

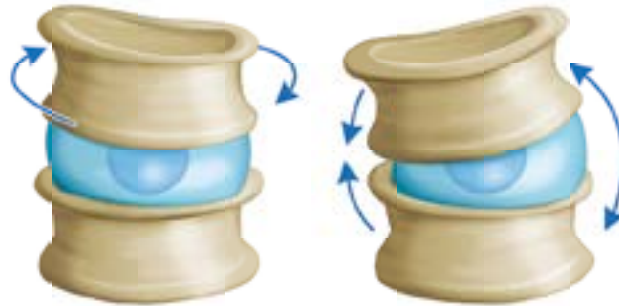
Construction and function of the spine – intervertebral discs, muscles, ligaments and nerves [1]

Intervertebral discs

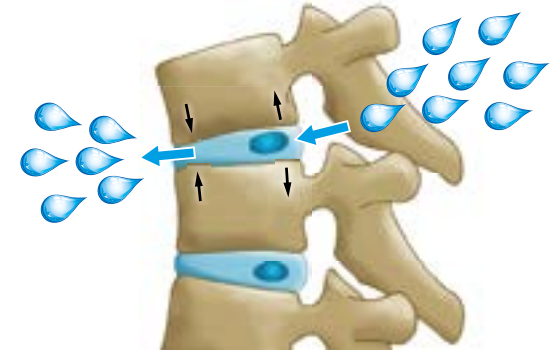
A



Intervertebral discs act as shock absorbers.



Intervertebral discs allow enormous mobility of the spine.



Intervertebral discs receive nutrition by diffusion through loading and relaxation.

Back muscles [2]

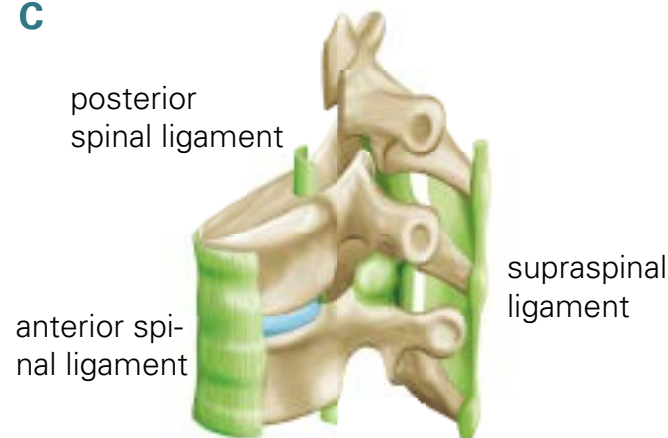
B



The back muscles, aided by the abdominal muscles, have an important supporting function and cushion weight.

Ligaments

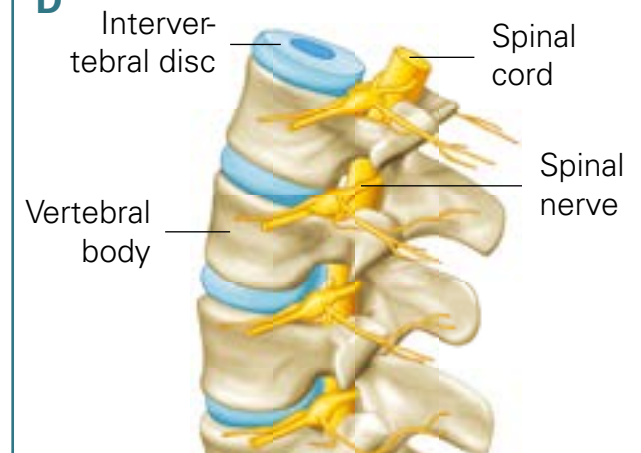
C



Ligaments ensure the stability of the spine.

Nerves

D



Nerve pathways that arise from the spinal cord emerge between the individual vertebral bodies.

This complex system requires regular and adequate movement to remain intact!

Construction and function of the spine – intervertebral discs, muscles, ligaments and nerves [1]

A Intervertebral discs

Intervertebral discs have the important function of a shock absorber. They each consist of a hard, protective outer ring (annulus fibrosus) and a soft, water-containing jelly-like core (nucleus pulposus).

Intervertebral discs form elastic connections for the vertebral bodies and allow the significant mobility of the spine.

They receive their nutrients not via blood vessels but through the constant fluctuation of loading and relaxation. Fluids are consequently exchanged between the intervertebral discs and their surroundings. Breakdown products are removed by the same route.

Motion is therefore crucially important – otherwise ageing processes are accelerated, the fluid content of the intervertebral discs decreases, they become thinner and more brittle, and they lose their function.

Defective intervertebral discs are **only one** cause of back pain.

B Back muscles

Strong, functionally capable back muscles and abdominal muscles are essential for the stability of the spine, and they also cushion most of the weight that is imposed on it [2]. Chronic back pain is commonly caused by muscle atrophy.

C Ligaments

Several ligaments hold the spine and its many elements together. They run along the internal and external sides of the vertebral bodies and joints, and fulfil an important stabilising function.

D Nerves

Nerve pathways which supply many regions of the body emerge from the vertebral canal, through which the spinal cord runs, between the individual vertebral bodies.

Defective intervertebral discs or narrowing at the points of exit of the nerves can irritate these spinal nerves and thus lead to pain. In addition, inflammatory reactions may occur.

[1] Middleditch A, Oliver J. Functional Anatomy of the Spine (2002) 2nd edition. Oxford: Butterworth-Heinemann

[2] Gardner-Morse MS, Stokes IAF. (1998) 23(1): 86- 92.