an increased activity level. A graduated exercise programme including advice and information on how to exercise in a healthy way is recommended.

Anorexia nervosa is a complex medical condition and recovery may take many years. A significant number of people will continue to have lower bone density and the long-term effects on bone will be related to the severity and duration of their illness. Therefore, early diagnosis of anorexia nervosa and treatment is the most important factor affecting an individual's prognosis and future bone health.

What else can people with anorexia nervosa do to prevent osteoporosis and fractures?

Other general lifestyle factors which can help to maintain healthy bones are avoiding smoking and keeping alcohol consumption within the recommended limits.

Useful contacts

Beat

Wensum House
103 Prince of Wales Road
Norwich
NR1 1DW

Adult Helpline: 0845 634 1414

Email: help@b-eat.co.uk

Youthline (under 25): 0845 634 7560

fyp@b-eat.co.uk

b-eat.co.uk

This information reflects current evidence and best practice but is not intended to replace the medical advice provided by your own doctor or other healthcare professional.

This is one of many information resources available about osteoporosis and bone health. View the range at theros.org.uk and order more by calling us on **01761 471 771** or emailing info@theros.org.uk

President: HRH The Duchess of Cornwall. Formerly known as the National Osteoporosis Society.
Royal Osteoporosis Society is a registered charity no. 1102712 in England and Wales, no. SC039755 in Scotland, and no. 1284 in Isle of Man. Registered as a company limited by guarantee in England and Wales no. 4995013, and foreign company no. 006188F in Isle of Man.
Registered address: Camerton, Bath, England, BA2 0PJ

For osteoporosis information and support contact our free specialist nurse Helpline:

 nurses@theros.org.uk

 **0808 800 0035**

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 theros.org.uk

 **01761 473 287**



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