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Spinocerebellar Tracts

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Definition

Spinal cord pathways that carry somatosensory information from the trunk and extremities to the cerebellum.

Current Knowledge

The spinocerebellar pathways are divided into a *dorsal* (posterior) and *ventral* (anterior) *spinocerebellar tract*, both of which lie in the lateral portion of the cord. These latter tracts supply proprioceptive and other somatosensory information to the cerebellum from muscle spindles, Golgi tendon organs, and cutaneous touch and pressure receptors. The information carried by these tracts to the cerebellum is not consciously perceived but nevertheless is critical to the spinal-cerebellar-cortical-spinal feedback loops essential for coordination and balance. The anatomical distinctions between the dorsal and ventral spinocerebellar tracts are clearer than their functional distinctions. The spinal input for both tracts

is via the dorsal nerve roots. The dorsal spinocerebellar tract is proximately derived from axonal fibers generated in the dorsal nucleus of Clarke that extends from the lumbar to lower cervical cord. These fibers remain ipsilateral in the cord and enter the cerebellum through the inferior cerebellar peduncle. By contrast, the ventral spinocerebellar tract is made up of fibers that synapse more diffusely in the gray matter of the cord and the majority of which ascend in the contralateral cord. Again in contrast to the dorsal fibers, these ventral tracts enter the cerebellum through the superior cerebellar peduncle, after the majority once again cross the midline in the brain stem. Thus, for the most part, each half the cerebellum receives ipsilateral input from the spinal cord. The *cuneocerebellar* and *rostral spinocerebellar* tracts are thought to represent the respective equivalents of the dorsal and ventral spinocerebellar tracts for the upper extremities.

Cross-References

► [Cerebellum](#)

References and Readings

Haines, D. E., Mihailoff, G. A., & Bloedel, J. R. (1997). The cerebellum. In D. E. Haines (Ed.), *Fundamental neuroscience* (pp. 379–398). New York: Churchill Livingstone.