

BETTER BONES

It's one of our biggest killers, affecting over three million of us in the UK and costing the NHS around £2 billion each year. Osteoporosis is scary stuff. Here's how it happens – and how to reduce risk and build up our bones.

Osteoporosis literally means 'porous bones'. It happens when the inner part of our bones, a mesh of collagen, calcium and other minerals, weakens as its honeycomb holes become larger. As these holes get bigger, we lose inner bone strength – with no outward signs or pain until we break a bone.

A third of all UK women (and a significant number of men) will suffer some kind of osteoporotic fracture. And for women aged 45+, osteoporosis accounts for more days in hospital than many other diseases, including diabetes, coronary heart disease and breast cancer. Just a ten per cent loss of bone mass in the spine doubles the risk of vertebral fractures – and more than doubles the risk of hip fracture. Half of those who have a hip fracture lose their ability to live independently, and 20 per cent die within the year. It's a big deal. Although falls are the most common cause of fragility fractures, some women's bones are so weakened that even a cough or sneeze can cause a rib fracture or partial collapse of the spine. Sadly, spinal fractures are a common cause of long-term pain.

Risk factors include smoking and heavy drinking (both damage bone-building cells). Post-menopausal women who don't top up their estrogen with HRT also have an increased risk (replacing missing estrogen slows bone loss and increases bone mineral density). Some medications also weaken bones. Not eating enough bone-building nutrients is a factor and can stem from young adulthood, when we may not have 'banked' enough calcium-rich foods in our bones (especially

important for young women if they're non-dairy eaters; our most common source of calcium). And some factors we can't control, such as genetics.

From our late thirties, bone tissue starts to decline and the Fracture Risk Assessment Tool (FRAX) score can assess risk. It's based on age, weight, gender, lifestyle (smoking, alcohol), medication, fracture history and bone mineral density. The best way to diagnose bone density is with a DEXA scan. This is a type of X-ray called dual-energy X-ray absorptiometry, or DEXA for short. It uses low doses of radiation, similar to the natural background radiation you'd expect to be exposed to on a transatlantic flight. Results are given as a standard deviation, meaning the number of units above or below the average bone density of a younger, healthy person. This is your T-score. A score above -1 is in the normal, healthy range. A score of -1 to -2.5 is slightly below the normal range (known as osteopenia, an indication to take lifestyle advice very seriously). Below -2.5 is classified as being in the osteoporosis range.

The most commonly prescribed drugs used here are a group called bisphosphonates, prescribed for osteoporosis (but not licensed or marketed for osteopenia). But despite being marketed to prevent fractures, studies show they can (rarely) cause a very serious condition where the bone tissue in the jaw dies, causing exposure of the jaw bone. Some doctors are also concerned that, over time, bisphosphonates such as Fosamax could cause demineralisation, making bones even more brittle, but this has not been proven. ➔

Image: Owen Beaud, Medical, Liz Budge

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'All that weight training acts like a growth hormone'

EATING DISORDERS: A personal story

Low body weight and a history of eating disorders is a significant osteoporosis risk factor, whatever your age, as Journalist Emily Faber explains. 'By 31, I'd had an eating disorder for 13 years. I'd had pain for a while and cracked my ribs twice, so a chiropractor packed me off for a DEXA scan. The results showed I had severe osteoporosis of the lumbar spine and hip. A senior rheumatologist said my bones were weak, brittle and could fracture at any point. But although the damage couldn't be reversed, it could be stopped if I put on weight.

'I saw nutritionists and was encouraged to eat and swallow huge amounts of calcium tablets. The weight crept back on, but a year after I was first diagnosed, further scans revealed the osteoporosis had worsened. The man who made an astronomical difference was personal trainer Michael Garry, who took on the task of piecing me back together again. I turned a corner of my sitting room into a makeshift gym and Michael helped me isolate specific muscle groups to help rebuild them, which included enough impact to reinforce my bones. The impact on my muscle mass has been staggering, plus all that weight training acts like a growth hormone – so I'm always trimming my nails and hair! At my last DEXA scan, six months on, the specialist called me his "miracle" as the deterioration in my back had improved – and halted in my hips. It's amazing what the body can do.'

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Eat well for bone health

A well-balanced diet rich in calcium (dairy products, leafy greens, dried fruit and tofu), plus vitamin D (oily fish, red meat – especially liver – egg yolks and artificially fortified foods, such as some breakfast cereals) is important. As vitamin D is hard to obtain daily from foods (and we don't have enough year-round sunshine in the UK to absorb it through the skin), current government guidelines are to take a daily supplement of 10mcg of vitamin D. Some nutritionists caution against drinking fizzy drinks, theorising that their phosphoric acid (phosphate) interferes with calcium absorption, but this is not backed up by good evidence. However, cola drinks of all kinds have been found to reduce bone density (possibly due to their unique mix of ingredients) – yet another good reason to cut out the pop. Fizzy mineral waters are thought to be fine and many are rich in bone-protecting minerals such as calcium – and there's no issue with drinking sparkling water or making your own fizzy water with a carbonating gadget.

Restricted diets and long-term dieting can also lead to a weakened skeleton. Actress and singer Britt Ekland was diagnosed with osteoporosis aged 53, and has questioned whether years of dieting led to her porous bones. 'As an actor, staying slim is part of the job,' she says. 'So, like most celebrities, I've been on a diet most of my adult life. But you need to eat well, considering things like calcium, vitamin D and so on, and also you need to stay active and just keep the bones and the body moving. Life's too good to be missing out on it – healthy bones are the foundation to a healthy body.' ➔

OSTEOPENIA OVERVIEW

'Osteopenia' is an increasingly common term for the early signs of bone loss. Some medics argue it shouldn't be labelled a specific disease, as it is a natural part of the ageing process and affects us all, sooner or later, to some extent. Even the definition is disputed: it is rumoured to have been an impromptu decision at a World Health Organization meeting in 1992, where experts were discussing how new technology in bone scanners had made the natural changes in bone density detectable. Since all women lose bone density after the age of 30, what was considered normal? And where did bone 'disease' start? After much to-and-fro among the medics, and a lengthy discussion on a hot summer's day, a line was hastily drawn on a graph and it was pronounced that a new term 'osteopenia' would be given to anyone the 'wrong side' of the dividing line.

According to Professor Anna Tosteson, who was in the room at the time, 'It was just a matter of, "Well... it has to be drawn somewhere."' The upshot of this is that now, every woman on one side of this line is said to have a disease. According to Tosteson, osteopenia was created more for public health researchers, who like to monitor these things, not imagining that the drug companies would move in and use this new-found ailment as a disease requiring medical treatment – a powerful financial incentive.

The average woman develops osteopenia around the age of 50, although for many women it can be much earlier. Academy Award-



Gwyneth Paltrow

winning actress turned wellness entrepreneur Gwyneth Paltrow was diagnosed aged 45. 'A bone scan showed I had the beginning stages of osteopenia and further tests showed my vitamin D levels to be the lowest my doctors had ever seen – not a good thing. I went on a prescription-strength level of vitamin D and was told to spend a bit of time in the sun.' Fellow actor Sally Field, now in her 70s, went from osteopenia to osteoporosis, so not only takes medication and goes for daily sunny dog walks, but is also an advocate of daily bone-building workouts.

VERDICT If you are given a diagnosis of osteopenia, question how far from the norm your reading is – and consider other (potentially safer) options for building bones, such as a body identical (licensed) estrogen replacement, in the form of gels or patches (not unregulated, compounded 'bio-identical' hormones), prescription-strength vitamin D supplements, spending time in the sun and more weight-bearing exercise.

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Bone-building moves

Strengthening muscles and bones works in two ways: firstly by improving balance and increasing flexibility – most fractures are caused by falls. Secondly, by building density back into our bones with weight-bearing exercises and specific resistance moves (see Michael Garry's bone-builders opposite).

According to NHS guidelines, everyone aged 19-64 should do at least 150 minutes (two and a half hours) of moderate intensity aerobic activity every week. This could be activities such as cycling, fast walking (not an amble!), jogging, sports etc. As well as this, guidelines also advise muscle-strengthening work on two or more days a week, targeting all the major muscle

groups, including legs, hips, back, abdomen, chest, arms and shoulders. Weight-bearing exercises are important for bone strength and these are any kind of activity where your feet and legs support your weight (even using a standing desk as work counts as weight-bearing activity). High-impact, weight-bearing exercises, such as running, skipping, dancing, aerobics (even just jumping up and down on the spot) are also all useful ways to strengthen muscles, ligaments and joints. Last but not least, resistance training is vital for muscle strength. This is where the action of the tendons pulls on the bones to boost bone strength, such as press-ups, lifting weights or using weighted gym equipment. ➔

Michael Garry's BEST BONE-BUILDERS

WALKING Weighted and so easy. Wear a weighted jacket or rucksack filled with water bottles, bags of beans etc for extra effect.

CLIMBING STAIRS Always take the stairs, striding up two at a time.

JOGGING The classic weight-bearing activity. Download the free Couch to 5k app for fantastic free advice and motivation.

SKIPPING Fast and effective. Start with simple two-foot skips, moving on to single-foot hops and faster alternating footwork for greater agility.

TENNIS A fantastic (and social) way to keep fit, with weight-bearing moves every time you hit the ball, increased flexibility and agility. It's never too late to take it up.

DANCING Sociable and fun! Whether ballroom, disco, line-dancing or Zumba appeals, join a group and get moving.

RESISTANCE TRAINING Use your own body weight to add resistance – no equipment required. Simple yet effective moves include push-ups, squats and using resistance bands.

YOGA AND TAI CHI Both have been found to be highly effective at building bone health if practised daily.

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