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Truth & Myths about soya



ENSA Insights:

# Soya and Bones

## Healthy Bones



Bone tissue is a very dynamic tissue, continuously remodelling itself through bone formation (by osteoblastic cells) and bone resorption (osteoclasts). During growth, bone accretion is higher than bone resorption, allowing the bone mass to increase. Between the ages of twenty and twenty-five, this process is completed and a person's **'peak bone mass'** is normally reached. Peak bone mass is the maximum bone mass achieved in life. After this, for a certain period of time (30 to 50 years) there is a balance between the formation and degradation of bone tissue. In later life, the occurrence of bone resorption becomes higher than bone formation.

### Lifestyle Factors

Although genetic factors largely determine the size and density of your bones, lifestyle factors such as good nutrition, regular exercise, and avoiding smoking and excess alcohol also play a key role in good bone development.

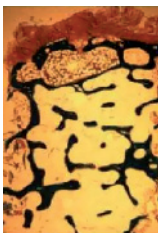
### Good Nutrition for Strong Bones

Our diet, and in particular the intake of **calcium**, plays an important role for bone health. Calcium is the major building-block of our bone tissue. Vitamin D plays a key role in assisting calcium absorption from food, ensuring the correct renewal and mineralization of bone tissue, and is therefore also essential for bone health. Other vitamins and minerals such as phosphorus and other nutrients such as protein and isoflavones may also play a role.

### The Importance of Physical Exercise

Exercise is not only important for general health, it helps build bone mass in youth and slows down bone loss in adults. For older people, exercise helps maintain muscle mass, which protects the bones when an old person accidentally falls. For healthy bones, this should be a form of exercise that brings weight to bear on your bones: walking, gardening, jogging, tennis, (roller) skating, dancing, skipping ... the more weight placed on the bones, the stronger they will remain.

## What is Osteoporosis?



Osteoporosis, which literally means "porous bone", is a disease in which the density and quality of bones are reduced. As bones become more porous and fragile, the risk of fracture is greatly increased. The loss of bone occurs "silently" and progressively. Often there are no symptoms until the first fracture occurs. The most common fractures associated with osteoporosis occur at the hip, spine and wrist. The incidence of these fractures, particularly at the hip and spine, increases with age in both women and men.

### Women

Women, particularly post-menopausal women, are more susceptible to bone deterioration than men. The female hormone oestrogen supports bone formation; due to the fall in levels of oestrogen during the menopause, postmenopausal women are at greater risk of osteoporosis, as bones no longer benefit from the protective effect of oestrogens.

### Men

Men also suffer from loss of bone tissue, but the rate of loss in men is much slower than in women.

### Facts and figures

- 1 in 3 women over 50 will experience osteoporotic fractures, as will 1 in 5 men
- It is estimated that in Europe, 179,000 men and 611,000 women will suffer a hip fracture each year
- The cost of all osteoporotic fractures in Europe is provisionally €25 billion each year





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## What about soya?

### Several soy components help to keep bones healthy.

#### Calcium

Many soy food products are rich in calcium, which means they provide the key nutrient essential for bone health. Together with other sources in our diet, the consumption of calcium enriched soy-products will help to obtain our daily needs of calcium.

#### Protein

Calcium is essential to bone growth and bone health, and therefore if the body can retain and use calcium effectively, our bones will be healthier. Studies have shown that calcium loss through urine is significantly lower in diets high in soy protein, compared to diets high in animal protein. This effect is due to the composition of the amino acids ("building blocks") in soy protein. There are fewer sulphur-containing amino acids in soy protein. An epidemiological study of postmenopausal women has shown that women with the highest intake of soy protein in their diets have a 30% reduced risk of bone fractures.

#### Isoflavones

Studies have shown that isoflavones, natural plant compounds present in soya, are beneficial to the skeleton. Soy isoflavone intake inhibits bone resorption and stimulates bone formation. This was the conclusion of a recent meta-analysis consisting of nine studies with a total of 432 **menopausal/postmenopausal** women. Moreover, in some studies the beneficial effect was already observed after an intervention less than 12 weeks.

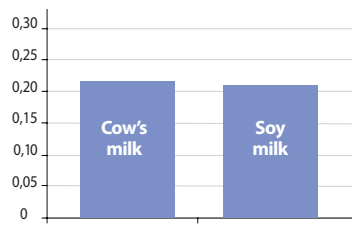
Human data suggests that 60-90mg/day of isoflavones may be effective. This translates into 2-3 servings of soya drinks per day. Some studies suggest that lower amounts consumed over many years will also have a favourable effect on bones.

Soy for healthy bones is also important for **younger women**. Soon after peak bone mass attainment, small loss of spinal bone mineral density occurs. However, a longitudinal study shows that the consumption of soya isoflavones has a significant effect on the maintenance of this spinal bone mineral density in women aged 30-40 years.

Overall research suggests that soya isoflavones positively effect bone mineral density; several, large, long-term trials are currently underway.

**To conclude, consumers should be encouraged to increase the amount of calcium-enriched soy foods in their diet in order to maintain strong, healthy bones.**

## Some FAQ's about soya and bone health



### Do soya products contain as much calcium as cow's milk?

The soyabean is rich in calcium and contains approximately 225 mg of calcium per 100g of soyabeans. However, the content in a soya drink, for example, is only around 12mg/100ml, therefore calcium enrichment is needed to obtain the same levels as in cow's milk. A lot of soy drinks and desserts are enriched with calcium in order to supply amounts similar to those found in dairy products (120mg/100ml or 100g).

Adapted from ref: Zhao, Y., B. R. Martin, and C. M. Weaver. "Calcium bioavailability of calcium carbonate fortified soymilk is equivalent to cow's milk in young women." Journal of Nutrition 135.10 (2005): 2379-82.

### Does the bioavailability of calcium in soya drinks equal cow's milk?

Scientific research has shown that calcium absorption of calcium enriched soya drinks is comparable to that of cow's milk.

Calcium enriched soya drinks contain 120 mg calcium per 100 ml, the same amount as cow's milk, therefore calcium-enriched soya drinks are a good, reliable source of calcium.

**Interested?** Have a look on [www.ensa-eu.org](http://www.ensa-eu.org) for more details and references or contact us via [secretariat@ensa-eu.org](mailto:secretariat@ensa-eu.org)

