# What is the Spinal Cord and Its Tracts?

Worksheet

The spinal cord runs from the foramen magnum to about the L1-L2 vertebra, with inner gray matter (neuron cell bodies) surrounded by white matter tracts - ascending tracts carry sensory signals to the brain, descending tracts carry motor commands to the body.

## Questions

1. In an adult, the spinal cord typically ends at which vertebral level?

A) T12
B) L1-L2
C) S1-S2
D) C7

2. Ascending tracts in the spinal cord mainly carry:

A) Motor commands to muscles
B) Sensory signals to the brain
C) Blood to the spinal cord
D) Cerebrospinal fluid

3. Which tract carries pain and temperature sensation?

A) Dorsal columns
B) Corticospinal tract
C) Spinothalamic tract
D) Rubrospinal tract

4. How many pairs of spinal nerves does the human spinal cord give rise to?

A) 12
B) 24
C) 31
D) 42

5. A patient loses fine touch and vibration sense in both legs, but pain and temperature sensation stay normal. Which tract is likely damaged?

6. Where does the adult spinal cord end, and what structure lies below that point?

7. Trace a voluntary motor signal from the brain to a leg muscle.

8. Define: What is the spinal cord?

9. Define: Where is gray matter in the spinal cord - inside or outside?

10. Define: What do ascending tracts carry?

# Answer Key

1. B) L1-L2 - The spinal cord tapers into the conus medullaris around L1-L2; nerve roots continue below as the cauda equina.

2. B) Sensory signals to the brain - Ascending = sensory information traveling upward, toward the brain.

3. C) Spinothalamic tract - The spinothalamic tract specifically carries pain and temperature; touch/vibration use the dorsal columns.

4. C) 31 - There are 31 pairs: 8 cervical, 12 thoracic, 5 lumbar, 5 sacral and 1 coccygeal.

5. Fine touch, vibration and proprioception travel in the dorsal columns Pain and temperature travel separately in the spinothalamic tract Since pain sensation is preserved, the lesion is isolated to the dorsal columns (a classic sign of vitamin B12 deficiency)

6. The spinal cord tapers into the conus medullaris around vertebral level L1-L2 Below this, spinal nerve roots continue down inside the vertebral canal This bundle of nerve roots is called the cauda equina ('horse's tail')

7. Signal starts in the primary motor cortex Descends via the corticospinal tract Crosses to the opposite side at the medullary pyramids (decussation) Synapses onto a motor neuron in the spinal cord's anterior horn Travels via a peripheral nerve to contract the target muscle

8. The cylindrical nerve tissue running from the brainstem to about vertebra L1-L2, relaying signals between brain and body.

9. Inside - it forms an H/butterfly shape at the center, opposite to the brain where gray matter is on the outside.

10. Sensory information from the body up to the brain (e.g., touch, pain, proprioception).