

by
**Amanda J.
Butler**



The Wellness Column

The future of bone health may not come in a pill bottle. But it won't replace the barbell either.

That sentence sums up what I've learned this year, since a single number turned my world upside down. In November 2025, a DEXA scan gave me a T-score of -3.2: "severe osteoporosis", a prescription "that will only slow down the deterioration of your bones" and advice to slow down and stop all dangerous sports! Six months later, a different kind of scan told a very different story. It found mild osteopenia and bone strength above average for my age.

Same bones, two very different verdicts. That experience sent me looking at what technology can now tell us about our bones, and what it might do to help them.

What I found is exciting. Some of it is already available, some is still emerging, and some is a glimpse of the future. None of it is a magic bullet. But taken together, it offers women something the standard approach rarely does: more information, more options and more control.

Seeing bone more clearly

Some of the most useful advances are in diagnosis. **DEXA**, the standard bone scan, measures bone mineral density using two-dimensional X-ray images. It is valuable, but density is only part of fracture risk. That number can be distorted by arthritis, spinal curvature or the extra bone that builds up around ageing joints, which is why hip and spine results often disagree. And because DEXA measures bone in two dimensions, not three, it can underestimate bone strength in smaller, slimmer women.

REMS (Radiofrequency Echographic Multi Spectrometry) is the ultrasound scan that prompted my reassessment. It uses no ionising radiation and provides bone-density estimates and a fragility score. Mainstream medical profession have yet to embrace it, but it is available privately in the UK and Europe, and increasingly respected by specialists who believe DEXA alone can lead to overmedication.

Biomechanical **CT** uses computer modelling similar to that used to stress-test bridges and aircraft. It turns suitable CT images into a virtual stress test, estimating bone strength rather than measuring the actual force that would break your bone. FDA-cleared software is already available in the United States.

Artificial intelligence can also analyse suitable CT scans taken for other reasons and flag low bone density. Reusing existing images means no new scan or extra radiation for that analysis, although a finding may need follow-up.

Two blood markers are worth discussing too. **P1NP** and **CTX** reflect bone formation and breakdown. They can help clinicians monitor treatment response within months, rather than years. An experienced clinician should interpret them alongside scans and fracture risk. There is more on these tests in my previous articles.



Red light therapy.

Between the PILL BOTTLE and the BARBELL



Osteoboost and Lifewave.

The barbell still wins

Bone is living tissue that responds to loading through lifting, impact and weight-bearing movement. Appropriately supervised resistance and impact training remains a central part of bone care. In the Australian LIFT-MOR trial, postmenopausal women with low bone mass gained almost 3% in spinal density in eight months under close supervision. NASA learned the same lesson in reverse: without gravity, astronauts lose bone fast, so resistance training is part of their daily routine in space.

What is exciting is that several **new technologies** appear to tap into the same signal. **Some of them can help women who cannot yet lift safely.**

Whole-body vibration plates, used standing with knees softly bent, have consistently been shown to slow bone loss. They also clearly improve balance, which may matter just as much. Dr Jason Conviser of Performance Health Systems recommends 30 Hz, 10 minutes a day - 1 minute on and 1 minute off for older patients - so a minimum of 15-20 minutes between waiting time, subject to fracture risk. In the US, a wearable vibration belt called **Osteoboost** has become the first drug-free treatment cleared by the FDA for

osteopenia. In its trial, women who wore it regularly lost significantly less bone at the spine and hip.

PEMF (pulsed electromagnetic field therapy) isn't new. It has been FDA-cleared since 1979 for fractures that fail to heal. Gentle magnetic pulses mimic bone's natural electrical signal, without any physical load. In one small trial of postmenopausal women, it matched a standard osteoporosis drug over six months, though more research is needed.

Red and near-infrared light therapy, or photobiomodulation, is also being studied for bone repair. The evidence is strong for bone healing after dental work and fractures. In one year-long Brazilian study, postmenopausal women who exercised under near-infrared light lost no bone in the thigh, while those who exercised without it lost 2.5%. It seems to work best not alone, but as an amplifier of exercise.

A personal note

For the past three years I have been using a product called **LifeWave X39 and X49** - technologically advanced and completely natural, non-transdermal photo-therapy patches.

During that time my blood results have improved year on year - which at my age is unusual, with no changes to my routine other than the patches. And my nails and hair, always weak and brittle since childhood, are now growing long and strong. I can't prove the patches are responsible, but since collagen underpins skin, nails and bone alike, I'll be watching my bone markers closely. More on this in the extended article on Mallorca Wellness Living.

On the horizon

Researchers including a team at Leipzig University have identified a receptor on bone cells, GPR133, that responds to mechanical stimulation. A compound called AP503, which activates it, improved bone in an osteoporosis mouse model. It is years away from human use, but it shows where science is heading: treatments that mimic what exercise does naturally.

Why you may not have heard of these

Large clinical trials cost millions and are almost always funded where there is a patentable drug and a strong financial return. Vibration, light and magnetic fields have no pharmaceutical sponsor because most often they cannot be patented. Much of the evidence therefore comes from smaller studies, clinical experience and companies specialising in these technologies. That is a reason to ask questions, not a reason to dismiss them. Absence of a large trial is not proof that something doesn't work.

Where this leaves us

None of these technologies replaces strength and balance training, adequate nutrition, supplements where needed, sleep, stopping smoking and limiting alcohol, and, for many women, hormone replacement. Better imaging and specialist interpretation can help you understand your real fracture risk before considering medication. Blood markers can show within months whether your efforts are paying off. And vibration, PEMF and light may give your bones an extra nudge in the right direction.

If you are considering any of them, talk to your doctor, ask for your P1NP and CTX before you start, and test again three to six months later. Work alongside your clinician and help your own body show you what works.

The pill bottle has its place, for women correctly assessed as high risk, or unable to exercise. So does the barbell. But for the first time, we have a growing toolkit in between, and it is well worth knowing about.

I'm delighted that this series has sparked a local conversation too. After I raised my differing scan results with Clínica Juaneda, they told me they are upgrading their DXA assessment with two new tools: Trabecular Bone Score (TBS), which gives an indication of the micro-architecture of the spine, and 3D-Shaper, which builds a three-dimensional model of the hip from DXA images. Both add valuable information to standard density measurements. Of everything this journey has brought, that response is the one I am proudest of, because it means women in my community will be better served.

Read the extended version, with sources and further discussion, at mallorcawellnessliving.com.