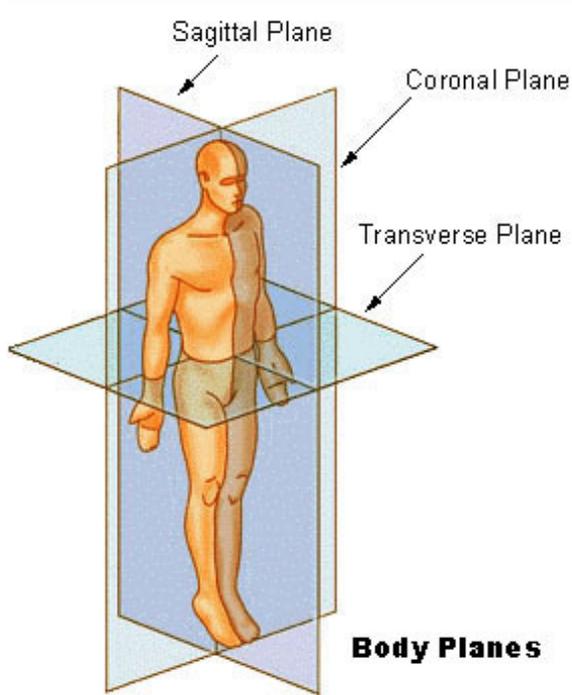


Basic Canine NeuroAnatomy and MRI

Imaging Planes

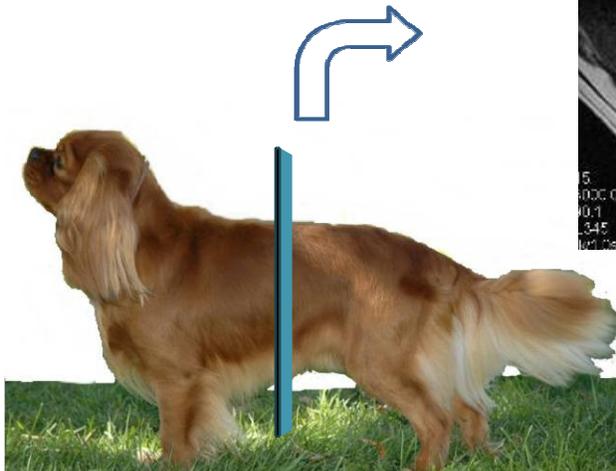


Sagittal - slice (blue line) thru the length of the body dividing it into left and right sides.



Sagittal of the spine

Transverse (axial or cross-section) – slice (blue line) cuts across the body



Transverse spine

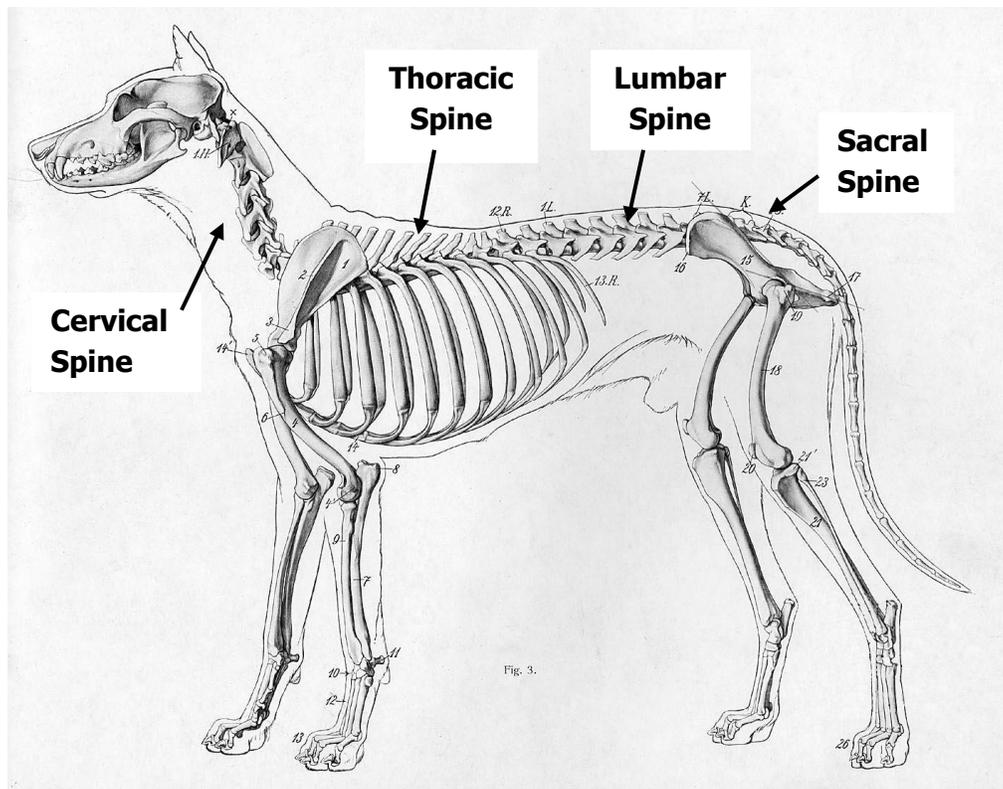
Canine Spine

The cervical spine is located in the neck.

The thoracic spine is located in the chest. Ribs attach to the thoracic vertebrae.

The lumbar spine is the lower back area.

The sacral spine is in the tail.



MRI Basics



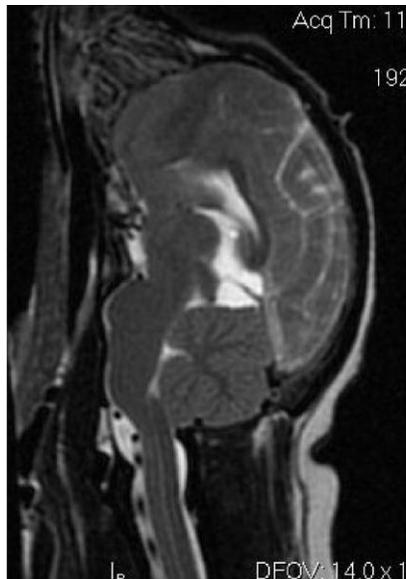
Magnetic Resonance Imaging (MRI) does not use radiation, and there are no known side effects. A very strong magnet is used to align the hydrogen protons in the body. By applying a radio frequency (RF) pulse, the protons can be flipped into a different plane. As they realign back to the original plane, they give off a signal that is read by the MR computer, and reconstructed into an image. Depending on the timing of the RF pulses different types of signals are generated that create different types of images. The most common are T1 and T2.

T1 and T2

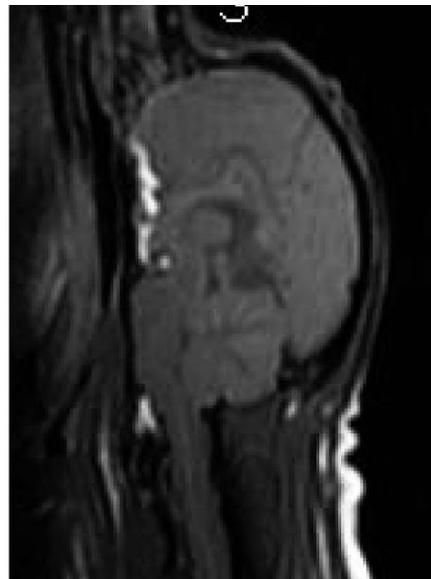
T1 images typically provide better imaging of anatomy and bone. CSF is dark on a T1 image.

T2 images typically provide better imaging of fluid and pathologies (although bone is visible). CSF is white on a T2 image.

On Left:
T2 image
White CSF



On Right:
T1 image
Dark CSF

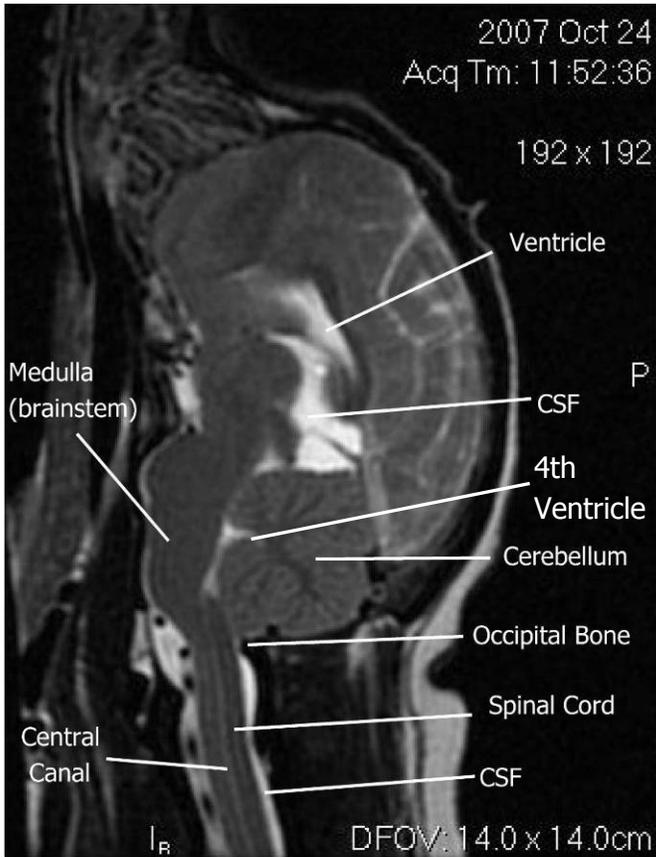


T2 shows CSF better than a T1, therefore it shows a syrinx better. The T2 will also show hydrocephalus and if the 4th ventricle is compressed (the 4th ventricle should be a little triangle in front of the cerebellum and the brainstem).

MRI Normal Anatomy

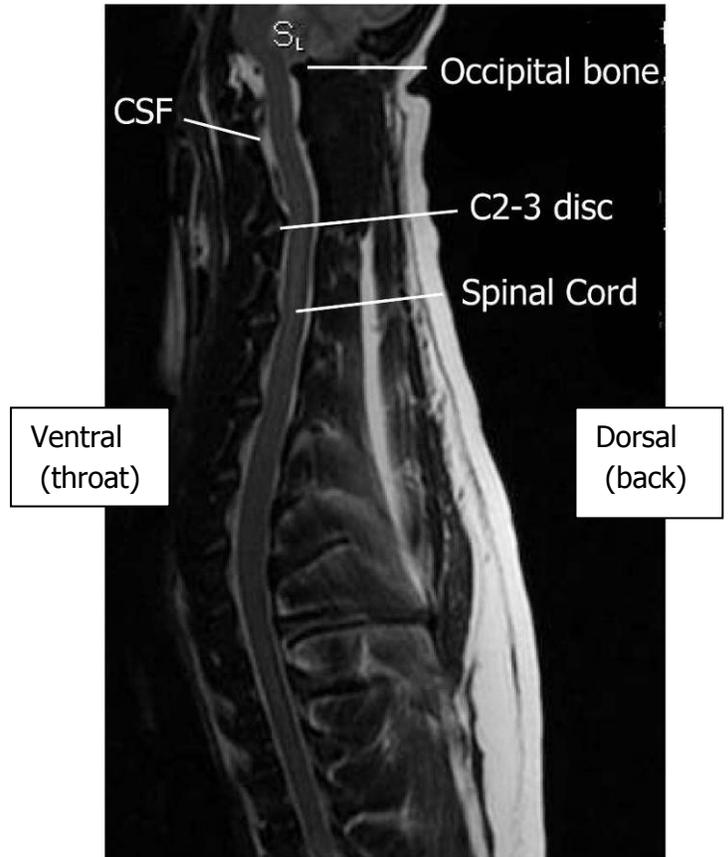
Sagittal T2

Brain and upper Cervical spine



Sagittal T2

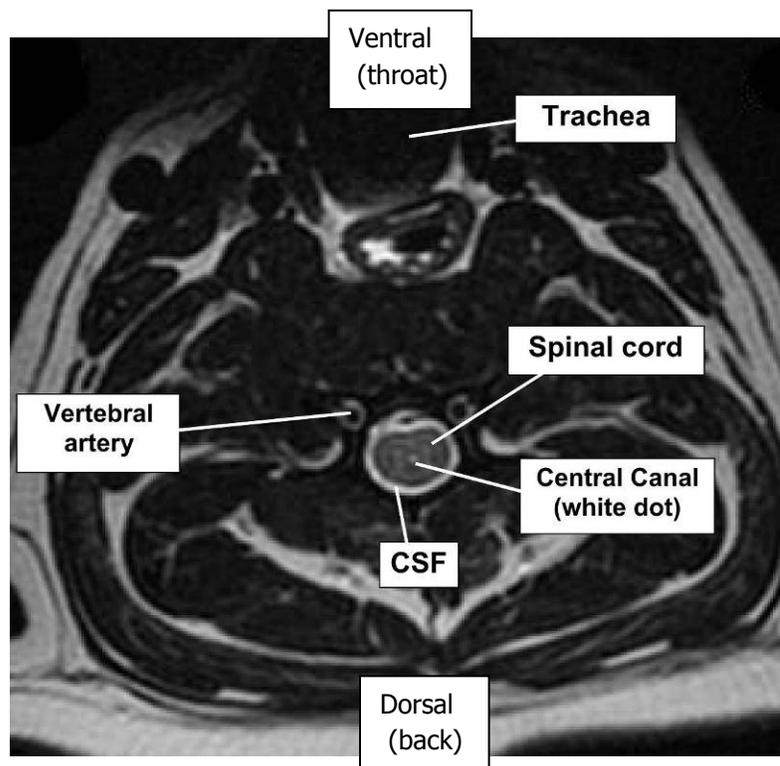
Cervical and Thoracic spine



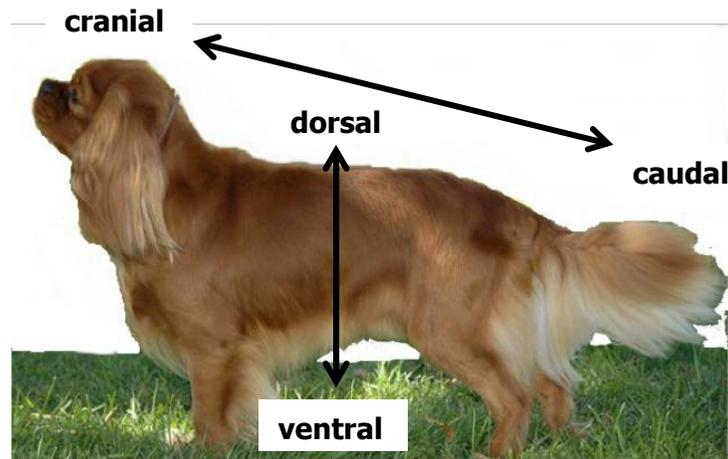
Transverse

T2 Spine

(mid 3rd Cervical
Vertebrae)



Glossary of Anatomical Directions



Term	Equivalent Term	Meaning	Short Form
Dorsal	Posterior	Toward the back	
Ventral	Anterior	Toward the front (belly, abdomen, throat)	
Cranial	Cephalad	Toward the head	
Caudal		Toward the tail	
Rostral		Toward the nose	
Lateral		Toward the side	
Medial		Toward the midline	
Transverse	Axial	Cross section	Tran
Sagittal			Sag
Cervical spine		Vertebrae in neck	C spine
Thoracic spine		Vertebrae in chest/ mid back	T spine
Lumbar spine		Vertebrae in lower back	L spine
Cervical + Thoracic spine			CT spine
Thoracic + Lumbar spine			TL spine