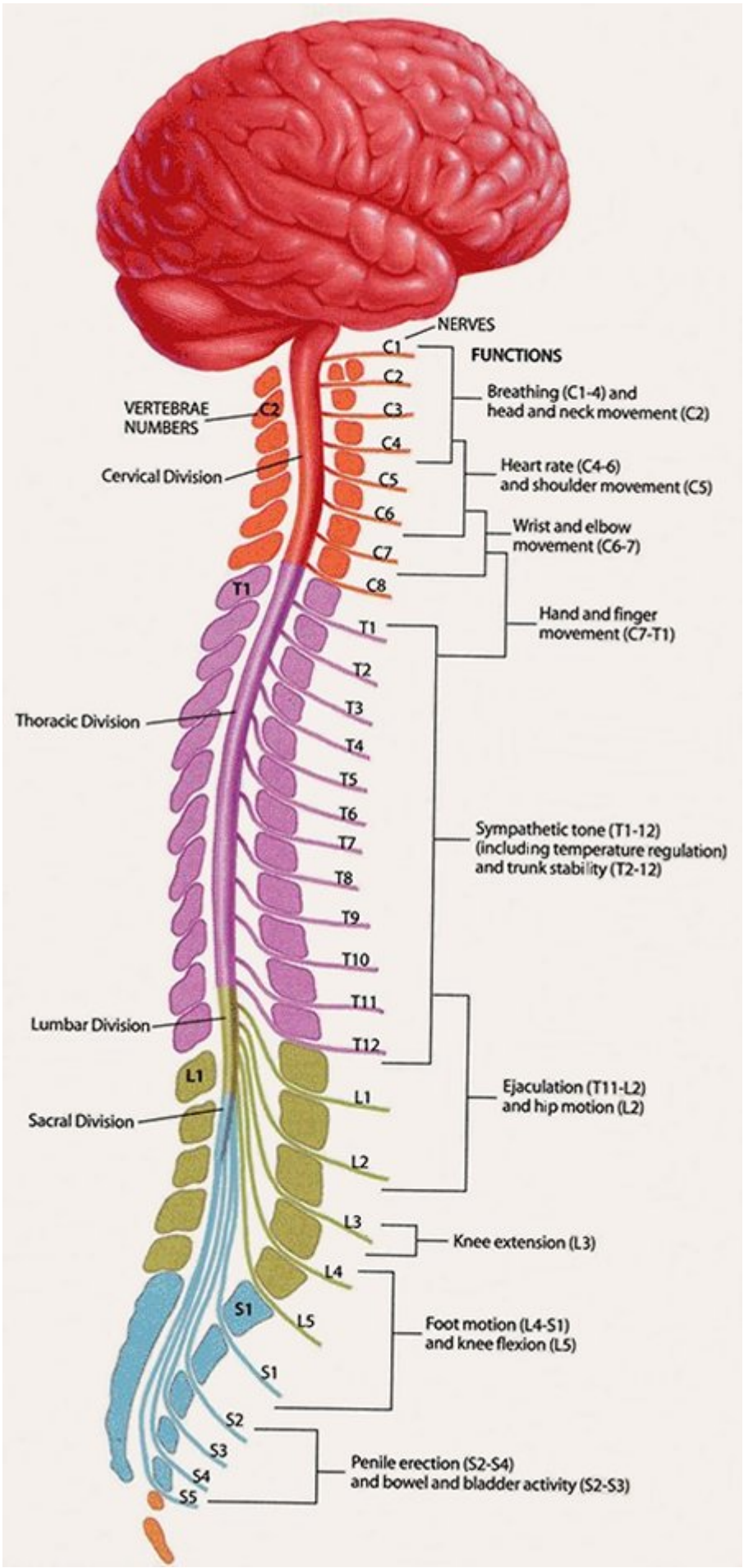
Spinal cord

A column of nerve tissue that runs from the base of the skull down the center of the back. It is covered by three thin layers of protective tissue called membranes. The spinal cord and membranes are surrounded by the vertebra

Journal

Spinal Cord: http://www.nature.com/sc/index.html


NERVES
FUNCTIONS
C1
C2
C3
C4
C5
C6
C7
C8
T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
L1
L2
L3
L4
L5
S1
S2
S3
S4
S5
VERTEBRAE NUMBERS
Cervical Division
Thoracic Division
Lumbar Division
Sacral Division
Breathing (C1-4) and head and neck movement (C2)
Heart rate (C4-6) and shoulder movement (C5)
Wrist and elbow movement (C6-7)
Hand and finger movement (C7-T1)
Sympathetic tone (T1-12) (including temperature regulation) and trunk stability (T2-12)
Ejaculation (T11-L2) and hip motion (L2)
Knee extension (L3)
Foot motion (L4-S1) and knee flexion (L5)
Penile erection (S2-S4) and bowel and bladder activity (S2-S3)

Spinal Cord Parenchyma

Spinal Cord Parenchyma.

Spinal cord vasculature

Spinal cord vasculature.

Functions

The spinal cord functions primarily in the transmission of neural signals between the brain and the rest of the body but also contains neural circuits that can independently control numerous reflexes and central pattern generators. The spinal cord has three major functions: as a conduit for motor information, which travels down the spinal cord, as a conduit for sensory information in the reverse direction, and finally as a center for coordinating certain reflexes.

see Cervical spinal cord

see Thoracic spinal cord

see Spinal cord stimulation

see Spinal cord tumor

see Spinal cord ischemia.

Development

Spinal cord development

Imaging

see Spinal Cord Imaging.

Books

Vascular Anatomy of the Spinal Cord: Radioanatomy as the Key to Diagnosis and TreatmentVascular Anatomy of the Spinal Cord: Radioanatomy as the Key to Diagnosis and Treatment By Armin K. Thron

This book systematically describes the angioarchitecture of the spinal cord. Microradiographs of superficial and intrinsic arterial supply and venous drainage patterns provide the anatomical basis

needed to understand spinal vascular disorders. These post mortem studies are supplemented by clinical spinal angiographies and case studies.

Rapid advances in imaging technology have facilitated the solution of many diagnostic problems concerning diseases of the spine and spinal cord. But this is less true for vascular diseases of the spinal cord or diseases secondarily involving them. Furthermore, safely using interventional procedures or open surgery still requires a profound knowledge of the vascular anatomy involved. Accordingly, a growing demand for training in this special field has become evident over the last 25 years, making improvement of this knowledge in all Neuro-Specialities dealing with diagnostic and therapeutic problems of spinal disorders a highly desirable goal.

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Injury

Spinal Cord Injury

Landmarks

The topographical neuroanatomy of the human spinal cord (SC) is currently based on the adjacent vertebrae.

Morphometrics sought to develop a dataset allowing for statistical analysis of human SC segment characteristics.

32 human SCs were dissected (18 female and 14 male donors), and individual SC segments were identified. Anterior and posterior lengths, thicknesses and widths were measured by two examiners. Statistical analyses included t-tests, as well as intraclass and Pearson's correlation coefficients.

The SC length was significantly shorter in females than males. The cranial (C4) and caudal (T1/T2) limits of the cervical enlargement, along with its maximal width (C6-C7), were identified by combining widths and thicknesses of the segments. The thoracic region, T2 to T12, could be identified using segments widths and thicknesses values. The length of the lumbosacral region, from segments L2 to S5, was particularly stable, independently of SC length and sex. The lumbar enlargement was characterized by a thickness increase between the segments L2 and S1 which reached its maximum at the level of L3, L4, and L5, whereas the width was not significantly increased. From the S2 to S5 segments, width and thickness were equal, with both decreasing of 1mm per segment.

The morphometrical analysis of 32 human SCs provided a dataset allowing for statistical analysis of segmental measures with significant results. A combined approach mostly using widths and thicknesses provided landmarks of potential interest for the localization of SC segments in a clinical MRI setting [1)]

1)
Nunès A, Glaudot G, Lété A, Balci A, Lengelé B, Behets C, Jankovski A. Measurements and morphometric landmarks of the human spinal cord: a cadaveric study. Clin Anat. 2023 Jan 17. doi: 10.1002/ca.24010. Epub ahead of print. PMID: 36647816.