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THE ANATOMY OF HUMAN SKELETAL MUSCLES IN TABLES

Учебно-методическое пособие

Рекомендовано методической комиссией факультета Института биологии и биомедицины для студентов ННГУ, обучающихся по направлению подготовки 31.05.03 «Стоматология», 31.05.01 «Лечебное дело» на английском языке.

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В настоящем учебно-методическом пособии изложены на английском языке материалы для проведения практических работ по курсам нормальная анатомия и анатомия головы и шеи по теме: миология. Материал представлены в виде таблиц, которые сопровождаются схемой скелета, предназначенного для самостоятельного изображения анатомии мышц.

Учебно-методическое пособие предназначено для студентов ННГУ, обучающихся по направлению подготовки 31.05.03 «Стоматология», 31.05.01 «Лечебное дело» на английском языке.

Ответственный за выпуск:

Председатель методической комиссии Института биологии и биомедицины ННГУ к.б.н. Е.Л. Воденеева

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Contents

Chapter 1. The muscles of the back.

1.1 Introduction.

In accordance with embryological origin and function in movement, all back muscles can be divided into 3 groups:

1. The superficial (extrinsic) group originate in embryo form by locations other than the back and are responsible for movements at the shoulder and upper limb.
2. The intermediate group originate in embryo form by locations other than the back and responsible a respiratory action and comprises of muscles connected to the ribs.
3. The deep group (intrinsic) group originate in embryo in the back and responsible actions of the vertebral column and head.

1.2 The superficial (extrinsic) group:

- The trapezius muscle (musculus trapezius)
- The latissimus dorsi muscle (M. latissimus dorsi)
- The rhomboid major muscle (M. rhomboideus major)
- The rhomboid minor muscle (M. rhomboideus minor)
- The levator scapulae muscle (M. levator scapulae)

Table 1. The superficial (extrinsic) muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The trapezius muscle (musculus trapezius)	External occipital protuberance, superior nuchal line, ligamentum nuchae, ligamentum supraspinatus, processes spinosus CVII and ThI - ThXII.	Acromial part of the clavicle, acromion, spin of the scapula.	• Draw the scapula to the vertebral column. • Contraction of the: Upper fibers - raises the scapula Lower fibers - lowers it. • When the scapula is fixed: Contraction of one of the muscle tilts the head to the corresponding side. Both trapezius muscles pull the head backwards.	• Accessory nerve • Cervical nerves (C3-C4) <u>Blood supply:</u> • Transverse cervical a. • Occipital a. • Suprascapular a. • Intercostals a.

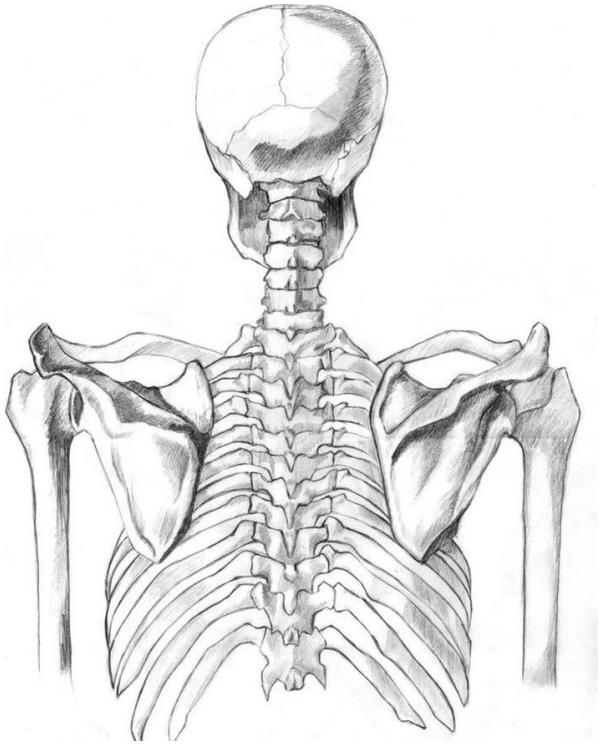

Fig. 1 Draw the trapezius muscle (Origin – blue; Insertion – red; Action – arrow)

Table 2. The superficial (extrinsic) muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The latissimus dorsi muscle (M. latissimus dorsi)	The spinous processes of the Th6 - Th12, L1 - L5, thoracolumbar fascia, external lip of the iliac crest, 9 – 12 ribs	Crest of the lesser tubercle of humerus (tuberculum minor humeri)	• Draws the arm to the trunk. • Pulls the limb backwards to the midline • Rotates limb medially (pronation) When the arm is fixed: • Pulls the trunk up on the arm Contributes to upward displacement of the lower ribs (accessory muscle of respiration)	• Cervical nerves (C7 – C8) –N. thoracodorsalis <u>Blood supply:</u> • Thoracodorsal a. • Circumflex humeral a. • Intercostals a.

Fig. 2. Draw latissimus dorsi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 3. The superficial (extrinsic) muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rhomboid major muscle (M. rhomboideus major)	The spinous processes of the Th1 - Th4	Margo medialis scapulae	• Draw the scapula closer to the vertebral column • Draw the scapula upwards	• N. dorsalis scapulae (C4-C6) <u>Blood supply:</u> • Transverse cervical a. • Suprascapular a. • Intercostals a.

Fig. 3 - 5. Draw rhomboid major muscle, rhomboid minor muscle, levator scapulae muscle (Origin – blue; Insertion – red; Action – arrow)

Table 4. The superficial (extrinsic) muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rhomboid minor muscle (M. rhomboideus minor)	The spinous processes of the C6 - C7	Medial border of the scapula.	• Draw the scapula closer to the vertebral column • Draw the scapula upwards	• N. dorsalis scapulae (C4-C6) <u>Blood supply:</u> • Transverse cervical a. • Suprascapular a. • Intercostals a.

Table 5. The superficial (extrinsic) muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The levator scapulae muscle (M. levator scapulae)	Posterior tubercles of the transvers processes of C1-C4.	Superior angle and the upper part of the medial border of the scapula.	• Raises the upper angle of the scapula, title it medially • When the scapula is fixed cervical part of the vertebral column inclined backwards to the side of contracting muscle	• N. Dorsalis scapulae (C4-C5) <u>Blood supply</u>: • Transverse cervical a. • Superficial cervical a. • Ascending cervical a.

1.3 The intermediate group:

- The serratus posterior superior muscle (M. serratus posterior superior)
- The serratus posterior inferior muscle (M. serratus posterior inferior)

Table 6. The intermediate muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The serratus posterior superior muscle (M. serratus posterior superior)	The lower part of ligamentum nuchae and spinous processes of C6-C7 and Th1 – Th2	External surface of the 2, 3, 4, 5 ribs laterally of their angles	• Raises the upper ribs (participates in inspiration)	• Intercostal nerves Th1 - Th4 Blood supply: • Deep cervical a. • Intercostal a.

Fig. 6. Draw serratus posterior superior muscle (Origin – blue; Insertion – red; Action – arrow)

Table 7. The intermediate muscle of the back

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The serratus posterior inferior muscle (M. serratus posterior inferior)	Spinous processes of Th11 – Th12 and L1 - L2	External surface of the 9, 10, 11, 12 ribs laterally of their angle	Lovers the lower ribs (participates in a respiration)	• Intercostal nerves Th9-Th12 <u>Blood supply:</u> • Intercostal a.

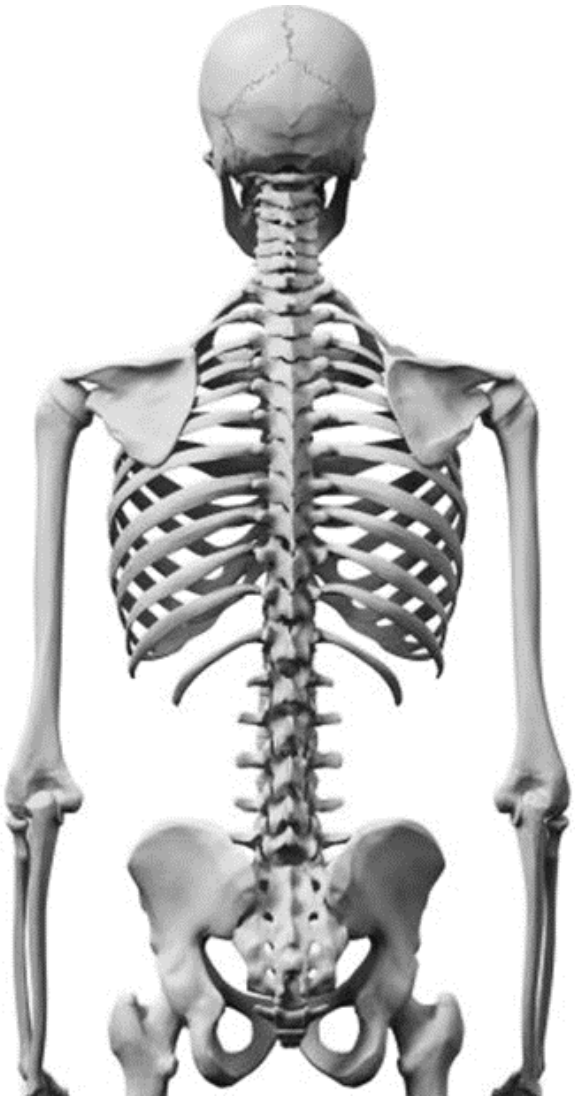

Fig. 7. Draw serratus posterior inferior muscle (Origin – blue; Insertion – red; Action – arrow)

1.4 The deep (intrinsic) group:

I. Long deep (proper) muscles of the back:

- The splenius capitis muscle (M. splenius capitis)
- The splenius cervicis muscle (M. splenius cervicis)
- The sacrospinalis muscle (M. erector spinae) is a group of muscles that run from the sacrum to the base of the skull on the left and the right of the spine.. These muscles lie on either side of the vertebral column spinous processes and extend throughout the lumbar, thoracic, and cervical regions. It include the three:
  a) M. iliocostalis
  b) Longissimus muscle
  c) Spinalis muscle
- The transversospinalis muscle (m. transversospinalis) is a collective term for the muscles of the back primary medial to the iliocostalis and longissimus muscles and lateral to the spinalis, interspinalis and intertransversarius groups. Their combined action is rotation and extension of the vertebral column. They include the three:
  a) Semispinalis muscles - spanning 4-6 vertebral segments
  b) Multifidus - spanning 2-4 vertebral segments
  c) Rotatores - spanning 1-2 vertebral segments

II. Short deep (proper) muscles of the back:

- Interspinales muscles. (M. interspinales)
- The intertransverse muscles (Mm. intertransversalii)
- The levatores costarum muscles (M. levatores costarum)
- The rectus capitis posterior major muscle
- The rectus capitis posterior minor muscle
- The obliquus capitis inferior muscle
- The obliquus capitis superior muscle

Table 8. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The splenius capitis muscle (M. splenius capitis)	The lower part of ligamentum nuchae and spinous processes of C7 and Th1 – Th3	Lateral part of superior nuchal line and posterior border of the mastoid process	• Both contraction pulls the head and neck backwards • In unilateral contraction the head and neck rotate to side of the acting muscle	• Greater occipital nerve and C3-C4 cervical nerves

Fig. 8. Draw splenius capitis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 9. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The splenius cervicis muscle (M. splenius cervicis)	Spinous processes of C7 and Th1 – Th5.	Posterior tubercles of the transverse processes of C1-C2 (3)	• Both contraction pulls the head and neck backwards • In unilateral contraction the head and neck rotate to side of the acting muscle	• Greater occipital nerve and C3-C4 cervical nerves

Fig. 9. Draw splenius cervicis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 10. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The sacrospinalis muscle (M. erector spinae)	Posterior part of the iliac crest, dorsal surface of the sacrum, spinous processes of L1-L5, thoracolumbar fascia		• Extends the vertebral column on bilateral contraction. In contraction on one side - the vertebral column bends to the same side. • The upper fibers pull the head to side of contracting muscle. • Some of the fibers pull the ribs downwards.	• The spinal nerves C1-C8, Th1-Th12, L1-L5, S1 - S2.

Fig. 10. Draw sacrospinalis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 11. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)
M. iliocostalis lumborum	Posterior part of the transvers tubercles of the sacrum, lumbar fascia.	External surface of the 3(4) - 12 ribs near of their angles
M. iliocostalis thoracis	External surface of the 7(8) - 12 ribs near of their angles	External surface of the 1 - 5(7) ribs near of their angles
M. iliocostalis cervicis	External surface of the 1 - 5(7) ribs near of their angles	Posterior tubercles of the transverse processes of C4 - C6.

Fig. 11. Draw iliocostalis lumborum, thoracis, cervicis (Origin – blue; Insertion – red; Action – arrow)

Table 12. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)
M. longissimus thoracis	Transverse processes of L1 - L5 and Th7(6) – Th12	External surface of the 2 - 12 ribs near of their angles
M. longissimus cervicis	Transverse processes of Th1 – Th5 and C7.	Transverse processes of C2 - C5
M. longissimus capitis	Transverse processes of Th1 – Th3 and C3(4)	Posterior border of the mastoid prosess

Fig. 12. Draw longissimus thoracis, cervicis, capitis (Origin – blue; Insertion – red; Action - arrow)

Table 13. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)
M. spinalis thoracis	Spinous processes of L1 - L2(3) and Th10(11) – Th12.	Spinous processes of Th8 – Th2.
M. spinalis cervicis	Spinous processes of Th1 – Th2 and C7-C6.	Spinous processes of C4 - C2.
M. spinalis capitis	Spinous processes of Th10 – Th2 and C7-C6.	External occipital protuberance.

Fig. 13. Draw spinalis thoracis, cervicis, capitis (Origin – blue; Insertion – red; Action – arrow)

Table 14. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The semispinalis thoracis muscle (M. semispinalis thoracis)	Transverse processes of Th6 – Th12.	Overlapping **4-6** vertebrae. Spinous processes of Th1 – Th7.	• Extends the upper part of the vertebral column. Pulls the head back. • In contraction on one side -the vertebral column rotates to the same side.	• The spinal nerves C1 - C8, Th1 - Th12, L1 - L5.
The semispinalis cervicis muscle (M. semispinalis cervicis)	The semispinalis cervicis muscle (M. semispinalis cervicis)	Spinous processes of C7 – C3.		
The semispinalis capitis muscle (M. semispinalis capitis)	Transverse processes of Th1 – Th6.	Spinous processes of C7 – C4.		

Fig. 14. Draw semispinalis cervicis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 15. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
Multifidus muscles (M. multifidus)	In the sacral region: the back of the sacrum, the posterior superior iliac spine, the posterior superior iliac crest, the posterior sacroiliac ligaments. In the lumbar region: from all the mammillary processes In the thoracic region: from all the transverse processes In the cervical region: from the articular processes of the lower four vertebrae.	Overlapping **2 - 4** vertebrae. The spinous process of one of the vertebrae above.	Stabilizing the joints within the spine.	• The spinal nerves C1 - C8, Th1 - Th12, L1 - L5.

Fig. 15. Draw multifidus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 16. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rotatores cervicis muscle (M. rotatores cervicis)	The transverse processes of all vertebrae (except the atlas), the mammillary processes of *lumbar* vertebrae.	Overlapping **1** vertebrae. The spinous process of one of the vertebrae above.	• Extends the vertebral column. • In contraction on one side - the vertebral column rotates to the same side.	• The spinal nerves C1 - C8, Th1 - Th12, L1 - L5.
The rotatores thoracis muscle (M. semispinalis thoracis)				
The rotatores lumborum muscle (M. semispinalis lumborum)				

Fig. 16. Draw rotatores muscle (Origin – blue; Insertion – red; Action – arrow)

Table 17. The deep (intrinsic) group. Short deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
Interspinal muscles. (M. interspinales)	Short muscular fasciculi, placed in pairs between the spinous processes of the contiguous vertebra, one on either side of the interspinal ligament. In the cervical region - most distinct, and consist of six pairs. In the thoracic region - found between the Th1 and Th2 and between the Th11 and Th12. In the lumbar region - four pairs in the intervals between the five lumbar vertebrae.		Extends the vertebral column and hold it erect.	• The spinal nerves C1 - C8, Th1 - Th12, L1 - L5.

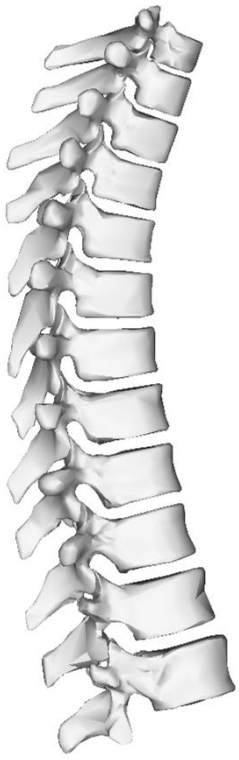

Fig. 17. Draw the interspinal muscles. (Origin – blue; Insertion – red; Action – arrow)

Table 18. The deep (intrinsic) group. Short deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The intertransverse muscles (Mm. Intertransversalii)	Small muscles placed between the transverse processes of the vertebrae		Hold the vertebral column erect	• The spinal nerves C1-C8, Th1-Th12, L1-L5.

Fig. 18. Draw intertransverse muscle (Origin – blue; Insertion – red; Action – arrow)

Table 19. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The levatores costarum muscles (M. levatores costarum)	Transverse processes of C7 and Th1 – Th11.	To the angles of the ribs.	Raise the ribs.	• The spinal nerves C8, Th1-Th12. • Intercostal nerves.

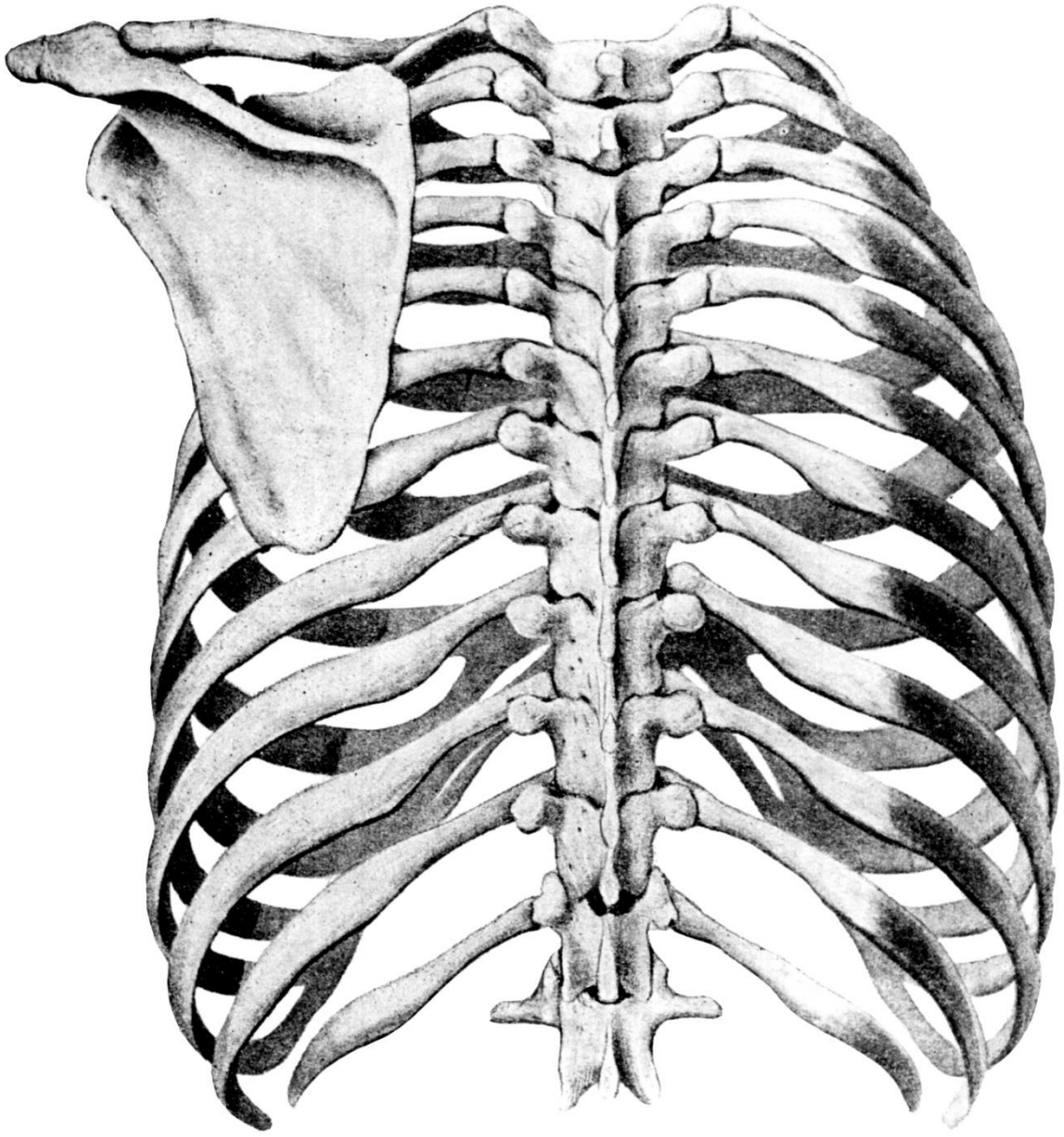

Fig. 19. Draw levatores costarum muscles (Origin – blue; Insertion – red; Action – arrow)

Table 20. The deep (intrinsic) group. Long deep muscles of the back.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rectus capitis posterior major muscle	Spinous process of the axis.	Lateral segment of inferior nuchal line.	• Both contraction pulls the head backwards • In unilateral contraction, the head backwards and rotate to side of the acting muscle.	• The spinal nerves C1-C2.
The rectus capitis posterior minor muscle	The posterior tubercle of the atlas	Medial segment of inferior nuchal line.		
The obliquus capitis inferior muscle	Spinous process of the axis.	Transverse process of the atlas.		
The obliquus capitis superior muscle	Transverse process of the atlas	Lateral segment of inferior nuchal line		

Fig. 20. Draw rectus capitis posterior major muscle, rectus capitis posterior minor, obliquus capitis inferior muscle, obliquus capitis superior muscle. (Origin – blue; Insertion – red; Action – arrow)

Chapter 2. The muscles of the chest.

2.1 Introduction.

The muscles of the chest and upper back occupy the thoracic region of the body inferior to the neck and superior to the abdominal region. These important muscles control moving of the upper limb and act to change the volume of the thoracic cavity during respiration.

The muscles of the chest are separates in two group: superficial and deep muscles of the chest.

2.2 Superficial muscles of the chest.

Superficial muscles of the chest provide movement in the upper shoulder girdle:

- The pectoralis major muscle (M. pectoralis major)
- The pectoralis minor muscle (M. pectoralis minor)
- The subclavian muscle (M. subclavius)
- The serratus anterior muscle (M. serratus anterior)

Table 21. Superficial muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pectoralis major muscle (M. pectoralis major)	Medial half of the clavicle, the anterior surface of the sternum, upper costal cartilages (1-6), and the aponeurosis of the external oblique muscle.	Lateral lip of the intertubercular (bicipital) groove of the humerus. Crest of the greater tubercle of the humerus.	• Draws the arm to the trunk. • Rotates it medially (pronation) • When the arm is horizontal muscle pulls it to a sagittal position (anteversion). • When the arm is fixed it assist in expanding the thoracic cage during respiration (accessory muscle of respiration).	• Medial and lateral pectoral nerve(C5-Th1) <u>Blood supply</u>**:** • Acromiothiracic a. • Intercostal a. • Superior thoracic a.

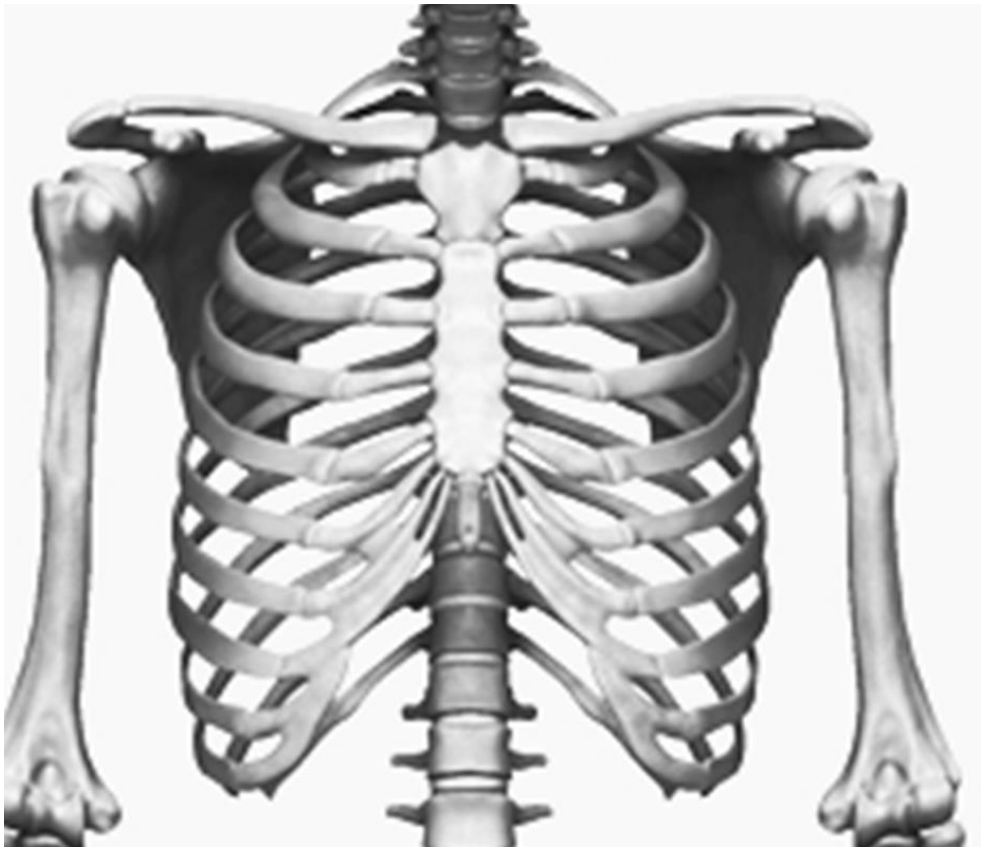

Fig. 21. Draw the pectoralis major muscle (Origin – blue; Insertion – red; Action – arrow)

Table 22. Superficial muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pectoralis minor muscle (M. pectoralis minor)	The upper margins and outer surfaces of the 2, 3, 4, 5 ribs near their cartilages and from the aponeuroses covering the intercostal muscles.	The medial border and upper surface of the coracoid process of the scapula.	• Draws scapula forward and downward. • Depresses shoulder. • When scapula fixed, elevation of 3rd-5th ribs.	• Medial and lateral pectoral nerve(C5-Th1) Blood supply: • Acromiothoracic a. • Intercostal a. • Superior thoracic a.

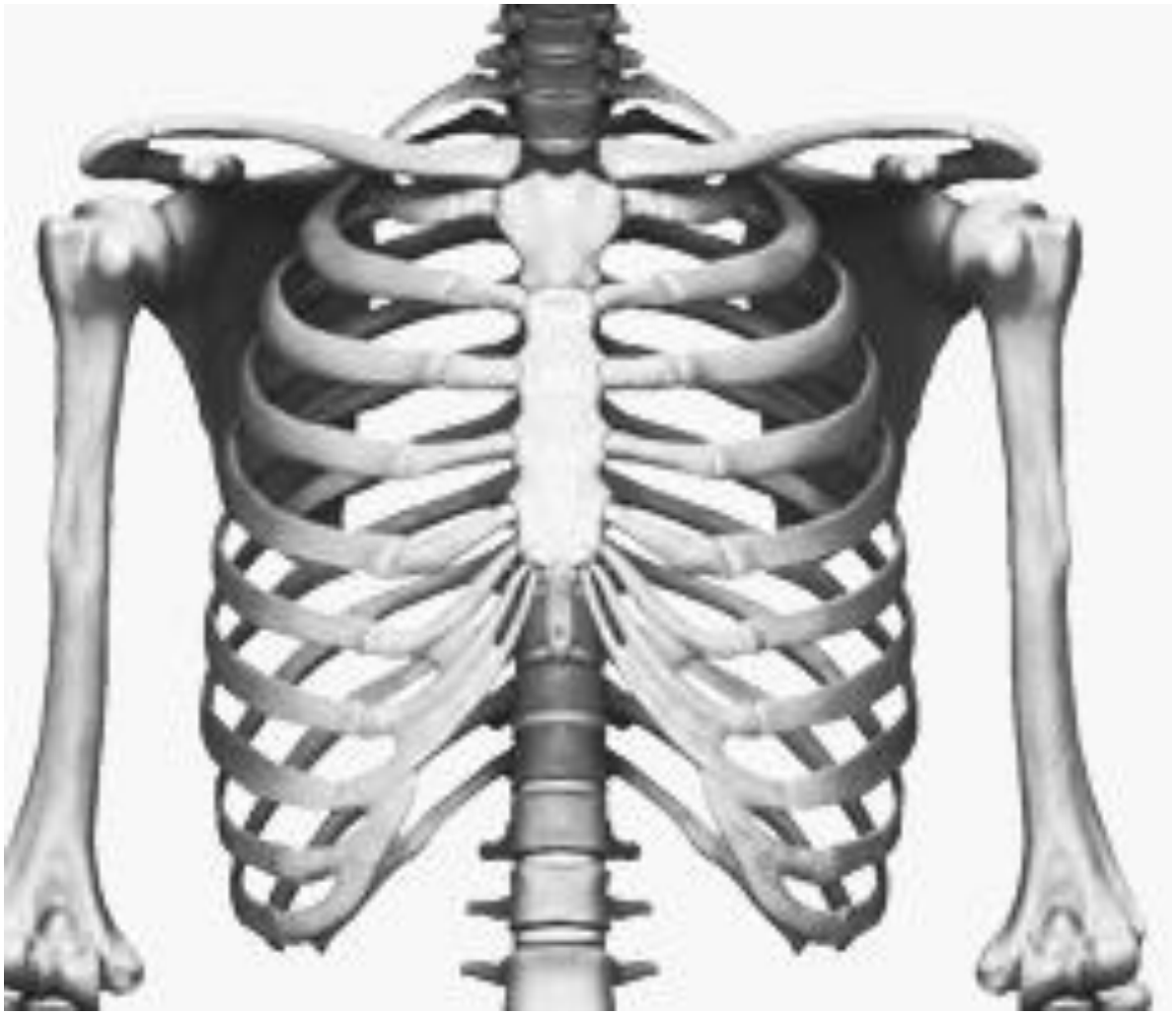

Fig. 22. Draw the pectoralis minor muscle (Origin – blue; Insertion – red; Action – arrow)

Table 23. Superficial muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The subclavian muscle (M. subclavius)	A short, thick tendon from the first rib and its cartilage at their junction, in front of the costoclavicular ligament.	The groove on the under inferior of the clavicle.	• Depresses clavicle. • When the arm is fixed - raises the I rib (accessory muscle of respiration). • Protects the underlying brachial plexus and subclavian vessels from a clavicle fracture - the most frequently broken long bone.	• The subclavian nerve <u>Blood supply</u>: • Suprascapular a. • Acromiothiracic a.

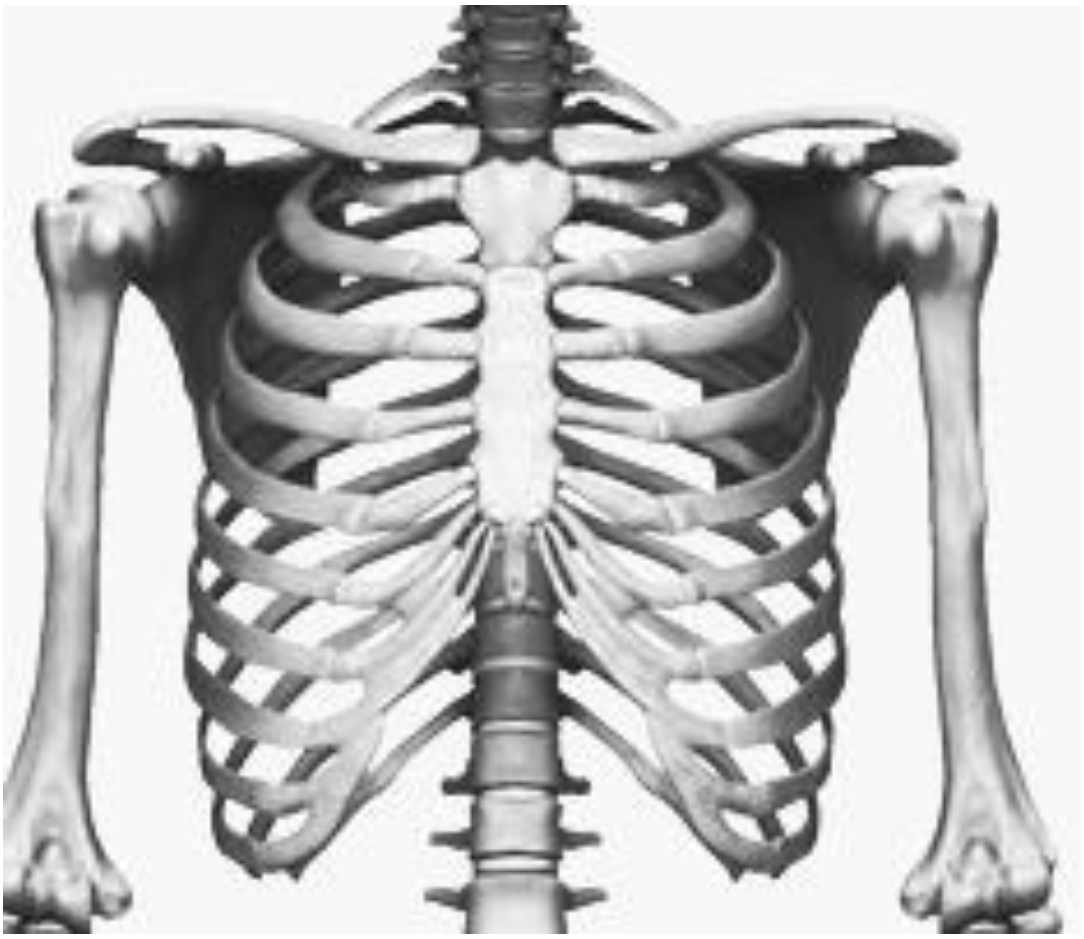

Fig. 23. Draw the subclavian muscle (Origin – blue; Insertion – red; Action – arrow)

Table 24. Superficial muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The serratus anterior muscle (M. serratus anterior)	Anterior surfaces of the 1-9 ribs.	Anterior surface of medial border and the inferior angle of scapula.	• Abducts (protracts) scapula and image description upwardly • Rotates it while abducting the arm; • Stabilizes scapula by holding it to chest wall.	• Long thoracic nerve (C5-C7). <u>Blood supply</u>: • Thoracodorsal a. • Intercostal a. • Lateral thoracic a.

Fig. 24 Draw serratus anterior muscle (Origin – blue; Insertion – red; Action – arrow)

2.3 Deep muscles of the chest – muscles of the chest proper:

- External intercostal muscles (Mm. intercostales externi)
- Internal intercostal muscles (Mm. intercostales interni)
- Intimi intercostal muscles (Mm. intercostales intimi)
- Subcostal muscles (Mm. subcostales)
- The transvers thoracis muscle (M. transversus thoracis)

Table 25. Deep muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
External intercostal muscles (Mm. intercostales externi)	Inferior border of ribs above. (inferior border) The fibers run in a **downwards, forwards and medial direction**	Superior border of ribs below.	• Elevation of the ribcage during inhalation.	• Intercostal nerves. <u>Blood supply:</u> • Anterior and posterior intercostal arteries

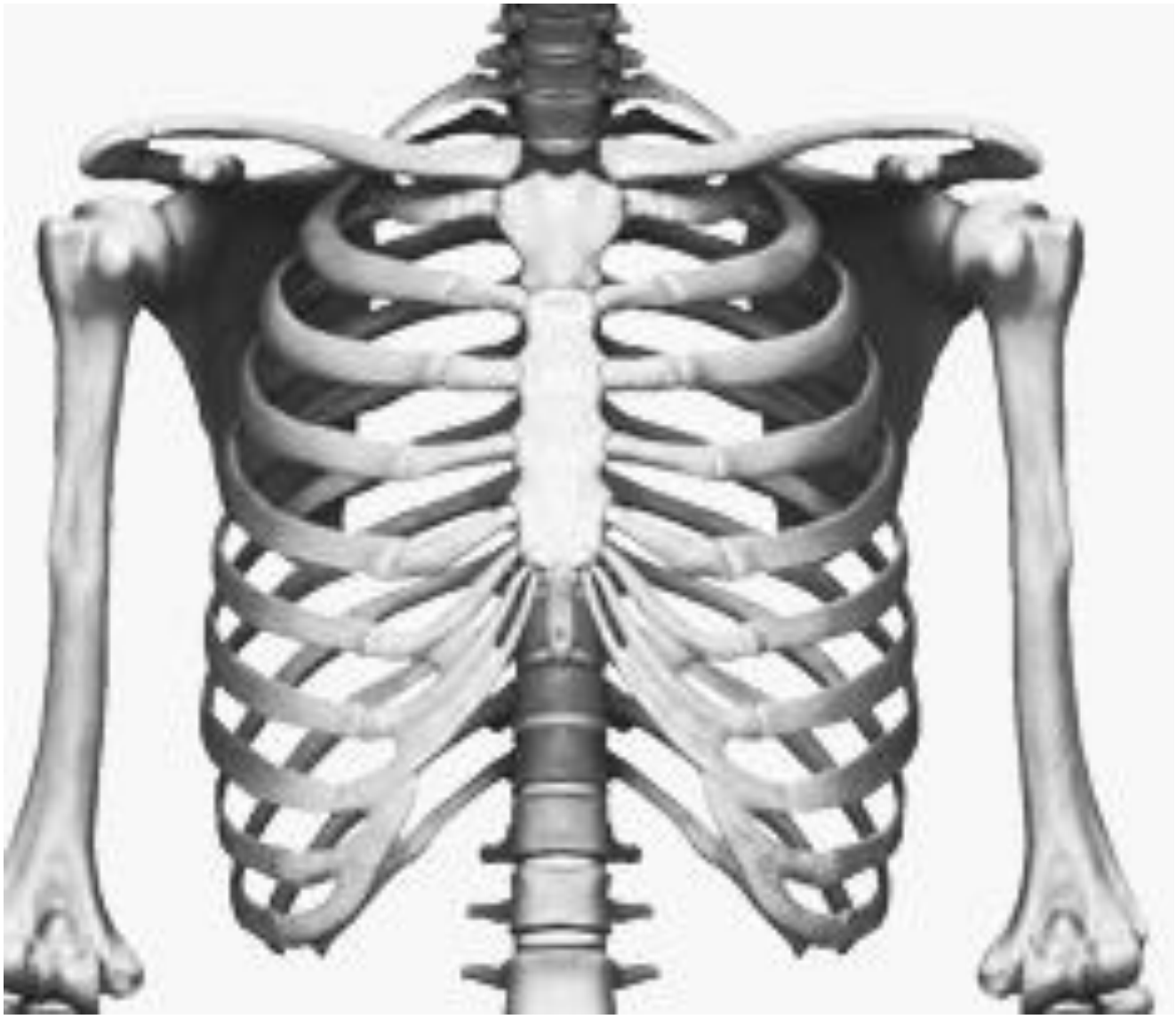

Fig. 25. Draw external intercostal muscles (Origin – blue; Insertion – red; Action – arrow)

Table 26. Deep muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
Internal intercostal muscles (Mm. intercostales interni)	The costal groove of the rib above. The fibers run in a **downwards, backwards and lateral direction** *(perpendicular to the external intercostal muscles)*	The superior border of the rib below.	Contraction causes reduction in volume of the thoracic cavity in the transverse dimension, expelling air from the lungs during expiration.	• Intercostal nerves. <u>Blood supply:</u> • Anterior and posterior intercostal arteries

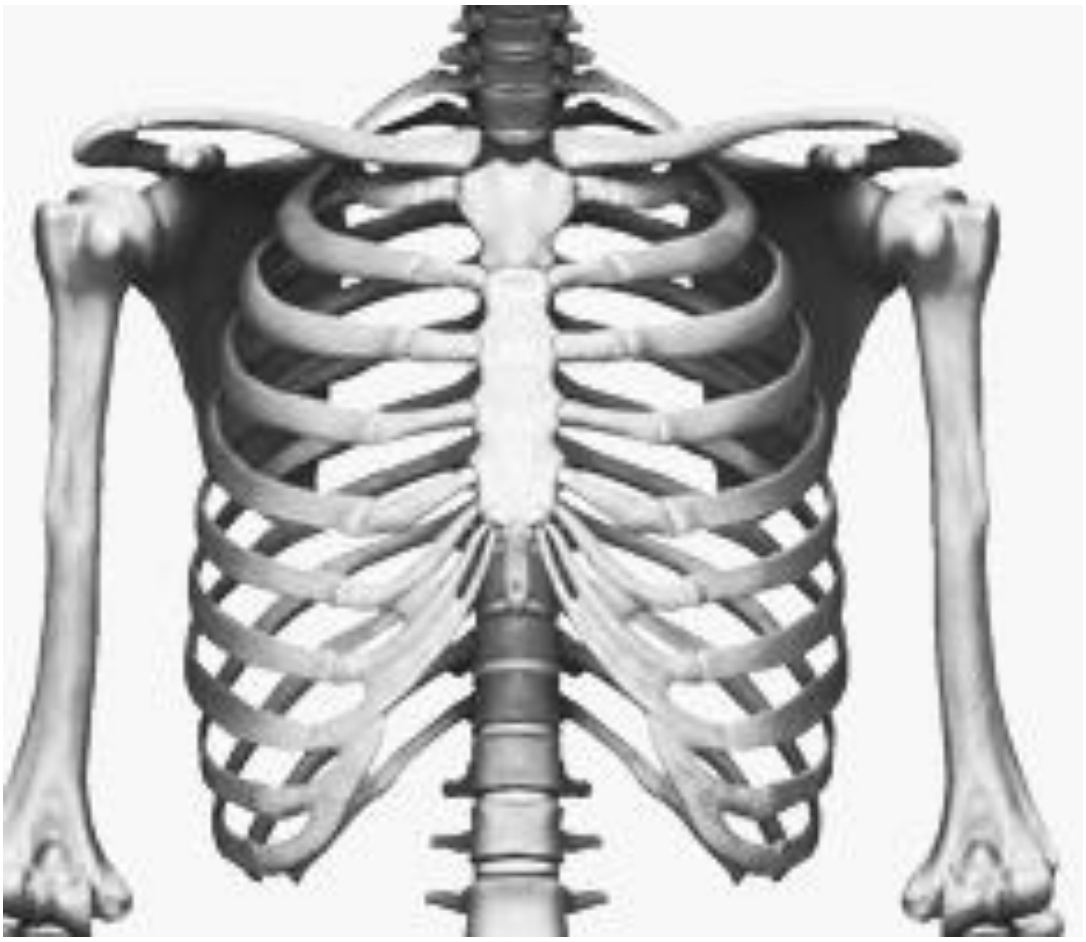

Fig. 26. Draw the internal intercostal muscles (Origin – blue; Insertion – red; Action – arrow)

Table 27. Deep muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
Intimi intercostal muscles (Mm. intercostales intimi)	Internal intercostal muscles	Internal surface of the adjacent ribs.	Contraction causes reduction in volume of the thoracic cavity in the transverse dimension, expelling air from the lungs during expiration.	• Intercostal nerves. <u>Blood supply:</u> • Anterior and posterior intercostal arteries

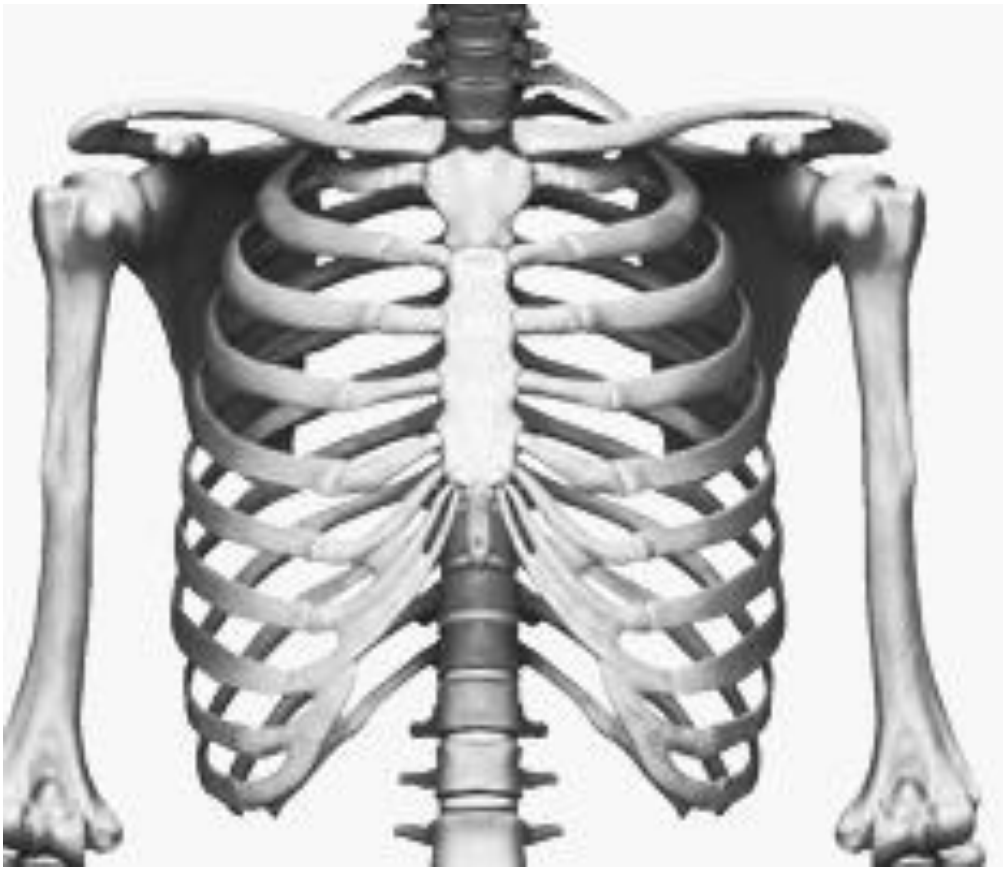

Fig. 27. Draw the intimi intercostal muscles (Origin – blue; Insertion – red; Action – arrow)

Table 28. Deep muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
Subcostal muscles (Mm. subcostales)	The inner surface of one ribs	2nd or 3rd rib below, near its angle.	Elevates the ribs to assist in inspiration.	• Intercostal nerves. Blood supply: • intercostal arteries

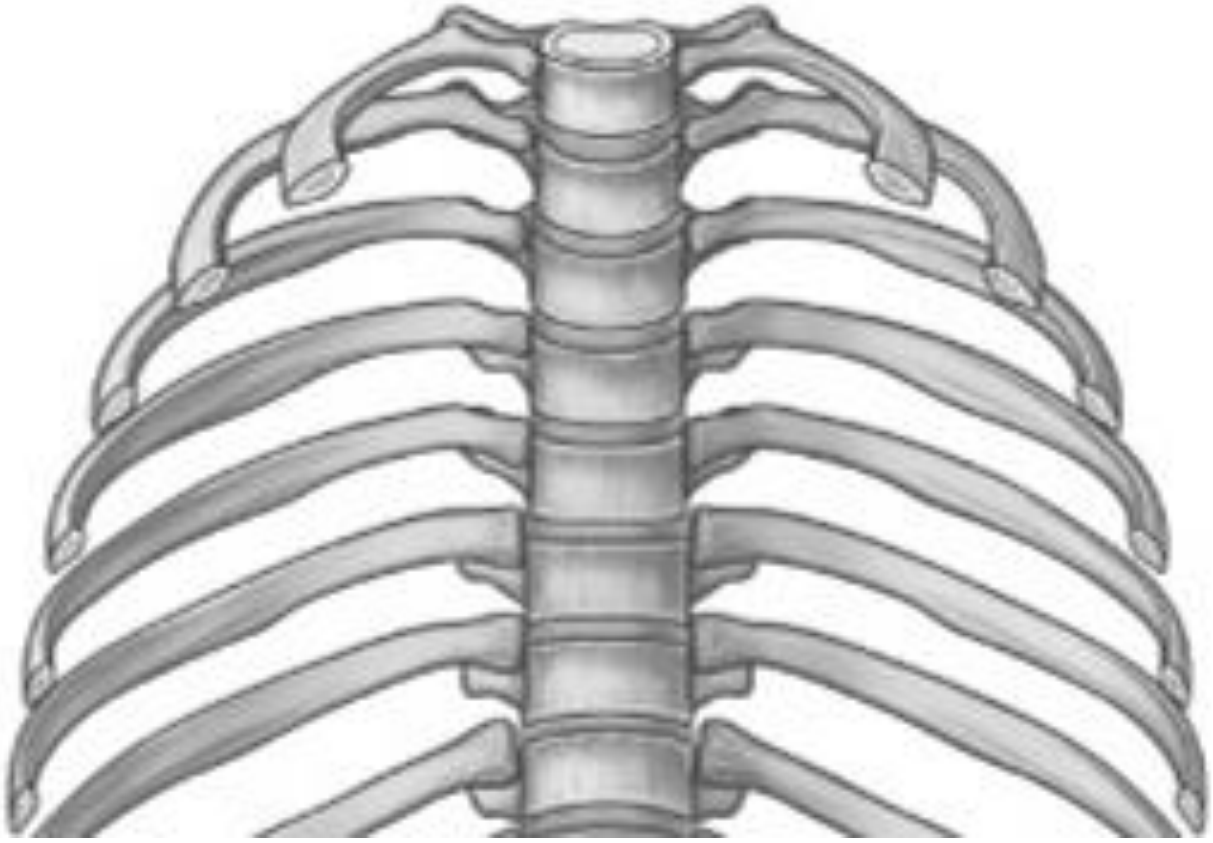

Fig. 28. Draw subcostal muscles (Origin – blue; Insertion – red; Action – arrow)

Table 29. Deep muscles of the chest.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The transvers thoracis muscle (M. transversus thoracis)	On either side from the lower third of the posterior surface of the **body of the sternum**, the posterior surface of the **xiphoid process**, the sternal ends of the costal cartilages of the lower 3 or 4 **true ribs**	The lower borders and inner surfaces of the costal cartilages of the 2 -4 and 6 ribs.	• Takes part in the respiratory act (expiration).	• Intercostal nerves. <u>Blood supply:</u> • intercostal a.

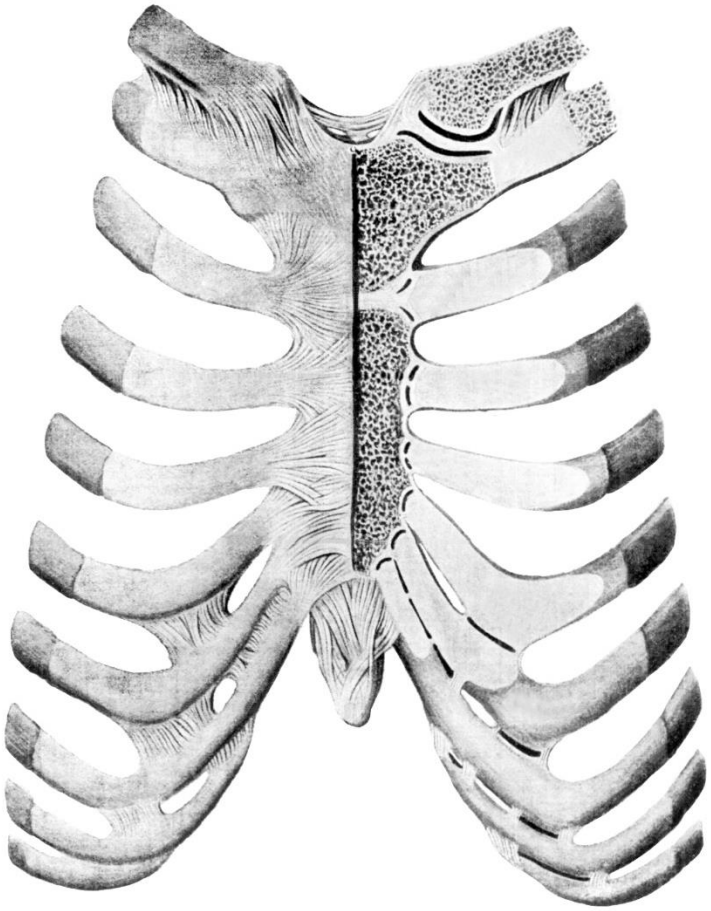

Fig. 29. Draw transvers thoracis muscle (Origin – blue; Insertion – red; Action – arrow)

Chapter 3. The muscles of the abdomen.

3.1 Introduction.

The muscles of the chest are separates in three group:

1. Muscles of the lateral abdominal wall
    - The external oblique muscle of the abdomen (M. obliquus externus abdominis)
    - The internal oblique muscle of the abdomen (M. obliquus internus abdominis)
    - The transversus abdominis muscle (M. transversus abdominis)
2. Muscles of the posterior abdominal wall
    - The rectus abdominis muscle (M. rectus abdominis)
    - The pyramidalis muscle
    - (M. Pyramidalis)
3. Muscles of the anterior abdominal wall

- The quadratus lumborum muscle (M. quadratus lumborum)

The muscle has some important features:

- ✓ inferior free border between the anterior superior iliac spine and the pubic tubercle is thickened and rolls inwards to form the **inguinal ligament**
- ✓ posterior fleshy free border forms the anterior boundary of the lumbar triangle (of Petit) 1
- ✓ upper part of the aponeurotic layer crosses over the rectus abdominis muscle contributes to forming **the anterior layer of the rectus sheath**
- ✓ lower part of the aponeurotic layer forms the medial half of the **anterior wall of the inguinal canal**; medial attachment provides a **V-shaped gap (superficial inguinal ring: crus mediale et laterale)** in order to provide passage of the spermatic cord / round ligament of the uterus
- ✓ The medial end of the lateral crus runs backward and laterally of the superior pubic ramus – it forms the round-sharp angle which is called – the lacunar ligament (ligamentum lacunare).

Table 30. Muscles of the lateral abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The external oblique muscle of the abdomen (M. obliquus externus abdominis)	Outer surface of the shaft of the lower 8 ribs	Upper aponeurotic fibers to the whole length of the linea alba, extends to the pubic crest and the pectineal line; Lower fleshy fibers to the outer lip of the anterior end of the iliac crest.	• Pull the chest downwards and compress the abdominal cavity • Rotate the trunk to the other side • assists expiration by depressing the ribs	• 6-12 intercostal, iliohypogastric and ilioinguinal nerves. <u>Blood supply:</u> • lower intercostal a. • branches of either the deep circumflex iliac aa. • iliolumbar a.

Fig. 30. Draw external oblique muscle of the abdomen (Origin – blue; Insertion – red; Action – arrow)

Table 31. Muscles of the lateral abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The internal oblique muscle of the abdomen (M. obliquus internus abdominis)	The whole length of the lumbar fascia, From the anterior two-thirds of the iliac crest From the lateral two-thirds of the inguinal ligament.	The inferior border of the lower 3 ribs Becomes aponeurotic at the level of the 9th costal cartilage, which fuses at the midline at the linea alba.	• Flexes and rotate the trunk to the same side • Compress the abdominal cavity • Assists forced expiration by depressing the lower ribs	• 6-12 intercostal, iliohypogastric and ilioinguinal nerves. <u>Blood supply:</u> • the lower intercostal arteries • a superior and inferior epigastric artery • the musculophrenic artery.

Fig. 31. Draw the internal oblique muscle of the abdomen (Origin – blue; Insertion – red; Action – arrow)

Table 32. Muscles of the lateral abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The transversus abdominis muscle (M. transversus abdominis)	Anterior lip of the iliac crest, lateral half of inguinal ligament, thoracolumbar fascia and cartilages of ribs 6-12.	Abdominal aponeurosis to linea alba, xiphoid process and pubic symphysis.	Compresses abdominal cavity	• 7-12 intercostal, iliohypogastric and ilioinguinal nerves. Blood supply: • Posterior intercostal and subcostal aa. • Superior and inferior epigastric aa. • Superficial and deep circumflex iliac aa. • Posterior lumbar aa.

Fig. 32. Draw transversus abdominis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 33. Muscles of the anterior abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rectus abdominis muscle (M. rectus abdominis)	The pubic symphysis, pubic crest and pubic tubercle	Costal cartilages of ribs 5-7; xiphoid process of sternum.	• Flexes vertebral column • Compress the abdominal cavity	• Anterior rami of T6-L1 spinal nerves Blood supply: • Superior and inferior epigastric aa.

The rectus abdominis has three-to-four horizontal tendinous intersections that divide the muscle into segments, which are often incomplete posteriorly.

Fig. 33. Draw the rectus abdominis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 34. Muscles of the anterior abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pyramidalis muscle (M. Pyramidalis)	Pubic symphysis and pubic crest	Linea alba at the midway point between umbilicus and pubis.	Straining the Alba line (weakly)	• Ventral T12 spinal nerve (variable) <u>Blood supply:</u> • Inferior epigastric aa.

Fig. 34. Draw pyramidalis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 35. Muscles of the posterior abdominal wall.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The quadratus lumborum muscle (M. quadratus lumborum)	Medial half of the posterior iliac crest and iliolumbar ligament.	Transverse processes of L1 - L4 and medial half of 12th rib.	• Bilateral action: extends vertebral column; stabilizes 12th rib while breathing. • Ipsilateral action: image description laterally flexes vertebral column.	• Subcostal nerve (thoracic; T12) and ventral rami of lumbar spinal nerves (L1-L4). <u>Blood supply:</u> • branches of the lumbar aa.

Fig. 35. Draw quadratus lumborum muscle (Origin – blue; Insertion – red; Action – arrow)

Chapter 4. The muscles of the upper limb.

4.1 Introduction.

In the human body, the muscles of the upper limb can be classified by region, topography, function, or innervation.

The following groups of the upper limb are distinguished according to their topographic and anatomic feature:

1. Muscles of the shoulder girdle.
2. Muscles of the muscles of the arm: anterior and posterior group
3. Muscles of the muscles of the arm: anterior, posterior and lateral group
4. Muscles of the hand

4.2 Muscles of the shoulder girdle:

- The deltoid muscle (M. deltoideus)
- The supraspinatus muscle (M. supraspinatus)
- The infraspinatus muscle (M. infraspinatus)
- The teres minor muscle (M. teres minor)
- The teres major muscle (M. teres major)
- The subscapularis muscle (M. subscapularis)

Table 36. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The deltoid muscle (M. deltoideus)	Lateral 1/3 of the clavicle, acromion, lateral 2/3 of the scapula spine	Deltoid tuberosity of the humerus	• Flex the arm at the (glenohumeral) shoulder joint. • Medially rotates the arm at the (glenohumeral) shoulder joint.	• Axillary nerve (C5-6) <u>Blood supply:</u> • Acromial and deltoid branches of the thoracoacromial a. • Anterior and posterior humeral circumflex aa. • Subscapular a. • Deltoid branch of profunda brachii

Fig. 36. Draw the deltoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 37. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The supraspinatus muscle (M. supraspinatus	Supraspinal fossa of the scapula	Superior facet of the greater tubercle of the humerus	• Abduction of the humerus.	• Suprascapular nerve (C5,6) <u>Blood supply:</u> • Suprascapular and thoracodorsal scapular arteries.

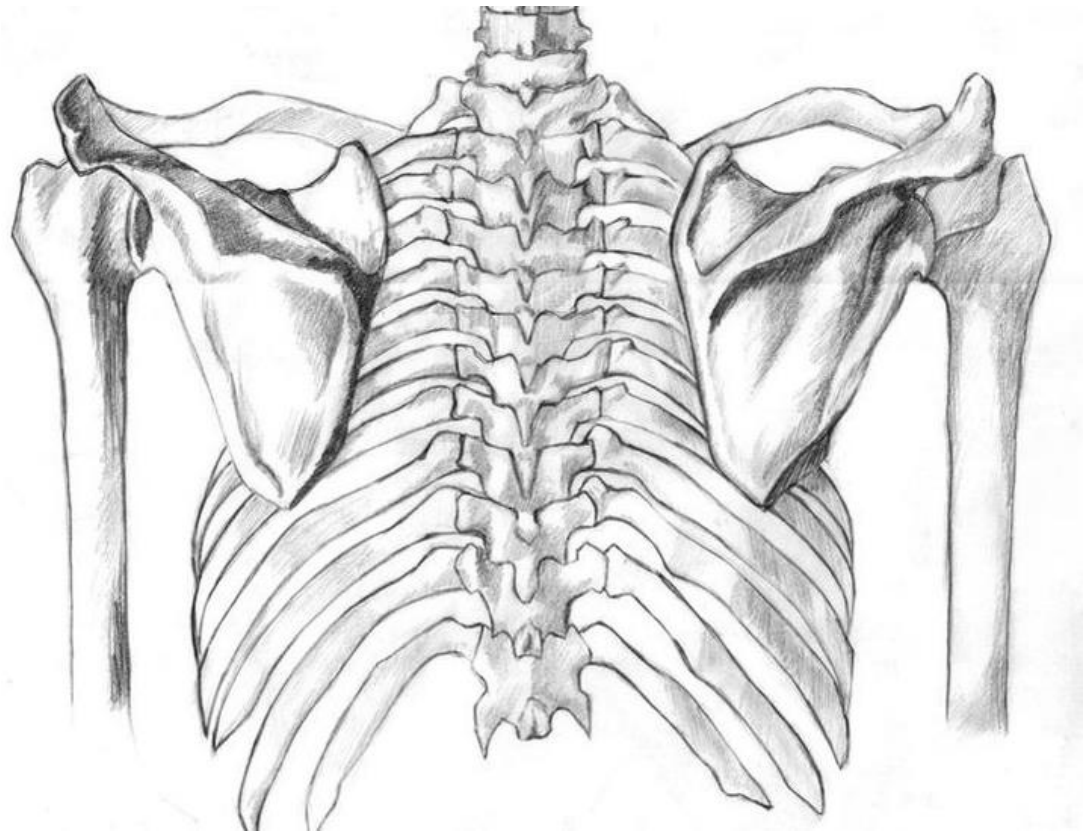

Fig. 37. Draw the supraspinatus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 38. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The infraspinatus muscle (M. infraspinatus)	Infraspinal fossa of the scapula	Middle facet of the greater tubercle of the humerus	• External rotation of the humerus.	• Suprascapular nerve (C5-6) <u>Blood supply:</u> • Suprascapular and circumflex scapular arteries.

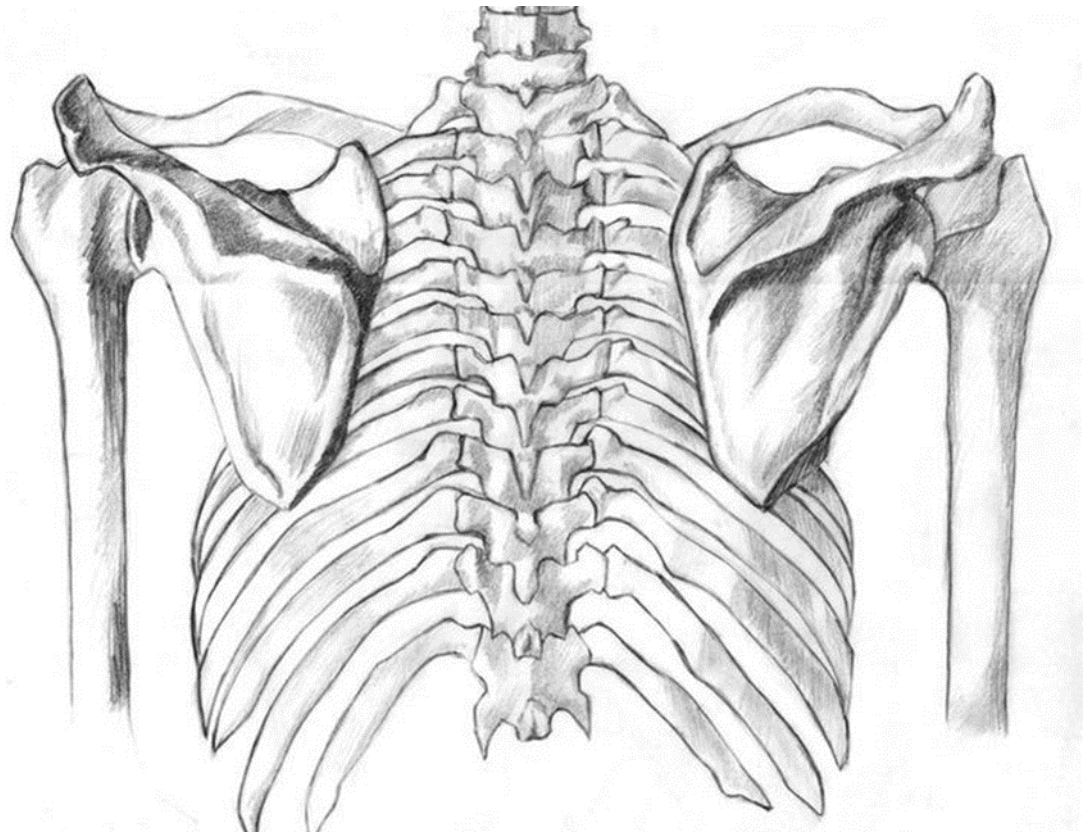

Fig. 38. Draw the infraspinatus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 39. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The teres minor muscle (M. teres minor)	Middle third of the lateral border of the scapula	Inferior facet of the greater tubercle of the humerus	• External rotation • Weak adductor of the humerus, • Stabilizes the shoulder joint, • Holds the head of the humerus down against the upward pull of the deltoid during arm abduction	• Axillary nerve (C5 - C6) <u>Blood supply:</u> • Circumflex scapular a.

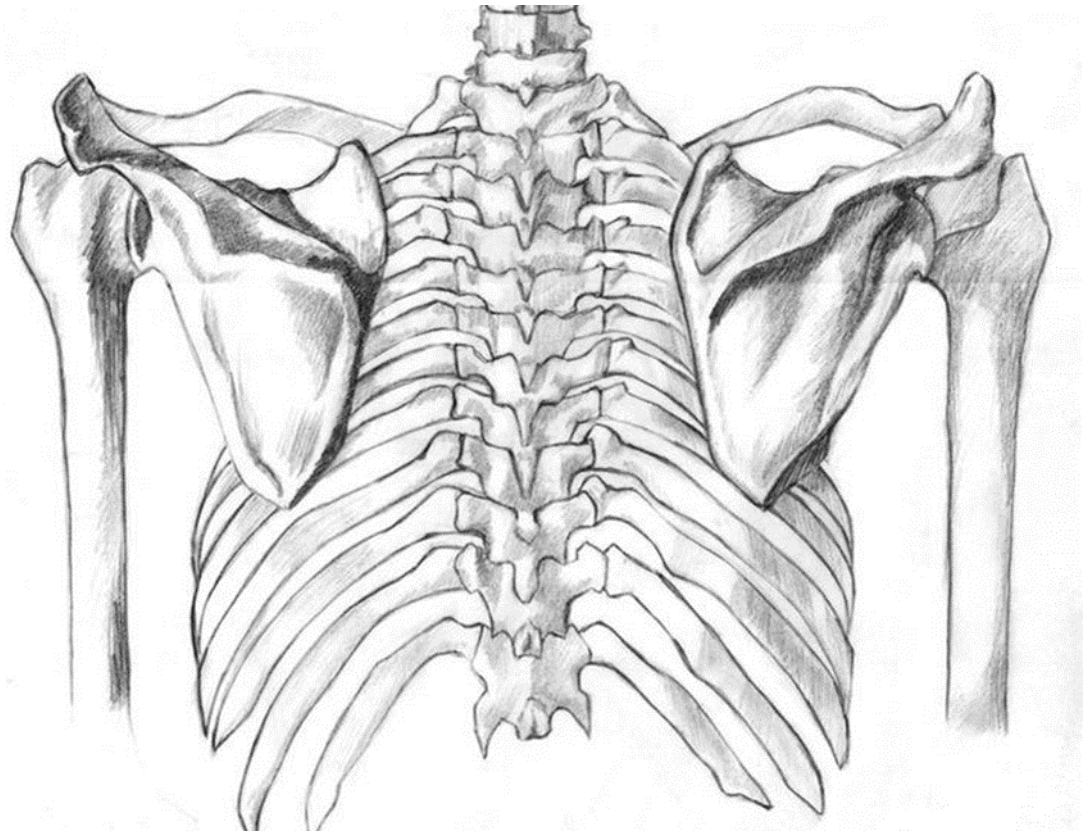

Fig. 39. Draw the teres minor muscle (Origin – blue; Insertion – red; Action – arrow)

Table 40. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The teres major muscle (M. teres major)	Lower lateral border and inferior angle of the scapula.	Medial lip of the intertubercular (bicipital) groove of the anterior humerus.	• Adducts the arm at the shoulder (glenohumeral) joint. • Medially rotates the arm at the shoulder (glenohumeral) joint. • Extends the arm at the shoulder (glenohumeral) joint	• Lower subscapular nerve (C5, C6) <u>Blood supply:</u> • Thoracodorsal branch of the subscapular a. • Posterior circumflex humeral a.

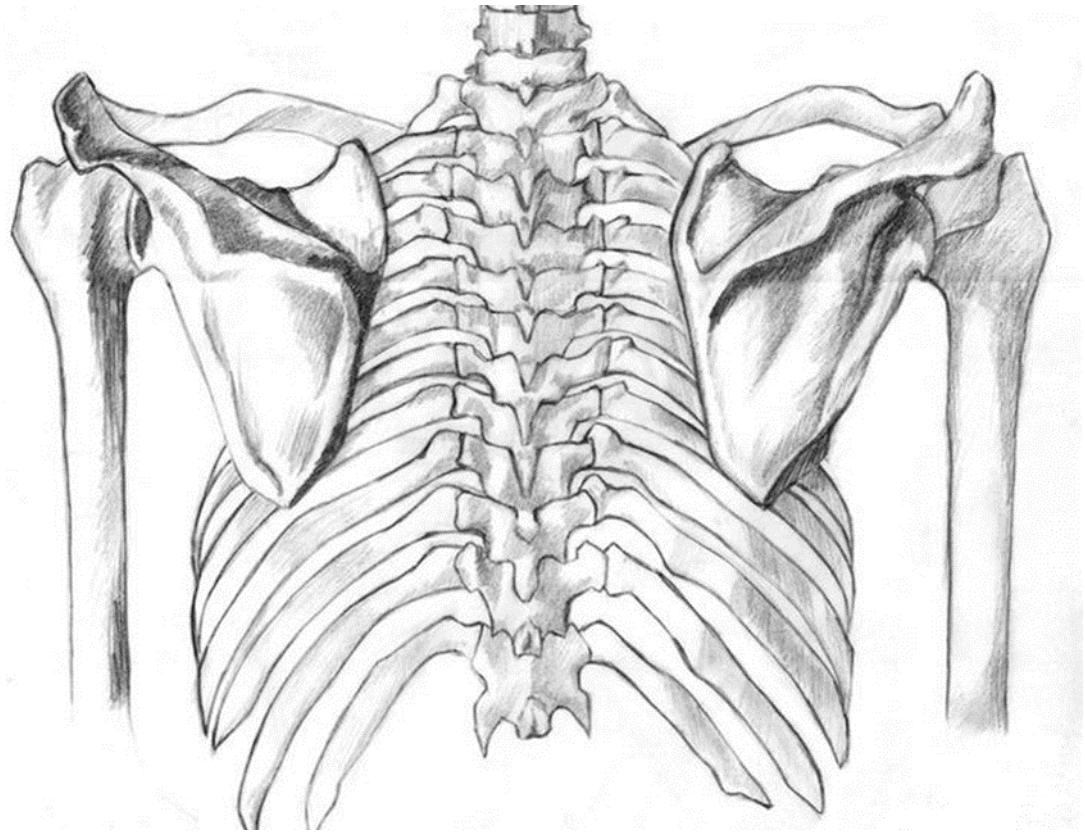

Fig. 40 - 41. Draw the teres major muscle (Origin – blue; Insertion – red; Action – arrow)

Table 41. Muscles of the shoulder girdle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The subscapularis muscle (M. subscapularis)	Subscapular fossa of the scapula.	Lesser tubercle of humerus.	Medially rotates the arm at the shoulder (glenohumeral) joint.	• Upper and lower subscapular nerves (C5-6) Blood supply: • Suprascapular, axillary and subscapular aa.

4.3 Muscles of the muscles of the arm:

1. Anterior group:
   - The biceps brachii muscle (M. biceps brachii)
   - The coracobrachialis muscle (M. coracobrachialis)
   - The brachialis muscle (M. brachialis)

2. Posterior group:
   - The triceps brachii muscle (M. triceps brachii)
   - The anconeus muscle (M. anconeus)

Table 42. Muscles of the anterior group of the muscles of the arm.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The biceps brachii muscle (M. biceps brachii)	Long head (located laterally): supraglenoid tubercle of the scapula Short head (located medially): coracoid process of the scapula	Radial tuberosity of the proximal radius.	<u>Shoulder joint</u> • Long head: arm abduction • Short head: arm adduction and flexion <u>Elbow joint</u> • Supination of the pronated forearm • Flexion of the supinated forearm.	• Musculocutaneous nerve <u>Blood supply:</u> • a. axillaris and a. brachialis

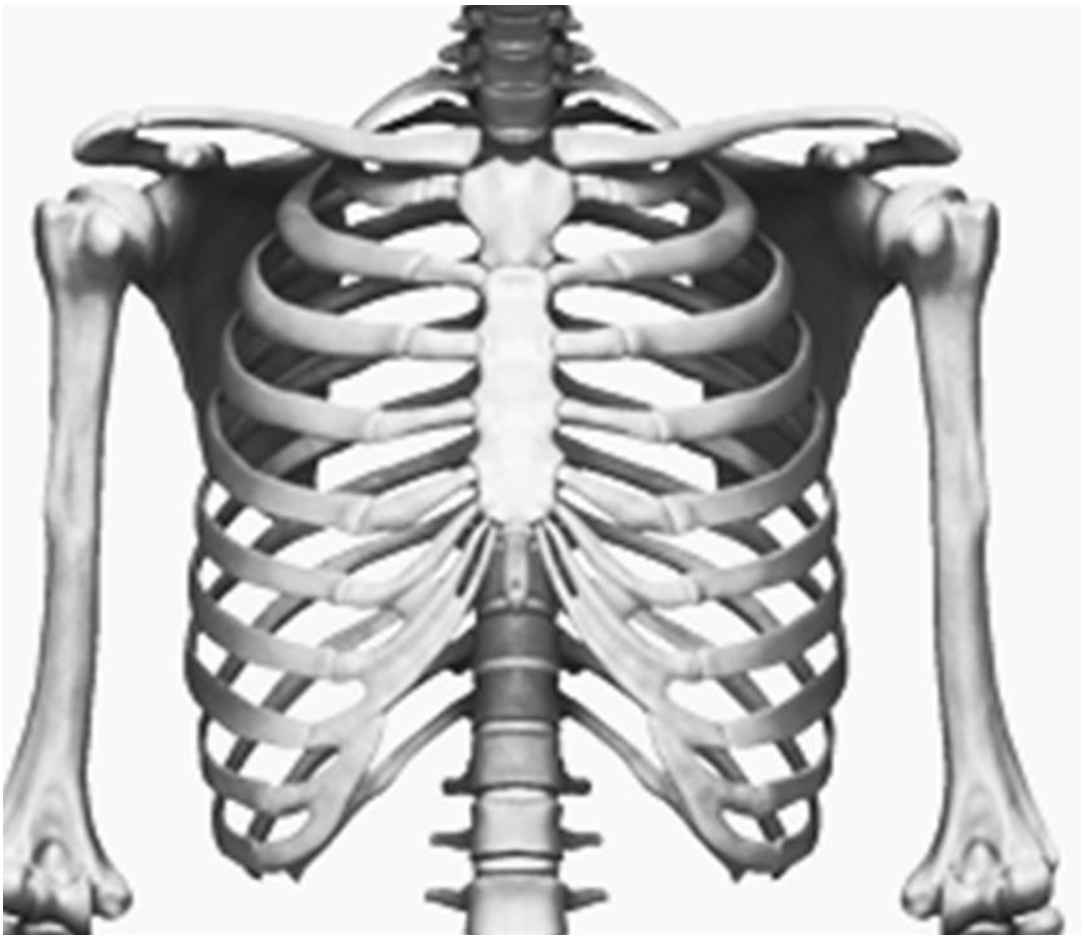

Fig. 42. Draw the teres major muscle (Origin – blue; Insertion – red; Action – arrow)

Table 43. Muscles of the anterior group of the muscles of the arm.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The coracobrachialis muscle (M. coracobrachialis)	Coracoid process of scapula.	Middle of the medial surface and border of the body of the humerus (shaft of the humerus).	Arm flexion and adduction	• musculocutaneous nerve (C6 and C7) <u>Blood supply:</u> • anterior and • posterior circumflex humeral artery

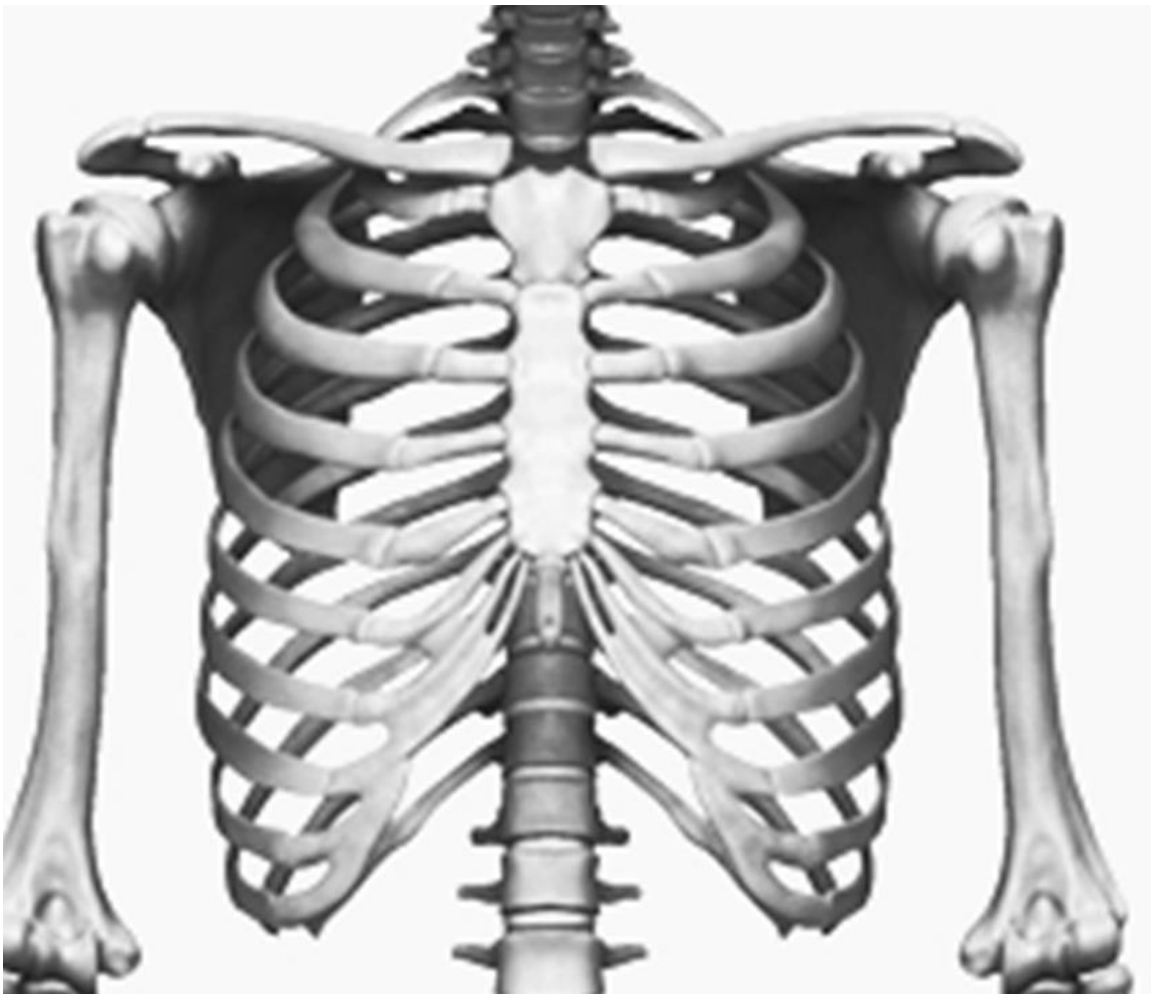

Fig. 43. Draw the coracobrachialis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 44. Muscles of the anterior group of the muscles of the arm.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The brachialis muscle (M. brachialis)	Anterior, distal half of humerus.	Ulna tuberosity and coronoid process of the ulna	Flexion at the elbow	• musculocutaneous nerve and radial nerve (proprioceptive branch) <u>Blood supply:</u> • Muscular branches of brachial artery and the recurrent radial artery.

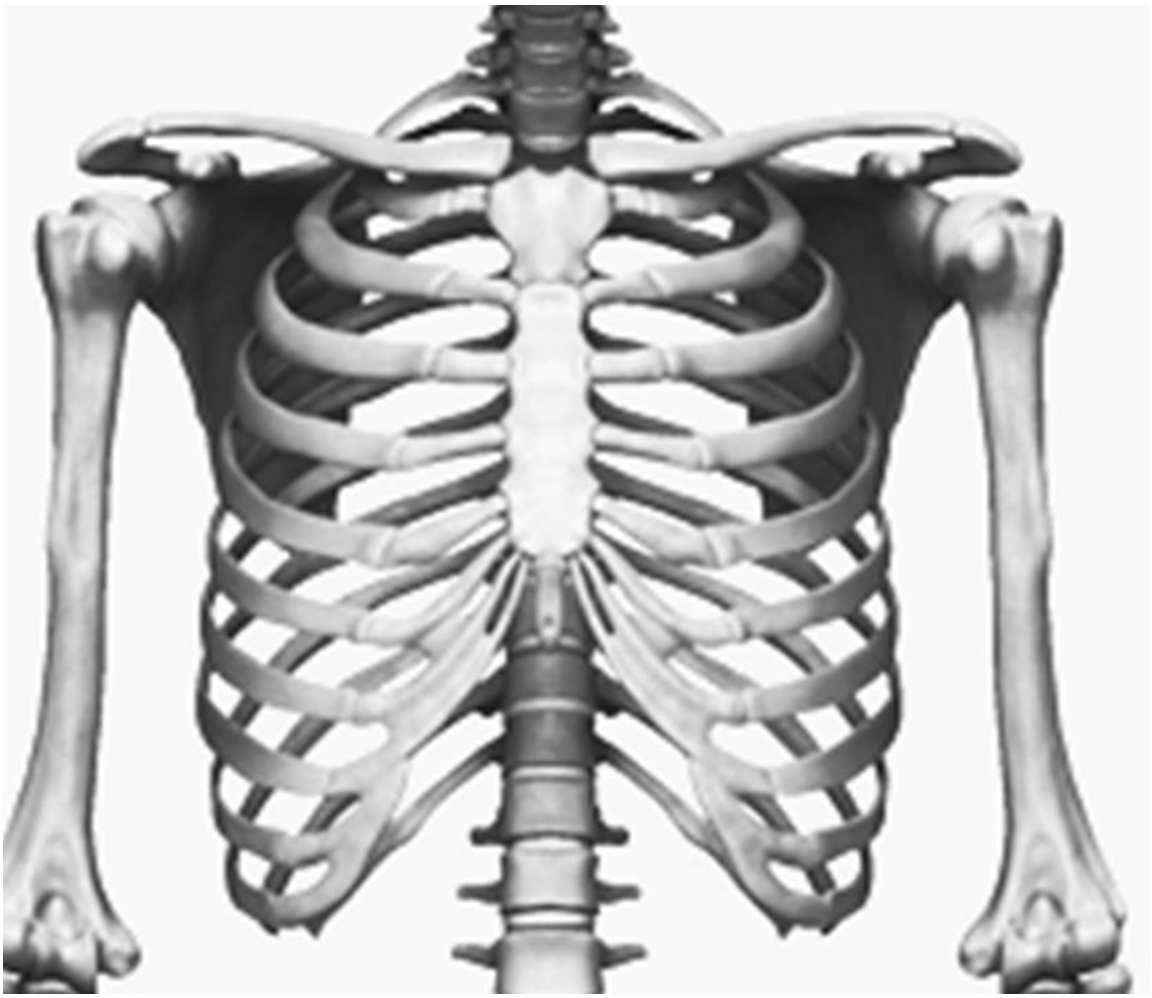

Fig. 44. Draw the coracobrachialis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 45. Muscles of the posterior group of the muscles of the arm.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The triceps brachii muscle (M. triceps brachii)	• Long head: infraglenoid tubercle of the scapula • Medial head: posterior humerus inferior to the radial groove, both intermuscular septa • Lateral head: posterior and lateral humerus from the surgical neck to the top of deltoid tuberosity (superior and lateral to radial groove), and lateral intermuscular septum	Olecranon of the ulna and deep fascia of arm	• Extensor of the elbow joint • Assists in extension of the shoulder joint (long head only) • Long head of triceps is important for stabilizing the shoulder joint in abduction • Medial head retracts capsule of the elbow joint on extension	• Radial nerve, branches of ulnar nerve Blood supply: • Branches of deep brachial a.

Fig. 45. Draw the triceps brachii (Origin – blue; Insertion – red; Action – arrow)

Table 46. Muscles of the posterior group of the muscles of the arm.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The anconeus muscle (M. anconeus)	Lateral epicondyle of the humerus	Olecranon of the ulna	• Elbow extension (weak)	• Radial nerve Blood supply: • Posterior interosseous recurrent artery

Fig. 46. Draw the anconeus muscle (Origin – blue; Insertion – red; Action – arrow)

4.4 Muscles of the muscles of the forearm:

1. **The anterior group of the muscles of the forearm**:

1st layer:

- Pronator Teres
- Flexor carpi radialis
- Palmaris longus
- Flexor carpi ulnaris

2nd layer:

- M. flexor digitorum superficialis

3d layer:

- M. flexor digitorum profundus
- M. flexor pollicis longus

4 layer:

- M. pronator quadratus

2. **The lateral group of the muscles of the forearm**
   - M. supinator
   - M. brachioradialis

3. **The posterior group of the muscles of the forearm:**

1st layer:

- M. extensor carpi radialis longus
- M. extensor carpi radialis brevis
- M. extensor digitorum
- M. extensor digiti minimi
- M. extensor carpi ulnaris

2nd layer:

- M. adductor pollicis longus
- M. extensor pollicis brevis
- M. extensor pollicis longus
- M. extensor indicis

Table 47. Muscles of the anterior group of the muscles of the forearm: 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pronator teres muscle (M. pronator teres)	• Humoral head – medial epicondyle of humerus and distal supracondylar ridge • Ulnar head – medial side of coronoid process of ulna.	Middle of lateral surface of radius.	• Pronates the forearm at the elbow. • Flexes the forearm at the elbow.	• Median nerve (C6, C7). Blood supply: • Humeral head: inferior ulnar collateral artery and anterior ulnar recurrent artery • Ulnar head: common interosseous artery

Fig. 47. Draw the pronator teres muscle (Origin – blue; Insertion – red; Action – arrow)

Table 48. Muscles of the anterior group of the muscles of the forearm: 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor carpi ulnaris muscle (M. flexor carpi ulnaris)	• Humeral head: medial epicondyle of the humerus • Ulnar head: medial border of olecranon and posterior border of ulna	Base of 5th metacarpal; hook of hamate, pisiform	Flexion and adduction of the wrist joint	• Ulnar nerve (C8 - Th1) Blood supply: • Posterior ulnar recurrent artery and ulnar artery

Fig. 48. Draw the flexor carpi ulnaris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 49. Muscles of the anterior group of the muscles of the forearm: 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor carpi radialis muscle (M. flexor carpi radialis)	Medial epicondyle of the humerus, antebrachial fascia	Base of the 2nd and 3rd metacarpals, small slip to trapezia tuberosity	Flexion and radial deviation (abducts) of the wrist joint	• Median nerve (C6, C7). Blood supply: • Anterior and posterior ulnar recurrent a.

Fig. 49. Draw the flexor carpi radialis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 50. Muscles of the anterior group of the muscles of the forearm: 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The palmaris longus muscle (M. palmaris longus)	Medial epicondyle of the humerus.	Flexor retinaculum and palmar aponeurosis.	• Flexes the hand at the wrist (weak). • Tenses palmar aponeurosis.	• Median nerve <u>Blood supply:</u> • Anterior ulnar recurrent artery

Fig. 50. Draw the palmaris longus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 51. Muscles of the anterior group of the muscles of the forearm: 2nd layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digitorum superficialis muscle (M. flexor digitorum superficiali)	• Humeroulnar head: medial epicondyle of the humerus and coronoid process of the ulna • Radial head: diaphysis of the radius	Middle phalanges of digits 2-5.	Flexes middle phalanges.	• Median nerve Blood supply: • Anterior ulnar recurrent a.

Fig. 51. Draw the palmaris longus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 52. Muscles of the anterior group of the muscles of the forearm: 3^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digitorum profundus muscle (M. flexor digitorum profundus)	Proximal, anterior surface of ulna and adjacent interosseous membrane	Volar surface of distal phalanges 2-5	Flexion at the distal interphalangeal, proximal interphalangeal and wrist joints	• Medial half (third, fourth and fifth digits): ulnar nerve • Lateral half (second and third digits): anterior interosseous nerve • Third digit typically receives dual innervation <u>Blood supply:</u> • anterior ulnar recurrent a.

Fig. 52. Draw the flexor digitorum profundus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 53. Muscles of the anterior group of the muscles of the forearm: 3^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The long flexor pollicis muscle (M. flexor pollicis longus)	• Mid-anterior surface of the radial shaft and adjacent interosseous membrane • Lower part and slip of coronoid process of ulna by a rounded bundle of muscular fibers • Medial epicondyle of humerus	The base of the distal phalanx of the thumb	Flexion of 1st interphalangeal joint	• Anterior interosseous nerve <u>Blood supply:</u> • Radial a.

Fig. 53. Draw the long flexor pollicis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 54. Muscles of the anterior group of the muscles of the forearm: 4 layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pronator quadratus muscle (M. pronator quadratus)	Anterior surface of distal quarter of ulnar shaft	Anterior surface of distal quarter of radial shaft	Pronates forearm	• Anterior interosseous nerve <u>Blood supply:</u> • Anterior interosseous artery

Fig. 54. Draw the pronator quadratus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 55. Muscles of the posterior group of the muscles of the forearm: 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The long extensor carpi radialis muscle (M. extensor carpi radialis longus)	Lateral supracondylar crist of humerus, lateral epicondyle of humerus, lateral intermuscular septum of arm	Base of second metacarpal on its posterior surface	Extension and abduction of the wrist joint	• Radial nerve (C6, C7) Blood supply: • Radial recurrent a

Fig. 55. Draw the extensor carpi radialis longus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 56. Muscles of the posterior group of the muscles of the forearm 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor carpi radialis brevis muscle (M. extensor carpi radialis brevis)	Lateral epicondyle of the humerus, annular ligament of the radius	Base of 3rd metacarpal (dorsal surface).	Extension and abduction of the wrist joint	• Deep branch of radial nerve, (C7, C8) <u>Blood supply:</u> • Radial recurrent a.

Fig. 56. Draw the extensor carpi radialis brevis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 57. Muscles of the posterior group of the muscles of the forearm 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor digitorum muscle (M. extensor digitorum)	Lateral epicondyle of humerus.	Distal phalanges via dorsal mechanism of digits 2-5 (extensor expansion).	• Extends the wrist. • Extends the fingers (middle phalanx of digits 2-5).	• Deep branch of radial nerve (C6, C8). <u>Blood supply:</u> • Posterior intercostal a.

Fig. 57. Draw the extensor digitorum muscle (Origin – blue; Insertion – red; Action – arrow)

Table 58. Muscles of the posterior group of the muscles of the forearm 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor digiti minimi muscle (M. extensor digiti minimi)	Lateral epicondyle of humerus	Tendon of extensor digitorum for the 5th digit	Extension in metacarpophal angeal joint of digits 5 and wrist joint	• Posterior interosseous nerve (C7 and C8), • Continuation of the deep branch of the radial nerve (C7, C8) <u>Blood supply:</u> • Radial recurrent artery, posterior interosseous artery

Fig. 58. Draw the extensor digiti minimi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 59. Muscles of the posterior group of the muscles of the forearm 1st layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor carpi ulnaris muscle (M. extensor carpi ulnaris)	Lateral epicondyle of humerus, radial collateral ligament and posterior border of ulna	Base of 5th metacarpal on posterior surface	Extension and adduction (i.e. ulnar deviation) of the wrist joint	• Posterior interosseous nerve (C7 and C8), • Continuation of the deep branch of the radial nerve (C7, C8) <u>Blood supply:</u> • Radial recurrent artery, posterior interosseous artery

Fig. 59. Draw the extensor carpi ulnaris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 60. Muscles of the posterior group of the muscles of the forearm 2^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The **ab**ductor pollicis longus muscle (M. a**b**ductor pollicis longus)	Posterior surfaces of ulna, radius and interosseous membrane	The tendon dividing into two slips: • one attaching to the base of 1st metacarpal • the other attaching to the trapezium	Abducts and extends the thumb at the carpometa carpal joint	• Posterior interosseous nerve (C7, C8), continuation of the deep branch of the radial nerve (C7, C8) <u>Blood supply:</u> • Proximally by the posterior interosseous a. • Distally by a branch from the anterior interosseous a.

Fig. 60. Draw the abductor pollicis longus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 61. Muscles of the posterior group of the muscles of the forearm 2^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor pollicis brevis muscle (M. extensor pollicis brevis)	The ulna (distal to the abductor pollicis longus), the interosseous membrane, the dorsal surface of the radius	The base of the first phalanx of the thumb.	Extend the proximal phalanx of the thumb.	• The radial nerve. <u>Blood supply:</u> • Proximally by the posterior interosseous a. • Distally by a branch from the anterior interosseous artery

Fig. 61. Draw the extensor pollicis brevis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 62. Muscles of the posterior group of the muscles of the forearm 2^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor pollicis longus muscle (M. extensor pollicis longus)	Posterior surface of the middle 1/3 of the ulna and interosseous membrane	Posterior surface of the base of the distal phalanx of thumb.	• Extends the thumb at the carpometacarpal and interphalangeal joints • Partially adducts 1st metacarpal	• Posterior interosseous nerve (C7, C8), continuation of the deep branch of the radial nerve (C7, C8) <u>Blood supply:</u> • Anterior and posterior interosseous aa.

Fig. 62. Draw the extensor pollicis longus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 63. Muscles of the posterior group of the muscles of the forearm 2^{d} layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor indicis muscle (M. extensor indicis)	Lower 1/3 of the distal surface of the ulna (distal to extensor pollicis longus)	The ulnar side of the tendon of the common extensor digitorum.	Extends the index finger	• Posterior interosseous nerve, continuation of the deep branch of the radial nerve (C7, C8) <u>Blood supply:</u> • Anterior and posterior interosseous aa.

Fig. 63. Draw the extensor indicis muscle (Origin – blue; Insertion – red; Action – arrow)

4.5 Muscles of the hand.

Muscles of the palmar surface hand

Muscles of the thenar (thumb):

- Abductor pollicis brevis
- Flexor pollicis brevis
- Opponens pollicis
- Adductor pollicis

Muscles of the medial group:

- Lumbrical muscles
- Palmar interossei muscles

Muscles of the hypothenar (little finger.):

- Palmaris brevis
- Flexor digiti minimi brevis
- Abductor digiti minimi
- Opponens digiti minimi

Table 64. Muscles of the palmar surface hand. Muscles of the thenar (thumb).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The abductor pollicis brevis muscle (M. abductor pollicis brevis)	• The flexor retinaculum of the hand • The tubercle of the scaphoid bone • The tubercle of the trapezium.	• The lateral side of the base of the first phalanx of the thumb • The capsule of the metacarpophalangeal joint.	• Abducts the thumb • Medially rotates the thumb at the carpometacarpal and metacarpophalangeal joints	• Lateral branch of median nerve (C8 and T1) **Blood supply:** • Princeps pollicis aa.

Fig. 64. Draw the abductor pollicis brevis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 65. Muscles of the palmar surface hand. Muscles of the thenar (thumb).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor pollicis brevis muscle (M. flexor pollicis brevis)	Tubercle of the trapezium and flexor retinaculum	Proximal phalanx of the thumb	Flexes thumb at metacarpophalan geal joint	• Recurrent branch of median nerve Blood supply: • Superficial palmar arch

Fig. 65. Draw the flexor pollicis brevis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 66. Muscles of the palmar surface hand. Muscles of the thenar (thumb).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The opponens pollicis muscle (M. opponens pollicis brevis)	Extends from the trapezial tubercle and flexor retinaculum	Lateral border and adjoining lateral half of the palmar surface of the first metacarpal bone	• Flexes the metacarpal bone medially across the palm, • Rotating it medially, causing opposition, the palmar aspect of the terminal segment of thumb • Contacts the flexor aspects of any other digit	• Lateral terminal branch of median nerve (C8,Th1), the deep terminal branch of the ulnar nerve (C8 and/or T1) Blood supply: • Princeps pollicis aa.

Fig. 66. Draw the opponens pollicis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 67. Muscles of the palmar surface hand. Muscles of the thenar (thumb).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor pollicis muscle (M. adductor pollicis brevis)	• Arises by several slips from the **capitate bone** • The bases of the 2 and 3 metacarpals • The intercarpal ligaments • The sheath of the tendon of the flexor carpi radialis	Base of the proximal phalanx of the thumb Sesamoid bone being present in the tendon.	Adducts thumb	• Deep branch of **ulnar** nerve Blood supply: • Deep palmar arch

Fig. 67. Draw the adductor pollicis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 68. Muscles of the palmar surface hand. Muscles of the hypothenar (little finger).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digiti minimi brevis muscle (M. flexor digiti minimi brevis)	The hamulus of the hamate bone and the palmar surface of the flexor retinaculum of the hand.	The medial side of the base of the first phalanx of digit	Flexes 5th finger at metacarpophalangeal joint	• Superficial branch of the ulnar nerve Blood supply: • Palmar metacarpal artery of deep palmar arch.

Fig. 68. Draw the flexor digiti minimi brevis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 69. Muscles of the palmar surface hand. Muscles of the hypothenar (little finger).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The abductor digiti minimi muscle (M. abductor digiti minimi)	Pisiform, pisohamate ligament, and tendon of flexor carpi ulnaris.	5th proximal phalanx	Abducts 5th finger at metacarpophalangeal joint	• Deep branch of ulnar nerve Blood supply: • Ulnar artery

Fig. 69. Draw the abductor digiti minimi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 70. Muscles of the palmar surface hand. Muscles of the hypothenar (little finger).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The opponens digiti minimi muscle (M. opponens digiti minimi)	Hook of hamate and flexor retinaculum	Medial aspect of the 5th metacarpal	Flexion and lateral rotation of the 5th metacarpal about the 5th carpometacarpal joint	• Deep branch of ulnar nerve <u>Blood supply:</u> • Ulnar artery

Fig. 70. Draw the opponens digiti minimi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 71. Muscles of the palmar surface hand. Muscles of the medial group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The lumbrical muscles muscle (M. lumbrical muscles)	Tendons of flexor digitorum profundus in the palm	Extensor expansion on the dorsum of proximal phalanx after passing along the lateral side of metacarpophalangeal joints	• Provide motor and proprioceptive functions • Flex metacarpophalangeal joints	• 3 and 4 lumbricals by ulnar nerve (C8, Th1), 1 and 2 lumbricals by median nerve Blood supply: • Ulnar a

Fig. 71. Draw the lumbrical muscles muscle (Origin – blue; Insertion – red; Action – arrow)

Table 72. Muscles of the palmar surface hand. Muscles of the medial group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The palmar interossei muscles (M. palmar interossei muscles)	Palmar surface of 2nd, 4th and 5th metacarpal bones	Extensor hood and the base of the proximal phalanges of their related digits **1st:** (often rudimentary) base of proximal phalanx of thumb and extensor hood **2nd:** medial side of extensor hood of index finger **3rd and 4th** : lateral side of ring and little fingers extensor hood and proximal phalanges, respectively	• Primary: adduction of thumb, Index, ring and little fingers at the MCPJ joints; NB: the middle finger cannot adduct • Secondary: contribute to the flexion of MCPJ and extension of the proximal interphalangeal joint and distal interphalangeal joint	• Deep branch of the ulnar nerve • **<u>Blood supply:</u>** • Ulnar a.

Fig. 72. Draw the palmar interossei muscles (Origin – blue; Insertion – red; Action – arrow)

Table 73. Muscles of the palmar surface hand. Muscles of the medial group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The dorsal interossei muscles (M. palmar interossei muscles)	Contiguous (adjacent) sides of the five metacarpal bones	Extensor hood of their related digit and the base of the proximal phalanx ***1st and largest:*** 2nd digit dorsal digital expansion and radial side of 2nd proximal phalanx **2nd:** 3rd digit dorsal digital expansion and radial side of 3rd proximal phalanx **3rd:** 3rd digit dorsal digital expansion and ulnar side of 3rd proximal phalanx **4th** digit dorsal digital expansion and ulnar side of 4th proximal phalanx	• Primary: abduction of 2nd, 3rd, and 4th fingers at the MCPJ joints; the 3rd finger can abduct both medially and laterally • Secondary: contributes to the flexion of MCPJ and extension of the proximal interphalangeal joint and distal interphalangeal joint	• Deep branch of the ulnar nerve • **Blood supply:** • Ulnar a.

Fig. 73. Draw the dorsal interossei muscles (Origin – blue; Insertion – red; Action – arrow)

Chapter 5. The muscles of the lower limb.

5.1 Introduction.

The lower limbs are specialized for transmission of body weight and locomotion. The lower limb is comprised of four major parts, i.e., a girdle formed by the hipbones, thigh, leg, and foot.

5.2 The muscles of the hip joint:

5.2.1 The internal group of the muscles of the hip joint:

- The iliopsoas muscles (M. Iliopsoas)
- The psoas major muscles (M. psoas major)
- The psoas minor muscles (M. psoas minor)
- The iliacus muscles (M. Iliacus)
- The obturator internus muscles (M. obturatorius internus)
- The piriformis muscles (M. piriformis)
- The coccyges muscles (M. coccygeus)

5.2.2 The external group of the muscles of the hip joint:

- The gluteus maximus muscles (M. gluteus maximus)
- The gluteus medius muscles (M. gluteus medius)
- The gluteus minimus muscles (M. gluteus minimus)
- The quadratus femoris muscles (M. quadratus femoris)
- The gemellus superior muscles (M. gemellus superior)
- The gemellus inferior muscles (M. gemellus inferior)
- The tensor fasciae latae muscles (M. tensor fasciae latae)
- The obturator externus muscles (M. obturatorius externus)

Table 74. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The psoas major muscles (M. psoas major)	Lateral surface of bodies and transverse processes of Th12 - L5	Fuses with the fibers of iliacus muscle to form a common iliopsoas muscles	• Flexor of the hip and trunk; • Medial rotation of the femur • When thighs are fixed the iliopsoas muscles flex the trunk forwards.	• Femoral nerve; lumbar plexus **Blood supply:** • Iliolumbar a • Medial femoral circumflex a.

Fig. 74. Draw the psoas major muscles (Origin – blue; Insertion – red; Action – arrow)

Table 75. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The psoas minor muscles (M. psoas minor)	Lateral surface of bodies and transverse processes of Th12 - L1 (on the anterior surface of psoas major muscles)	The innominate line and the iliopectineal eminence. (together with the fascia iliaca)	Stretches the deep surface of the iliac fascia.	• Muscular branches of the lumbar plexus Blood supply: • 4 lumbar aa. (inferior to the subcostal aa.) • Lumbar branch of the iliolumbar a.

Fig. 75. Draw the psoas minor muscles (Origin – blue; Insertion – red; Action – arrow)

Table 76. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The iliacus muscles (M. Iliacus)	Superior part of the iliac fossa, anterior sacroiliac ligaments and anterior surface of sacral ala	Into the **psoas major tendon** to form iliopsoas tendon which inserts on the lesser trochanter of the femur	• Flexor of the hip and trunk; • Medial rotation of the femur • When thighs are fixed the iliopsoas muscles flex the trunk forwards.	• Femoral nerve Blood supply: • Iliolumbar aa. • Medial femoral circumflex aa.

Fig. 76. Draw the iliacus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 77. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The iliopsoas muscles (M. Iliopsoas)	Fusion of psoas major and iliacus muscles	Lesser trochanter of the femur	• Flexor of the hip and trunk; • Medial rotation of the femur • When thighs are fixed the iliopsoas muscles flex the trunk forwards.	• Femoral nerve, lumbar plexus <u>Blood supply:</u> • Iliolumbar aa; • Medial femoral circumflex aa.

Fig. 77. Draw the iliopsoas muscles (Origin – blue; Insertion – red; Action – arrow)

Table 78. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The obturator internus muscles (M. obturatorius internus)	Anterolateral wall of true pelvis Internal surface of obturator membrane and surrounding bone	Medial side of greater trochanter of femur	Supinates the thigh.	• Femoral nerve, lumbar plexus <u>Blood supply:</u> • Inferior gluteal a. • Obturator a. • Internal pudendal a.

Fig. 78. Draw the obturator internus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 79. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The piriformis muscles (M. piriformis)	Anterior lateral surface of the sacrum	To the 2 and 4 sacral foramina	Supinates and abduct the thigh.	• Sacral plexus (S1-S3) <u>Blood supply:</u> • Superior and inferior gluteal a.

Fig. 79. Draw the piriformis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 80. Muscles of internal group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The coccyges muscles (M. coccygeus)	Ischial spine	Lateral surface of L4-L5 and 1-3 coccygeal vertebra.	In combination with the levator ani it forms the pelvic diaphragm.	• Femoral nerve, lumbar plexus Blood supply: • Iliolumbar a. • Medial femoral circumflex a.

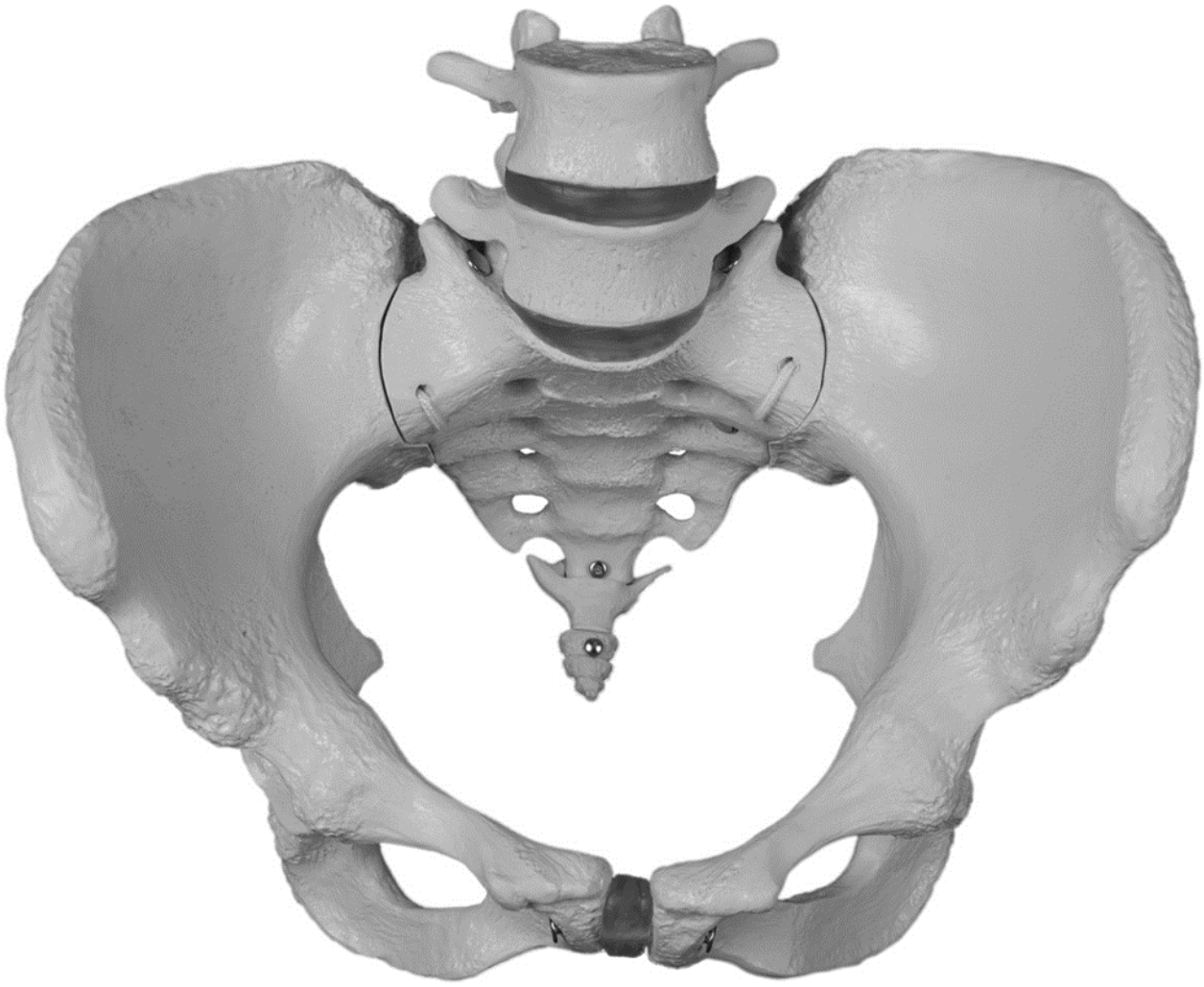

Fig. 80. Draw the coccyges muscles (Origin – blue; Insertion – red; Action – arrow)

Table 81. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gluteus maximus muscles (M. gluteus maximus)	Posterior part of the external surface of ilium behind the posterior gluteal line Lateral borders of sacrum and coccyx Sacrotuberous ligament	Gluteal tuberosity of the femur (lower fibers) Iliotibial tract (upper fibers).	• Powerful extensor of flexed femur at hip joint • Lateral stabilizer of hip joint • Tenses the fascia lata oh the thigh • Lateral rotator of the thigh • Abduction at the hip (upper fibers).	• Inferior gluteal nerve (L5, S1, S2) Blood supply: • Superior and inferior gluteal aa. • Medial femoral circumflex a. • Profunda femoris aa.

Fig. 81. Draw the gluteus maximus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 82. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gluteus medius muscles (M. gluteus medius)	The external surface of the ilium between the anterior gluteal line in front, iliac crest above and the posterior gluteal line below	Apex (posterolateral surface) of the greater trochanter of femur	• Abducts femur at hip joint • Medially (anterior fibers) and laterally (posterior fibers) rotates thigh • Erect the trunk	• Superior gluteal nerve <u>Blood supply</u>**:** • Superior gluteal a.

Fig. 82. Draw the gluteus medius muscles (Origin – blue; Insertion – red; Action – arrow)

Table 83. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gluteus minimus muscles (M. gluteus minimus)	The external surface of the ilium between anterior and the posterior gluteal line	Anterior border of the greater trochanter of femur	• Abducts femur at hip joint • Medially rotates thigh	• Superior gluteal nerve <u>Blood supply:</u> • Superior gluteal a

Fig. 83. Draw the gluteus minimus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 84. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The quadratus femoris muscles (M. quadratus femoris)	Lateral surface of the ischial tuberosity	Quadrate tubercle on the intertrochanteric crest and the greater trochanter of femur	Laterally rotates femur at hip joint	• Sciatic nerve <u>Blood supply:</u> • Inferior gluteal a. • Medial femoral circumflex a. • Obturator a.

Fig. 84. Draw the quadratus femoris muscles (Origin – blue; Insertion – red; Action – arrow)

Table 85. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gemellus superior muscles (M. gemellus superior)	Gluteal surface of the ischial spine	The trochanteric fossa (the medial part of the greater trochanter)	• Laterally rotates extended thigh • Aids abduction of flexed thigh • Hip stabilizer	• Branches of the sacral plexus (L4-L5, S1) Blood supply: • Inferior gluteal a. • Internal pudendal a.

Fig. 85. Draw the gemellus superior muscles (Origin – blue; Insertion – red; Action – arrow)

Table 86. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gemellus inferior muscles (M. gemellus inferior)	Upper aspect of ischial tuberosity	The medial side of greater trochanter of femur (with obturator internus tendon)	• Laterally rotates extended thigh • Abduction of flexed thigh	• Branches of the sacral plexus (L4-L5, S1) <u>Blood supply:</u> • Inferior gluteal a. • Internal pudendal a.

Fig. 86. Draw the gemellus inferior muscles (Origin – blue; Insertion – red; Action – arrow)

Table 87. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The obturator externus muscles (M. obturatorius externus)	External surface of obturator membrane and adjacent bone (inferior pubic ramus and the ramus of the ischium)	Trochanteric fossa of femur (next to the obturator internus muscle)	• Laterally rotates thigh at the hip	• Obturator nerve branches of the lumbar plexus <u>Blood supply:</u> • Obturator a. • Lateral circumflex a.

Fig. 87 Draw the obturator externus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 88. Muscles of external group of the muscles of the hip joint.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The tensor fasciae latae muscles (M. tensor fasciae latae)	Lateral aspect of external lip of the crest of ilium to the anterior superior iliac spine	Iliotibial tract of fascia lata	• Tens the fascia lata • Flexion in the thigh • Stabilizes the knee in extension	• Superior gluteal nerve <u>Blood supply:</u> • Lateral circumflex femoral a. • Superior gluteal a.

Fig. 88. Draw the tensor fasciae latae muscles (Origin – blue; Insertion – red; Action – arrow)

5.3 Muscles of the thigh

In clinical anatomy, the thigh muscles are divided into three groups: anterior muscles extend legs and flex thighs. Medial muscles adduct and rotate thigh, and posterior flex leg and extend thigh.

5.3.1 The anterior group:

- The sartorius muscles (M. sartorius)
- The quadriceps femoris muscles (M. quadriceps femoris)

5.3.2 The medial group:

- The gracilis muscles (M. gracilis)
- The pectineus muscles (M. pectineus)
- The adductor longus muscles (M. adductor longus)
- The adductor brevis muscles (M. adductor brevis)
- The adductor magnus muscles (M. adductor magnus)

5.3.3 The posterior group:

- The biceps femoris muscles (M. biceps femoris)
- The semitendinosus muscles (M. semitendinosus)
- The semimembranosus muscles (M. semimembranosus)

Table 89. Muscles of anterior group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The sartorius muscles (M. sartorius)	Anterior superior iliac spine and the region just below it.	Medial to tibial tuberosity (part of pes anserinus).	• Flexion of the hip and knee • Lateral rotation and weak abduction of the thigh (such as when sitting cross-legged)	• Muscular branch from anterior division of the femoral nerve (L2, L3, L4) <u>Blood supply:</u> • Lateral circumflex femoral artery • Muscular branch from the femoral a.

Fig. 89. Draw the sartorius muscles (Origin – blue; Insertion – red; Action – arrow)

Table 90. Muscles of anterior group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The quadriceps femoris muscles (M. quadriceps femoris) • **Rectus femoris** occupies the middle of the thigh deep to rectus: • **Vastus lateralis** (on the lateral side) • **Vastus medialis** (on the medial side) • **Vastus intermedius (**between vastus lateralis and vastus medialis on the front of the femur)	• Anterior inferior iliac spine of the ilium and superior acetabular ridge • Lateral part of intertrochanteric line, margin of greater trochanter, lateral lip of linea Aspera • Medial part of intertrochanteric line, pectineal line, medial lip of the linea Aspera, medial supracondylar line • Upper two thirds of the anterior and lateral surfaces of the femur	Quadriceps tendon - the tuberosity of the tibia, where the quadriceps tendon becomes the patellar ligament.	• Flexes the thigh at the hip joint • Extends the leg at the knee joint	• Femoral nerve (L2, L3, L4). Blood supply: • Descending branch of the lateral circumflex femoral a.

Fig. 90. Draw the quadriceps femoris muscles (Origin – blue; Insertion – red; Action – arrow)

Table 91. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gracilis muscles (M. gracilis)	A line on the external surfaces of the body of the pubis, inferior pubic ramus, and the ramus of the ischium	Anterior surface and side of the knee joint capsule	• Tenses and pulls the knee joint capsule proximally	• Muscular branch from anterior division of the femoral nerve (L2, L3, L4) <u>Blood supply:</u> • Lateral circumflex femoral a. • Perforating branch of the deep femoral a.

Fig. 91. Draw the gracilis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 92. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The pectineus muscles (M. pectineus)	Pectineal line along superior ramus of pubis. The fibers pass downward, backward and lateral.	The pectineal line of the femur (from the lesser trochanter to the linea Aspera), (posterior surface of femur)	• Adducts the thigh at the hip joint • Flexes the thigh at the hip joint • Rotate it laterally	• Muscular branch from anterior division of the femoral nerve (L2, L3) and branch of the obturator nerve <u>Blood supply</u>**<u>:</u>** • Obturator a. • External pudendal a. • deep femoral a.

Fig. 92. Draw the pectineus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 93. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor longus muscles (M. adductor longus)	Superior aspect of pubis, below pubic tubercle.	Middle third of linea Aspera of femur along medial lip.	• Adducts the thigh at hip. • Flexes the thigh at hip. • Laterally rotate the thigh	• The anterior division (sometimes the posterior division) of the obturator nerve. <u>Blood supply</u>**:** • Obturator a. • External pudendal a. • Deep femoral a.

Fig. 93. Draw the psoas major muscles (Origin – blue; Insertion – red; Action – arrow)

Table 94. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor brevis muscles (M. adductor brevis)	Lateral (outer) surface of inferior ramus of pubis.	Proximal portion of linea Aspera.	• Adducts the thigh at the hip. • Flexes the thigh at hip. • Laterally rotate the thigh	• The anterior division (sometimes the posterior division) of the obturator nerve. <u>Blood supply</u>**:** • Obturator a. • Perforating a.

Fig. 94. Draw the adductor brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 95. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor magnus muscles (M. adductor magnus)	It consists of two parts. • Oblique head (pubofemoral portion, adductor minimus) – the ischiopubic ramus. • Ischiocondylar portion ("hamstring portion“)– the tuberosity of the ischium	• Oblique head – gluteal tuberosity, linea Aspera and proximal supracondylar line of femur. • Vertical head – adductor tubercle of femur.	• Adducts the thigh at the hip. • Flexes the thigh at hip. • Laterally rotate the thigh	• The anterior division (sometimes the posterior division) of the obturator nerve. <u>Blood supply:</u> • Obturator a. • Perforating a.

Fig. 95. Draw the adductor magnus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 96. Muscles of medial group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor magnus muscles (M. adductor magnus)	It consists of two parts. • Oblique head (pubofemoral portion, adductor minimus) – the ischiopubic ramus. • Ischiocondylar portion ("hamstring portion“)– the tuberosity of the ischium	• Oblique head – gluteal tuberosity, linea Aspera and proximal supracondylar line of femur. • Vertical head – adductor tubercle of femur.	• Adducts the thigh at the hip. • Flexes the thigh at hip. • Laterally rotate the thigh	• The anterior division (sometimes the posterior division) of the obturator nerve. <u>Blood supply:</u> • Obturator a. • Perforating a.

Fig. 96. Draw the adductor magnus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 97. Muscles of posterior group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The biceps femoris muscles (M. biceps femoris)	It has two heads of origin: • Long head: medial facet of the ischial tuberosity • Short head: lateral lip Aspera and lateral supracondylar line of the femur and adjacent intermuscular septum	• Fibular head • Crural fascia • Lateral tibial condyle	• Flexes knee joint • Laterally rotates knee joint (when the knee is flexed) • Extends hip joint (long head only) • External rotation of the thigh (long head only)	• Long head: tibial nerve • Short head: common peroneal nerve <u>Blood supply:</u> • Inferior gluteal a. • Perforating a. • Popliteal a.

Fig. 97. Draw the biceps femoris muscles (Origin – blue; Insertion – red; Action – arrow)

Table 98. Muscles of posterior group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The semitendinosus muscles (M. semitendinosus)	Lower and medial impression on the upper part of the tuberosity of the ischium.	The medial surface of the body of the tuberculum of the tibia.	• Extends the thigh at the hip. • Medially rotates knee joint • Flexes the leg at the knee joint	• Tibial nerve <u>Blood supply:</u> • Perforating aa. • Inferior gluteal aa. • Popliteal aa.

Fig. 98. Draw the semitendinosus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 99. Muscles of posterior group of the thigh.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The semimembranosus muscles (M. Semimembranosus)	Ischial tuberosity	Infraglenoid tubercle of the posterior medial tibial condyle, posterior joint capsule (contributing to the oblique popliteal ligament), popliteal fascia and posterior horn of medial meniscus	• Extends the thigh at the hip. • Medially rotates knee joint • Flexes the leg at the knee joint	• Tibial nerve Blood supply: • Perforating aa. • Inferior gluteal aa. • Popliteal aa.

These muscles of the posterior group (or their tendons) apart from the short head of the biceps femoris, are commonly known as **the hamstrings.**

❖ *The hamstrings are quite susceptible to injury.*

Fig. 99. Draw the semimembranosus muscles (Origin – blue; Insertion – red; Action – arrow)

5.4 Muscles of the leg

The muscles of the leg exert their action on the ankle, foot, and toes.

5.4.1 The anterior group

- The tibialis anterior muscles (M. tibialis anterior)
- The extensor digitorum longus muscles (M. extensor digitorum longus)
- The extensor hallucis longus muscles (M. extensor hallucis longus)

5.4.2 The lateral group

- The peroneus longus muscles (M. peroneus longus)
- The peroneus brevis muscles (M. peroneus brevis)
- The peroneus tercius muscles (M. peroneus brevis)

5.4.3The posterior group

Superficial layer

- The gastrocnemius muscles (M. gastrocnemius)
- The soleus muscles (M. soleus)

Deep layer

- The plantaris muscles (M. plantaris)
- The popliteus muscles (M. popliteus)
- The flexor digitorum longus muscles (M. flexor digitorum longus)
- The tibialis posterior muscles (M. tibialis posterior)
- The flexor hallucis longus muscles (M. flexor hallucis longus)

Table 100. Muscles of anterior group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The tibialis anterior muscles (M. tibialis anterior)	Upper half of lateral half of tibia (lateral condyle) and interosseous membrane.	The base of first metatarsal bone. The medial cuneiform bone	• Dorsal flexion of the foot. • Raise medial border of the foot.	• Deep peroneal nerve <u>Blood supply:</u> • Anterior tibial a.

Fig. 100. Draw the tibialis anterior muscles (Origin – blue; Insertion – red; Action – arrow)

Table 101. Muscles of anterior group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor digitorum longus muscles (M. extensor digitorum longus)	Upper third of tibial, head and anterior border of the fibula, interosseus membrane, the crural fascia.	Distal and middle phalanges of digits 2-5. Fifth small tendon – at the base of the 5th metatarsal bone.	• Extends the lateral 4 toes. • Dorsal flexion of the foot • Pronates the lateral border of the foot	• Deep peroneal nerve <u>Blood supply:</u> • Anterior tibial a.

Fig. 101. Draw the extensor digitorum longus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 102. Muscles of anterior group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor hallucis longus muscles (M. extensor hallucis longus)	Medial surface of the middle and lower thirds of the fibula, interosseus membrane.	Distal phalanges of the great toe.	• Extends the great toe. • Dorsal flexion of the foot • Supinates the lateral border of the foot	• Deep peroneal nerve <u>Blood supply:</u> • Anterior tibial a.

Fig. 102. Draw the extensor hallucis longus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 103. Muscles of lateral group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The peroneus longus muscles (M. peroneus longus)	It has two heads of origin: • Anterior head: head of the fibula, lateral condyle of the tibia, fascia cruris • Posterior head: upper part of the lateral surface of the fibula.	Tubercle of the first metatarsal bone. The base of the second metatarsal bone The medial cuneiform bone	• Flexes the planta of the foot. • Lower the medial border of the planta	• Tibial nerve <u>Blood supply:</u> • Lateral inferior genicular a. • Peroneal aa. • Anterior tibial a.

Fig. 103. Draw the peroneus longus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 104. Muscles of lateral group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The peroneus brevis muscles (M. peroneus brevis)	Lower half of the lateral part of the fibula Intermuscular septa of the leg	Tubercle of the fifth metatarsal bone.	• Flexes the planta of the foot. • Raises its lateral part	• Superficial peroneal nerve <u>Blood supply:</u> • Peroneal aa. • Anterior tibial a.

Fig. 104. Draw the peroneus brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 105. Muscles of lateral group of the leg.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The peroneus tercius muscles (M. peroneus brevis)	Inferior 1/3rd of anterior surface of fibula and interosseous membrane below the extensor digitorum longus Some authors describe the muscles as arising from the lateral margin of the extensor digitorum longus muscle	Dorsal surface of the 5th metatarsal base and with a so-called falciform extension to the superior surface of that bone	Dorsiflexion and foot eversion	• Superficial peroneal nerve <u>Blood supply:</u> • Deep peroneal aa.

Fig. 105. Draw the peroneus tercius muscles (Origin – blue; Insertion – red; Action – arrow)

Table 106. Muscles of posterior group of the leg. . Superficial layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The gastrocnemius muscles (M. gastrocnemius)	It has two heads of origin: • Medial head (shorter): popliteal surface of the femur above the medial condyle • Lateral head (longer): posterolateral surface of lateral condyle of the femur.	Posterior surface of the calcaneus via the calcaneal tendon	• Plantar flexes foot • Flexes knee	• Tibial nerve (S1, S2) <u>Blood supply:</u> • Sural aa.

Fig. 106. Draw the gastrocnemius muscles (Origin – blue; Insertion – red; Action – arrow)

Table 107. Muscles of posterior group of the leg. Superficial layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The soleus muscles (M. soleus)	Head and upper third of the shaft of the fibula. Middle third of the shaft of the tibia.	Posterior surface of the calcaneus via the calcaneal tendon (tendo calcaneus (Achillis))	• Plantar flexes foot • Flexes knee • Raises the heel	• Tibial nerve (S1, S2) <u>Blood supply:</u> • Sural aa.

Fig. 107. Draw the soleus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 108. Muscles of posterior group of the leg. Deep layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The plantaris muscles (M. plantaris)	Lateral femoral condyle. Posterior wall of the knee joint capsule.	Fuse with the calcaneal tendon (tendo calcaneus (Achillis)) Or intertwine with the plantar aponeurosis.	• Tenses of the capsule of the knee joint.	• Tibial nerve Blood supply: • Popliteal a.

Fig. 108. Draw the plantaris muscles (Origin – blue; Insertion – red; Action – arrow)

Table 109. Muscles of posterior group of the leg. Deep layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The popliteus muscles (M. popliteus)	Lateral femoral condyle. Posterior horn of the lateral meniscus of the knee joint capsule.	Posterior surface of proximal tibia	• Flex the knee joint. • Knee joint stabilization • Rotates the leg medially	• Tibial nerve <u>Blood supply:</u> • Popliteal a.

Fig. 109. Draw the popliteus muscles (Origin – blue; Insertion – red; Action – arrow)

Table 110. Muscles of posterior group of the leg. Deep layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digitorum longus muscles (M. flexor digitorum longus)	Medial side of posterior surface of the tibia. Deep layer of the crural fascia.	Plantar surfaces of bases of distal phalanges of the lateral four toes	• Flex the distal phalanges of the lateral four toes • Supinates the medial border of the foot	• Tibial nerve <u>Blood supply:</u> • Posterior tibial a.

Fig. 110. Draw the flexor digitorum longus (Origin – blue; Insertion – red; Action – arrow)

Table 111. Muscles of posterior group of the leg. Deep layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The tibialis posterior muscles (M. tibialis posterior)	Upper half of posterior shaft of tibia Upper half of fibula between medial crest and interosseous border Interosseous membrane.	The tendon splits into two slips after passing inferior to plantar calcaneonavicular ligament: • superficial slip inserts on the tuberosity of the navicular bone and sometimes medial cuneiform • this is the main slip, accounting anterior two-thirds of the tendon • deeper slip divides again into slips and has variable insertions onto the plantar surfaces of metatarsals 2 - 4, second cuneiform, cuboid, sustentaculum tali	• Plantarflexion and inversion of the foot	• Tibial nerve <u>Blood supply:</u> • Posterior tibial a.

Fig. 111. Draw the tibialis posterior muscles (Origin – blue; Insertion – red; Action – arrow)

Table 112. Muscles of posterior group of the leg. Deep layer.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor hallucis longus muscles (M. flexor hallucis longus)	Lower two-thirds of posterior fibula. Interosseous membrane	Plantar surface at the base of the first distal phalanx.	• Plantarflexion and inversion of the foot	• Branch of the tibial nerve (root S1 and S2). • Cutaneous supply from root S2 <u>Blood supply:</u> • Peroneal aa

Fig. 112. Draw the flexor hallucis longus muscles (Origin – blue; Insertion – red; Action – arrow)

5.5 Muscles of the foot.

5.5.1 Muscles of dorsal surface:

- The extensor digitorum brevis muscles (M. extensor digitorum brevis)
- The extensor hallucis brevis muscles (M. extensor hallucis brevis)

5.5.2 Muscles of plantar surface:

Eminence of the great toe (medially)

- The abductor hallucis muscles (M. abductor hallucis)
- The adductor hallucis muscles (M. adductor hallucis)
- The flexor digitorum brevis muscles (M. flexor digitorum brevis)

Eminence of the little toe (laterally)

- The abductor digiti minimi muscles (M. abductor digiti minimi)
- The flexor digiti minimi brevis muscles (M. flexor digiti minimi brevis)
- The opponens digiti minimi muscles (M. abductor hallucis)

Deep proper muscles

- The flexor digitorum brevis muscles (M. flexor digitorum brevis hallucis)
- The quadratus plantae muscles (M. quadratus plantae)
- The lumbrical muscles (Mm. lumbricales) 4
- The planlar interossei muscles (Mm. interossei plantares)
- The dorsal interossei muscles (Mm. interossei dorsales)

Table 113. Muscles of the foot. Dorsal surface.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor digitorum brevis muscles (M. extensor digitorum brevis)	Lateral and upper surface of the anterior part of the calcaneus.	It ends in 4 tendons that insert into the base the base of the proximal phalanx.	• Extends the proximal phalanges of the lateral four toes • Pulls the proximal phalanges of the lateral four toes laterally	• Deep peroneal nerve. <u>Blood supply:</u> • Dorsalis pedis a.

Fig. 113. Draw the extensor digitorum brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 114. Muscles of the foot. Dorsal surface.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The extensor hallucis brevis muscles (M. extensor hallucis brevis)	Upper surface of the anterior part of the calcaneus.	The base of the proximal phalanx of the great toe.	Extends the great toe.	• Deep peroneal nerve. Blood supply: • Dorsalis pedis a.

Fig. 114. Draw the extensor hallucis brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 115. Muscles of the foot. Plantar surface. Eminence of the great toe (medially).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The abductor hallucis muscles (M. abductor hallucis)	Flexor retinaculum, the medial tubercles of the calcaneus, plantar aponeurosis.	Lateral side of the base of the proximal phalanx of the little toe.	Abducts and flex the little toe.	• Lateral plantar a. Blood supply: • Lateral plantar a.

Fig. 115. Draw the abductor hallucis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 116. Muscles of the foot. Plantar surface. Eminence of the great toe (medially).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The adductor hallucis muscles (M. adductor hallucis)	Oblique head: bases of metatarsal bones 2-4, cuboid bone, lateral cuneiform bone, tendon of fibularis longus. Transverse head: plantar metatarsophalangeal ligaments of toes 3-5, deep transverse metatarsal ligaments of toes 3-5	Lateral aspect of base of proximal phalanx of great toe	• Toe adduction, • Toe flexion; • Support of longitudinal and transverse arches of foot	• Lateral plantar nerve (S2,S3) Blood supply: • Medial plantar artery, • Lateral plantar artery, • Plantar arch, • Plantar metatarsal a.

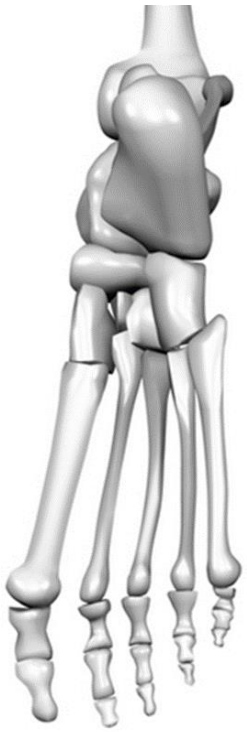

Fig. 116. Draw the adductor hallucis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 117. Muscles of the foot. Plantar surface. Eminence of the great toe (medially).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor hallucis brevis muscles (M. flexor hallucis brevis)	The medial cuneiform bone, Plantar surface of the navicular bone The long plantar ligament	Lateral and medial sesamoid bones Base of the proximal phalanges of the great toe	Toe flexion	• Lateral plantar nerve (S2,S3) <u>Blood supply:</u> • Medial plantar a. • Plantar arch

Fig. 117. Draw the flexor hallucis brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 118. Muscles of the foot. Plantar surface. Eminence of the little toe (laterally).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The abductor digiti minimi muscles (M. abductor digiti minim)	Lateral and medial processes of calcaneal tuberosity Planta aponeurosis	Lateral side of the base of proximal phalanges of the little toe	• Little toe flexion • Abducts the proximal phalanges of the little toe	• Lateral plantar nerve (S2,S3) <u>Blood supply:</u> • Lateral plantar a. • Plantar arch

Fig. 118. Draw the abductor digiti minimi muscles (Origin – blue; Insertion – red; Action – arrow)

Table 119. Muscles of the foot. Plantar surface. Eminence of the little toe (laterally).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digiti minimi brevis muscles (M. flexor digiti minimi brevis)	The base of the fifth metatarsal bone The plantar sheath of the peroneus longus The long plantar ligament	Base of proximal phalanges of the little toe	Flexes the proximal phalanges of the little toe	• Lateral plantar nerve (S2,S3) <u>Blood supply:</u> • Lateral plantar a.

Fig. 119. Draw the flexor digiti minimi brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 120. Muscles of the foot. Plantar surface. Eminence of the little toe (laterally).

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The opponens digiti minimi muscles (M. abductor hallucis)	The plantar sheath of the peroneus longus The long plantar ligament	Lateral border of the 5th metatarsal bone	• Adducts and opposes the 5th metatarsal bone • Strengthens the lateral part of the arch of the foot	• Lateral plantar nerve (S2,S3) Blood supply: • Lateral plantar a.

Fig. 120. Draw the opponens digiti minimi muscles (Origin – blue; Insertion – red; Action – arrow)

Table 121. Muscles of the foot. Plantar surface. Deep proper muscles.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The flexor digitorum brevis muscles (M. flexor digitorum brevis hallucis)	Medial process of calcaneal tuberosity Plantar aponeurosis	The middle phalanges of the 2-5 toes.	Flexes the middle phalanges of the 2-5 toes.	• Lateral plantar nerve (S2,S3) <u>Blood supply:</u> • Medial and lateral plantar aa. • Plantar arch • Plantar metatarsal a. • Plantar digital a.

Fig. 121. Draw the flexor digitorum brevis muscles (Origin – blue; Insertion – red; Action – arrow)

Table 122. Muscles of the foot. Plantar surface. Deep proper muscles.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The quadratus plantae muscles (M. quadratus plantae)	The medial (larger) head: he medial surface of the calcaneus The lateral head: the lateral border of the inferior surface of the calcaneus, and from the long plantar ligament.	The lateral margin and under surfaces of the tendon of the flexor digitorum longus	To aid in flexing the 2-5 digits of the foot.	• Lateral plantar nerve (S2,S3) Blood supply: • Medial and lateral plantar aa. • Plantar arch • Plantar metatarsal a. • Plantar digital a.

Fig. 122. Draw the quadratus plantae muscles (Origin – blue; Insertion – red; Action – arrow)

Table 123. Muscles of the foot. Plantar surface. Deep proper muscles.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The lumbrical muscles (Mm. lumbricales) *(They are 4 in number)*	First lumbrical: medial side of tendon of flexor digitorum longus associated with toe II Second, third and fourth lumbricals: adjacent surfaces of adjacent tendons of flexor digitorum longus.	Medial free margins of extensor hoods of toes II to V	Flexing the lateral phalanges of 2-5 digits of the foot.	• Lateral and medial plantar nerve (S2,S3) Blood supply: • Medial and lateral plantar aa.

Fig. 123. Draw the lumbrical muscles (Origin – blue; Insertion – red; Action – arrow)

Table 124. Muscles of the foot. Plantar surface. Deep proper muscles.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The planlar interossei muscles (Mm. interossei plantares) *(They are 3 in number)*	Medial aspects of metatarsal bones 3-5	Medial bases of proximal phalanges and extensor expansion of digits 3-5	• Toe flexion in proximal phalanges • Toe extention in middel and distal phalanges • Toes adduction	• Lateral and medial plantar nerve (S2,S3) <u>Blood supply:</u> • Plantar arch • Plantar metatarsal a.

Fig. 124. Draw the planlar interossei muscles (Origin – blue; Insertion – red; Action – arrow)

Table 125. Muscles of the foot. Plantar surface. Deep proper muscles.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The dorsal interossei muscles (Mm. interossei dorsales) *(They are 4 in number)*	Opposing sides of metatarsal bones 1-5	Medial base of proximal phalanx of digit 2-4 Lateral bases of proximal phalanges and extensor expansion of digits 2-4	• 1st interossei muscle pulles the 2d toe medially • 2,3,4 interossei muscles desplace the 2,3,4 toes laterally • 4th interossei muscle flex the proximal phalanges • 4th interossei muscle the middle and distal phalanges	• Lateral plantar nerve <u>Blood supply:</u> • Plantar arch • Plantar metatarsal a.

Fig. 125. Draw the dorsal interossei muscles (Origin – blue; Insertion – red; Action – arrow)

Chapter 6. The muscles of the head (Musculi capitis).

6.1 Introduction.

The muscles of the head perform important tasks, including movement of the head and neck, chewing and facial expressions, and movement of the eyes.

The muscles of the face are unique among groups of muscles in the body. While most muscles connect to and move only bones, facial muscles mostly connect bones to skin.

6.2 The muscles of facial expression (facial mm.) are located under the skin and are devoid of the fasciae. Most of them arise on the bones of the head and are inserted into the skin.

6.3.1 Muscles of the scalp

- The epicraneal aponeurosis (Galea aponeuratica s. aponeurosis epicranealis)
- The auricularis anterior muscle (Musculus auricularis anterior)
- The auricularis superior muscle (Musculus auricularis superior)
- The auricularis posterior muscle (Musculus auricularis posterior)
- The transversus nuchae muscle (Musculus transversus nuchae)

6.3.2 Muscles surrounding the eyes

- The corrugator muscle of the eyebrow (musculus corrugator supercilii)
- The procerus muscle (m. procerus)
- The orbicularis oculi muscle (m. orbicularis oculi)

6.3.3 Muscles surrounding the mouth

- The orbicularis oris muscle (m. orbicularis oris)
- The zygomaticus major muscle (m. zygomaticus major)
- The zygomaticus minor muscle (m. zygomaticus minor)
- The levator labii superioris muscle (m. levator labii superioris)
- The levator labii superioris alaeque nasi muscle (m. levator labii superioris alaeque nasi)
- The levator anguli oris muscle (m. levator anguli oris)
- The buccinator muscle (m. buccinator)
- The risorius muscle (m. risorius)
- The depressor anguli oris muscle (m. depressor anguli oris)

- The depressor labii inferioris muscle (m. depressor labii inferioris)
- The mentalis muscle (m. mentalis)
- The transversus menti muscle (m. transversus menti)

6.3.4 Muscles surrounding the nose

- The nasal muscle (m. nasalis)
- The depressor septi nasi muscle (m. depressor septi nasi)

6.3 The muscles of mastication

move the mandible on contraction. The point of origin is the fixed point (on the skull bones) and the point of insertion is the mobile point (on the mandible):

- The masseter muscle (m. masseter)
- The temporal muscle (m. temporalis)
- The medial pterygoid muscle (m. pterygoideus medialis)
- The lateral pterygoid muscle (m. pterygoideus lateralis)

Table 126. The muscles of the head. The mm of facial expression (facial mm.). Muscles of the scalp

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The epicranial aponeurosis (Galea aponeurotica s. aponeurosis epicranialis) The occipitofrontalis muscle (epicranius muscle)	The Frontal belly near the frontal bone - the epicranial aponeurosis above the frontal tubers The occipital belly near the occipital bone - the external occipital protuberance and highest nuchal lines of the occipital bone	The Frontal belly - the skin of the forehead at the level of the eyebrows arch. The occipital belly - posterior parts the epicranial aponeurosis	• Assisted by the occipital belly • The frontal belly draws the scalp back, which raise the eyebrows and wrinkles the forehead	• Branches of the facial nerve • The Frontal belly -the temporal branch. • The occipital belly - the posterior auricular nerve. Blood supply: • The Frontal belly - the superficial temporal, ophthalmic a. • The occipital belly - posterior auricular and occipital a.

Fig. 126. Draw the epicranial aponeurosis (Origin – blue; Insertion – red; Action – arrow)

Table 127. The muscles of the head. The mm of facial expression (facial mm.). Muscles of the scalp

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The auricularis anterior muscle (M. auricularis anterior)	The temporal fascia and the lateral edge of the Galea aponeurotic	Skin of the auricle above the tragus	• Pulls the auricle forwards and upwards	• Branches of the facial nerve <u>Blood supply:</u> • The superficial temporal a.

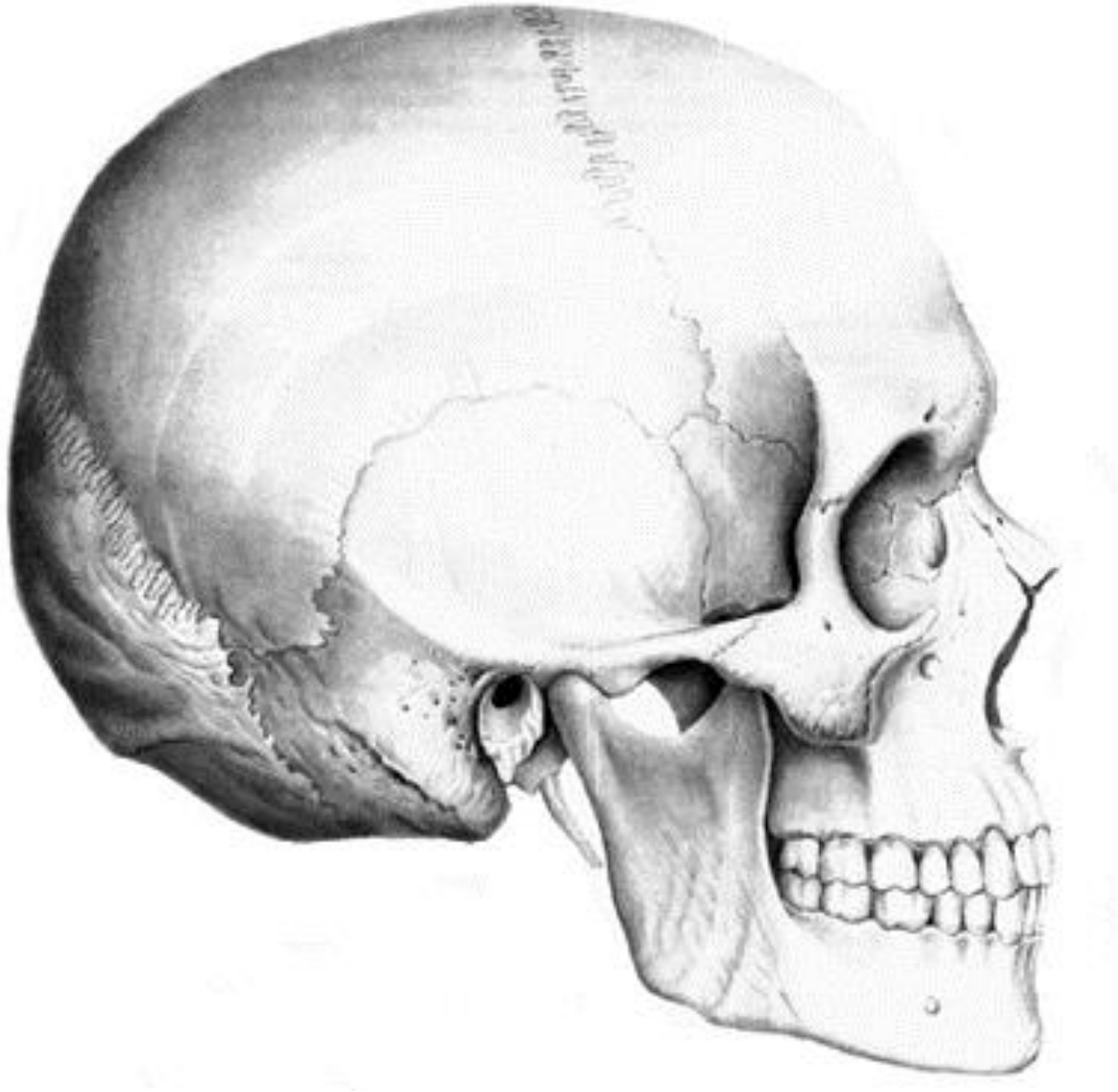

Fig. 127. Draw the auricularis anterior muscle (Origin – blue; Insertion – red; Action – arrow)

Table 128. The muscles of the head. The mm of facial expression (facial mm.). Muscles of the scalp

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The auricularis superior muscle (Musculus auricularis superior)	The temporal fascia and the central edge of the Galea aponeurotica	The upper part of the cranial surface of the auricular cartilage	• Pulls the auricle upwards and tenses the epicranial aponeurosis.	• Branches of the facial nerve Blood supply: • The superficial temporal • Posterior auricular • Occipital a.

Fig. 128. Draw the auricularis superior muscle (Origin – blue; Insertion – red; Action – arrow)

Table 129. The muscles of the head. The mm of facial expression (facial mm.). Muscles of the scalp

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The auricularis posterior muscle (M. auricularis posterior)	The fascia nuchae.	Base of the auricle.	• Pulls the auricle backwards.	• Branches of the facial nerve Blood supply: • Posterior auricular a.

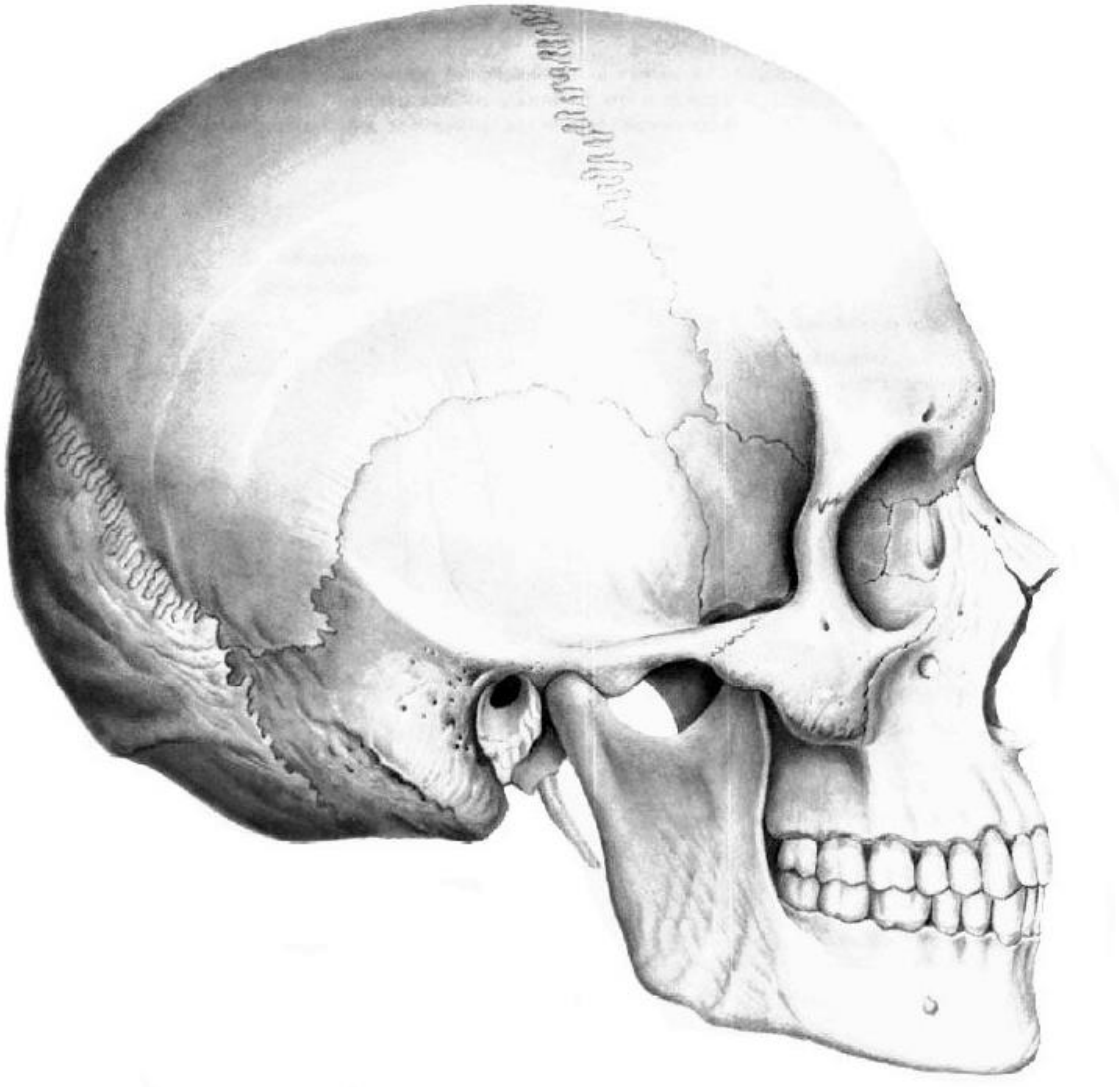

Fig. 129. Draw the auricularis posterior muscle (Origin – blue; Insertion – red; Action – arrow)

Table 130. The muscles of the head. The mm of facial expression (facial mm.). Muscles of the scalp

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The transversus nuchae muscle (M. transversus nuchae)	The external occipital protuberance.	The mastoid process.	• Tenses the fascia and the skin of the occipital region.	• Branches of the facial nerve (n. auricularis posterior) <u>Blood supply:</u> • Occipital a.

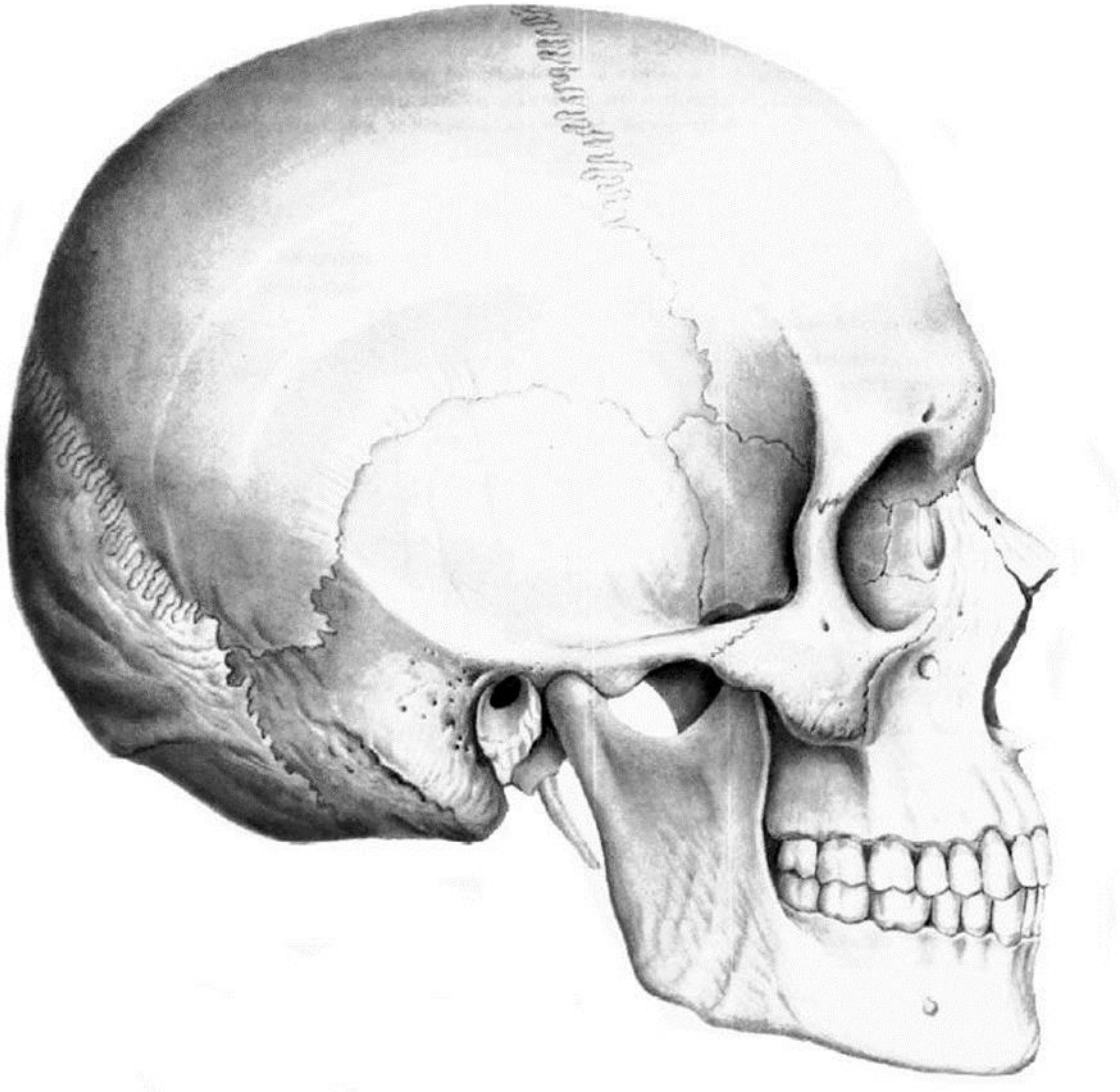

Fig. 130. Draw the transversus nuchae muscle (Origin – blue; Insertion – red; Action – arrow)

Table 131. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the eyes

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The corrugator muscle of the eyebrow (M. corrugator supercilii)	Medial end of the supraorbital margins of the frontal bone.	The **skin** of eyebrow.	• Frowning, furrowing the forehead • Drawing eyebrows inferomedially • Responsible for producing vertical wrinkles on the supranasal strip of the forehead	• Temporal branches of the facial nerve (VII) Blood supply: • Branches of superficial temporal and ophthalmic a.

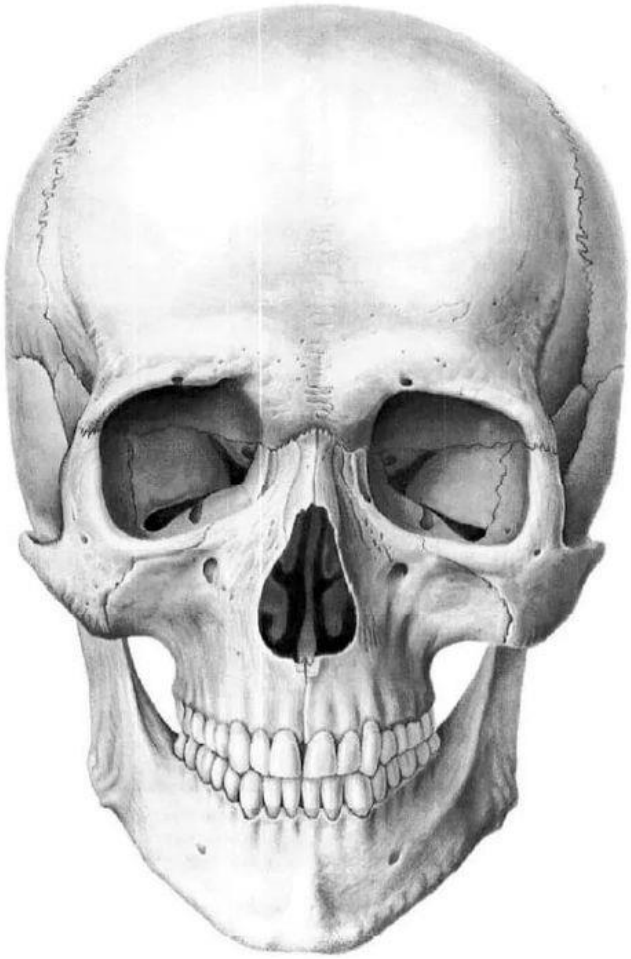

Fig. 131. Draw the corrugator muscle of the eyebrow (Origin – blue; Insertion – red; Action – arrow)

Table 132. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the eyes

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The procerus muscle (M. procerus) (the pyramidalis nasi muscle)	Descending fibers of frontalis muscle coalesce with procerus nasal bone lateral nasal cartilage	Skin of the inferior glabella.	• Wrinkling of the skin of the nose • Draws down the medial end of the eyebrows	• Buccal branches of the facial nerve (VII) <u>Blood supply:</u> • Branches of superficial temporal and ophthalmic a.

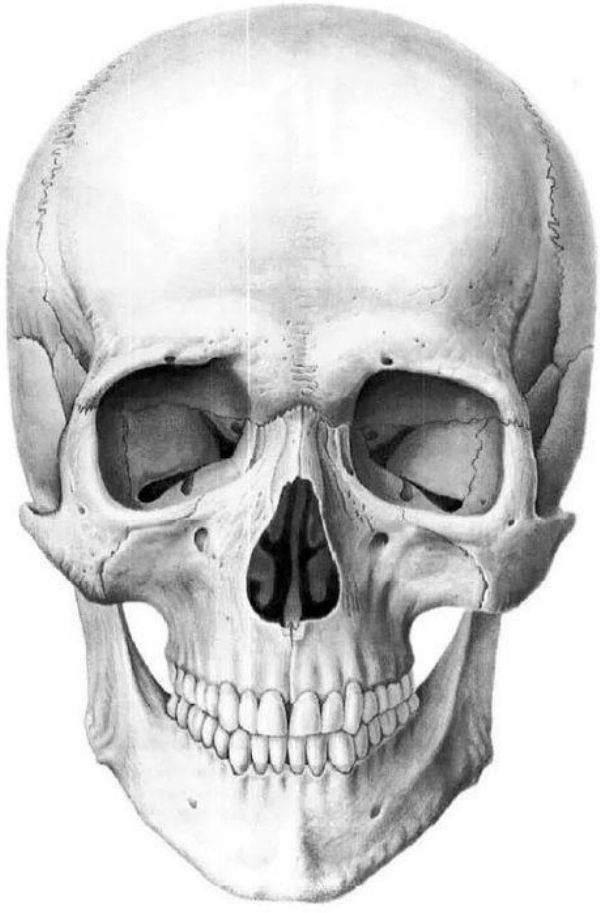

Fig. 132. Draw the procerus muscle (Origin – blue; Insertion – red; Action – arrow)

Table 133. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the eyes

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The orbicularis oculi muscle (M. orbicularis oculi)	Orbital part - the medial and lateral palpebral ligament The frontal process of the maxilla and nasal part of the frontal bone. It form the muscular ring around the orbit. The palpebral part (superior and inferior) - the medial palpebral ligament The lacrimal part – posterior crest of the lacrimal bone	The palpebral part - the lateral palpebral ligament The lacrimal part – fibers of the palpebral part	To close the eye • Orbital part – narrows the palpebral fissure and smoothes out the transverse folds in the skin of the forehead • The palpebral part closes the palpebral fissure • The lacrimal part dilates the lacrimal sac.	• Branches of the facial nerve (VII) Blood supply: • Branches of superficial temporal and ophthalmic a.

The orbicularis oculi is subdivided into orbital, palpebral and lacrimal parts. Each has defined actions.

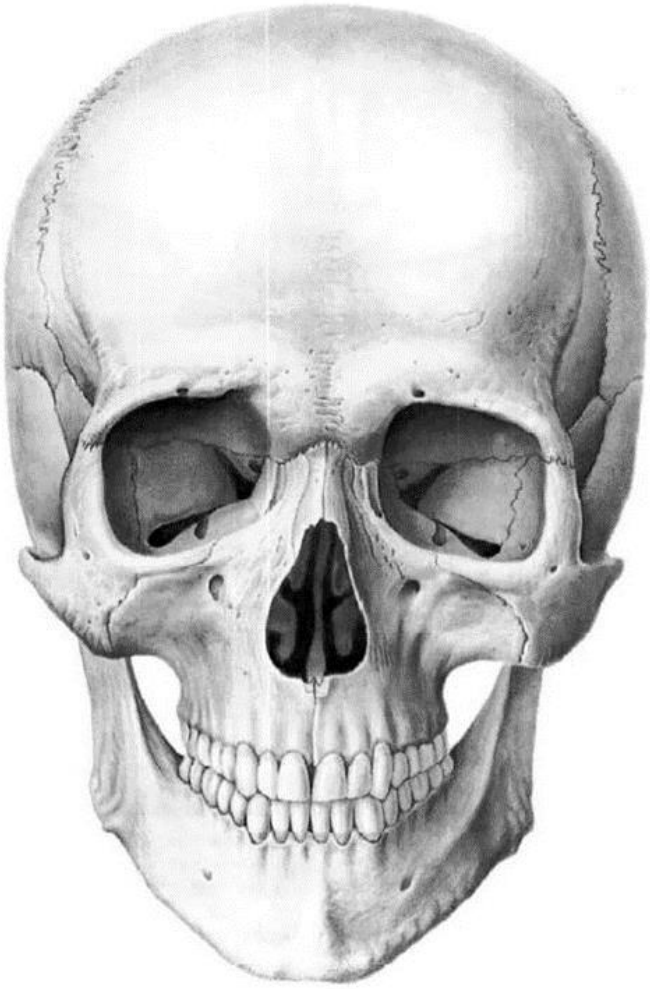

Fig. 133. Draw the orbicularis oculi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 134. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The orbicularis oris muscle (M. orbicularis oris)	Is formed of the circular muscle fibers lying in the thickness of the lips. The muscle fibers are fuse closely with the skin. Orbicularis oris is subdivided into four quadrants (upper, lower, right and left). Each quadrant consists of a major peripheral portion and a smaller marginal portion in the vermillion of the upper and lower lips.		• Narrows the oral fissure • Pulls the lips forward	• Buccal and marginal mandibular branches of the facial nerve (VII) <u>Blood supply:</u> • Muscular branches of the facial a.

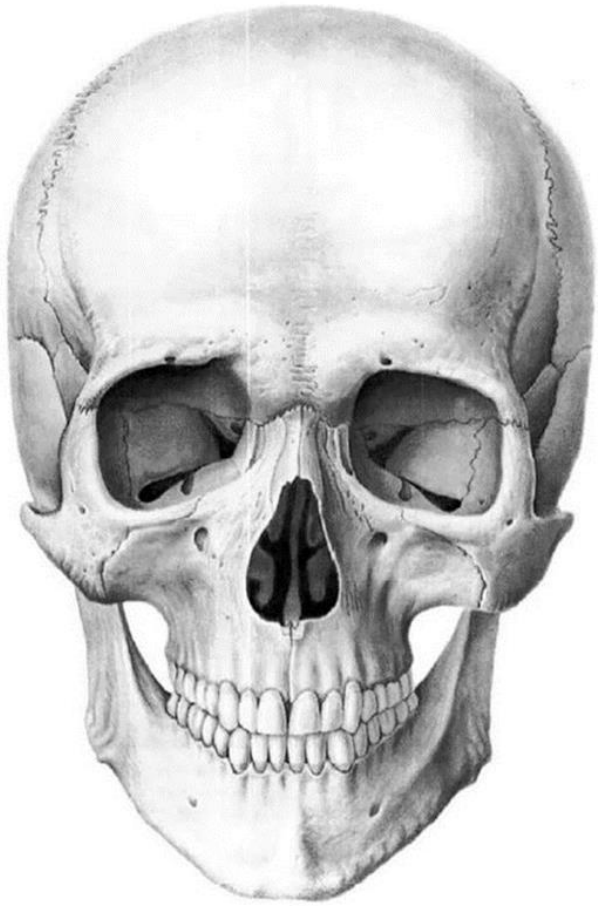

Fig. 134. Draw the orbicularis oris (Origin – blue; Insertion – red; Action – arrow)

Table 135. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The zygomaticus major muscle (M. zygomaticus major)	Lateral surface of the zygomatic bone	M. orbicularis oris and skin of the angle of the mouth	Pull the angle of the mouth upwards and laterally	• Branches of the facial nerve (VII) Blood supply: • The infraorbital and buccal aa.

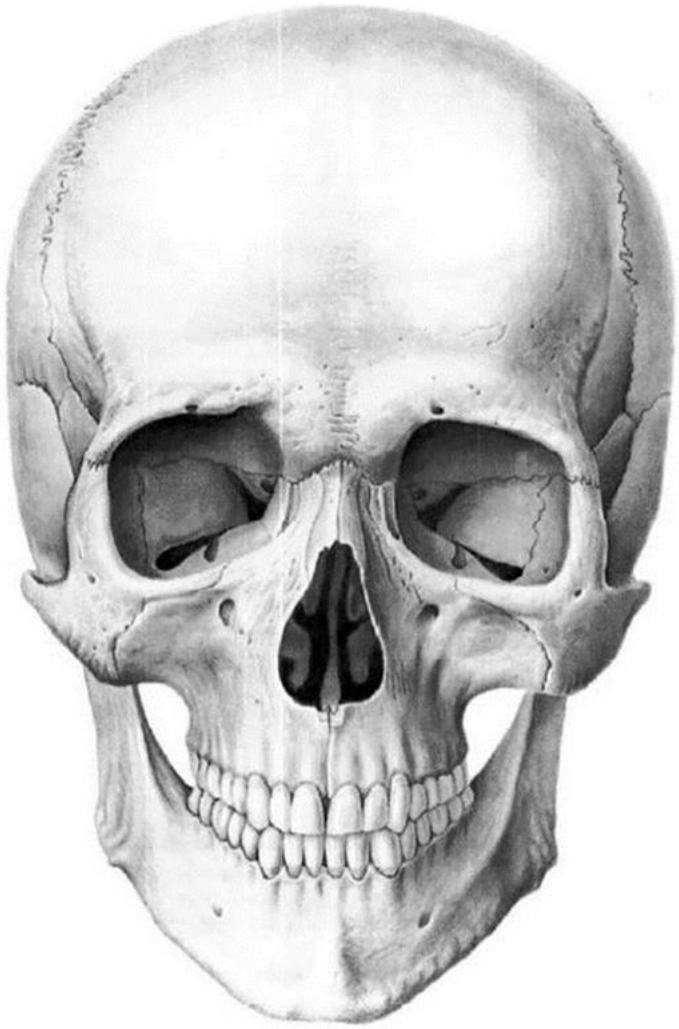

Fig. 135. Draw the zygomaticus major muscle (Origin – blue; Insertion – red; Action – arrow)

Table 136. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The zygomaticus minor muscle (m. zygomaticus minor)	Anterior surface of the zygomatic bone	M. orbicularis oris and skin of the mouth	Pull the skin of the mouth upwards.	• Branches of the facial nerve (VII) Blood supply: • The infraorbital and buccal aa.

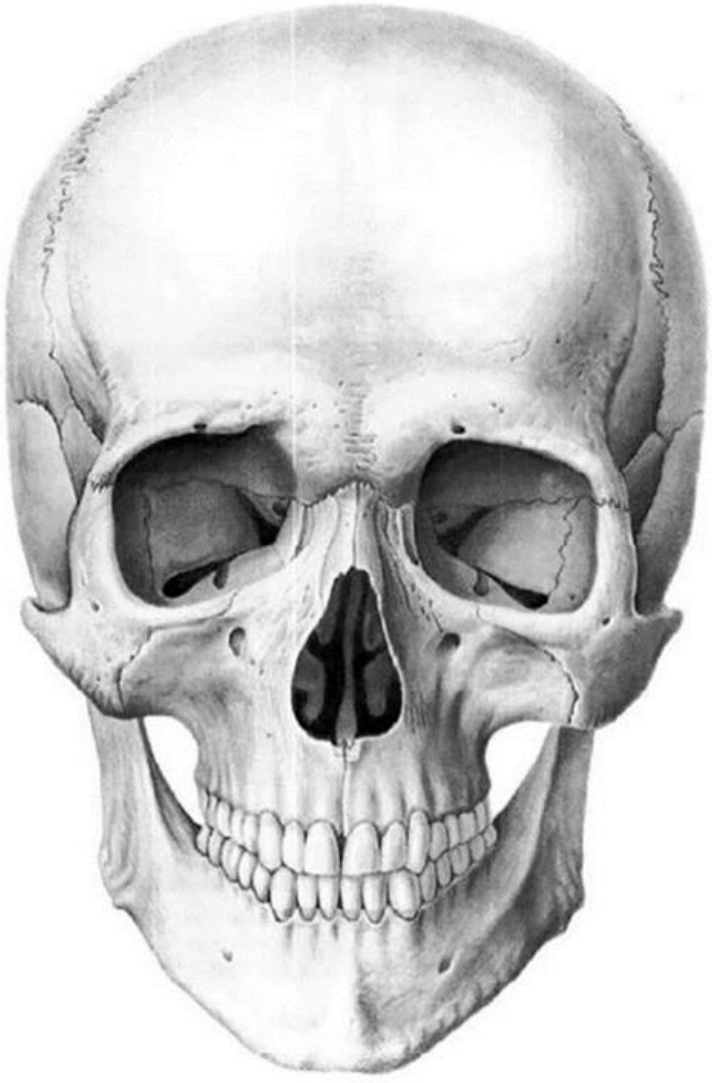

Fig. 136. Draw the zygomaticus minor muscle (Origin – blue; Insertion – red; Action – arrow)

Table 137. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The levator labii superioris muscle (M. levator labii superioris)	Its fibers originate from the frontal process of the maxilla, nasal bone, and medial	Its muscle fibers pass inferiorly as two main components • Alaris fibers pass into the superior margin of the lower lateral nasal cartilage and skin of the alar base, intermingling with the dilator naris muscle • Labiocolumellaris(a.k.a. labial portion) fibers pass around the nasal base and into the philtrum, ramifying with myrtiformis and, then into the columella, joining with orbicularis oris fibers	• Alaris: elevator and dilator of the nostril • Labiocolumellaris: depressor of the nostril tip	Zygomatic and buccal nerves (VII) Blood supply: • Infraorbital artery • Facial artery

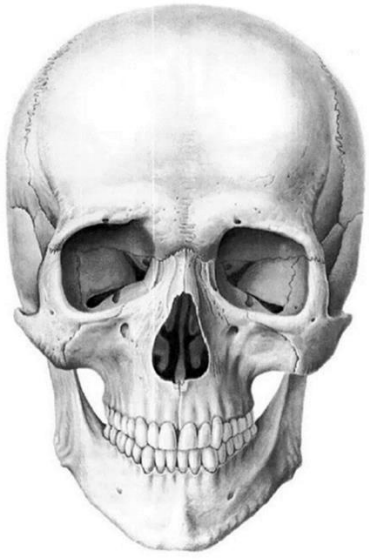

Fig. 125. Draw the levator labii superioris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 138. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The levator labii superioris alaeque nasi muscle (M. levator labii superioris alaeque nasi)	The frontal process of the maxilla	M. orbicularis oris and skin of the upper lip and skin of the ala nasi	• Depressor of the tip of the ala nasi • Raises the upper lip	• Branches of the facial nerve (VII) <u>Blood supply:</u> • Infraorbital a. • Superior labial a. • Angular a.

Fig. 138. Draw the levator labii superioris alaeque nasi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 139. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The levator anguli oris muscle (M. levator anguli oris)	Below the infraorbital foramen from canine fossa	M. orbicularis oris and skin at angle of the mouth	Pull the skin of the mouth upwards and laterally.	• Branches of the facial nerve (VII) Blood supply: • Infraorbital a. • Superior labial a. • Angular a.

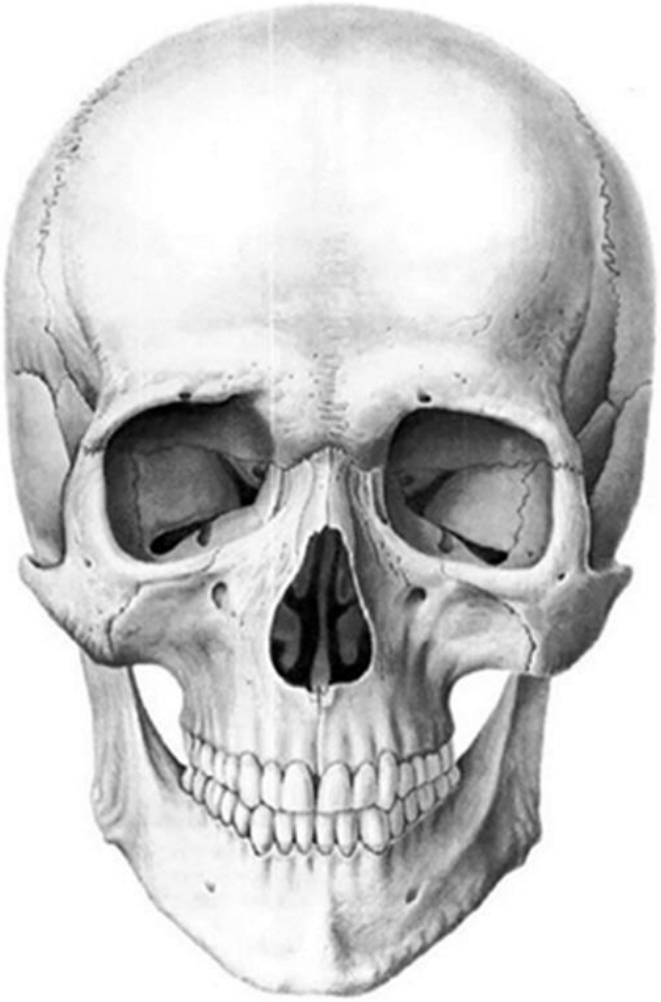

Fig. 139. Draw the levator anguli oris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 140. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The buccinator muscle (M. buccinator)	External surface of alveolar process of both maxilla and mandible, and anterior margin of the pterygomandibular ligament	Skin of the lips and skin of the ala nasi and angle of the mouth, moth membrane of the massetser muscle.	Pull angle of the mouth laterally. In bilateral contraction the oral fissure is stretched and the inner surface of the cheek is press to the teeth	• Branches of the facial nerve (VII) Blood supply: • Facial a. • Maxillary artery.

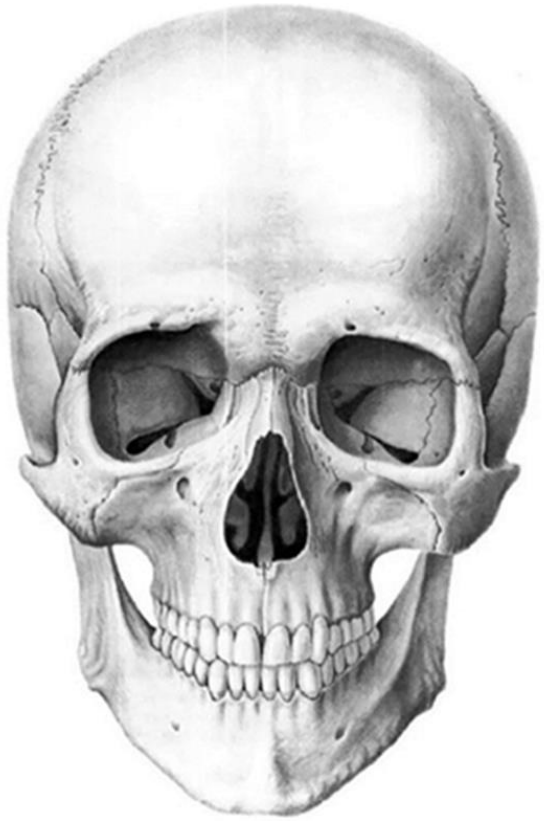

Fig. 140. Draw the buccinator muscle (Origin – blue; Insertion – red; Action – arrow)

Table 141. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The risorius muscle (M. risorius)	The masseteric fascia and the skin at the region of the nasolabial fold.	Skin at angle of the mouth	Pull the angle of the mouth laterally.	• Branches of the facial nerve (VII) <u>Blood supply:</u> • Infraorbital a. • Buccal a. • Facial a.

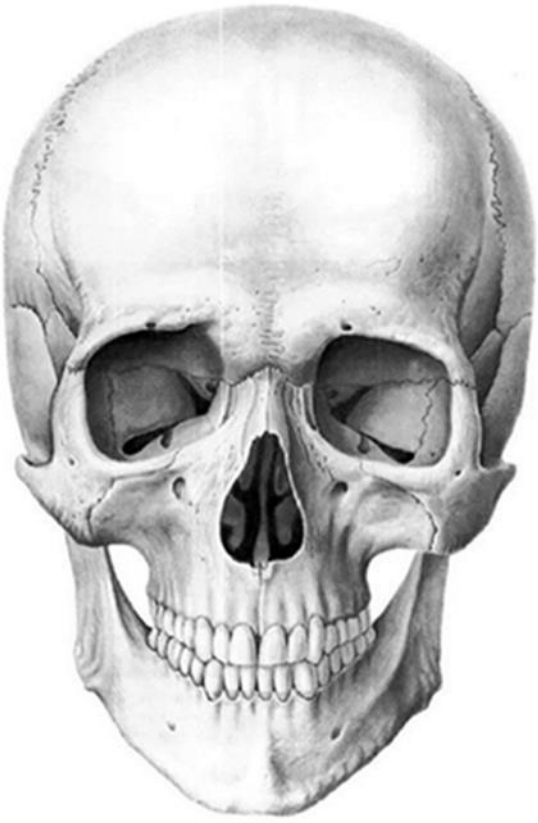

Fig. 141. Draw the risorius muscle (Origin – blue; Insertion – red; Action – arrow)

Table 142. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The depressor anguli oris muscle (M. depressor anguli oris)	Anterior surface of the mandible inferior of the mental foramen	Skin at angle of the mouth and the levator anguli oris.	Pull the angle of the mouth laterally.	• Branches of the facial nerve (VII) Blood supply: • Inferior labial a. • Mental a. • Submental a.

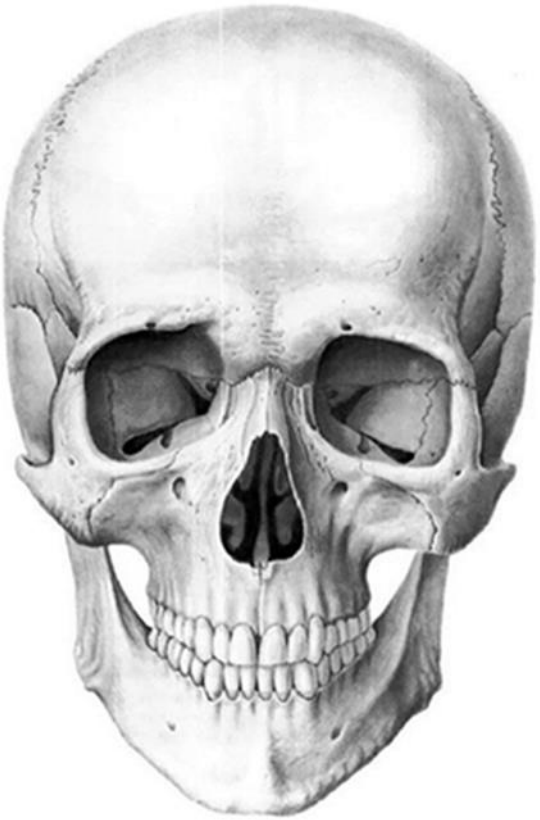

Fig. 142. Draw the depressor anguli oris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 143. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The depressor labii inferioris muscle (M. depressor labii inferioris)	Anterior surface of the mandible above the origin of the depressor anguli oris anteriorly of the mental foramen	Skin of the lower lip and chin	Pull the lower lip downwards.	• Branches of the facial nerve (VII) Blood supply: • Inferior labial a. • Mental a. • Submental a

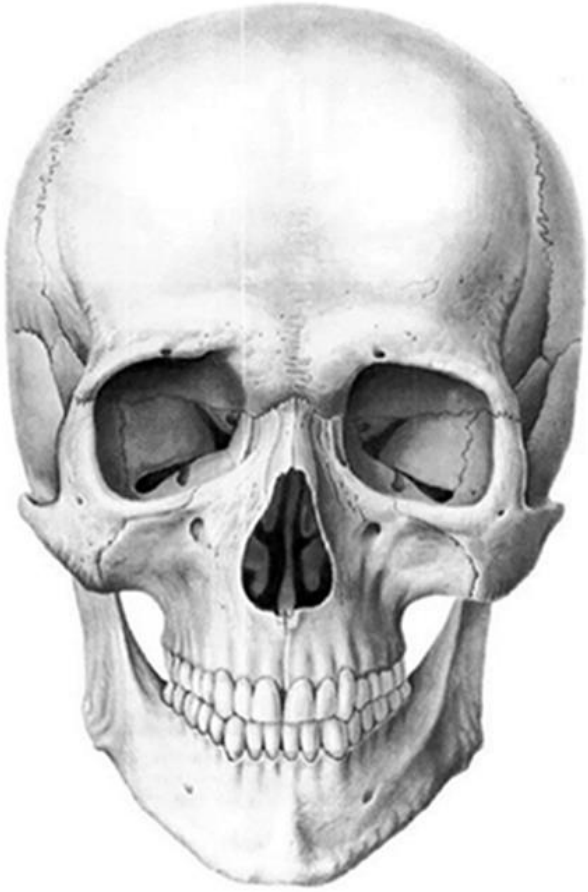

Fig. 143. Draw the depressor labii inferioris muscle (Origin – blue; Insertion – red; Action – arrow)

Table 144. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The mentalis muscle (M. mentalis)	Next to the depressor labii inferioris muscle from the alveolar juga of the mandibular incisors	Skin of the chin	• Pull the skin of the chin upwards. • Pull out the lower lip.	• Branches of the facial nerve (VII) <u>Blood supply:</u> • Inferior labial a. • Mental a.

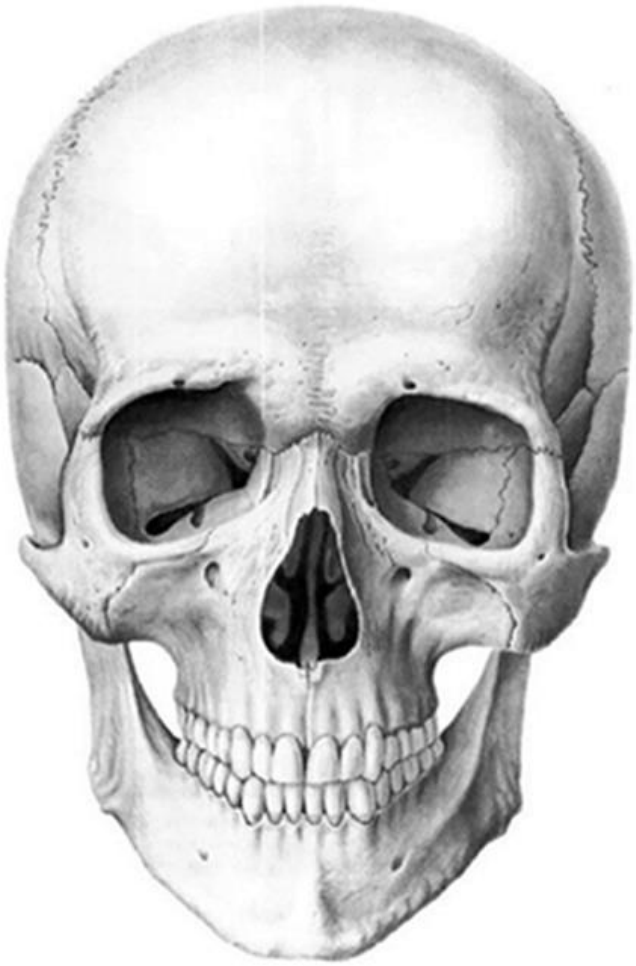

Fig. 144. Draw the mentalis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 145. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the mouth

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The transversus menti muscle (M. transversus menti)	A small inconstant muscle that crosses the midline directly under the chin.			• Branches of the facial nerve (VII) <u>Blood supply:</u> • Inferior labial a. • Mental a.

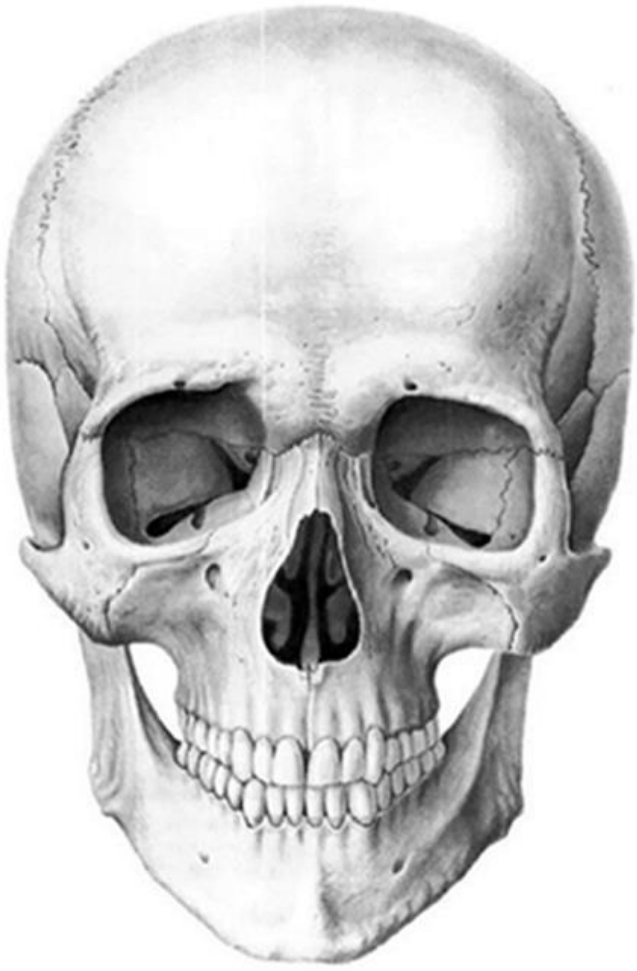

Fig. 145. Draw the transversus menti muscle (Origin – blue; Insertion – red; Action – arrow)

Table 146. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the nose.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The nasal muscle (M. nasalis)	The transverse part (compressor naris) - from the maxilla, above and lateral to the incisive fossa. The alar part (dilator naris) - the maxilla over the lateral incisor	The transverse part - the bridge of the nose with that of the muscle of the opposite side, and with the aponeurosis of the Procerus. The alar part (dilator naris) –the greater alar cartilage	• Compresses the nostrils • Completely close them	• Branches of the facial nerve (VII) Blood supply: • Superior labial a. • Angular a.

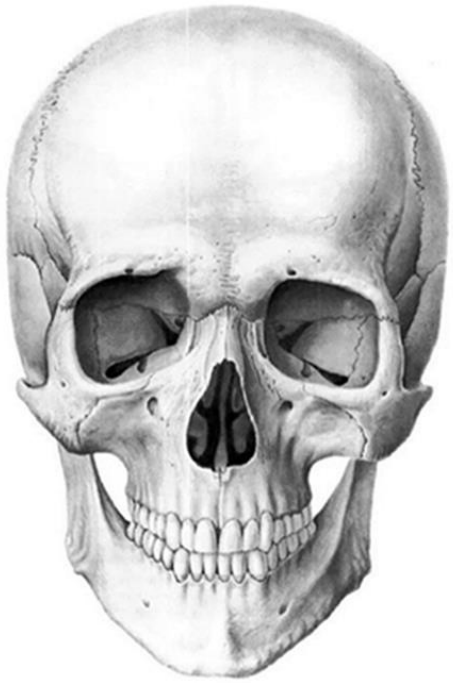

Fig. 146. Draw the nasal muscle (Origin – blue; Insertion – red; Action – arrow)

Table 147. The muscles of the head. The mm of facial expression (facial mm.). Muscles surrounding the nose.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The depressor septi nasi muscle (M. depressor septi nasi)	The alveolar juga of the maxillary medial incisors	Inferior surface of the cartilage of the nasal septum	• Pull the nasal septum downwards	• Branches of the facial nerve (VII) <u>Blood supply:</u> • Superior labial a.

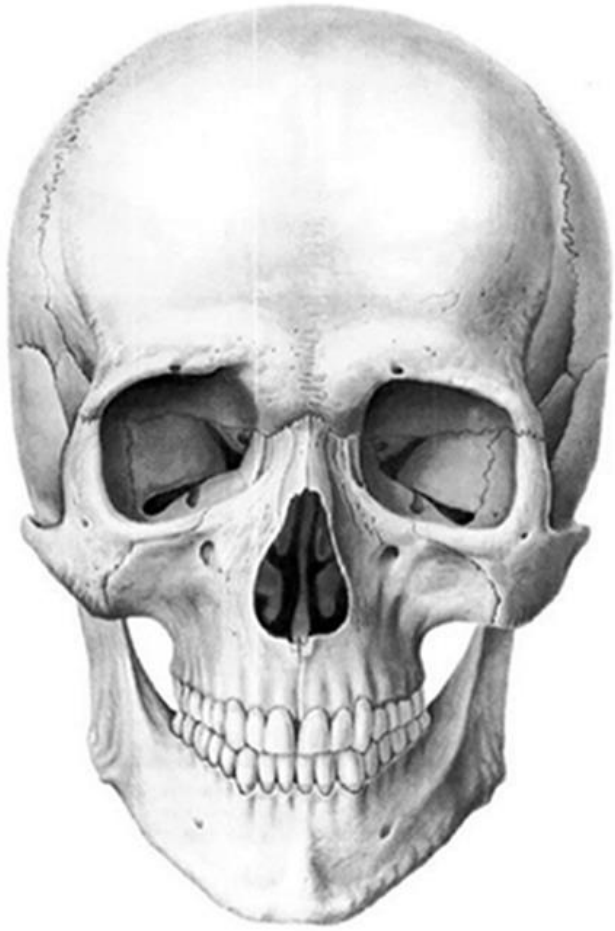

Fig. 147. Draw the depressor septi nasi muscle (Origin – blue; Insertion – red; Action – arrow)

Table 148. The muscles of the head. The muscles of mastication.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The masseter muscle (M. masseter)	Superficial layer - the aponeurotic tissue arising from the maxillary process of the zygomatic bone Middle layer - the medial aspect of the anterior zygomatic arch and the lower border of the posterior zygomatic arch Deep layer - the medial aspect of the zygomatic arch	Superficial layer - run inferoposteriorly and insert into the angle and the posterior half of the lateral aspect of the mandibular ramus. Middle layer - the middle part of the mandibular ramus Deep layer - the upper part of the mandibular ramus and the coronoid process	• Elevate the mandible and to clench the teeth. I • Protract the angle of the mandible.	• The masseteric nerve, a branch of the mandibular nerve (CN V3). Blood supply: • Masseteric branch of the maxillary a. • Facial a. • Transverse facial branch of the superficial temporal a.

Fig. 148. Draw the masseter muscle (Origin – blue; Insertion – red; Action – arrow)

Table 149. The muscles of the head. The muscles of mastication.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The temporal muscle (M. temporalis)	Temporal fossa between the infratemporal crest and inferior temporal line on the parietal bone	Coronoid process and ramus of mandible	• Elevate and retract the mandible • Upper and anterior fibers: close the jaws • Posterior fibers: retract the mandible • Side-to-side movements of the mandible	• The deep temporal nerves of the mandibular nerve • The middle temporal nerve. <u>Blood supply:</u> • Deep and superficial temporal a.

Fig. 149. Draw the temporal muscle (Origin – blue; Insertion – red; Action – arrow)

Table 150. The muscles of the head. The muscles of mastication.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The medial pterygoid muscle (M. pterygoideus medialis)	It has two heads of origin. The deep head is the major component and is attached to the medial aspect of the lateral pterygoid plate of the sphenoid bone. The superficial head is attached to the maxillary tuberosity and the pyramidal process of the palatine bone.	The medial surface of the mandibular ramus and angle	• Elevate the mandible. • Displaces the mandible to the contralateral side.	• Medial pterygoid nerve (trigeminal nerve (CN V3). Blood supply: • Alveolar a. • Buccal a. • Facial a.

Fig. 150. Draw the medial pterygoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 151. The muscles of the head. The muscles of mastication.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The lateral pterygoid muscle (m. pterygoideus lateralis)	It has two heads of origin. The superior part arises from the lower part of the lateral surface of the greater wing of the sphenoid bone and from the infratemporal crest. The inferior part arises from the lateral surface of the lateral pterygoid plate.	The superior part –the TMJ capsule and TMJ disc. The inferior part - a depression in front of the neck of the condyle of the mandible; the pterygoid fovea	• The superior part is active during retrusion (opposite of protrusion) and ipsilateral jaw movement. • It pull the capsule and disc forward during mouth opening, • The inferior part is responsible for opening of the mouth, protrusion and contralateral jaw movement.	• Medial pterygoid nerve (trigeminal nerve (CN V3). Blood supply: • Alveolar a. • Buccal a. • Facial a.

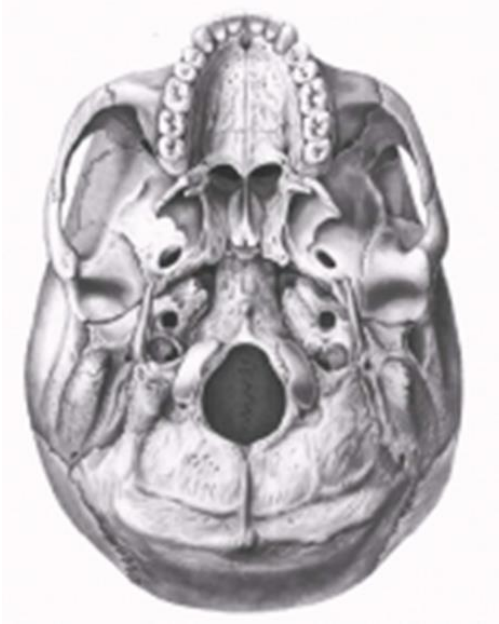

Fig. 151. Draw the lateral pterygoid muscle (Origin – blue; Insertion – red; Action – arrow)

Chapter 7. The muscles of the neck (musculus coli).

7.1 Introduction.

The muscles of the neck run from the base of the skull to the back and chest and work to bend the head and assist in breathing.

The motion of the muscles of the neck are divided into four categories: rotation, lateral flexion, flexion, and hyperextension. Rotation describes the action of moving the head from side to side, lateral motion brings the ear to the shoulder, flexion moves the chin to the chest (as in looking down), and hyperextension moves the neck so that the head tilts upward.

7.2 The superficial muscle:

- The platysma
- The sternocleidomastoid (m. sternocleidomastoideus)

7.3 The middle muscles:

7.3.1 The suprahyoid muscles:

- The digastric muscle (m. digastricus)
- The stylohyoid muscle (m. stylohyoideus)
- The mylohyoid muscle (m. mylohyoideus)
- The geniohyoid muscle (m. geniohyoideus)

7.3.2 The infrahyoid muscles :

- The sternohyoid muscle (m. sternohyoideus)
- The thyohyoid muscle (m. thyohyoideus)
- The sternothyroid muscle (m. sternothyroid eus)
- The omohyoid muscle (m. omohyoid)

7.4 The deep muscles:

7.4.1 Lateral group

- The scalenius anterior (m. scalenius anterior)
- The scalenius medius (m. scalenius medius)
- The scalenius posterior (m. scalenius posterior)

7.3.3 The prevertebral group

- The longus capitis muscle
- The longus cervicis muscle
- The rectus capitis muscle

- The rectus cervicis muscle

Table 152. The muscles of the neck. The superficial muscle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The platysma	The fascia of pectoralis major and deltoid muscles (on the level of the 2 rib)	Lower border of the mandible, the lower lip, and subcutaneous tissue of the lower face (parotid and masseteric fascia)	• Tenses the skin between the jaw and lateral neck • Assists in lowering the mandible • Pull the angle of the mouth laterally and downwards	• Cervical branch of the facial nerve <u>Blood supply:</u> • Facial a. • Superficial cervical a. • Suprascapular a.

Fig. 152. Draw the platysma (Origin – blue; Insertion – red; Action – arrow)

Table 153. The muscles of the neck. The superficial muscle.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The sternocleido mastoid muscle (M. sternocleido mastoidus)	The sternal head (round and tendinous): upper part of anterior surface of manubrium of sternum The clavicular head (thin and broader fleshy): upper surface of sternal end of clavicle.	Mastoid process of temporal bone. Lateral half of the superior nuchal line of the occipital bone	• Unilaterally: lateral flexion of neck to same side, rotates head to opposite side • Bilaterally: flexes neck, draws head ventrally and elevates chin, draws sternum superiorly in deep inspiration	• Cervical branch of the facial nerve Blood supply: • Superior thyroid a. • Occipital a.

The sternal head passes over the sternoclavicular joint and joins the clavicular head halfway up the neck, the common muscle belly then courses posterolaterally to its insertion.

Fig. 153. Draw the sternocleidomastoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 154. The muscles of the neck. The middle muscle. The suprahyoid

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The digastric muscle (M. digastric us)	Anterior belly: digastric fossa on the deep surface of symphysis menti of the mandible Posterior belly: mastoid process of temporal bone	Hyoid bone via intermediate tendon (see deep cervical fascia)	Opens the jaw when masseter and temporalis are relaxed (pull the mandible downward s)	Anterior belly: • Mylohyoid nerve • Branch of the posterior division of the mandibular division of the trigeminal nerve (CN V). Posterior belly: • Unnamed branch of the facial nerve (CN VII) Blood supply: Anterior belly: • Submental branch of the facial a. Posterior belly: • Occipital a.

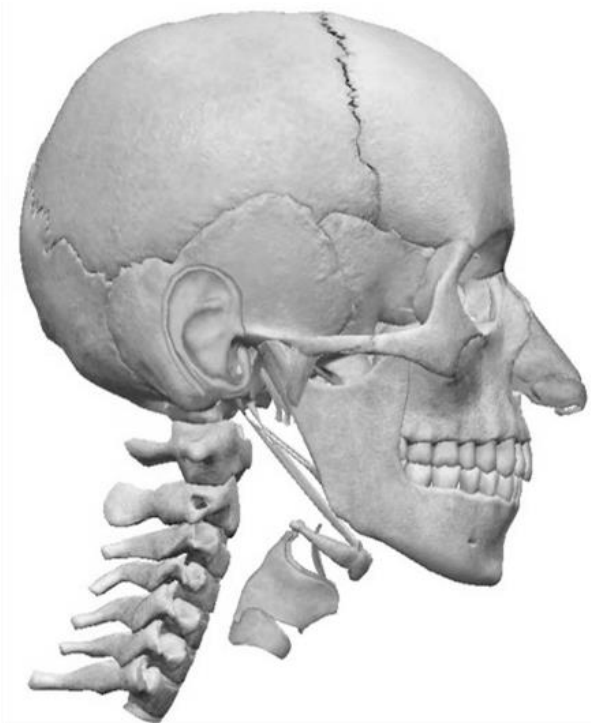

Fig. 154. Draw the digastric muscle (Origin – blue; Insertion – red; Action – arrow)

Table 155. The muscles of the neck. The middle muscle. The suprahyoid

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The stylohyoid muscle (M. stylohyoideus)	Styloid process of temporal bone	Body and great honor of the hyoid bone	Retracts and elevate hyoid bone, elevates the tongue	• Facial nerve (CN VII) Blood supply: • Occipital and facial aa.

Fig. 155. Draw the stylohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 156. The muscles of the neck. The middle muscle. The suprahyoid

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The mylohyoid muscle (M. mylohyoid eus)	Mylohyoid line/ridge on the medial surface of the mandible	The anterior surface of the hyoid bone.	Elevates the floor of the mouth (e.g. in swallowing or protruding the tongue)	• Mylohyoid nerve, a branch of the inferior alveolar nerve (CN V) Blood supply: • Sublingual branch of the lingual a. • Mylohyoid branch of the inferior alveolar a. • Submental branch of the facial a.

Fig. 156. Draw the mylohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 157. The muscles of the neck. The middle muscle. The suprahyoid

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The geniohyoid muscle (M. geniohyoideus)	Inferior mental spine of the mandible (genial tubercle)	Anterior surface of the body of the hyoid bone	• Paired muscle pull the hyoid bone and larynx up and forwards during swallowing; • When the hyoid bone is fixed geniohyoid acts to depress the mandible and open the mouth	• Anterior rami of C1 – C2 spinal nerve • Hypoglossal nerve <u>Blood supply:</u> • Sublingual branch of the lingual a. • Submental branch of the facial a.

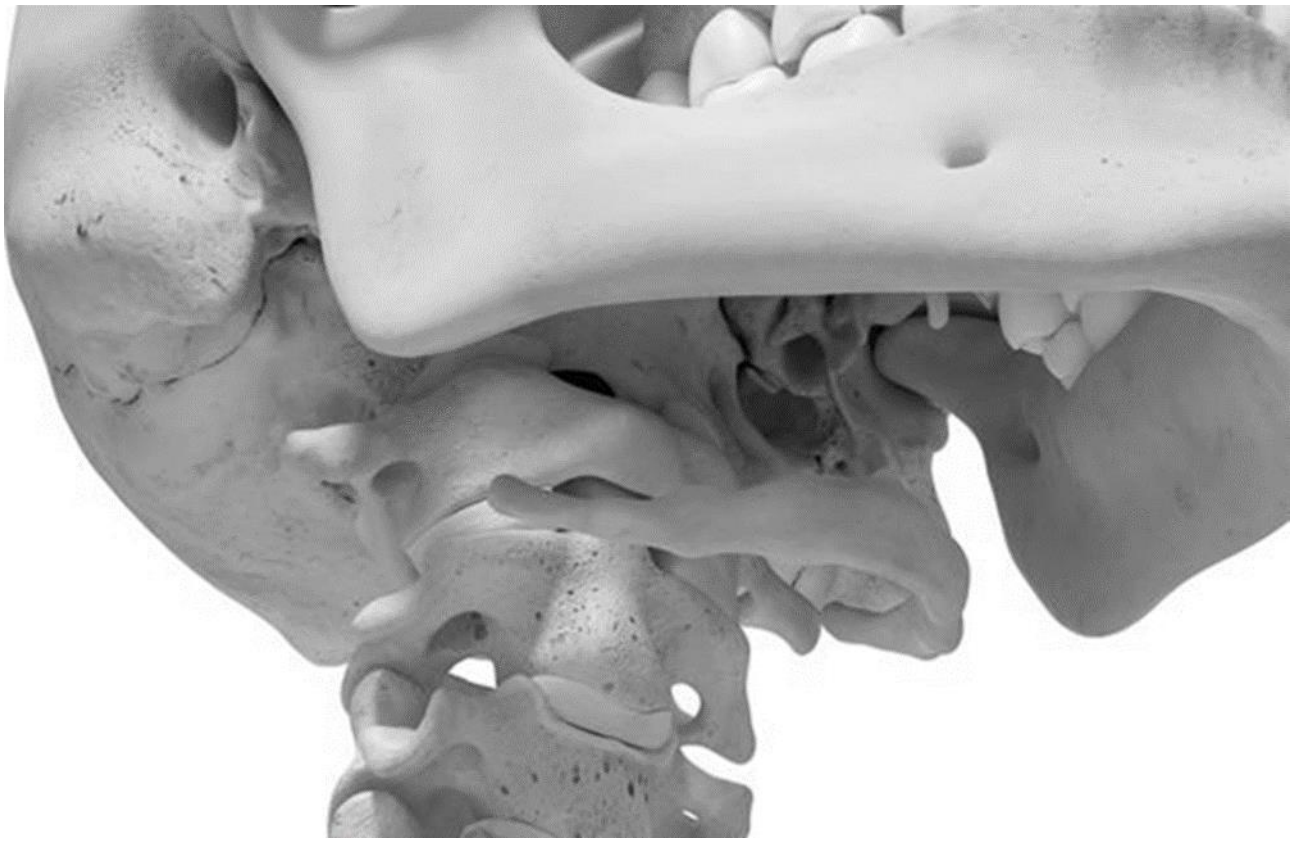

Fig. 157. Draw the geniohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 158. The muscles of the neck. The middle muscle. The infrahyoid group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The sternothyroid muscle (M. sternothyroid eus)	Posterior surface of the 1st costal cartilage and posterior surface of manubrium sterni.	The oblique line of the thyroid cartilage	Pull the larynx downwards	• Anterior rami of C1 - C3(4) spinal nerves of the cervical plexus Blood supply: • Inferior thyroid a. • Superficial cervical a. • Transverse cervical a.

Fig. 158. Draw the sternothyroid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 159. The muscles of the neck. The middle muscle. The infrahyoid group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The sternohyoid muscle (M. sternohyoid eus)	Posterior surface of the clavicle, the sternoclavicular joint and posterior surface of manubrium sterni.	Anterior surface of the body of the hyoid bone	Pull the hyoid bone downwards	• Anterior rami of C1 - C3(4) spinal nerves of the cervical plexus Blood supply: • Inferior thyroid a. • Superficial cervical a. • Transverse cervical a.

Fig. 159. Draw the sternohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 160. The muscles of the neck. The middle muscle. The infrahyoid group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The thyrohyoid muscle (M. thyrohyoideus)	The oblique line of the thyroid cartilage	The great honors of the hyoid bone	Pull the hyoid bone close to the larynx	• Anterior rami of C1 – C2 spinal nerves of the cervical plexus <u>Blood supply:</u> • Inferior thyroid a. • Superficial cervical a. • Transverse cervical

Fig. 160. Draw the thyrohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 161. The muscles of the neck. The middle muscle. The infrahyoid group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The omohyoid muscle (M. omohyoideus)	Transverse scapular ligament and superior border of scapula medial to the suprascapular notch	The lateral and inferior border of the hyoid bone	• Pull the hyoid bone close to the larynx • Depresses and fixes the hyoid bone • Draws the hyoid bone and underlying larynx downwards in phonation and the terminal phase of swallowing • Intermediate tendon of the muscle tenses overlying cervical fascia and maintains patency of the internal jugular vein	• Anterior rami of C1 – C2 spinal nerves of the cervical plexus <u>Blood supply:</u> • Inferior thyroid a. • Superficial cervical a. • Transverse cervical a.

Fig. 161. Draw the omohyoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 162. The muscles of the neck. The deep muscles. The lateral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The anterior scalene (M. scalenius anterior)	Anterior tubercles of the C3 - C6	The scalene tubercle of the fist rib.	• Pull the 1st rib upwards (when the vertebral column is fixed) • Unilateral contraction – flexes the cervical spine to the same side • Bilateral contraction - flexes the cervical spine forward.	• Anterior rami of C5-C7 spinal nerves of the brachial plexus <u>Blood supply:</u> • Inferior thyroidea aa. • Ascending cervical aa.

Fig. 162. Draw the anterior scalene (Origin – blue; Insertion – red; Action – arrow)

Table 163. The muscles of the neck. The deep muscles. The lateral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The medial scalene (M. scalenius medius)	Anterior tubercles of the C1 - C6	The anterior surface of the fist rib behind the groove for the subclavian artery.	• Pull the 1st rib upwards (when the vertebral column is fixed) • Unilateral contraction – flexes the cervical spine to the same side • Bilateral contraction - flexes the cervical spine forward.	• Anterior rami of C5-C8 spinal nerves of the brachial plexus <u>Blood supply:</u> • Deep cervical a. • Vertebral a.

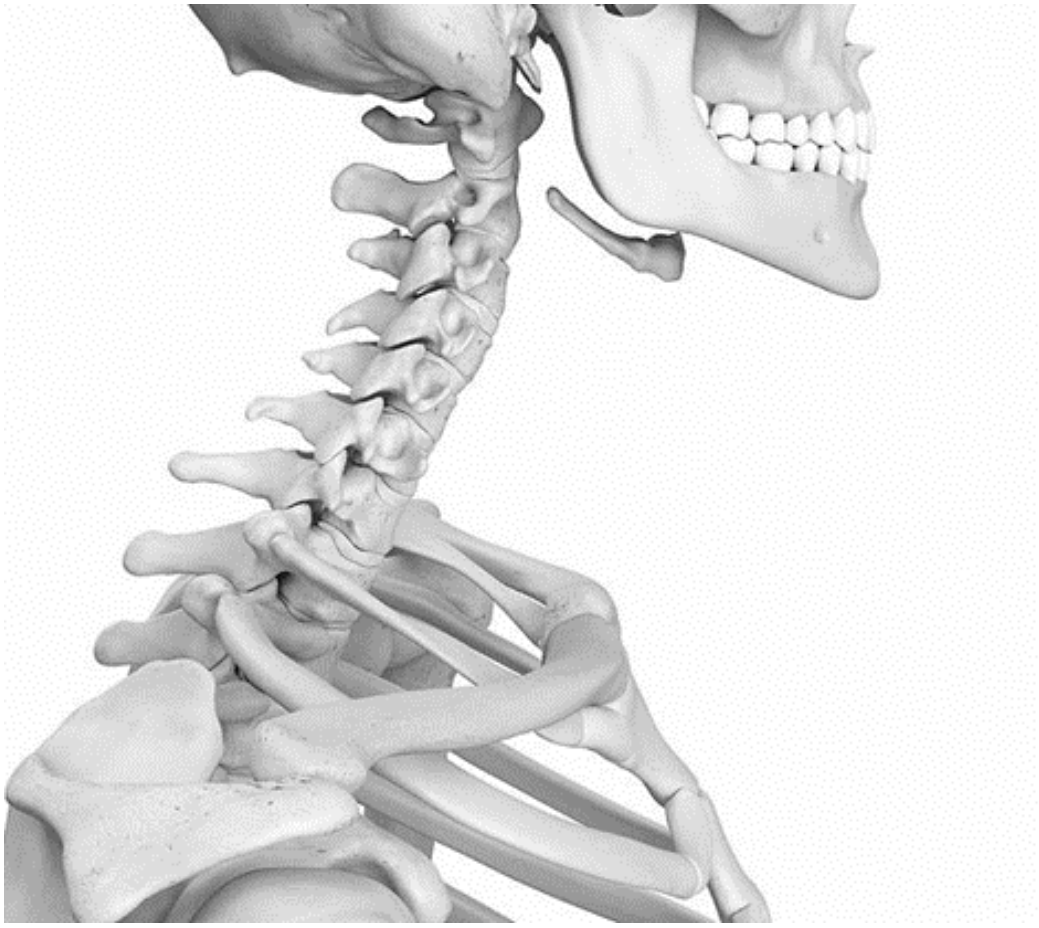

Fig. 163. Draw the medial scalene (Origin – blue; Insertion – red; Action – arrow)

Table 164. The muscles of the neck. The deep muscles. The lateral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The posterior scalene (M. scalenius posterior)	Posterior tubercles of the C5-C6	The external surface of the 2nd rib.	• Pull the 2 rib upwards (when the vertebral column is fixed) • Unilateral contraction - flexes the cervical spine to the same side • Bilateral contraction - flexes the cervical spine forward.	• Anterior rami of C7-C8 spinal nerves of the brachial plexus <u>Blood supply:</u> • Deep cervical a. • Vertebral a. • 1st intercostal aa.

Fig. 164. Draw the posterior scalene (Origin – blue; Insertion – red; Action – arrow)

Table 165. The muscles of the neck. The deep muscles. The prevertebral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The longus capitis muscle (M. longus capitis)	Anterior tubercles of the C3-C6	The inferior surface of the basilar part of the occipital bone.	Flex forward the head and cervical spine	• Anterior rami of C1-C8 spinal nerves s Blood supply: • Deep cervical a. • Vertebral a. • 1st intercostal aa.

Fig. 165. Draw the longus capitis muscle (Origin – blue; Insertion – red; Action – arrow)

Table 166. The muscles of the neck. The deep muscles. The prevertebral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The longus cervicis muscle (M. longus cervicis)	Mediovertical part - the bodies of the C6 – Th3 The superior oblique part - anterior tubercles of the transverse processes of the C2 – C5 The inferior oblique part - the anterior surface of the bodies of the Th3 - Th1	Mediovertical part - the anterior surface of the bodies of the C3 - C2, anterior tubercle of the atlas The superior oblique - the anterior surface of the bodies of the C2, anterior tubercle of the atlas. The inferior oblique part - anterior tubercles of the transverse processes of the C5 - C7	• Flex forward the cervical spine • Unilateral contraction – flexes the cervical spine to the same side	• Anterior rami of C2 - C6 spinal nerves Blood supply: • Ascending and deep cervical a. • Vertebral a. • 1st - 3d intercostal aa.

Fig. 166. Draw the medial pterygoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 167. The muscles of the neck. The deep muscles. The prevertebral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rectus capitis muscle (M. rectus capitis)	Anterior tubercles of the transverse processes and lateral mass of the atlas	The inferior surface of the basilar part of the occipital bone in front of the foramen magnum	• Flex forward the head • Unilateral contraction - flexes the head to the same side	• Anterior rami of C1 - C2 spinal nerves <u>Blood supply:</u> • Ascending pharyngeal a. • Vertebral a.

Fig. 167. Draw the medial pterygoid muscle (Origin – blue; Insertion – red; Action – arrow)

Table 168. The muscles of the neck. The deep muscles. The prevertebral group.

Muscle	Origin (start)	Insertion (finish)	Action	Innervation
The rectus cervicis muscle (M. rectus cervicis)	Anterior tubercles of the transverse processes	Jugular process of the occipital bone	• Bilateral contraction - flex forward the cervical spine • Unilateral contraction - flexes the cervical spine to the same side	• Anterior rami of C1 - C2 spinal nerves <u>Blood supply:</u> • Occipital a. • Vertebral a.

Fig. 168. Draw the medial pterygoid muscle (Origin – blue; Insertion – red; Action – arrow)

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