Human Anatomy

Curated preclinical study track (not a medical degree, no licensure claim). Original explanations and practice only, following the reviewed course handout.

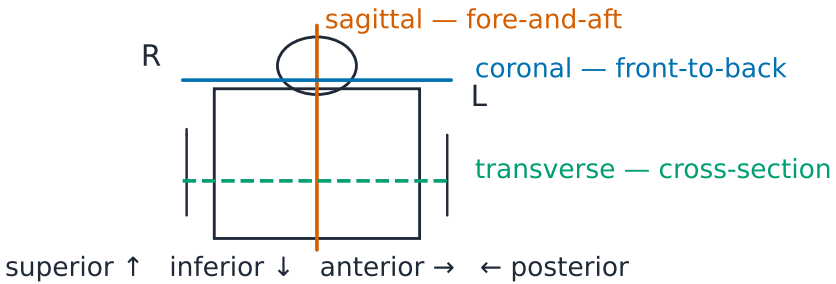
The map of the body

- The language and limbs first, then the trunk cavities, then head, neck and back.
- Structure explains symptom: every nerve, vessel and space taught with the one lesion that exposes it.

Planes: the grammar of anatomy

1. **Pairs Superior/inferior**, **anterior/posterior**, **proximal/distal**, lateral/medial - each pair replaces a sentence of description.
2. **Planes** Sagittal divides right/left; coronal front/back; transverse cuts across - every scan is one of the three.
3. **Display** An axial slice shows the patient RIGHT on the image LEFT: one convention, applied consistently, is why readers agree.

Sagittal, coronal, transverse

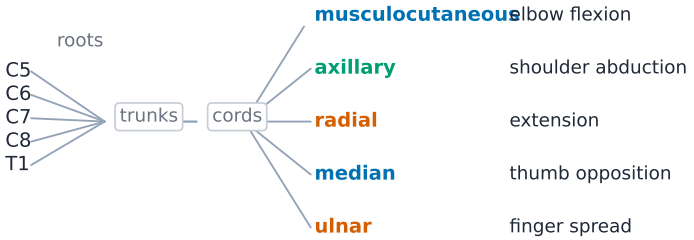


Sagittal, coronal, transverse - the three planes every scan reads.

Upper limb - the brachial plexus

1. **Circuit** C5-T1 $\rightarrow$ trunks $\rightarrow$ cords $\rightarrow$ five terminal nerves: musculocutaneous, axillary, radial, median, ulnar.
2. **Tests** One nerve, one movement: radial extends, median opposes, ulnar spreads - wrist drop / ape hand / claw hand are one-line reads.
3. **Palpable** The **ulnar nerve** sits in the groove behind the medial epicondyle: tappable and entrappable.

C5-T1 condense to five nerves, one movement each.



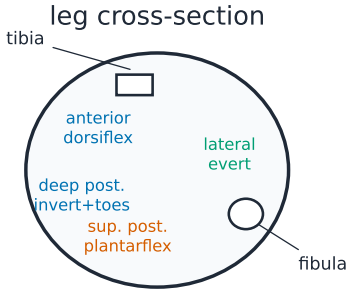
one nerve, one movement — lesions read as movement patterns

C5-T1 condense to five nerves, one movement each.

Lower limb - four compartments

1. **Thigh** Femoral (extension), obturator (adduction), sciatic (posterior → tibial + common peroneal).
2. **Leg** Four compartments: anterior dorsiflex, lateral evert, superficial posterior plantarflex, deep posterior invert + toes.
3. **Syndrome** Fascia does not stretch: pressure above ~30 mmHg shuts the capillary bed - pain on passive stretch is the sign.

Cross-section compartments plus the four pulse check



four compartments = four pressure vessels

the four pulse checkpoints

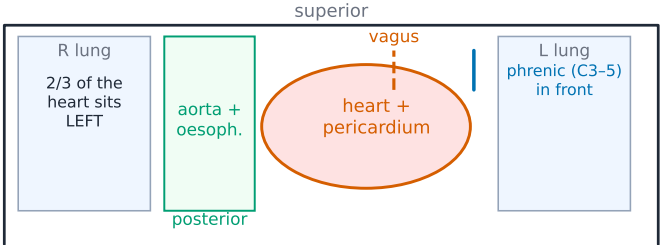
femoral	hip fold, mid-point quads/knee extension
popliteal	knee crease, deep behind the knee
posterior tibial	behind medial malleolus ankle, medial
dorsalis pedis	foot dorsum foot

Cross-section compartments plus the four pulse checkpoints.

Thorax - the mediastinum

1. **Divisions** Middle = heart + **pericardium** (two-thirds LEFT); posterior = descending aorta + oesophagus; superior above.
2. **Nerves** Phrenic (C3-5) ANTERIOR to the lung root; vagus posterior - development fixed the routes.
3. **Anchors** Bifurcation at the sternal angle (T4/5); arch branches brachiocephalic, L carotid, L subclavian; apex at L5 ICS MCL.

Thorax - the engine room in one view



apex beat: L 5th ICS, mid-clavicular line
trachea bifurcates at the sternal angle (T4/5)

> Heart centre, aorta and oesophagus behind, phrenic in front.

Territories: embryology as a pain map

1. **Grid** Nine regions (four quadrants for speed): epigastric, umbilical, hypogastric columns flanked by three pairs.
2. **Supply** Coeliac (foregut), superior mesenteric (midgut), inferior mesenteric (hindgut) - one artery per embryological gut.
3. **Referral** Foregut T5-9 epigastric, midgut T10-12 umbilical, hindgut L1-3 hypogastric - **referred pain** is embryology as symptoms.

Nine regions above, three territories and pain bands

nine regions

R hypochond.	epigastric	L hypochond.
R lumbar	umbilical	L lumbar
R inguinal	hypogastric	L inguinal

referred pain: embryology as symptoms

foregut — coeliac
T5–9 → epigastric

midgut — sup. mesenteric
T10–12 → umbilical

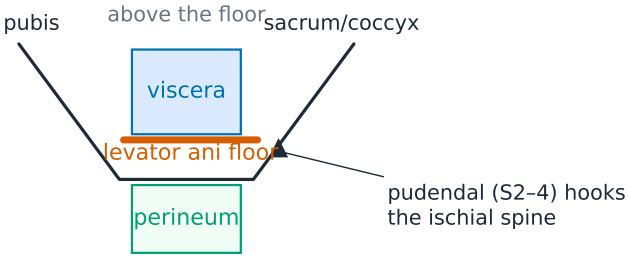
hindgut — inf. mesenteric
L1–3 → hypogastric

Nine regions above, three territories and pain bands below.

The floor and its nerve

1. **Floor Levator ani** + coccygeus sling pubis-to-coccyx, carrying viscera; perineum below.
2. **Core** S2-4: detrusor, sphincter, perineal sensation, bulbocavernosus - one cone, one bedside exam.
3. **Hook** Pudendal (S2-4) wraps the ischial spine: palpable, blockable, compressible in delivery.

Pelvis - the floor and its nerve

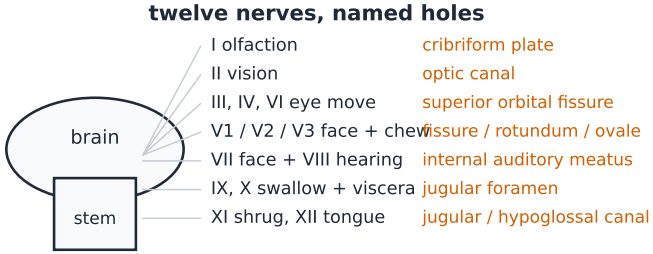


Muscle floor, viscera above, perineum below, nerve at the spine.

Twelve nerves, named holes

1. **Pairs** I smell, II see, III/IV/VI move the eye, V face+chew, VII face+T, VIII hear, IX/X swallow+viscera, XI shrug, XII tongue.
2. **Holes** II optic canal; III/IV/VI SOF; V1/V2/V3 fissure/rotundum/ovale; VII+VIII IAM; IX/X jugular; XII hypoglossal.
3. **Test** Forehead SPARED = central, INVOLVED = peripheral VII: one muscle test splits emergency from benign.

Twelve nerves with their foramina of exit.



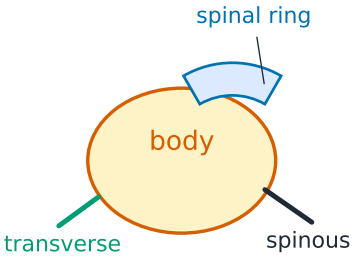
a lesion at a hole catches everything sharing it (VII + VIII)

Twelve nerves with their foramina of exit.

Back and vertebral column - the stack

1. **Stack** 7 cervical, 12 thoracic, 5 lumbar, 5 sacral, 4 coccygeal = 33 bones, 24 movable; alternating curves.
2. **Levels** Cord ends L1-2 (conus); below is **cauda equina**. Bony level $\neq$ neural level - the gap grows down the spine.
3. **Ladder** Thumb C6, nipple T4, umbilicus T10, big toe L5, perianal S3-5: five rungs read a level.

Back - vertebra and dermatome ladder



vertebra, superior view

the dermatome ladder

- thumb — C6
- nipple — T4
- umbilicus — T10
- big toe — L5
- perianal — S2–4

cord ends L1–2 — below is cauda equina

One vertebra in superior view; the **dermatome** ladder beside it.

Check yourself

- How many movable vertebrae? (24 of 33.)
- Forehead involvement in facial weakness means? (Peripheral VII.)
- The three gut arteries? (Coeliac, superior mesenteric, inferior mesenteric.)
- Cord ends at what level? (L1-2; below is **cauda equina**.)