

Muscles of the Spine

SUBOCCIPITAL muscles

↳ Rectus capitis posterior major

- Nerve: dorsal ramus C1 (suboccipital N.)
- Segmental innervation: C1
- Actions: extends (both sides) & rotates (same side) the head

↳ Rectus capitis posterior minor

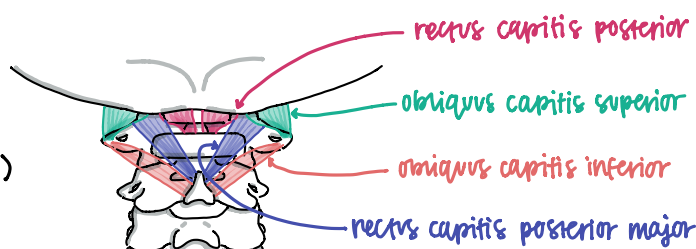
- Nerve: dorsal ramus C1 (suboccipital N.)
- Segmental innervation: C1
- Actions: extends the head (both sides)

↳ Obliquus capitis superior

- Nerve: dorsal ramus C1 (suboccipital N.)
- Segmental innervation: C1
- Actions: laterally flexes (same side) & extends (both sides) the head

↳ Obliquus capitis inferior

- Nerve: dorsal ramus C1 (suboccipital N.)
- Segmental innervation: C1
- Actions: rotates the neck (same side)



make up the suboccipital triangle

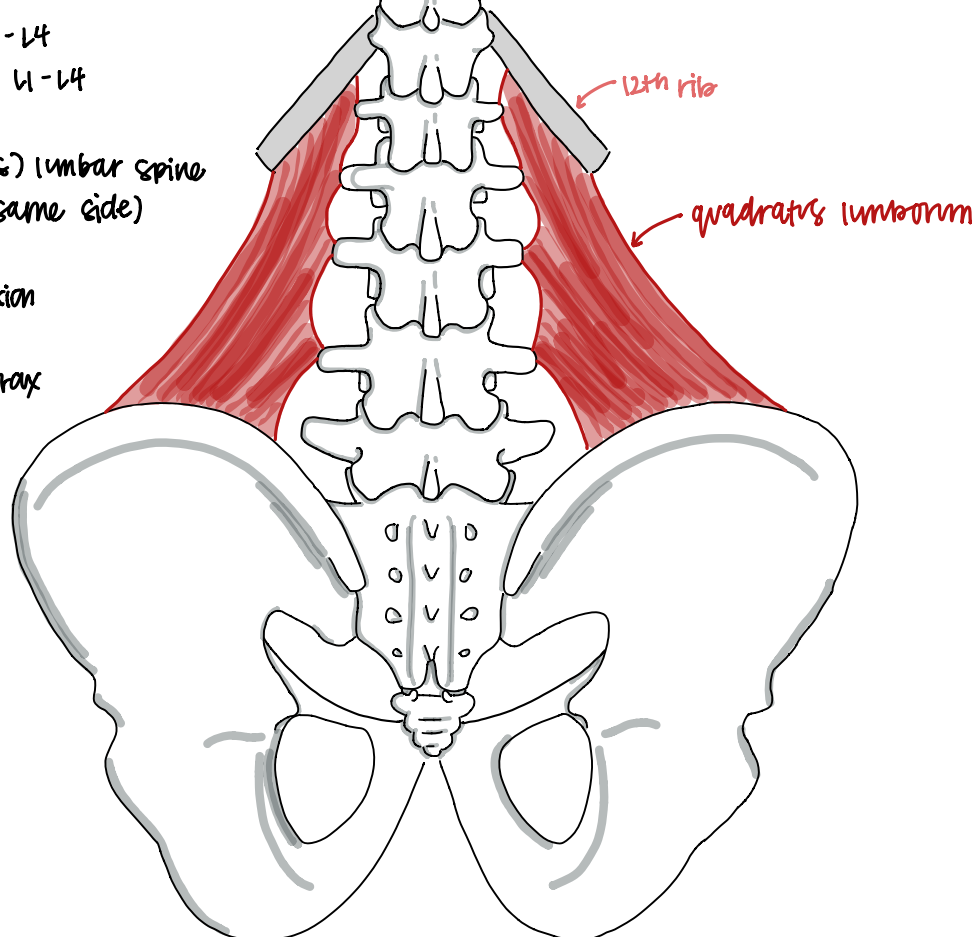
* Other important structures:

- ↳ vertebral A. → crosses the floor of the suboccipital Δ
- ↳ suboccipital N. → passes through the suboccipital Δ
- ↳ greater occipital N. → crosses superficially over the suboccipital Δ

QUADRATUS LUMBORUM muscle

- Nerve: ventral rami L1-L4
- Segmental innervation: L1-L4
- Actions:

- ↳ extends (both sides) lumbar spine
- ↳ laterally flexes (same side) lumbar spine
- ↳ controls lumbar flexion (opposite side)
- ↳ helps elongate thorax during inspiration by anchoring 12th rib in place



SEGMENTAL muscles

↳ **Interspinalis**

- **Nerve:** dorsal ramus of spinal N. crossed by muscle
- **Segmental Innervation:** spinal cord level crossed by muscle
- **Actions:** extends vertebra, postural control

↳ **Intertransversarius anterior**

- **Nerve:** ventral ramus of cervical N. crossed by muscle
- **Segmental Innervation:** spinal level crossed by muscle
- **Actions:** extends (both sides) and laterally flexes (same side) the cervical spine, postural control

↳ **Intertransversarius posterior**

- **Nerve:** ventral ramus of spinal N. crossed by muscle
- **Segmental Innervation:** spinal level crossed by muscle
- **Actions:** laterally flexes (same side) cervical spine, postural control

↳ **Intertransversarius lateralis**

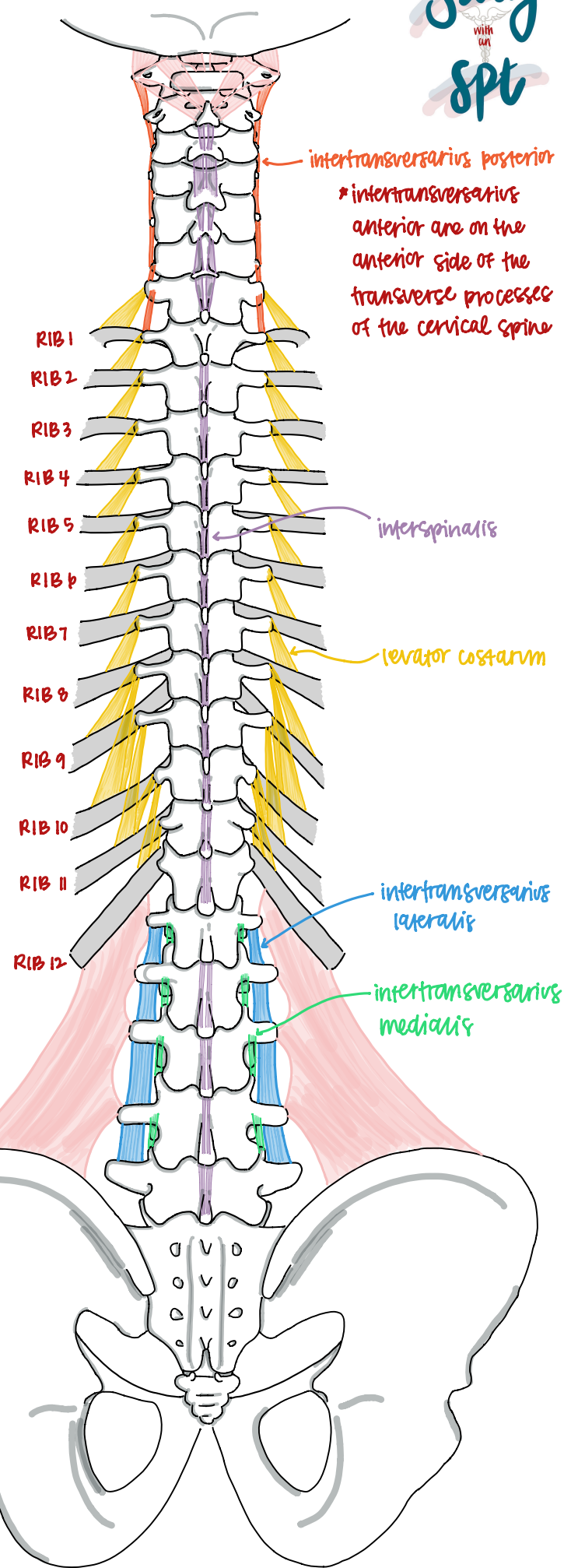
- **Nerve:** ventral ramus of lumbar N. crossed by muscle
- **Segmental Innervation:** spinal level crossed by muscle
- **Actions:** laterally flexes (same side) lumbar spine, postural control

↳ **Intertransversarius medialis**

- **Nerve:** dorsal ramus of the lumbar N. crossed by muscle
- **Segmental Innervation:** spinal level crossed by muscle
- **Actions:** laterally flexes (same side) lumbar spine, postural control

↳ **Levator costarum**

- **Nerve:** ventral ramus of thoracic N. cross crossed by muscle
- **Segmental Innervation:** spinal level crossed by muscle
- **Actions:**
 - ↳ raises ribs
 - ↳ extends (both sides) of thoracic spine
 - ↳ laterally flexes (same side) of thoracic spine
 - ↳ rotates (opposite side) of thoracic spine



DEEP SUBDIVISION:

1. Splenius Group
2. Erector Spinal Group
3. Transversospinalis Group
4. Segmental Group

TRANSVERSOSPINALIS muscles

↳ Rotatores Longi

- **Nerve:** dorsal rami of spinal nerve crossed by muscle
- **Segmental innervation:** spinal cord level crossed by muscle
- **Actions:** rotates superior vertebra (opposite side)

↳ Rotatores Brevi

- **Nerve:** dorsal rami of spinal nerve crossed by muscle
- **Segmental innervation:** spinal cord level crossed by muscle
- **Actions:** rotates superior vertebra (opposite side)

↳ Multifidus lumborum

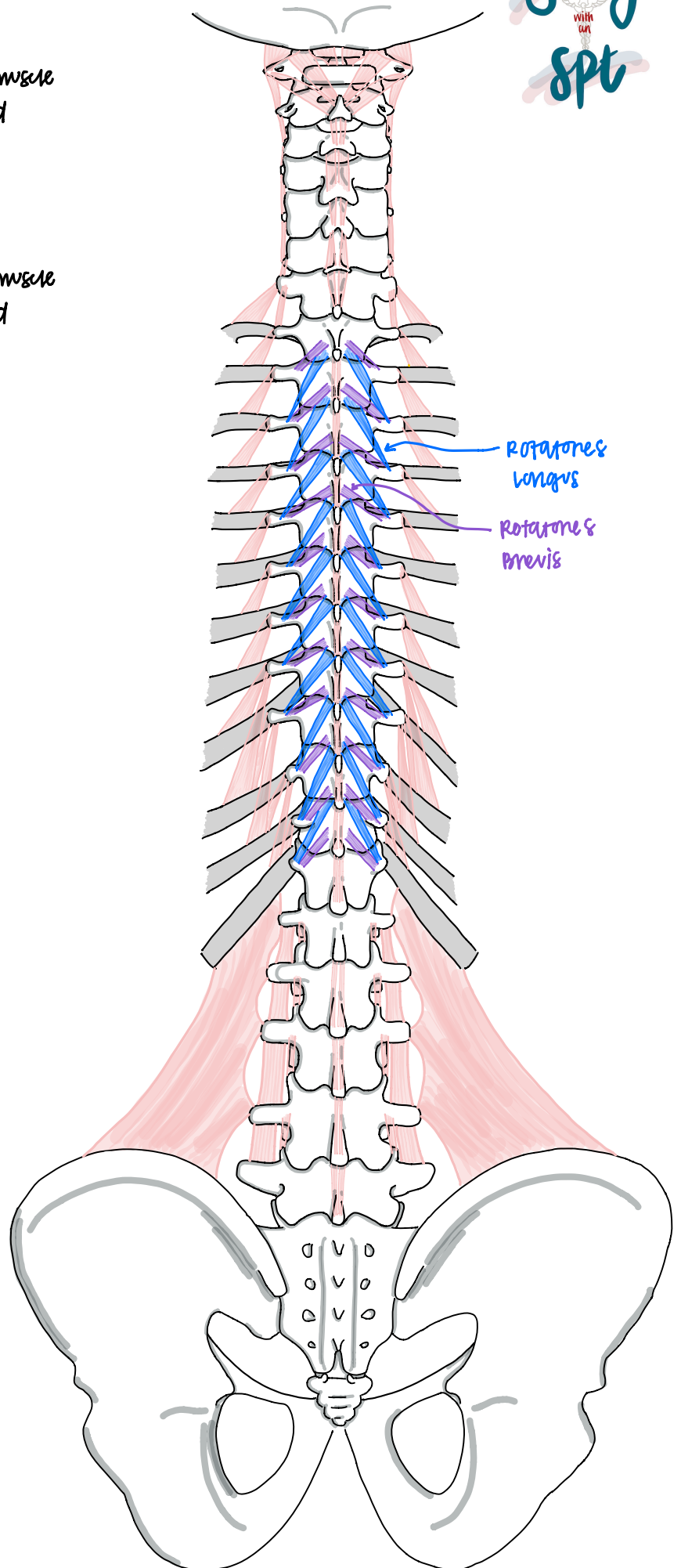
↳ Multifidus thoracis

↳ Multifidus cervicis

↳ semispinalis thoracis

↳ semispinalis cervicis

↳ semispinalis capitis



TRANSVERSOSPINALIS muscles

↳ Rotatores longi

↳ Rotatores brevis

↳ Multifidus lumborum

- **Nerve:** dorsal rami of lumbar N. crossed by muscle
- **segmental innervation:** lumbar levels crossed by muscle
- **Actions:** extends (both sides), controls lateral flexion (opposite side), & rotates (opposite side) the lumbar spine

↳ Multifidus thoracis

- **Nerve:** dorsal rami of thoracic N. crossed by muscle
- **segmental innervation:** thoracic levels crossed by muscle
- **Actions:** extends (both sides), controls lateral flexion (opposite side), & rotates (opposite side) the thoracic spine

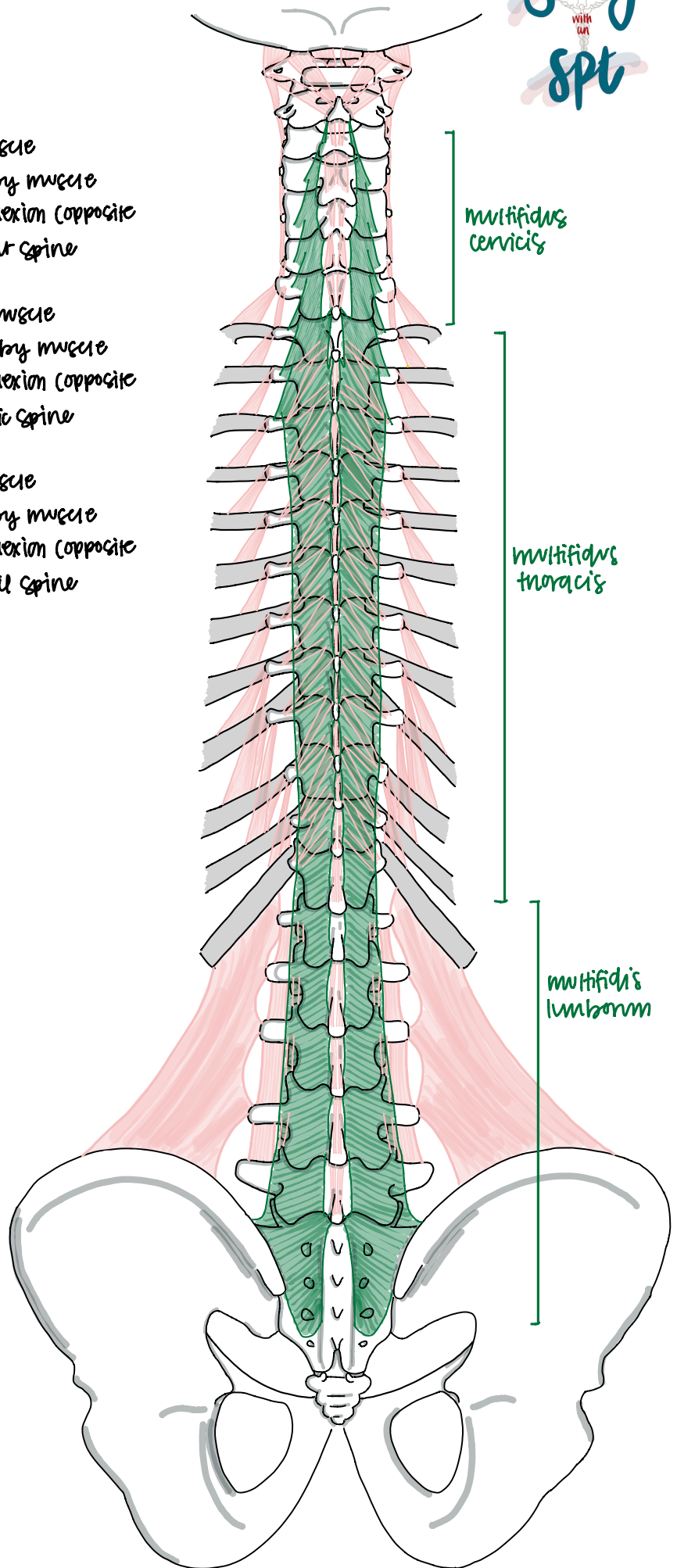
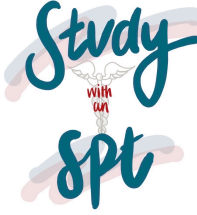
↳ Multifidus cervicis

- **Nerve:** dorsal rami of cervical N. crossed by muscle
- **segmental innervation:** cervical levels crossed by muscle
- **Actions:** extends (both sides), controls lateral flexion (opposite side), & rotates (opposite side) the cervical spine

↳ semispinalis thoracis

↳ semispinalis cervicis

↳ semispinalis capitis



TRANSVERSOSPINALIS muscles

- ↳ Rotatores longi
- ↳ Rotatores brevis
- ↳ Multifidus lumborum
- ↳ Multifidus thoracis
- ↳ Multifidus cervicis

↳ Semispinalis thoracis

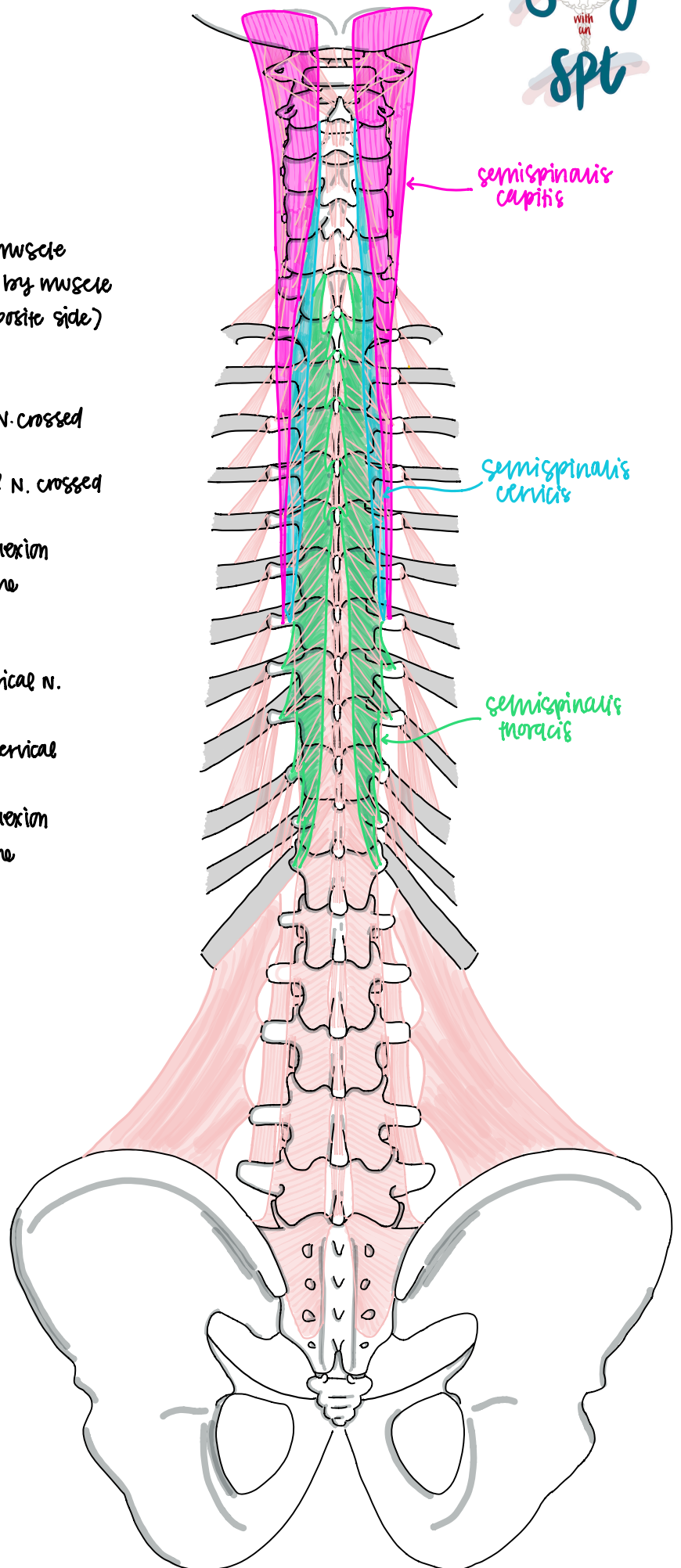
- **Nerve:** dorsal rami of thoracic N. crossed by muscle
- **Segmental innervation:** thoracic levels crossed by muscle
- **Actions:** extends the thoracic spine, rotates (opposite side) thoracic vertebrae

↳ Semispinalis cervicis

- **Nerve:** dorsal rami of upper thoracic & cervical N. crossed by muscle
- **Segmental innervation:** upper thoracic & cervical N. crossed by muscle
- **Actions:** extends (both sides), controls lateral flexion (opposite side), & rotates (opposite side) the cervical spine

↳ Semispinalis capitis

- **Nerve:** dorsal rami of upper thoracic & lower cervical N. crossed by muscle
- **Segmental innervation:** upper thoracic & lower cervical levels crossed by muscle
- **Actions:** extends (both sides), controls lateral flexion (opposite side), & rotates (opposite side) the cervical spine



ERECTOR SPINAE muscles

↳ Iliocostalis Lumborum

- **Nerve:** dorsal rami of lumbar N. crossed by muscle
- **Segmental innervation:** lumbar levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), rotates (same side) the lumbar spine

↳ Iliocostalis Thoracis

- **Nerve:** dorsal rami of thoracic N. crossed by muscle
- **Segmental innervation:** thoracic levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), rotates (same side) the thoracic spine

↳ Iliocostalis Cervicis

- **Nerve:** dorsal rami of cervical N. crossed by muscle
- **Segmental innervation:** cervical levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), rotates (same side) the cervical spine

↳ Longissimus Lumborum

- **Nerve:** dorsal rami of lumbar N. crossed by muscle
- **Segmental innervation:** lumbar levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), rotates (same side) the lumbar spine

↳ Longissimus Thoracis

- **Nerve:** dorsal rami of thoracic & lumbar N. crossed by muscle
- **Segmental innervation:** thoracic & lumbar levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side) the lumbar spine; laterally flexes thoracic spine

↳ Longissimus Cervicis

- **Nerve:** dorsal rami of cervical & thoracic N. crossed by muscle
- **Segmental innervation:** cervical & thoracic levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), rotates (same side) the cervical spine

↳ Longissimus Capitis

- **Nerve:** dorsal rami of upper thoracic & lower cervical N. crossed by muscle
- **Segmental innervation:** upper thoracic & lower cervical levels crossed by muscle
- **Actions:** extends (both sides), laterally flexes (same side), & rotates (same side) head

↳ Spinalis Thoracis

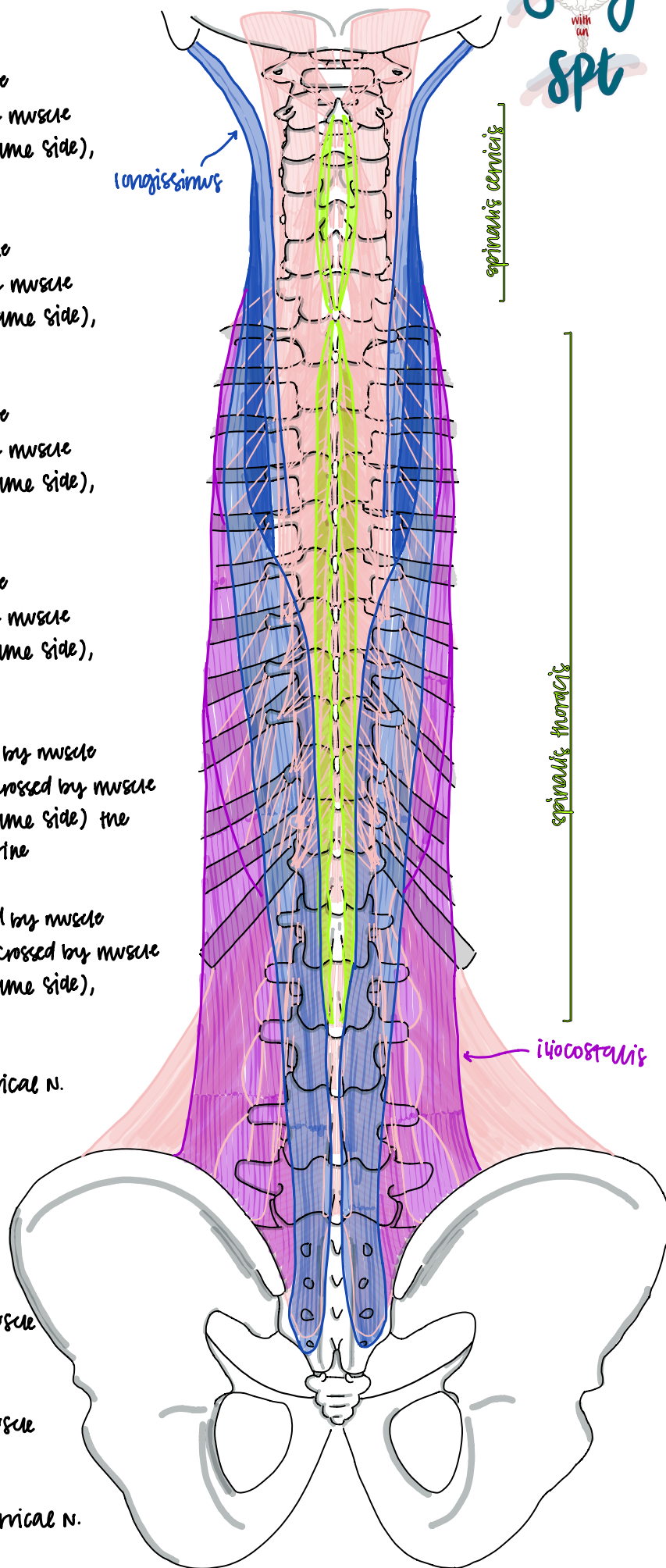
- **Nerve:** dorsal rami of thoracic N. crossed by muscle
- **Actions:** extends thoracic spine

↳ Spinalis Cervicis

- **Nerve:** dorsal rami of cervical N. crossed by muscle
- **Actions:** extends cervical spine

↳ Spinalis Capitis

- **Nerve:** dorsal rami of upper thoracic & lower cervical N. crossed by muscle
- **Actions:** extends the head



SPENIUS muscles

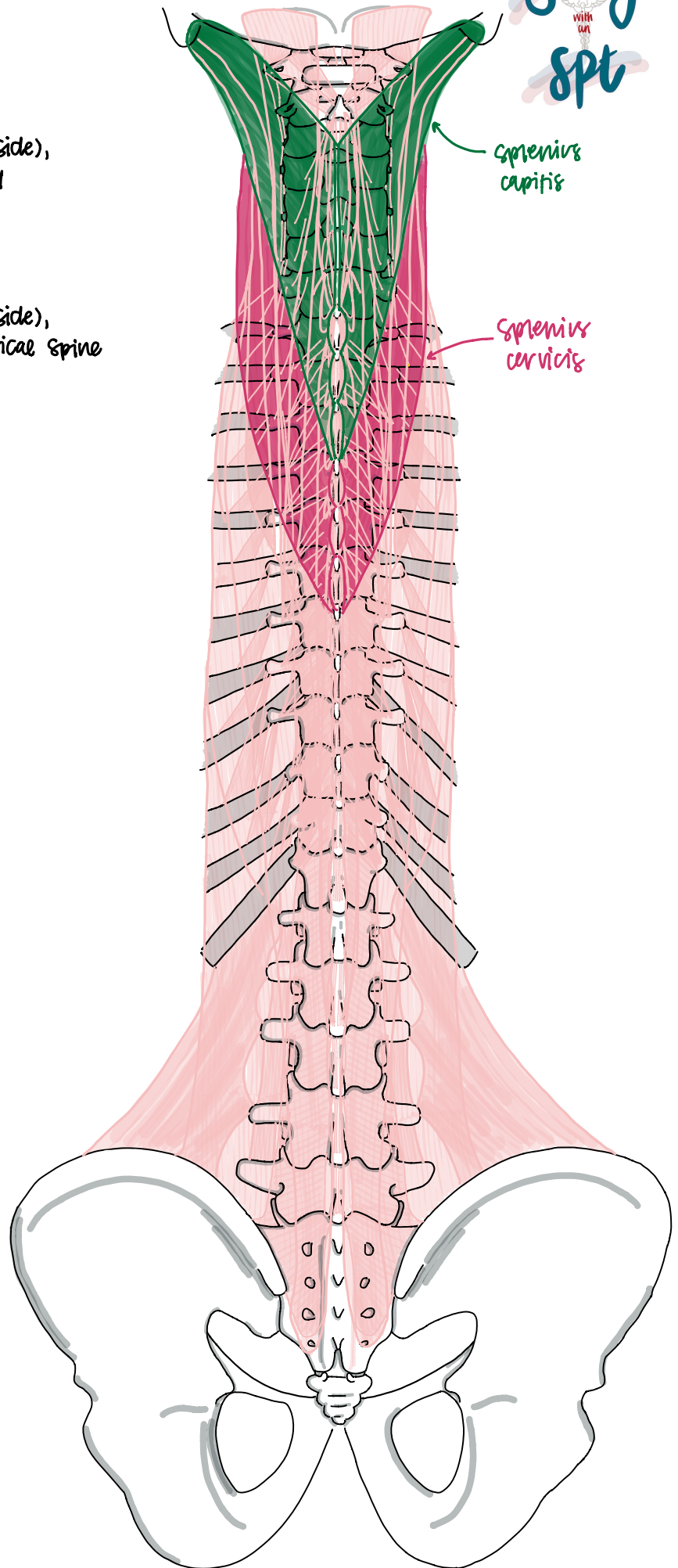
↳ splenius capitis

- **Nerve:** dorsal rami of C4-C8
- **Segmental innervation:** C4-C8
- **Actions:** extends (both sides), rotates (same side), laterally flexes (same side) the head

↳ splenius cervicis

- **Nerve:** dorsal rami C4-C8
- **Segmental innervation:** C4-C8
- **Actions:** extends (both sides), rotates (same side), laterally flexes (same side) the cervical spine

Study
SPT



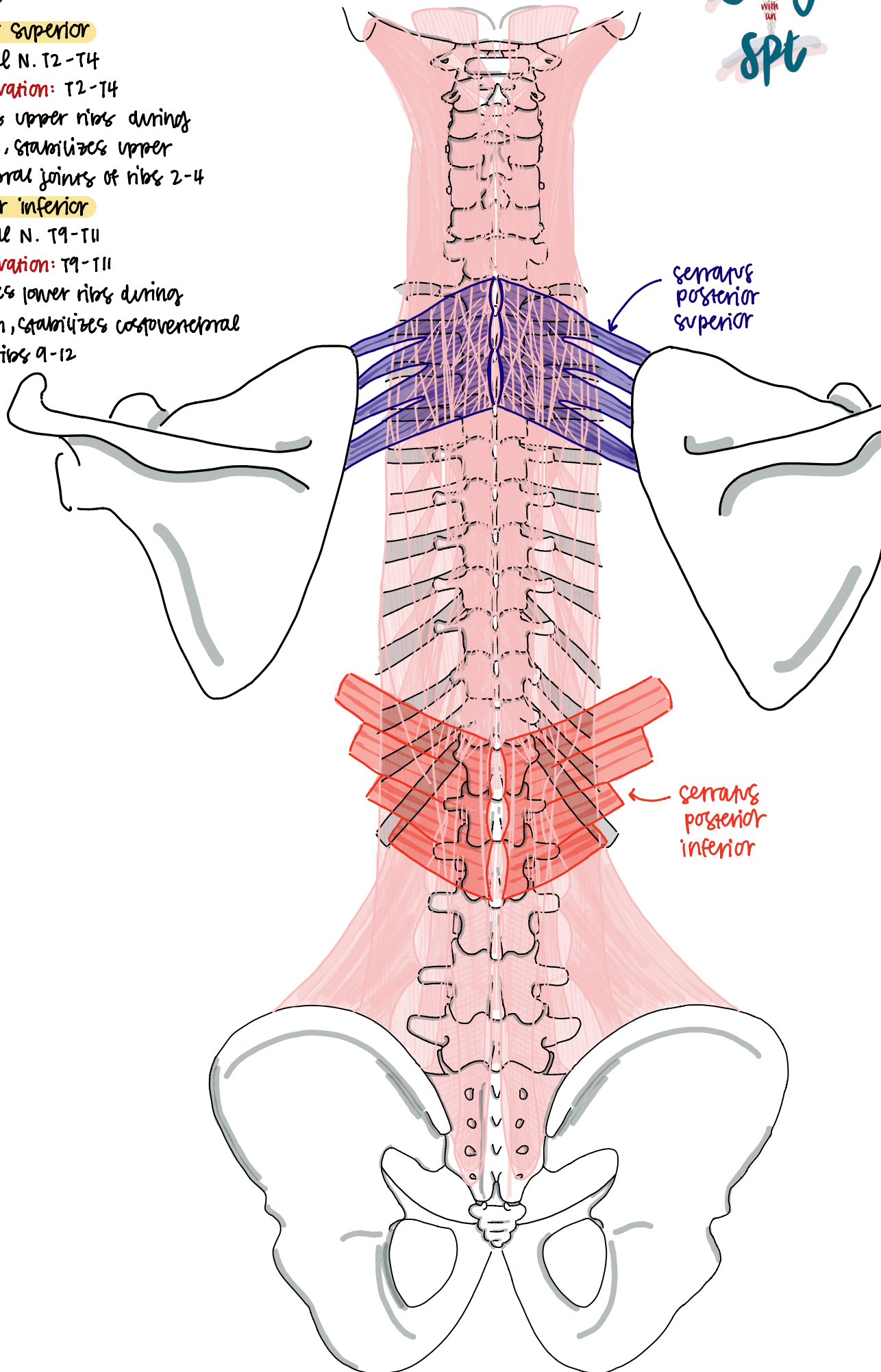
INTERMEDIATE SUBDIVISION muscles

↳ serratus posterior superior

- **Nerve:** intercostal N. T2-T4
- **Segmental innervation:** T2-T4
- **Actions:** elevates upper ribs during ventilation, stabilizes upper costovertebral joints of ribs 2-4

↳ serratus posterior inferior

- **Nerve:** intercostal N. T9-T11
- **Segmental innervation:** T9-T11
- **Actions:** depresses lower ribs during ventilation, stabilizes costovertebral joints of ribs 9-12



SUPERFICIAL SUBDIVISION muscles

↳ Trapezius

↳ Latissimus Dorsi

↳ Levator Scapulae

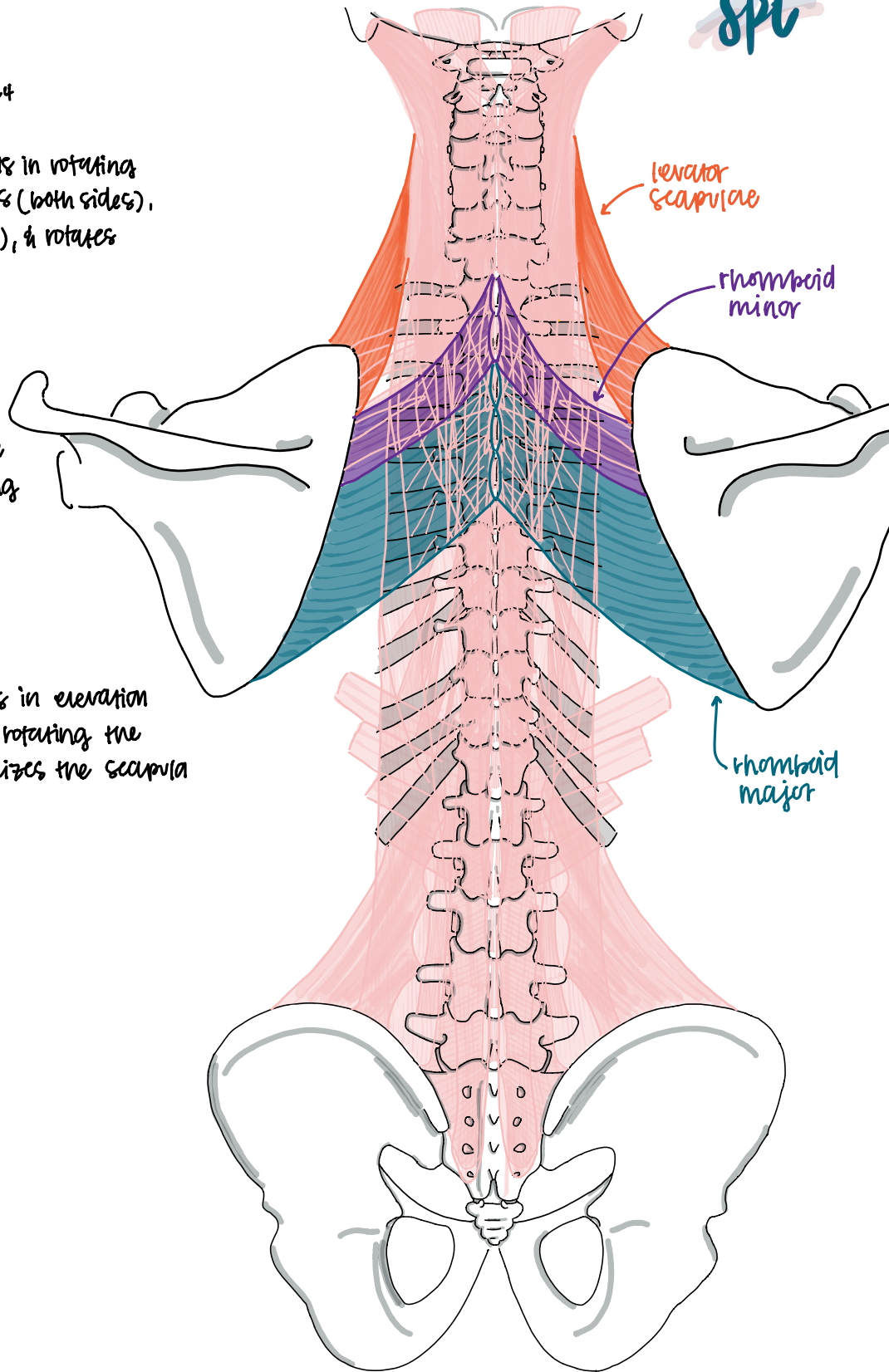
- **Nerve:** dorsal scapular N., C3, C4
- **Segmental Innervation:** C3, C4, C5
- **Actions:** elevates scapula, assists in rotating glenoid fossa down, extends (both sides), laterally flexes (same side), & rotates (same side) neck

↳ Rhomboid Minor

- **Nerve:** dorsal scapular N.
- **Segmental Innervation:** C4, C5
- **Actions:** retracts scapula, assists in elevation of the scapula, assists in rotating the glenoid fossa down, stabilizes the scapula

↳ Rhomboid Major

- **Nerve:** dorsal scapular N.
- **Segmental Innervation:** C4, C5
- **Actions:** retracts scapula, assists in elevation of the scapula, assists in rotating the glenoid fossa down, stabilizes the scapula



SUPERFICIAL SUBDIVISION muscles

↳ Trapezius

- **Nerve:** spinal accessory N. (CN XI - motor), C3, C4 (sensory)
- **segmental innervation:** C3, C4 (sensory only)
- **Actions:**
 - ↳ **upper trapezius:** elevates & retracts the scapula, assists in rotating the glenoid fossa upward, stabilizes the scapula for GH movement, extends head (both sides), laterally flexes head (same side), & rotates (opposite side) head
 - ↳ **middle trapezius:** retracts (adducts) scapula, stabilizes scapula for GH movement
 - ↳ **lower trapezius:** depresses scapula, assists in rotating glenoid fossa upward, & stabilizes scapula for GH movement

↳ Latissimus Dorsi

- **Nerve:** Thoracodorsal
- **segmental innervation:** C6, C7, C8
- **Actions:** adducts & IR humerus, assists in humeral extension & flexion, may depress scapula

↳ Levator Scapulae

↳ Rhomboid Minor

↳ Rhomboid Major

↳ Latissimus Dorsi

