

Relationship terms

MOVEMENTS OF THE FOOT

Plantarflexion – movement of the foot downwards, away from the anterior surface of the tibia

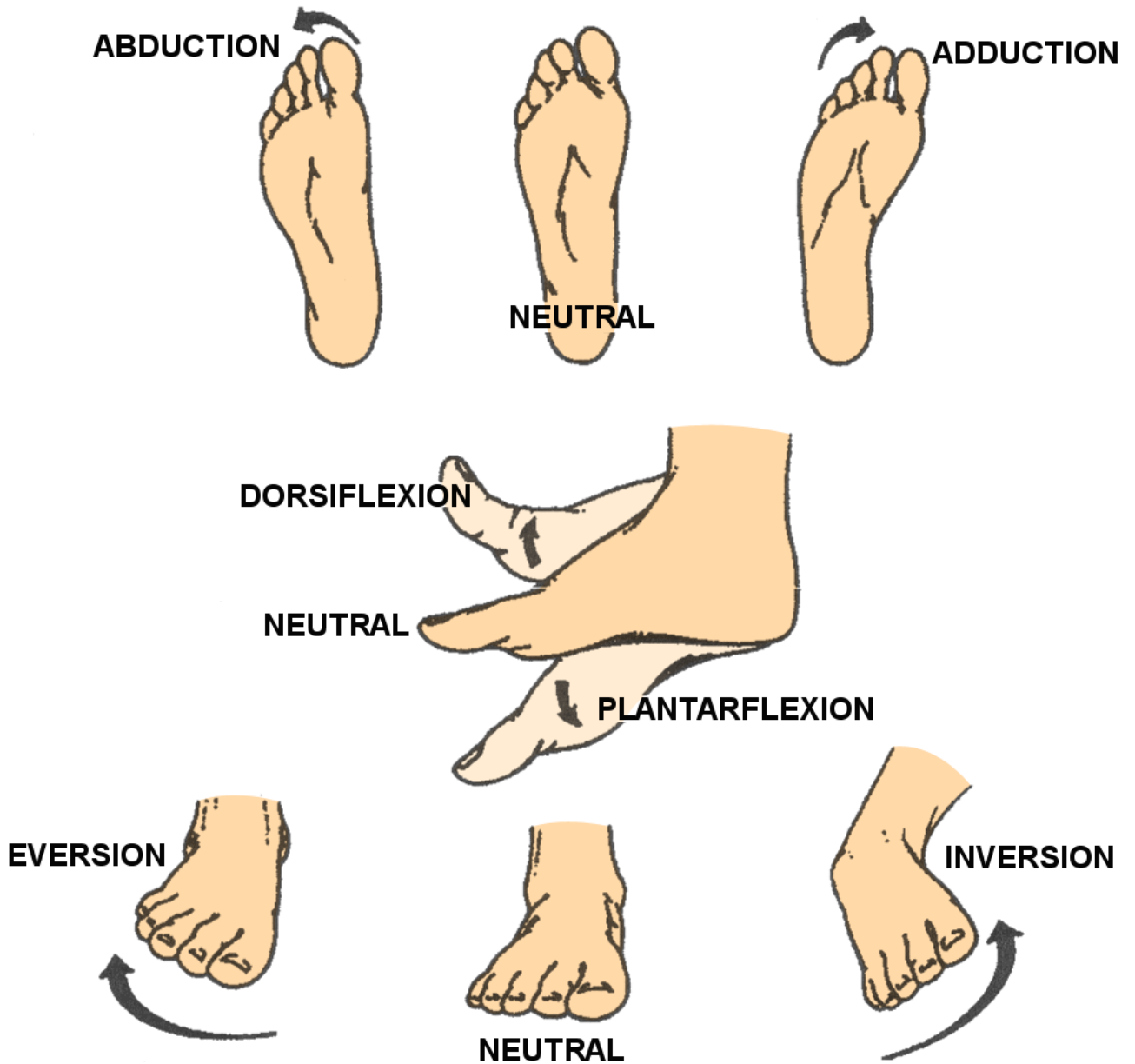
Dorsiflexion – movement of the foot upwards, towards the anterior surface of the tibia

Adduction – bringing towards midline of body, or towards the 2nd toe if within the foot

Abduction – movement away from body midline, or away from 2nd toe of the foot

Inversion – inner border of foot is raised so that plantar surface looks towards body midline

Eversion – outer border of foot is raised so that plantar surface looks away from midline

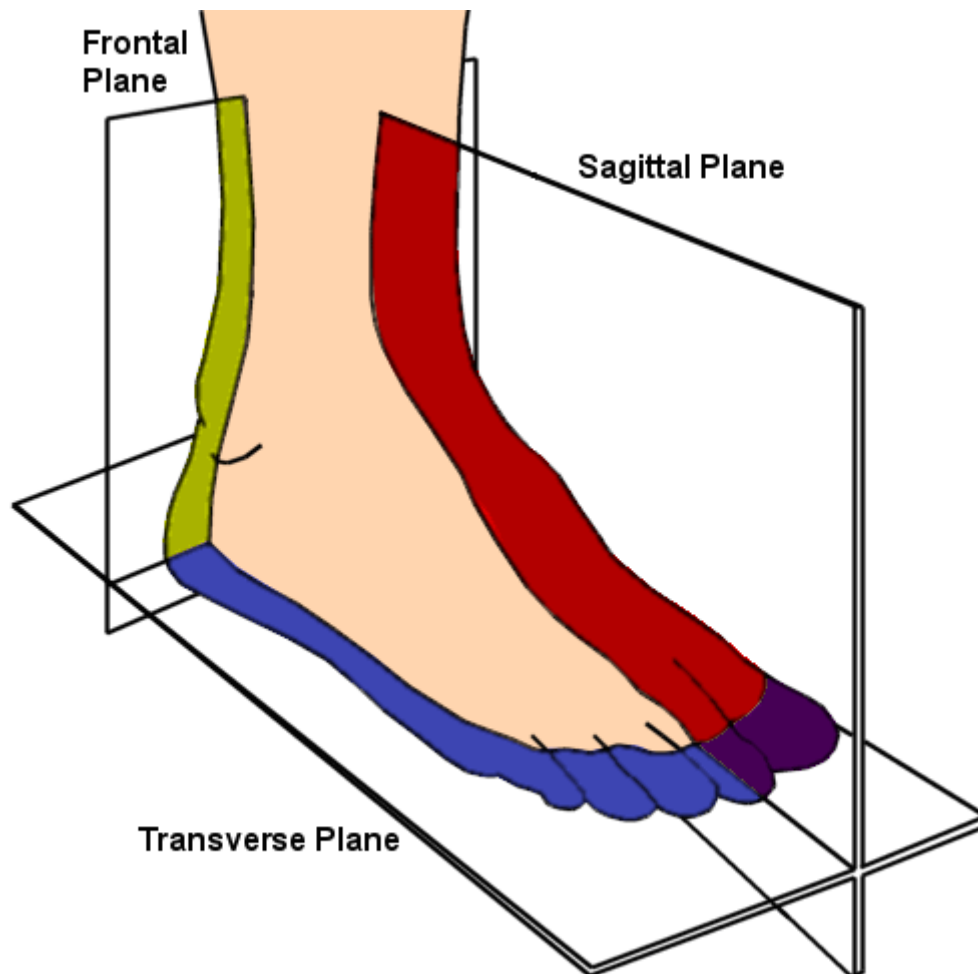


These 6 movements are known as the gross movements of the foot

BODY PLANES AND THE FOOT

The body is considered to be divided by three planes, **sagittal**, **frontal** and **transverse**. Each of these planes is at right angles to the other two planes. This diagram shows how the three planes divide the foot.

The **sagittal plane** runs front to back and divides the foot into medial and lateral. Note that the midline of the foot passes down the line of the second toe. Sagittal plane movements are **plantarflexion** and **dorsiflexion**.



The **frontal plane** runs side to side and separates anterior from posterior.

Frontal plane movements of the foot are **inversion** and **eversion**.

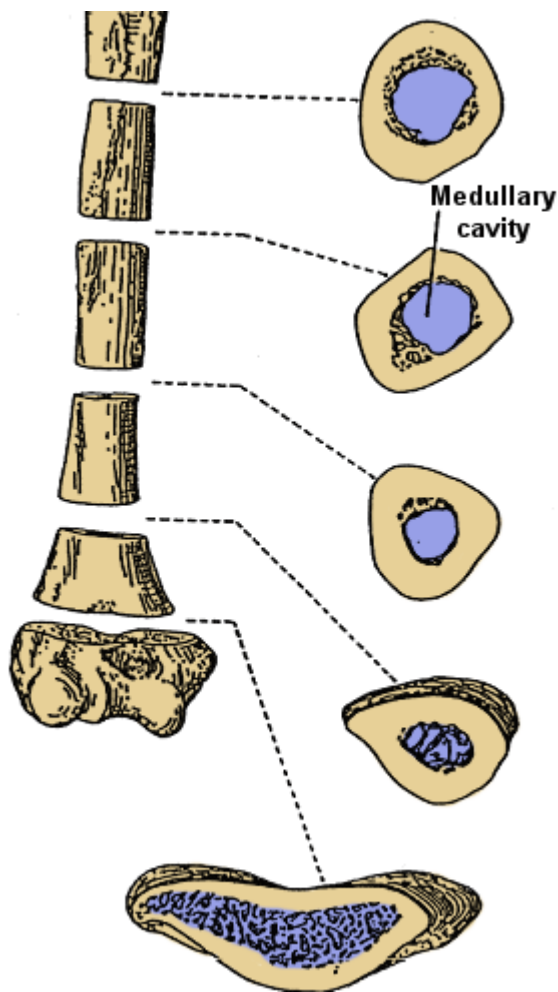
The **transverse plane** lies parallel to the ground surface and divides superior from inferior.

Transverse plane movements of the foot are **adduction** and **abduction**.

OSTEOLOGY is the study of bones

osteo = bone, ology = study

Bone is a renewable tissue combining great strength with resilience. Bones contain 70% of non-living matter in the form of mineral salts of calcium, phosphorous and magnesium. The matrix in which the mineral content is bound up is secreted by living bone cells and perforated by Haversian canals which conduct blood vessels throughout the bone, allowing nutrient to reach the innermost cells. Bone secreting cells form concentric rings around the canals, building up mineral-rich layers. Bones that are subjected to greater stress are larger and more dense. In the central cavities and within bone ends, bone marrow produces red blood cells.



BONE IS OF TWO TYPES

Compact (cortical) bone

is hard and dense and makes up the outer shell and shaft of a bone

Spongy (cancellous) bone

forms a *trabecular* (honeycomb) web within the widest parts of the shafts and at bone ends

Transverse sections of humerus to show medullary cavity, cortical bone of shaft and cancellous trabeculae at expansion of extremity

Red and yellow bone marrow fill the central medullary cavities and spaces occupied by spongy networks within bones. Red marrow is active in blood formation, whilst yellow marrow is mainly inert and fatty. In the child, nearly all of the marrow is red marrow. The proportion of yellow marrow increases as with age. In bone marrow transplants it is red marrow which is transferred from donor to recipient.

BONE STRUCTURE AND NUTRITION

Bone is covered on every surface except the articulation surfaces by periosteum, a thin skin which is well supplied with nerve endings and nutrient blood vessels. Vessels enter the cortical bone by perforating entrances or foramen. Following the path of the Haversian canals, they conduct blood into the inner structure to nourish the osteons. These bone cells secrete concentric rings of lamellar (stratified, layered or laminated) matrix which incorporates the mineral content which makes bone so dense and strong.

