

Bones are like muscles

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A healthy bone is one that is elastic and can resist pressure and tensile stress. A bone consists of living tissue in a continuous state of formation or resorption depending upon the load on it. It must be supplied with nutrients. A bone remains stable if these formation and resorption processes are in balance. In the case of osteoporosis (loss of bone mass), this balance is disturbed and the bone loses more tissue than it gains. The result is an overall loss of bone mass and the bone becomes porous. This often results in pain, mainly in the back and lumbar area and in more serious cases fractures.

Strong muscles – strong bones

Bone strength and load capacity are determined not only by the structure of the bone, its material characteristics, micro-architecture and the degree of bone turnover but also by its mass. The measurement used for bone mass is bone mineral density and it is usually measured by what is known as DEXA scanning. Bone mass gradually increases until adulthood and is at its maximum between 25 and 30 years of age. This maximum is known as peak bone mass. The maximum bone mass achieved by a given individual depends upon the mechanical load placed on the skeleton. Bones only develop a reasonable level of stability if sufficient tensile stress, pressure and shear stresses are transferred through muscles and tendons to the bone tissue. Bones react to training in a similar way to muscles; they increase in mass. Bone tissue is a living substance which – even if only slowly – responds to external stimuli. From an age between 30 to 40 years, there is a gradual physiological decline in bone mass of about 0,5 % or 1 % per year.

During the menopause, a lack of oestrogen causes an increase in the rate of bone resorption. As a result, about one-third of women develop osteoporosis during the menopause. However, men are also affected by loss of bone mass. There is a 25 % risk that men will suffer osteoporotic fractures between the age of 60 and the end of their life.

Active prevention

The value of regular strength training to maintain bone health or as therapy should not be underestimated. Although a wide range of factors such as diet, smoking or alcohol can be held responsible, in most cases a chronic lack of weight bearing exercise is also partly to blame. Apart from a “bone-friendly” diet, muscle strengthening and with it bone strengthening is the only non-pharmaceutical remedy against loss of bone mass and has the potential to deliver successful long-term results. A lack of exercise and a lack of muscle resistance in our technological age represent a threat to the bone health of future generations.

Omissions in childhood and adolescence are laying the foundations for future osteoporosis. The aim of measures to prevent osteoporosis must be to develop muscle strength and mass sufficiently to stimulate the bones and trigger the bone formation process.

Strength training requirements

In order to increase the rate of bone mineralisation, the weight and duration of training must be sufficient to trigger an adequate stimulus. It is important that the training intensity is high enough to cover the entire musculoskeletal system and this requires regular, long-term training. It therefore makes

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sense to train once or twice a week. For those with existing osteoporosis, we recommend that you start with targeted Medical Strengthening Therapy rather than Preventive Strength Training. Before starting therapy, we check your previous medical history, do a risk profile, a diet analysis, a test of your existing range of motion and a review of any previous therapies.