Thoracolumbar Outflow

The **thoracolumbar outflow** refers to the anatomical origin of the **sympathetic division** of the **autonomic nervous system**, which arises from the **thoracic and lumbar segments** of the spinal cord.

Definition

The **thoracolumbar outflow** comprises the **preganglionic sympathetic neurons** located in the **intermediolateral cell column (IML)** of the **spinal cord segments T1 to L2/L3**.

Pathway

- Preganglionic neurons originate in the **IML** (lateral horn)
- Their axons exit the spinal cord through **ventral roots**
- They pass through **white rami communicantes** to reach:
  - **Paravertebral ganglia** (sympathetic chain)
  - Or **prevertebral ganglia** (e.g., celiac, superior mesenteric)
- Postganglionic fibers then project to:
  - Viscera (heart, lungs, GI tract)
  - Blood vessels
  - Sweat glands
  - Pupillary dilator muscles

Functional Roles

- ↑ Heart rate and cardiac output
- ↑ Pupil dilation (mydriasis)
- Bronchodilation
- ↓ Gastrointestinal motility
- Vasoconstriction in skin and viscera
- Sweat secretion

Comparison

Division	Origin	Key Features
Sympathetic (Thoracolumbar)	T1–L2/L3	“Fight or flight” responses
Parasympathetic (Craniosacral)	Cranial nerves III, VII, IX, X + S2–S4	“Rest and digest” responses

Clinical Relevance

- Lesions affecting T1–L2 segments can impair sympathetic function
- Disruption may cause:
  - Orthostatic hypotension
  - Thermoregulatory dysfunction
  - Bladder/bowel dysfunction

Related Entries

- sympathetic_nervous_system
- intermediolateral_cell_column
- fight_or_flight_response