



Bones

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Imagine for just a moment that we did not have bones... interesting picture, isn't it?

While you might picture the whole body collapsing into a puddle, that could be the least of our problems. Bones have many crucial roles in the body.

The human skeletal system consists of 206 bones in adults with the necessary cartilage, membranes, connective tissue, muscle, nerve tissue (and more). Each bone is an organ that consists of cells involved in construction (and reconstruction), a non-mineral matrix of collagen and osteoid (proteins) and inorganic salts.

In addition to providing structural support, bones have many other functions. Bones protect vital organs like the brain, heart and lungs, produce blood cells, provide storage for minerals like calcium and phosphorous. Bones also store lipids (fats) stored in the yellow marrow providing a reservoir of energy. And bones allow for movement by acting as levers and points of attachment for muscles.

To be able to do all these things, bones must be complex internally and externally. They have to be shaped to connect to each other; be flexible, strong and hard all while being lightweight. Bones provide an intricate balance between all these demands. They are a very dynamic organ that is constantly remodelling and changing shape to adapt to the forces placed on it daily.

Bone is a highly specialized tissue that works much like the framework of an aircraft: rigid, flexible, light, hard. Long bones are tubular in shape with a strong outer shell surrounding spongier core. Vertebrae are

similarly constructed but with an additional cortical surrounding layer that can compress when loaded temporarily and return to its original size.

Sure, they are tough, but bones do break. Much the same as any structural construction, repeated loading and use do lead to deterioration. Bone, however, repairs damage by replacing it with new bone to return to its original composition. Damage repair is one thing, but put enough force on the bone and it will break.

Day to day, our bones continue to function as they do, helping us live healthy lives. As we grow older, many of us will experience a condition called osteoporosis, a disease that thins and weakens bone. Although younger people can experience osteoporosis, it is mainly a condition faced by older folks, particularly older women.

Osteoporosis is a serious condition leading to incredible pain when fractures occur. Unfortunately, there are no symptoms until there is a fracture, though tests of bone density are done if necessary. Osteoporosis starts silently, often remaining unnoticed until a bone breaks. Still, there

can be warning signs: backache, gradual loss of height with the accompanying stooped posture and fractures in the spine, wrist or hip.

Preventing or slowing osteoporosis is possible. Keep levels of calcium and vitamin D where they should be; get regular exercise; and if needed, osteoporosis medications.

Bones are wonderful organs that most of us ignore... until it is too late.

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