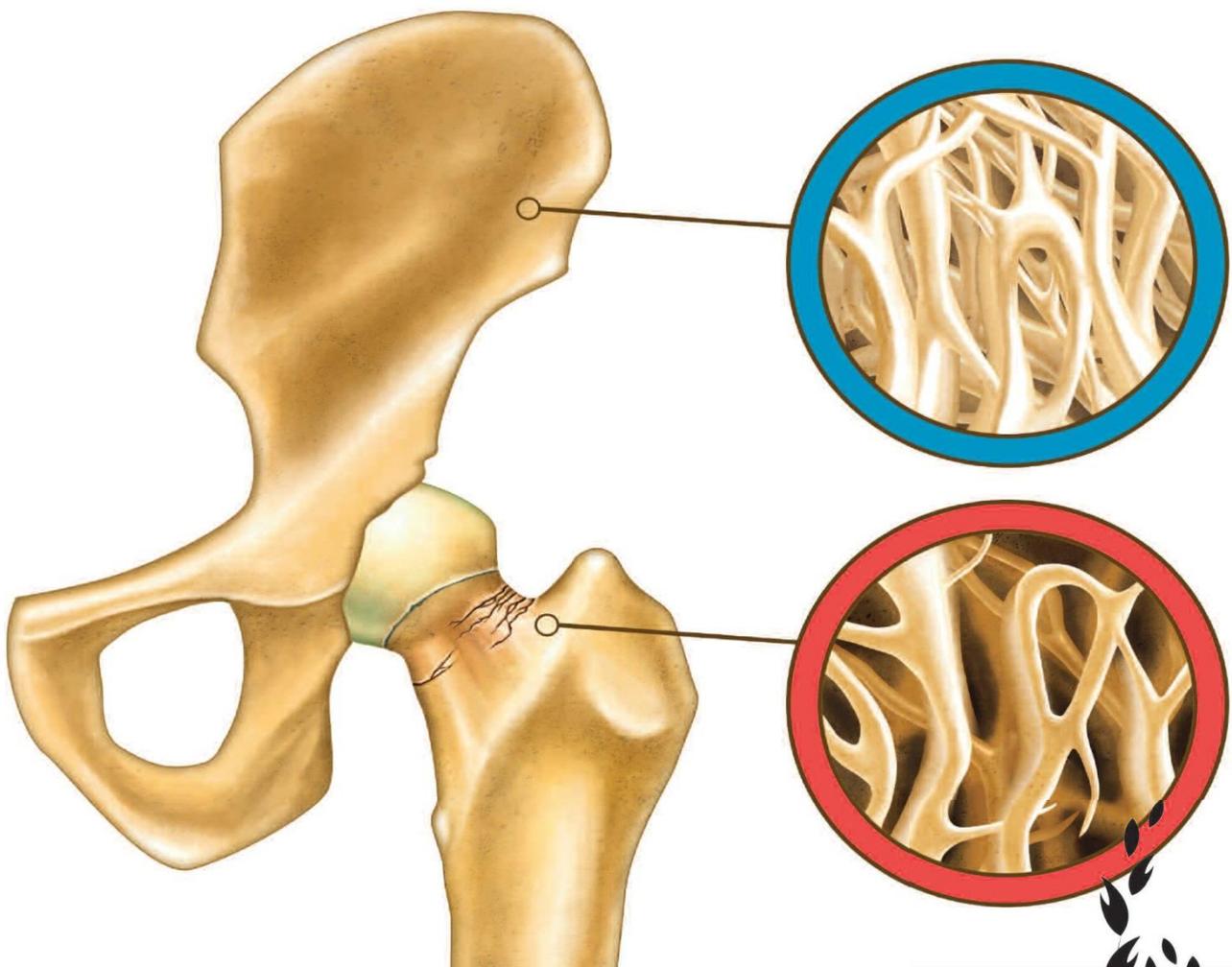




Physiotherapy Eating Disorder  
Professional Network

# Exercise, Activity & Osteoporosis with an Eating Disorder



Service User Information  
July 2019



## Exercise, Activity & Osteoporosis with an Eating Disorder

Osteoporosis is a condition of low bone mineral density (BMD), deterioration of the struts inside the bones and reduced bone strength. This leads to fragile bones that break more easily. The broken bones, known as fragility fractures or low impact fractures, occur mostly in the spine, wrists and hips. Stress fractures in the feet also commonly occur in those with eating disorders (EDs).

Unfortunately, broken bones in the spine, referred to as: compression, crush, biconcave or wedge fractures cause permanent changes, such as a loss of height and spinal curvature which can consequently lead to persistent pain and disability. Preventing these changes becomes really important for long term health.

There are many factors that are thought to contribute to the lowering of BMD in EDs including; hormonal changes- such as reduced oestrogen levels and the resultant loss of menstruation, low testosterone and androgen deficiency plus many other hormonal disturbances; prolonged malnutrition and reduced body weight to load weight bearing.

Throughout childhood, adolescence and young adulthood, bones increase in density and strength until around the age of 30 when we reach, what is known as 'Peak Bone Mass' (PBM). Think of this as your 'Bone Bank'. In women, bone turnover stays fairly stable until the age of 35 after which a little bone loss begins to occur until menopause is reached. After menopause it declines steeply for 5-7 years. Men, however reach a higher peak bone mass than women and their bone loss declines more steadily after the age of 50 years, meaning that they are less likely to suffer with osteoporosis than women. Bone loss; where the inner structure within bones begins to thin and break down, continues with advancing older age which is why osteoporosis and broken bones are more common in old age. Bone becomes less flexible and more brittle as we age.

The onset of Anorexia Nervosa (AN) in adolescence or young adulthood however interrupts the building of bone density and strength. In fact the opposite happens and losses occur. PBM ends up being lower than expected (less bone in the 'Bone Bank') especially when there has been significant weight loss and amenorrhoea over a long duration, during these important years. Many young females and males with AN and to a lesser extent Bulimia Nervosa (BN) develop bone density significantly lower than expected for their age, significantly increasing their risk of breaking bones with minor impact and leaving them more vulnerable to fractures with advancing age.

It is important for you to know that the best treatment for improving your bone health when you have an eating disorder is weight restoration, good nutrition and for females, restarting your menstruation. The younger you are and the quicker you do this will result in the best outcome for your long term physical health. Being under the age of 30 gives you the best chance of restoring some of the bone losses and rebuilding your 'Bone Bank', though improvements can be made at all stages of your life. You are advised to give your bone health some serious thought and take action to restore your health because it will have an impact on your future activities, physical health and exercise.

A DEXA bone scan will indicate whether you have a diagnosis of osteoporosis, osteopenia or 'low bone mineral density for age, gender and ethnicity'. It measures quantity rather than quality of bone. Low BMD is considered a risk factor for fractures but is not a perfect measure of bone strength. Do discuss your bone scan (including T and Z scores), bone strength and risk factors with the Physiotherapist and Doctors so that your care is specially tailored to you.

This leaflet is best used in conjunction with The Royal Osteoporosis Society; Exercise and physical activity for osteoporosis and bone health. Comprehensive information has been recently produced following the 'Strong, Steady and Straight' documents developed by leading clinical experts. There are 9 fact sheets and numerous videos to accompany the information.

**Strong-** details types and amounts of exercise and activities to promote bone strength. These include weight-bearing/impact exercise and muscle strengthening exercises.

**Steady-** details exercises and information to improve balance and reduce falls especially for the less steady and over 65s.

**Straight-** details exercises to strengthen the back muscles, manage pain from vertebral fractures, postural exercises and a positive approach to bending, moving and lifting.

It is made clear in the documentation that some groups - those with AN and compulsive exercise behaviour, have an individualised exercise programme drawn up by healthcare professionals involved in their care because excessive amounts of exercise and activity associated with the eating disorder, could potentially add to the bone strength problems and delay recovery from the eating disorder.

Advice on the amount and type of exercise and activity therefore needs careful consideration so that it does not interfere with weight restoration or the restoration of menstruation. Exercise may in fact be harmful to you if it results in plateau or further weight loss, placing your bones at further risk. An appropriate bone building programme will depend upon your ability to reach and maintain a healthy weight.

The Physiotherapy Eating Disorder Physiotherapy Network, service user information leaflet 'Managing Activity and Exercise with an Eating Disorder' supplements this leaflet and gives more detail in recognising and managing compulsive exercise behaviour.

Otherwise, newest evidence and expert consensus, suggests that physical activity and exercise is not associated with significant harm, including spinal fragility fractures and in general the benefits of physical activity and exercise outweigh the potential risks. Exercise has an important role in promoting bone strength, reducing falls risk and managing symptoms. However the expert group recommends more caution for people with vertebral fractures or multiple low trauma fractures, who will have greater general bone fragility and a higher risk of further fracture.

### **Appropriate exercise and activity:**

The amount of exercise and activity you do should be in line with good progress towards reaching a healthy weight and restoring menstruation (if female) and maintaining a healthy weight. Evidence is mixed as to whether exercise can promote bone strength in those who are not menstruating or not fully weight restored (those with AN have lower BMD and more fractures than their peers without AN and many compulsively exercise). Use common sense to maintain normal functional movements and day to day physical activities and leisure activities, so that you remain strong and flexible. Be guided by pain, move comfortably, use good moving and lifting techniques and stay within your comfort zone.

This leaflet is a guide on effective and safe exercise for your bone health.

Some people with low bone density never break a bone and vice versa but if you are having spinal fragility fractures or multiple low trauma fractures, whatever your bone scan results indicate, follow the most appropriate advice in this leaflet.

## Strong

Both impact and muscle strengthening exercises stimulate bones and promote bone strength.

Variety and surprising your bones with different movements, directions and speeds, rather than long durations of repetitive exercise is more beneficial.

- Lower impact exercise and activities if you have a diagnosis of osteoporosis and have **spinal fractures or multiple low trauma fractures and whilst stress fractures in the feet are healing.**

- Moderate impact exercise and activities if you have a diagnosis of osteoporosis **without any fragility fractures.**

- Moderate impact exercise and activities may again be possible if you have a diagnosis of osteoporosis and had **spinal fractures or multiple low trauma fractures** in the past but these are now healed and pain free and you have restored your weight and menstruation (if female). Individual Physiotherapy or medical advice is recommended.

### **Impact exercise levels**

*Lower impact activity or exercise is a broad term that includes activity in which there is a small amount of impact through the bones, such as walking, side steps and gentle heel drops. Usually, at least one foot remains on the ground.*

*Moderate impact activity or exercise is when a moderate force is created by pushing off and returning to the ground; usually both feet leave the ground but with less height and force than high impact activity. Examples: running, jogging, stride jumps, jump rope, Highland dancing, jumps and hops. Some exercise, such as stamping and heel drops with sufficient force, can create moderate impact even though one foot remains on the ground. Sports such as racquet sports, track events, most ball games and martial arts.*

*High impact activity or exercise is when a large force is created on returning to the ground, usually from a greater height (e.g. from a higher jump or from a higher jump to a lower level). This includes landings from exertional jumps such as high vertical jumps, star jumps, tuck jumps and drop landings. Sports such as volleyball, basketball and gymnastics may include high-impact activity.*

Swimming, cycling and water aerobics have many health benefits, but are not weight-bearing exercises. If they sufficiently strengthen muscles at target sites, then they may promote bone strength.

Exercises should target the most vulnerable sites affected by osteoporosis (spine, hips and wrists) and progress in the intensity of resistance.

- When strengthening using weights, resistance bands and gym equipment- get specialist advice for good technique and progress the intensity gradually, tailoring to individual fitness and ability.

Back strengthening exercises include those lying on your front, lifting the head and shoulders and adding movements of the arms and legs. They can be performed in other positions too. These exercises will also help you hold a better upright posture.

Strengthening the core muscles to improve spinal stability and support of the spine in everyday activities will have a positive influence on posture and balance. Pelvic floor strengthening exercises can help improve stress incontinence.

## Steady

-Balance exercises if you are less steady and over age 65.

## Straight

-Strengthening the back muscles has been shown in research studies to increase bone mineral density in the spine and to reduce the risk of vertebral fracture. However evidence is mixed as to whether exercise can promote bone strength in those who are not menstruating or not fully weight restored. Further trials are needed but learning the exercises will be helpful for the future, should a healthy weight be achieved. Back strengthening exercises also help towards maintaining, or regaining, a healthy posture.

-Postural exercises are important to maintain joint range and soft tissue flexibility and promote a good upright posture, which can reduce the risk of developing an increased spinal curve (kyphosis) and vertebral fractures.

These exercises include: upper back extension (bending backwards), shoulder retraction and depression (stretching shoulders backwards and downwards), chin tucks (lengthening the back of the neck) and front of the hip stretches.

-Learn safe moving and lifting techniques and the hip hinge for safe bending.

### CAUTION:

**Bending forward exercises place the spine in the kyphotic (hunched) posture, compressing the front of the spine which might increase your chance of wedge fractures. These general recommendations are to be 'on the safe side'.**

**a. If you have had spinal fragility fractures or multiple low trauma fractures and you have osteoporosis/ are not weight restored and not menstruating (if female):**

Modify or avoid movements or exercise that involve sustained, repeated or end-range, excessive forward flexion (forward bending). Any exercise that causes the back to bend into a 'C' shape, particularly with added load, should be modified or avoided.

**b. If you have a diagnosis of osteoporosis and have not had any fragility fractures but you are not weight restored and not menstruating (if female):**

Modify exercises that involve end range/sustained/repeated forward bending/ over flex the spine **unless** very experienced/have very good muscle tone and control.

Exercises with excessive 'c' curve especially with added load that put load on the spine in a curved position should be avoided or modified **but** people who are experienced/ demonstrate flexibility in the spine/manage the movements comfortably and smoothly can continue as long as they are fit enough to manage them with ease.

If you are not healthy, then it is more likely that you will not have very good muscle control or be fit enough to manage these with ease.

**c. If you have a diagnosis of osteoporosis and have not had any fragility fractures, (or you had them in the past when you were unhealthy but they are healed and pain free) and you are weight restored and menstruating (if female):**

Modify exercises that involve end range/sustained/repeated forward bending/ over flexing the spine **unless** very experienced/have very good muscle tone and control.

Exercises with excessive 'c' curve especially with added load that put load on the spine in a curved position, should be avoided or modified **but** people who are experienced/ demonstrate flexibility in the spine/manage the movements comfortably and smoothly can continue as long as they are fit enough to manage them with ease.

Some sports and leisure activities involve an inherent risk of injurious impact, falling and fracture, such as contact sports, horse riding and skiing. However, for those who practice these activities regularly, the benefits, including enjoyment and benefits to muscle and bone strength are likely to outweigh the risks, **unless you have had multiple fragility fractures or painful spinal fractures.** Consider benefits versus risks.

**Pilates** exercises are often recommended. The strength training and weight bearing aspects of Pilates are thought to promote bone strength. Classes incorporate a wide range of exercises which can be carefully considered and modified for people with osteoporosis. Pilates exercises also focus on alignment, posture, balance, flexibility, breathing, mindful movement and retraining the core stabilisers, to support the spine during everyday activities. The energy expenditure with Pilates exercises is relatively low, whilst still producing the desired outcome. This type of exercise is therefore more appropriate and favourable for someone recovering from an eating disorder.

It is very important to discuss attendance at classes with your Physiotherapist or healthcare professional as not all classes will be recommended for all individuals. It is advisable to find a class with an instructor who is knowledgeable in osteoporosis.

As your BMI increases the amount of exercise that you will safely be able to engage in will increase. It is important to work with the Physiotherapist and Multi-Disciplinary Team to identify an appropriate type and amount of exercise for you; in order to reach a healthy balance between activity and nutritional intake to progress restoration and to maintain a healthy weight. You will be advised that stress fractures in the feet require rest from the activity that caused them, to allow healing.

Physiotherapy can help you with managing pain and rehabilitation if you sustain a painful spinal fracture.

Other positive lifestyle choices and pharmacological treatments where appropriate are a part of the broader picture in promoting bone strength.

**Remember that restoration of weight, menstruation and a balanced diet are the most effective treatments for restoring some bone mass lost during amenorrhoea, improving bone strength or preventing further bone loss.**

**Leading a healthy active lifestyle and getting back to activities or sports you enjoy are the goals in the long term.**

For further information on anything contained in this leaflet or for individual advice, consult with your Physiotherapist.

Last updated July 2019

Lynn Hammond, Specialist Physiotherapist in Eating Disorders

In conjunction with:

'Managing activity and exercise with an eating disorder'

May 2018

Kate Brown, Advanced Specialist Physiotherapist

<http://cpmh.csp.org.uk/physiotherapy-eating-disorders>

Leaflet 9 & accompanying video: 'Pilates exercises-modifications with osteoporosis'

Information leaflets 1-9, February 2019

**STRONG, STEADY AND STRAIGHT**

An Expert Consensus Statement on Physical Activity and Exercise for Osteoporosis.

[www.theros.org.uk](http://www.theros.org.uk)

Solmi M, et al (2016) Bone mineral density, osteoporosis, and fractures among people with eating disorders: a systematic review and meta-analysis

Bone Acta Psychiatr Scand: 1–11

