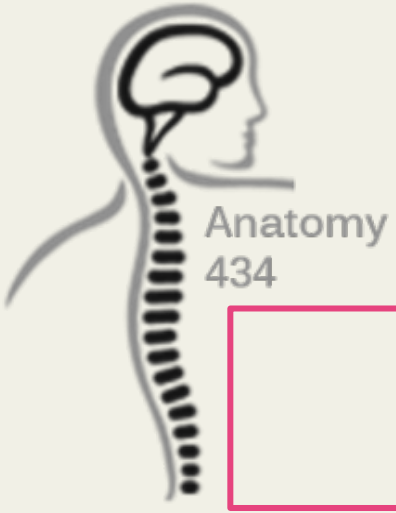


Cervical Spine

Anatomy Team 434

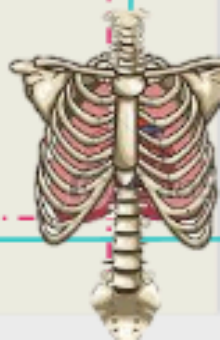
Color ***Index:***

- Important Points
- Helping notes
- Explanation

If you have any complaint or suggestion please don't hesitate to contact us on:
AnatomyTeam434@gmail.com

OBJECTIVES

- Describe the 7 cervical vertebrae, (typical & atypical).
- Describe the joints between the cervical vertebrae.
- Describe the movement which occur in the region of the cervical vertebrae.
- List the structures which connect 2 adjacent vertebrae together.



Cervical Vertebrae

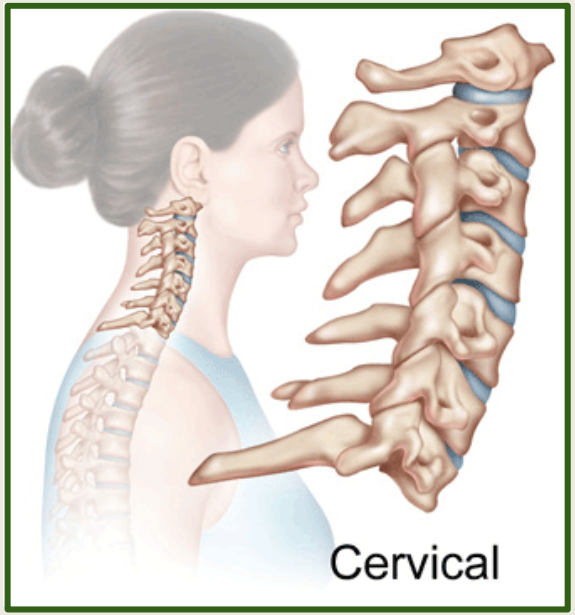
A vertebrae must have a Body and Arch.

*begins from the end of the skull to the thoracic vertebrae.
*composed of 7 vertebrae those are:

classified into two types:

Typical: 3rd, 4th, 5th and 6th

Atypica: 1st (Atlas) , 2nd (Axis) and the 7th.



Both two types Characterized by presence of foramen transversarium in the transverse process.

Cervical Vertebrae

Cervical spine landmarks

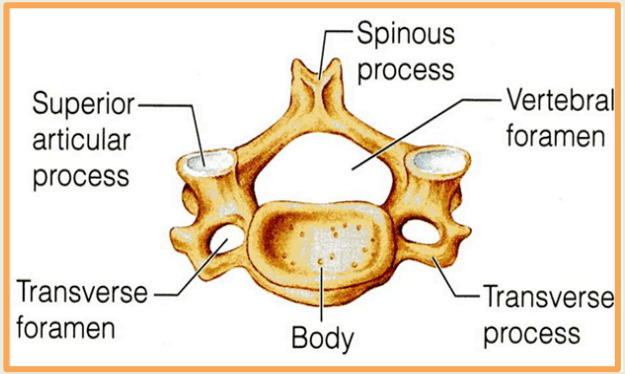
2 Inferior articular processes those attach to the next vertebra.

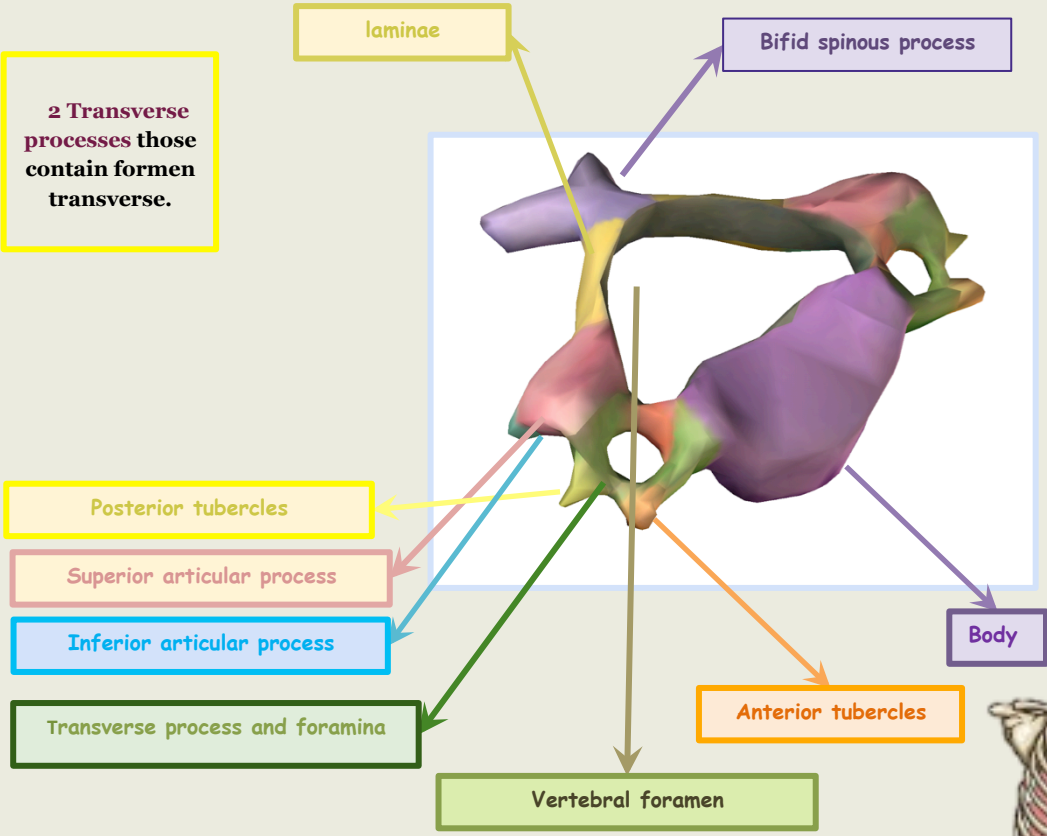
2 superior articular processes those attach to the previous vertebra.

The vertebral arch has 7 characteristics

2 Transverse processes those contain formen transverse.

1 Dorsal spine (spinous).





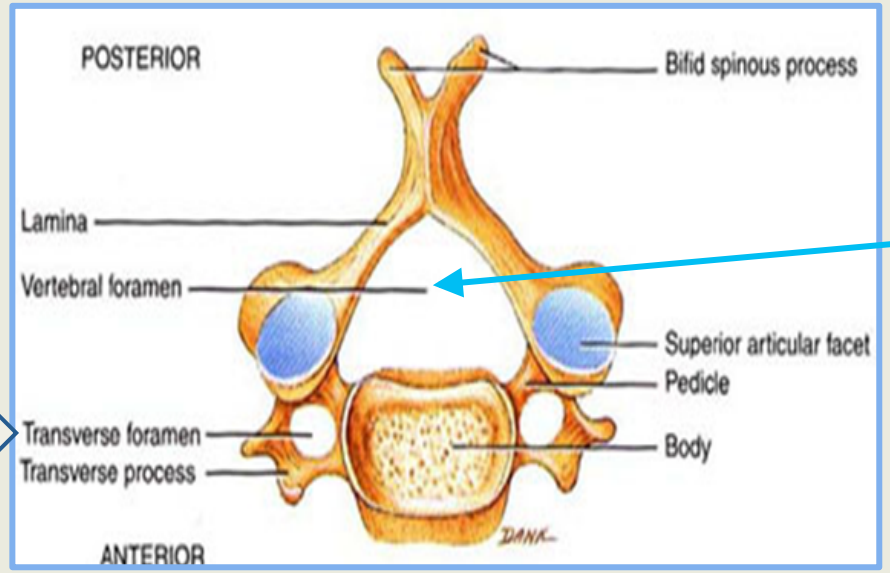
TYPICAL CERVICAL

Typical cervical vertebrae are 3rd 4th 5th and 6th.

The body is small and longer horizontally than anteroposterior, the vertebral foramen is large and triangular in shape

The spinous process arises from junction of the two lamina of vertebra is short and bifid .

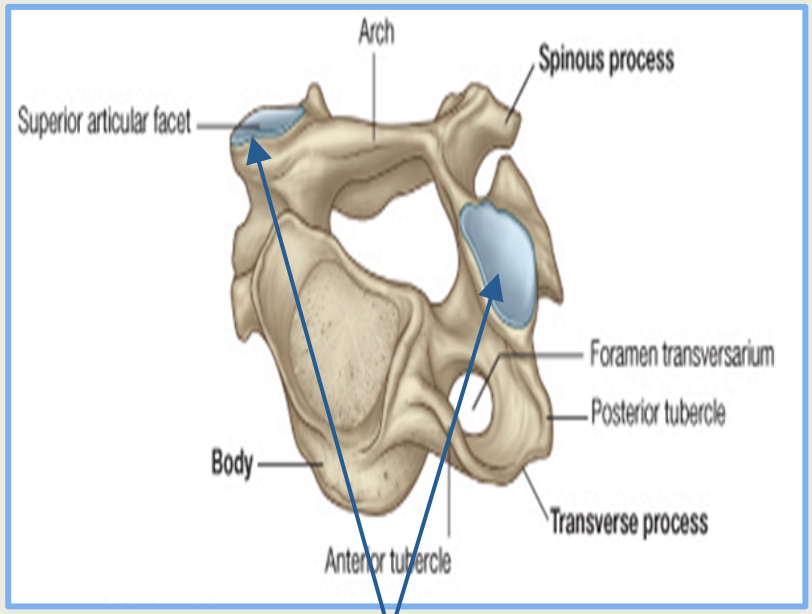
The transverse processes have an oval foramen transversarium which is wide and large in shape to accumulate the vertebral vessels (arteries veins) that pass inside it.



Vertebral foramen is triangular in shape.

Typical cervical

Consists of



Superior articular processes: have a facet that face upward and backward

Body small, longer horizontally than antero -posterior

The superior articular process have small facets (upward and backward)

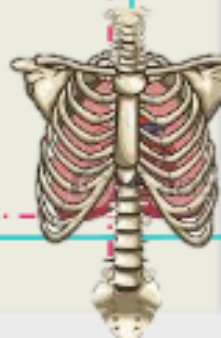
The inferior articular process have facets (downward and forward)

Transverse process has :- foramen transversarium: allows passage of the vertebral arteries & veins through it. 2 tubercles (anterior and posterior)

Vertebral foramen large, triangular

Spinous process short, bifid

The transverse processes has 2 tubercles, one placed in front of the foramen transversarium and the other behind.

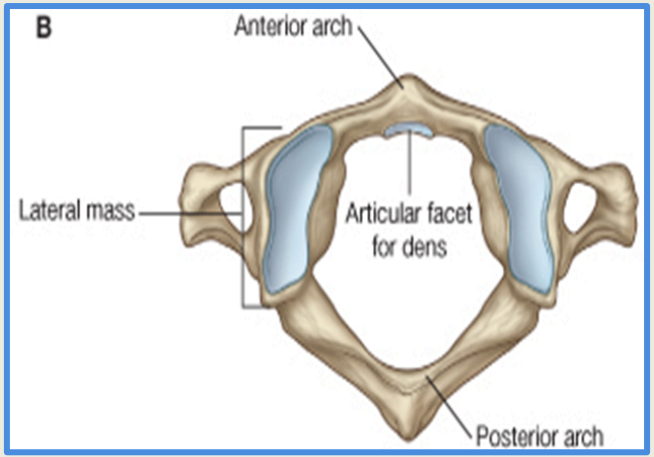


Atypical spines (C1,C2&C7): Atlas Vertebrae

The first vertebra (C1)has no body and no spine either.

It has two lateral masses connected together by short anterior arch and large and long posterior arch.

Each lateral mass has articular surface on it's upper and lower aspects.



Atlas Articulations

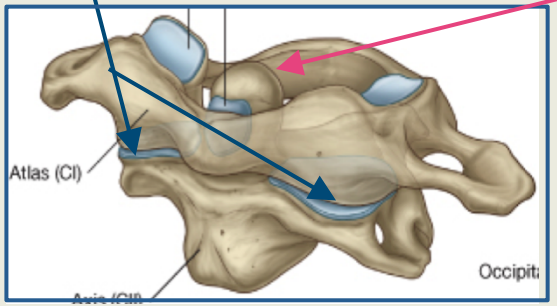
Superior articular surface (upper)

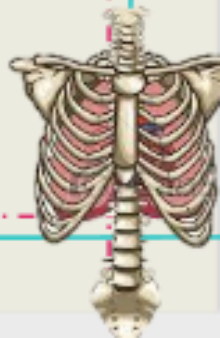
- Articulates with two occipital condyles of the skull it forms (atlanto-occipital joints)
- This joint allows flexion and extension of the neck. (This joint allows you to nod "say Yes".)

Inferior articular surface (lower)

- Circular, and articulates with the axis.
- It forms 2 lateral (atlanto-axial joints), and one medial
- Lateral side: atlas articulate with axis's superior articular surfaces.

Medial side: small anterior arch of atlas with odontoid process (dens of axis)
This joint allows us to make lateral rotation of the face (to say NO)

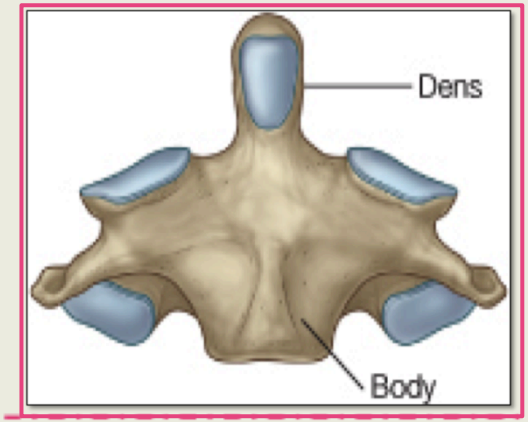




Atypical spines(C1, C2 & C7):

Axis Vertebrae

It's acting like a pivot (central point) for rotation of the Atlas and the skull above. Has a large upright peg-like odontoid process(dens), which projects upward from the superior surface of the body.
Actually it represents the body of the atlas that has fused with the axis.

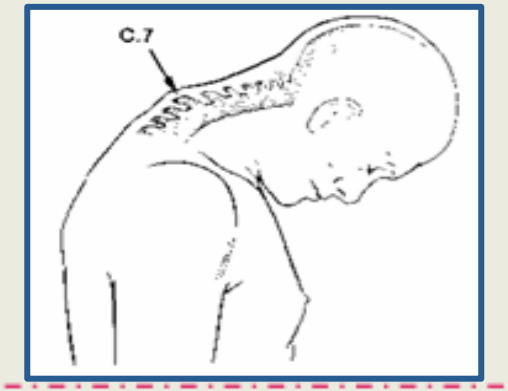


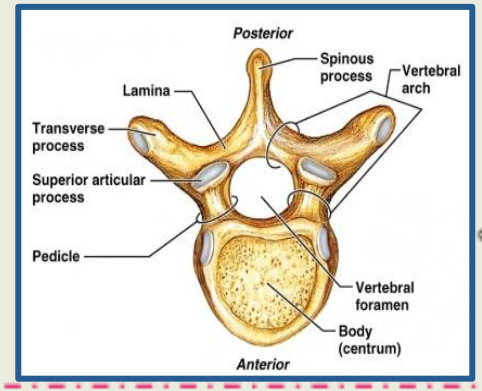
7th Cervical Vertebrae
(Prominence vertebrae)

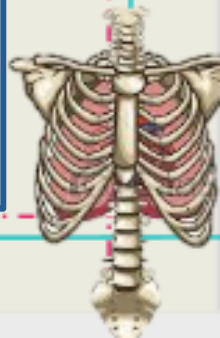
It has the longest spinous process which is not bifid.

It is the first spine to be felt subcutaneously in the root of the back.

The transverse process is large while its foramen transversarium is small and may be absent and doesn't transmit the vertebral artery.
only small accessory vein in case of existing of foramen transversarium at rarely times.







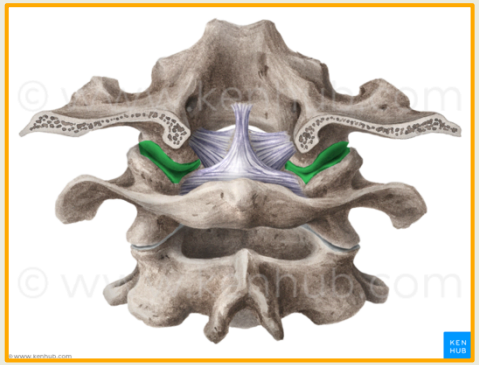
Atlanto-Occipital Joint

It's a two lateral synovial joint.(one left & one right)
location:between the superior articular surfaces (facets)on the lateral masses of the ATLAS & the occipital condyles of the skull.
benefit: allows you to say "YES"

Movement:

- Flexion
- Lateral Flexion
- Extension

(NO ROTATION)

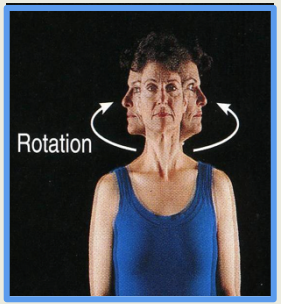


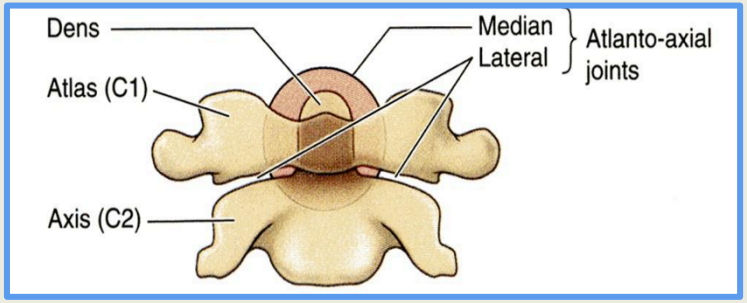
Atlanto-Axial Joint

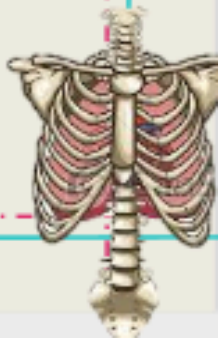
it consists of three synovial joints:
one medial: which is between the Odontoid process of Axis & the anterior arch of the Atlas.
two lateral: between the inferior facets of the lateral masses of Atlas & the superior facets of the Axis.

Application from life:
Brother:sara,you've stolen my Soda in the fridge.right?
Me(lying) : nodding "NO"
Brother: she is lying babe.
(i used my Atlanto-Axial Joint to say no.

Movement:
allow you say "NO"
(Gives An extensive lateral rotation of the head)

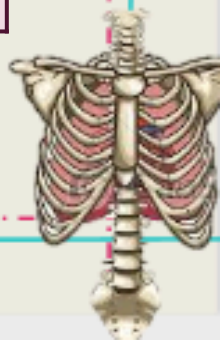






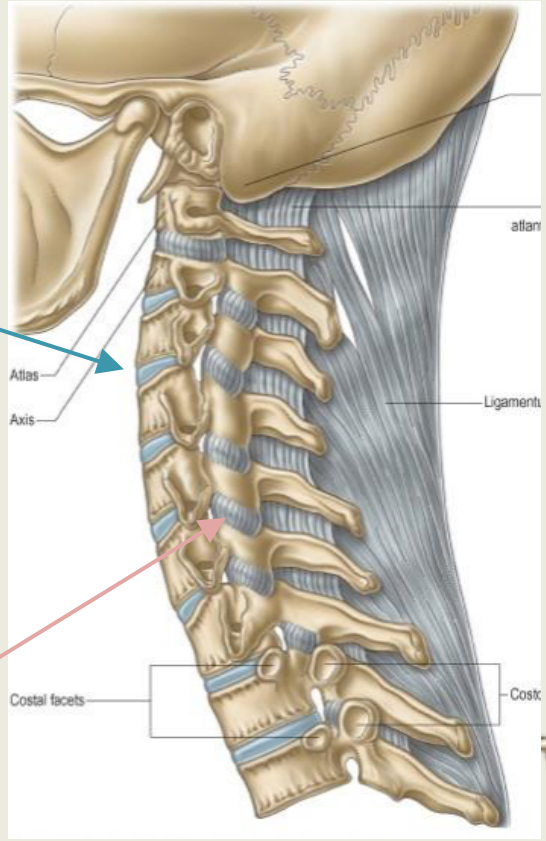
Joints of Cervical Vertebrae

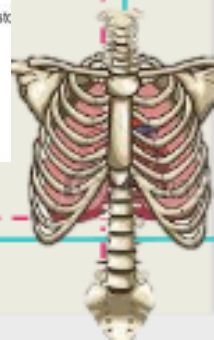
Name of the joint	Type of joint	Connection	Type of movement
Atlanto-occipital joint	Two synovial joints	Between the occipital condyles of skull and the upper facets of the atlas	1) flexion,lateral flexion. 2) extension. 3) they do NOT rotate
Atlanto-axial joint	Three synovial joints	One median: between the odontoid process and the anterior arch of the atlas. Two lateral: between the inferior facet of lateral masses of atlas and superior facets of the axis.	Extensive rotation (allows you to say "No") which is lateral rotation of the face



Joints of The Vertebral Column Below The Axis

Name of the joint	*Type of joint*	*Connection*
Between two vertebral bodies	Cartilaginous joints	The upper and lower surfaces of the bodies of 2 adjacent vertebrae, covered by thin plates of hyaline cartilage which is then covered by intervertebral disc of fibrocartilage (the collagen fibers of the disk strongly connect the bodies of the two vertebrae)
Between two vertebral arches	Synovial joints E.g. : Zygapophyseal joints	Between the vertebral arches (the superior and inferior articular processes) we have from out to inside 1-fibrous capsule. 2-the synovial membrane (secretes synovial fluid) 3-the articular Hyaline cartilage). Provide smooth surface allows easy movement





Vertebral Ligaments

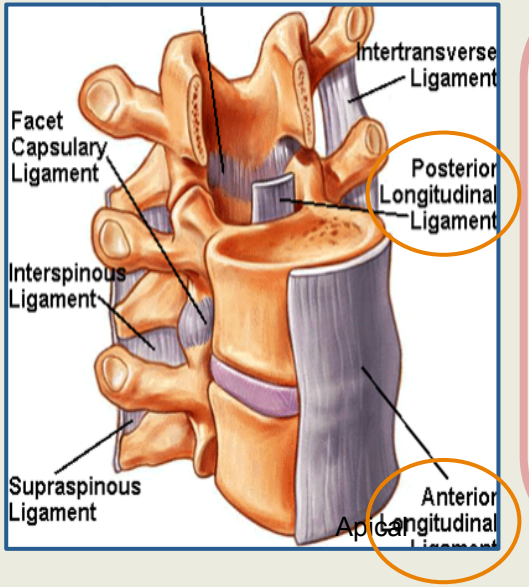
Anterior & Posterior longitudinal ligaments

Location: run as continuous band along the anterior & posterior surfaces of the vertebral bodies.

Function: hold the vertebrae firmly together, and permit a small amount of movement to take place.

- Anterior is wider because it is strongly attached to the front and sides of the vertebral bodies and to the intervertebral discs.

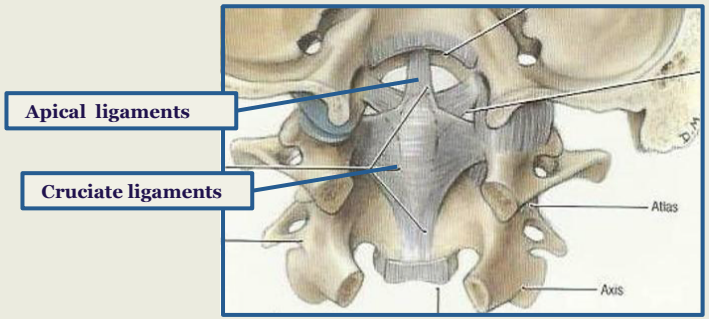
- Sterior ligament is weak and narrow and is attached to posterior border of the discs.

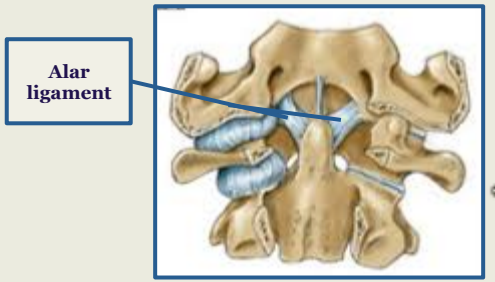


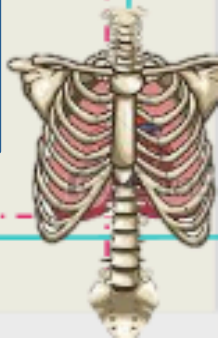
- Apical joint: it's a vertical median ligament connects the Apex of odontoid process (Dens) to the Foramen magnum above. (undercovered by the cruciate ligament)

- Alar ligaments: these ligaments lie on each side of the Apical ligament (مثل رقم ٧) (connect Odontoid process to medial sides of occipital condyles)

- Cruciate ligaments: consist of:
a- Transverse part: connects Dens to anterior Arch of Atlas. (for protection of the odontoid process)
b- Vertical part: connects body of Axis to foramen magnum in the skull.







Other Vertebral Ligaments

Supraspinous ligament: runs between the tips of adjacent spines.

Interspinous ligament: connects adjacent spines.

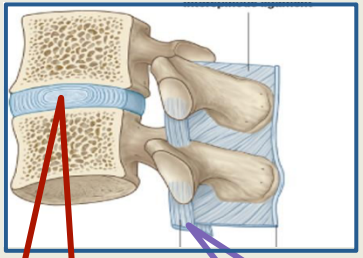
Ligamentum flavum: connects the laminae of adjacent transverse processes.

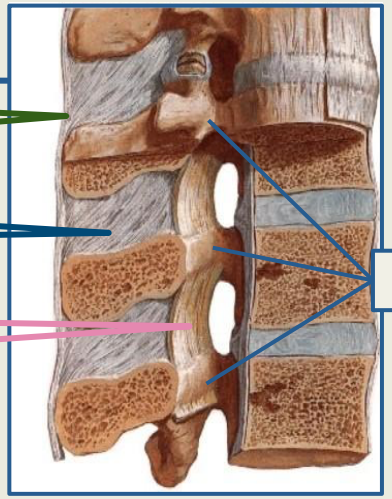
Intertransverse ligament: they run between adjacent transverse processes.

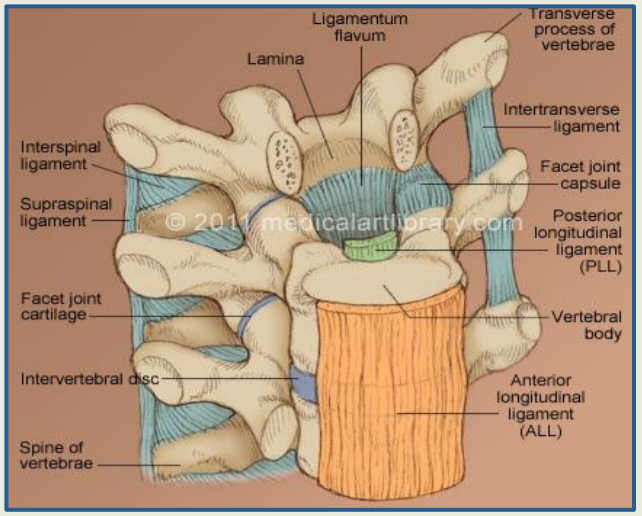
Ligamentum nuchae: only presents in the cervical region (consists of two kinds of ligaments which are Supraspinous & Interspinous ligaments thickening strongly to form this strong ligamentum nuchae).

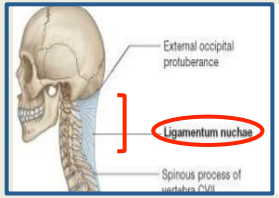
Location: extends from the 7th cervical vertebra to the external occipital condyles of the skull above.

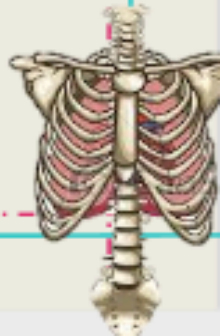
NOTE: its anterior border is strongly attached to the cervical spines in between.











MCQ's

1-The spinous process of the vertebra prominens is short and not bifid:
a)True
b)False

2-Which one of the following joints is between two vertebral arches:
a)Atlanto Axial
b)Secondary cartilaginous
c)Zygapophysial
d)Atlanto occipital

3-One of the following ligaments connects two laminae in the CV:
a)flavum
b)interspinous
c)supraspinous
d) intertransverse

4-Which one of the following cervical vertebrae is subcutaneous:
a)C1
b)C2
c) C5
d)C7

5-The articular facets are covered with hyaline cartilage and the joints are surrounded by a fibrous capsule:
a)True
b)False

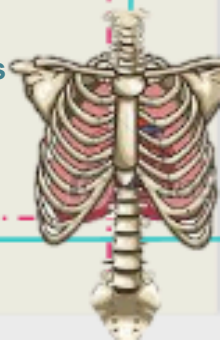
6-the vertical part of the (Cruciate ligament) is between body of the axis and interior arch of atlas
A) true
B) false

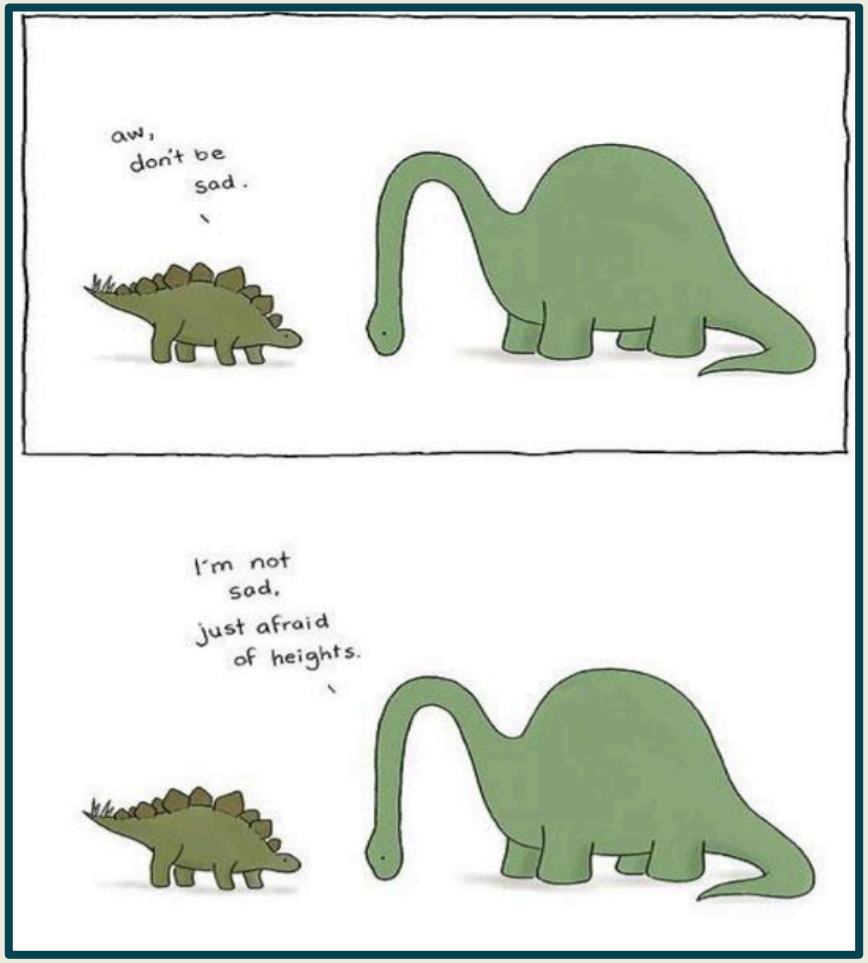
7-2 ligaments are greatly thickened to form (ligamentum nuchae)
A) supraspinous and intertransverse ligaments
B) intertransverse ligaments and interspinous ligaments
C) ligamentum flavum and supraspinous
D) supraspinous and interspinous ligaments

8-atlanto-axial joints has…..
A) 3 synovial joints
B) 3 cartilaginous joints
C) 2 synovial joints
D) 2 cartilaginous joints

9-the atlanto-occipital joints are synovial joints between the occipital condyles and the superior facets of the medial masses of atlas
A) true
B) false

Answers
1-b
2-c
3-a
4-d
5-a
6- b
7- d
8- a
9- b





GOOD LUCK

Done By Anatomy Team 434 ..