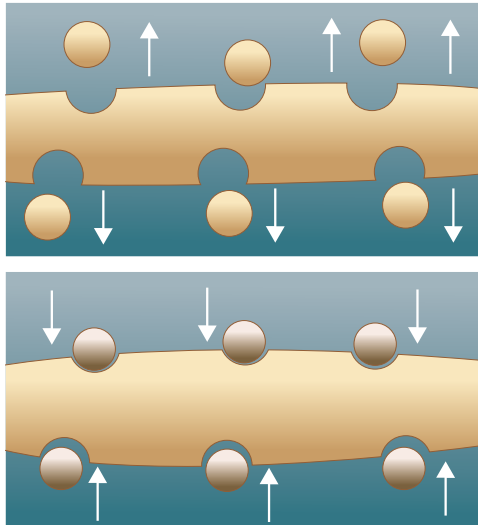


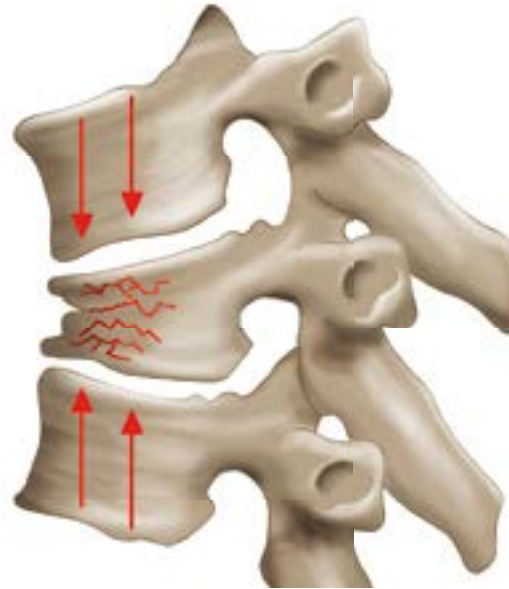
# Osteoporosis-related back pain [1]

## Development

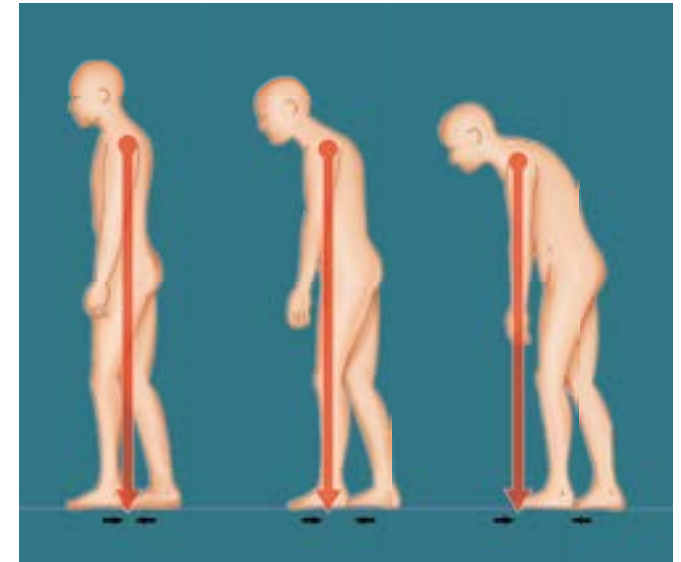
A



Osteoporosis: imbalance between deposition and breakdown of bone substance



Fractures in the vertebral bodies lead to pain, deformations and loss of body height, inactivity and a risk of falling.



## Conservative treatment [1, 2]

B



Muscle strengthening and coordination training



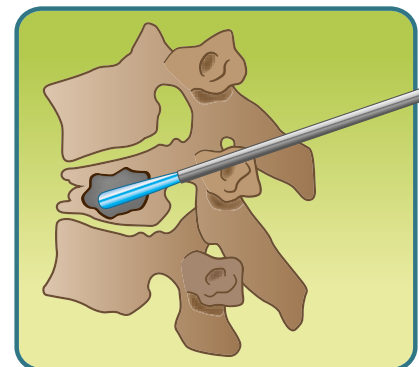
Calcium and vitamin D3

Medicines that slow down bone breakdown and increase bone deposition

Painkillers

## Surgical procedures [1, 2]

C



Repair of the vertebral body with bone cement (vertebroplasty or kyphoplasty)

# Osteoporosis-related back pain [1]

## A Development [1]

Bone substance is continuously resorbed by special cells and re-formed (osteoclasts resorb bone, osteoblasts lay down new bone).

This constant renewal (“bone turnover”) takes place throughout life. In osteoporosis this balance is disturbed so that the bone loses substance and thus becomes unstable.

Because of their reduced mechanical stability, osteoporotic vertebral bodies break very easily, for example as a result of a light impact or jerky movement. Mostly, however, the vertebrae are slowly compressed, which causes pain and is understood as “creeping bone fracture”.

Spinal fractures adversely affect the body’s skeletal stability, can lead to formation of a hump and, due to deformation of the spine, to very severe and chronic back pain.

In very rare cases compression of the spinal cord or the nerves can occur, leading to severe pain in the legs.

Women suffer from osteoporosis more commonly than men. More than a third of all women over the age of 60 are affected. The most common cause in women is oestrogen deficiency after the menopause. There is a whole range of other risk factors for osteoporosis.

## B Conservative treatment [1, 2]

Vitamin D plays an essential role in the regulation of the calcium level in the blood and in the deposition of new bone.

The following medicines are used to treat osteoporosis and prevent further bone fractures: bisphosphonates inhibit bone breakdown, parathormone promotes bone deposition. Strontium inhibits bone breakdown and increases bone deposition. Selective oestrogen receptor modulators exert an oestrogenic effect on bone. Denosumab is a monoclonal antibody, which modulates the complex regulation of bone breakdown and deposition in the direction of bone deposition.

**Pain treatment is essential** so that it is possible for patients to exercise and exert themselves. Inactivity is the greatest risk for the body and reinforces osteoporosis most.

## C Surgical procedures [1, 2]

In vertebroplasty, liquid bone cement is injected into the defective vertebral body under radiographic control and local anaesthesia.

In the lower-risk kyphoplasty a cavity is first created with a balloon catheter system into which a viscous cement is introduced at low pressure. The risk of cement escaping is lower in this procedure.

[1] Aebi M, Gunzburg R, Szpalski M (Eds). The Aging Spine. Berlin Heidelberg: Springer-Verlag, 2005. ISBN 3-540-24408-5.

[2] National Osteoporosis Foundation. Clinician’s Guide to Prevention and Treatment of Osteoporosis. Washington DC: National Osteoporosis Foundation, 2013.