

Anatomical planes and axes

A one-page reference for physiotherapy students

A plane is an imaginary flat surface. An axis is an imaginary line that a bone rotates around. In a simplified single-plane model, the axis is perpendicular to the plane.

Plane	Divides the body into	Perpendicular axis	Typical movements
Sagittal Vertical hatch	Left and right portions	Mediolateral axis Left to right. Also called the frontal or transverse axis.	Flexion and extension
Frontal (coronal) Diagonal hatch	Anterior and posterior portions	Anteroposterior axis Front to back. Also called the sagittal axis.	Abduction, adduction, lateral flexion
Transverse (horizontal) Horizontal hatch	Superior and inferior portions	Longitudinal axis Top to bottom. Also called the vertical or superoinferior axis.	Axial rotation; horizontal abduction and adduction

Joint examples

Shoulder flexion and extension	Sagittal plane, mediolateral axis
Shoulder abduction and adduction	Frontal (coronal) plane, anteroposterior axis
Shoulder internal and external rotation	Transverse (horizontal) plane, longitudinal axis
Elbow flexion and extension	Sagittal plane, mediolateral axis
Hip flexion and extension	Sagittal plane, mediolateral axis
Knee flexion and extension	Sagittal plane, mediolateral axis
Ankle dorsiflexion and plantarflexion	Sagittal plane, mediolateral axis
Trunk rotation	Transverse (horizontal) plane, longitudinal axis

Points to remember

- Only the midsagittal plane divides the body into equal halves. Other sagittal planes are parasagittal.
- Frontal and coronal are the same plane. Transverse and horizontal are common synonyms.
- The knee is a modified hinge: mainly flexion and extension, with real axial rotation, especially when flexed.
- Circumduction is a sequence of movements, not a fourth plane.
- Forearm pronation and supination happen at the radioulnar joints, not at the elbow hinge.
- Real movement is multiplanar, and a limb longitudinal axis is not always vertical.