

# ANATOMY #8

## THE SPINE AND THE CORE

### MAIN MUSCLES TO KNOW

- Iliopsoas Muscle group
- Suboccipital Muscle group
- Erector Spinae Group
- Quadrates Lumborum (or, "QL")
- Diaphragm
- Pelvic Floor Muscle Group
- Abdominal Muscle Group

# OVERVIEW: KEY BONY LANDMARKS

## OF THE PELVIS, SPINE, AND ABDOMEN

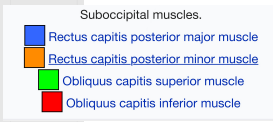
PELVIC FLOOR	ABDOMINALS	SPINE
<ul style="list-style-type: none"><li>• Ischial tuberosity</li><li>• Pubic symphysis</li><li>• Coxix (tailbone)</li></ul>	<ul style="list-style-type: none"><li>• Floating Ribs</li><li>• Sternum &amp; Xyphoid Process</li><li>• Iliac Crest</li><li>• ASIS</li></ul>	<ul style="list-style-type: none"><li>• C7</li><li>• T12</li></ul>

## SPINE

# THE SPINE

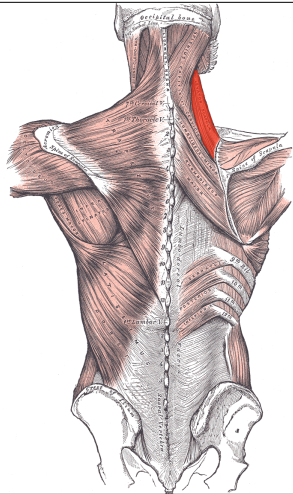
## SUB-OCCIPITALS

- Rectus Capitis Posterior Major - Spinous process of the axis (C2) to the occipital bone.
- Rectus Capitis Posterior Minor - Middle of the posterior arch of the atlas to the occipital bone.
- Obliquus Capitis Superior - Transverse process of the atlas to the occiput.
- Obliquus Capitis Inferior - Spine of the axis vertebra to the transverse process of the atlas.

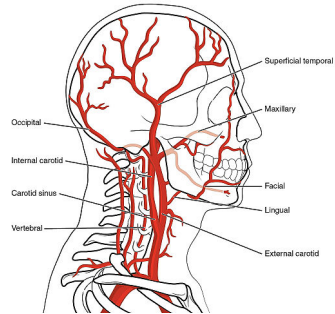


# LEVATOR SCAPULA

- **Origin** - Transverse processes 1 - 4 cervical vertebrae
- **Insertion** - Medial border of scapula
- **Actions** -
  - Elevates the Scapula
  - Downwardly rotate scapula
  - Laterally flex the head and neck
  - Extended the head and neck

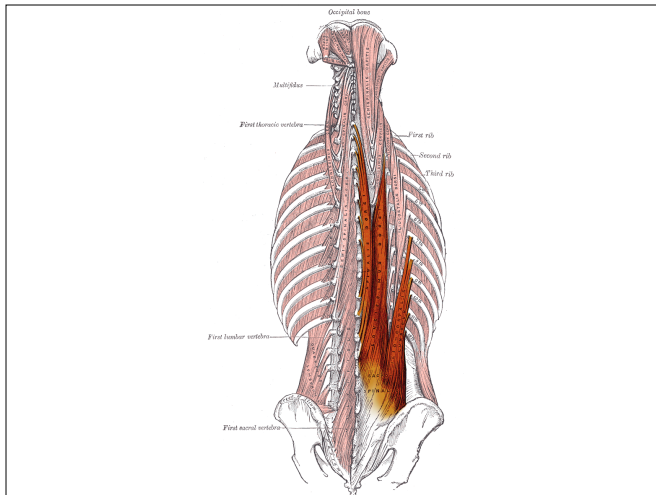


# COROTID ARTERY



# ERECTOR SPINAE GROUP

- Multiple muscles (Spinalis - Longissimus - Iliocostalis)
- Extends length of entire spine (cervical, thoracic & lumbar)
- Deep to Latissimus and Thoracolumbar Fascia
- **Actions**
  - Extension of the spine
  - Rotates the head

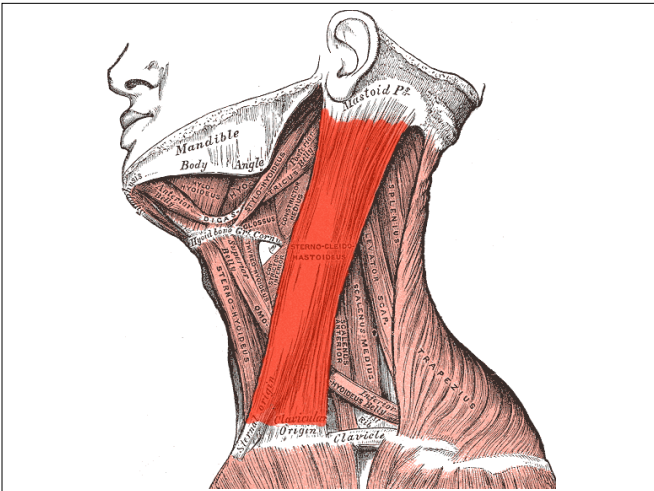


## STERNOCLEIDOMASTOID

- Common abbreviation SCM
- On both anterior and posterior sides of the body
- Two heads - one attaches on the sternum (breast bone) other at clavicle (collar bone)
- Inserts at mastoid process in the back of the head at the base of the medial skull
- Major movements of the neck and head

## STERNOCLEIDOMASTOID CONTINUED...

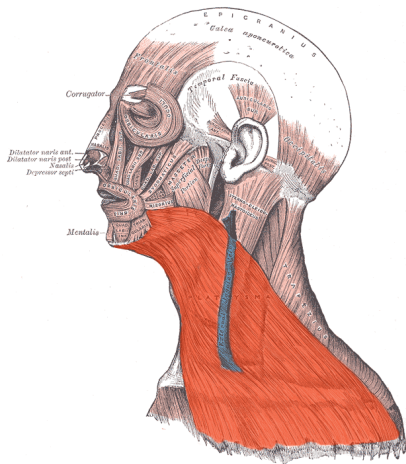
- Largest and most superficial cervical (neck) muscles
- Rotation of the head
- Flexion of the neck





# PLATYSMA

- Superficial to SCM
- From pectorals and deltoid to mandible (jaw)
- Actions
  - Depresses the lips (minor movement)
  - Depresses the jaw
  - Wrinkles the neck obliquely

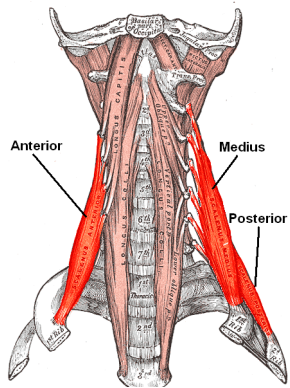


## possible treatment options



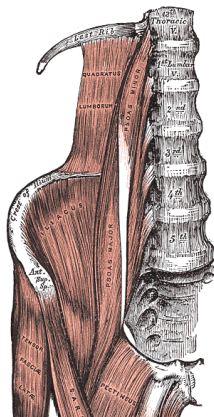
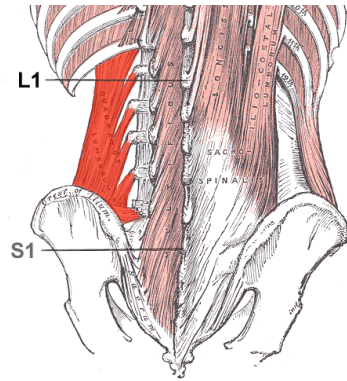
## SCALENES

- Deep to the SCM
- Origin: transverse processes from the cervical vertebrae of C2 to C7
- Insertion: the first and second ribs
- Actions:
  - Anterior and middle **scalene** muscles: elevate the first rib, flexes and laterally bends the neck to same side.
  - Posterior **scalene** is to elevate the second rib and tilt the neck to the same side.



## QUADRATES LUMBORUM

- **Origin** - Posterior ilium
- **Insertion** - transverse processes of the lumbar spine & 12th rib
- **Actions** -
  - elevates the pelvis
  - lateral flex the vertebral column
  - extend vertebral column



## REVIEW: THE SPINE

Sub occipitals  
Levator Scapula  
Erector Spinae Group  
Sternocleidomastoid  
Platysma  
Scalenes  
(Quadrates Lumborum)

## THE “CORE”

## ILLIOPSOAS GROUP

## A COMBINATION OF MUSCLES

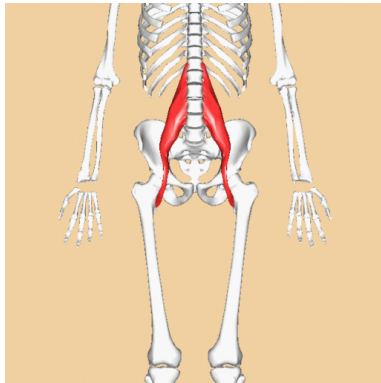
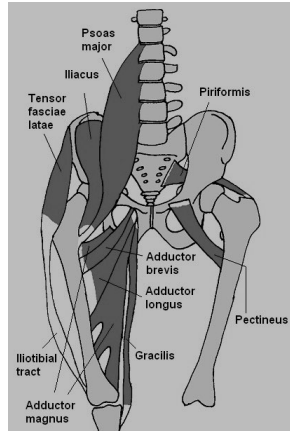
- Psoas Major
- Psoas Minor
- Illiacus

PSOAS MAJOR

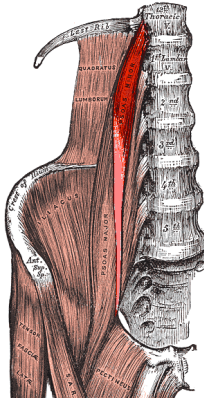
- **Originates** - Lateral surface of vertebrates T-12 through L-3.  
(Close to the bottom of rib)
- **Inserts** - Lesser Trochanter of the femur
- **Actions** - Flexion & Lateral Rotation

PSOAS MINOR

- “Roughly 40% of the population has a psoas minor.”
- Inserts on the pubis bone vs. inner thigh.



## PSOAS MINOR



## ILLIACUS

- Origin - iliac fossa of pelvis "inside of pelvis"
- Unites with Psoas Major at the inguinal ligament and inserts with Psoas Major at the lesser trochanter
- Action
  - Flex hip joint
  - Flex the trunk (towards thigh)
  - Tilt pelvis anteriorly

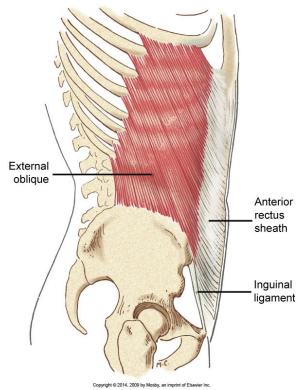






# EXTERNAL OBLIQUE

- Origin
  - Fifth - Twelfth rib
- Insertion
  - Anterior iliac crest
  - abdominal aponeurosis to linea alba



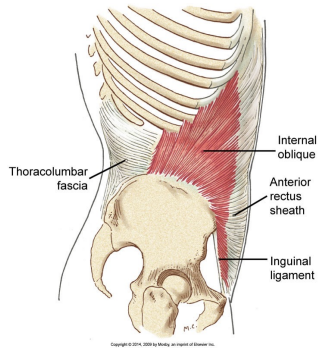
More...

## EXTERNAL OBLIQUE CONTINUED

- Action
  - Unilaterally
    - Laterally flex vertebral column
    - Rotate the vertebral column opposite side
  - Bilaterally
    - Flex vertebral column
- Compress abdominal contents

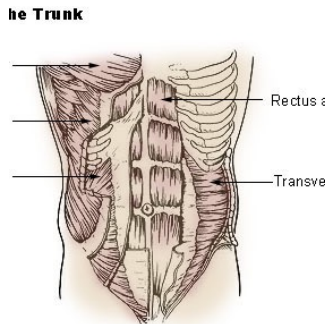
# INTERNAL OBLIQUE

- Lateral Flexion of the Vertebral column to the same side & Rotate vertebral column same side
- Bilaterally - Flex the vertebral & Compress abdominal contents



# RECTUS ABDOMINIS

- Linea alba connective tissue separates left and right
- Origin - Crest of pubis
- Insertion - Costal cartilages 5-7 & Xiphoid process
- Actions - Flexion (of the vertebral column) as in crunching

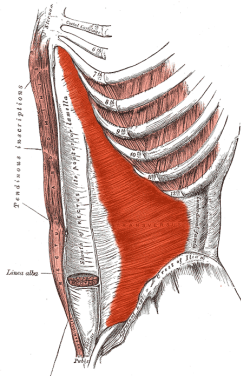


## TRANSVERSE ABDOMINIS

**Origin** - lateral inguinal ligament, iliac crest, thoracolumbar fascia and internal surface of lower six ribs

**Insertion** - Abdominal Aponerosis to linea alba

**Action** - Compress the Abdominal Contents



## INTERCOSTALS

- **Origin** - Inferior border of the rib above
- **Insertion** - Superior border of the below
- **Action** - Helps to stabilize the ribcage during movement
  - Could I have a side or ribs please?
  - Debated if or how they play a roll in breathing or not

- Origin: Inner surface of the six lower ribs
  - Insertion: Central Tendon
  - Action: "circular movement"
- 
- Primary muscle of respiration
  - Separates upper and lower thoracic cavities
  - Large and balloon like



## MUSCLES OF THE PELVIC FLOOR

### FEMALE AND MALE

- Might be more accurately called the pelvic back vs. floor. Pubic symphysis (there is no pubic" bone") helps to hold up the content of the abdomen in women such as the uterus, bladder, etc. (<http://www.savingthewholewoman.com/>). A tucked tailbone/pelvis weakens the muscles of the pelvic floor. "Put your tail behind you", and 'Let your behind be behind you".
- There are many "layers" to the Pelvic Muscles (Sexual Tissue is only one of them). Muscular layer, and Facial Layer.



## HOMework

- **Yoga Anatomy Coloring Book:**
  - Pages 56-59, 78-79, & 84-95

**Optional:**

- PSOAS & CONSTRUCTIVE REST POSE
  - VIDEO <https://www.youtube.com/watch?v=K0mnQdHFBMc>
  - OR ARTICLE: <https://www.yogauonline.com/yoga-for-back-pain/facilitating-calm-balance-understanding-multi-functional-psyos-muscle>