IMMANUEL KANT BALTIC FEDERAL UNIVERSITY
DEPARTMENT OF FUNDAMENTAL MEDICINE

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ANATOMY: MYOLOGY

Methodological recommendations for the students of medicine

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The manual is prepared according to requirements of the working program of the discipline “Anatomy” and contains methodical indications for the section Myology according to the existing curriculum. The manual is intended for the English-speaking students of medical faculty studying on specialties 31.05.01 “General medicine”.

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Topic 1

MUSCLES AND FASCIA OF THE HEAD. MUSCLES AND FASCIA OF THE NECK. NECK TOPOGRAPHY

INTRODUCTION TO THE TOPIC

There are 600 skeletal muscles in the human body. Skeletal muscles are the organs composed of striated muscle fibers, connective tissue, blood and lymph vessels and nerves.

Due to superficial localization, muscular system, especially the muscles of the head, the most frequently, compared to other organs, is subjected to mechanical and thermal effects (trauma, compression, myositis, burns, etc).

Knowledge of the muscular system is necessary to find the displaced bone fragments in case of fractures, to determine the location of vessels and nerves in different parts of the body during surgical interventions.

The neck muscles give mobility to the head; they are involved in the acts of swallowing, inspiration; they protect the subclavian artery and brachial plexus. Inflammation of the muscles, their injury, purulent lesions and surgery in the neck (thyroid gland, submandibular and sublingual glands, regional lymph nodes) require good knowledge of anatomy and the topography of the cervical muscles and fasciae.

Before studying the topic, you should know:

1. Anatomy of the skull bones.
2. The principles of the skeletal muscle work.
3. Anatomy of the hyoid bone, mandible, sternum, cervical vertebrae.
4. The types of the movements at the temporomandibular joints, intevertebral joints, atlantoaxial joints, atlantooccipital joints.

SELF-STUDY GOALS

After independently studying the topic, the student should know: the name of the masticatory and facial expression muscles in English and Latin, anatomy of these muscles on a corpse and a model, their projection on a living person.

When the topic material has been studied, the student must be aware of: the anatomy of the neck muscles: classification of muscles by origin and topogra-

phic location; English and Latin terminology of this topic; muscle attachment and function; neck topography; fascia of the neck (V. N. Shevkunenko); fascia of the neck. Be able to find the superficial, middle and deep muscles of the neck.

TOPIC CONTENT

- Muscles of mastication: masseter, temporal, lateral and medial pterygoid;
- Muscles surrounding the eye: procerus muscle, orbicularis oculi muscle, corrugator supercilii muscle.
- Muscles surrounding the mouth: orbicularis oris, levator labii superioris, levator anguli oris, zygomaticus major, zygomaticus minor, risorius muscle, buccalis, depressor anguli oris, depressor labii inferioris, mental muscle.
- Muscles of the circumference of the nose.
- Muscles of the cranial vault.
- Fascia of the head. Head spaces.
- Classification of the neck muscles by origin: derivatives of the 1st visceral arch — venter anterior m. digastrici, m. mylohyoideus; derivatives of the 2nd visceral arch — venter posterior m. digastrici, m. stylohyoideus; derivatives of the 3rd branchial arch — the m. sternocleidomastoideus; autochthonous muscles: anterior group — geniohyoid, sternohyoid, sternothyroid, thyrohyoid, and omohyoid muscles; prevertebral group of muscles — longus capitis, longus colli, rectus capitis lateralis and rectus capitis anterior muscles.
- Classification by topographic location: superficial (platisma, sternocleidomastoid), middle — muscles lying above the hyoid bone (mylohyoid, stylohyoid, digastric muscle, geniohyoid); muscles lying below the hyoid bone (sternothyroid, thyrohyoid, sternohyoid, omohyoid); deep — lateral (anterior, middle, posterior scalene) and prevertebral (longus colli, longus capitis, rectus capitis lateralis and rectus capitis anterior muscles).
- Topography of the neck; anterior, sternocleidomastoid, lateral and posterior regions. In the anterior region, the following are distinguished: the submandibular fossa, the carotid triangle, the submandibular triangle, the Pirogov triangle and the omotracheal triangle. In the lateral region there are: omoclavicular and omotrapezoid triangles. There are two spaces between the scalene muscles: interscalen and antescalen.
- Fascia of the neck (by Shevkunenko):

I. superficial fascia of the neck;
II. superficial layer of the proper cervical fascia;
III. deep layer of the proper cervical fascia;
IV. endocervical fascia;
V. prevertebral fascia.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	Find the corresponding muscles on the corpse, and find bony projections (tubercles, tubers, crests) on the skeleton
Revise the appropriate textbook chapters on the relevant bones	—
Revise the studied material while showing muscles on the preparation	When revising the topic, check the following: • English and Latin names of the muscle • the place of attachment of the muscle • muscle functions
Group the studied muscles according to the functional principle	Differentiate between synergistic muscles (flexors, extensors, abductors, adductors, etc.) and antagonist muscles
Determine the location of the studied muscles on yourself and check their function.	The action of the muscles is checked due to the characteristics of the joint on which they act (flexors, extensors, etc.)
Check the possible movements in this joint, determine the axes of these movements	Given the shape of the joint and the number of movement axes, check the movements on the frontal, sagittal and vertical axes
Write down new Latin terms	Write the terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. Classification of the muscular tissue. Difinition of the muscle as an organ.
2. Describe the internal and external structure of the muscle (the muscle fibers, fibrils, connective tissue layers surrounding the muscle fibers); the muscle attachment.
3. Describe the function of the skeletal muscles.
4. What muscle forms do you know?
5. Give all the classifications of the muscles (according to different principles).

6. How does a muscle work?
7. Enumerate the accessory apparatus of a muscle.
8. What is the fascia? Explain its functions.
9. Give the head muscles classification by the localisation and functions.
10. What special features of the facial expresion muscles do you know?
11. Name these groups of the facial expresion muscles.
12. Describe the epicranius muscle (position, bellies, places of attachment, functions).
13. Describe galea aponeurotica location, its attachment, functions, connection with the skull periosteum and skin.
14. Describe the auricular muscles.
15. Enumerate the muscles surrounding the eyes: origination, insertion, functions of each of them.
16. Describe the nasal muscles: origination, insertion, functions.
17. Enumerate the muscles surrounding the mouth: give the explanation of their attachment and functions.
18. Which muscles help to open the eyes?
19. Which muscle contraction close the eyes gently?
20. Which muscle contraction help to close the eyes tightly?
21. What parts of orbicularis oculi muscle do you know?
22. Describe the functions of all the orbicularis oculi muscle parts.
23. Which muscles change the diameter of nostrils (expand/narrow them)?
24. Which muscle presses the lips to each other/protrudes them forward?
25. Which muscle pulls the upper lip upward?
26. Which muscles produce the expression of anger?
27. Which muscle elevates the angle of the mouth?
28. Which muscles pulls the lower lip inferiorly?
29. Which muscle depresses the angle of the mouth?
30. Which muscle pulls the lower lip up and presses it to the teeth?
31. Which muscles produce the expression of disgust?
32. Which muscle forms the thickness of the lips?
33. Which muscles produce the expression of sorrow?
34. Which muscle forms the thickness of the cheek?
35. What duct lies on the masseter muscle surface and perforates the thickness of m. buccinator?
36. Which part of muscle give the face the expression of surprise?
37. Which muscles produce the expression of laughter?
38. Is risorius muscle constant?
39. Name the muscles of mastication.
40. Explain the localisation, places of origination, insertion and functions of the masticatory muscle.

41. Which muscles provide the protraction of the lower jaw?
42. Which muscles move the mandible backward (retraction)?
43. Which muscles of the lower jaw move it to right/left side?
44. Which musclesof mastication close the mouth?
45. Which muscles of the neck open the mouth?
46. Name the head fasciae.
47. Describe the head fasciae attachment.
48. Name and describe walls and contents of the head fascial spaces.
49. How the head fasciae communicate with the different skull areas and cavities?
50. Enumerate the regions of the neck.
51. Explane the neck regions boundaries.
52. Give the cervical muscles classification by the location and origin.
53. Enumerate the superficial neck muscles.
54. Describe the superficial neck muscles attachment and action.
55. Name suprahyoid and infrahyoid muscles.
56. Describe the origination, attachment, action of suprahyoid muscles.
57. . Explain the origination, attachment, action of infrahyoid muscles.
58. Enumerate the deep neck muscles according their localization (lateral group, medial group, suboccipital group).
59. Describe the function of each deep cervical muscle.
60. Enumerate the muscles of the oral cavity floor. Describe their practical significance.
61. Which neck muscle protects the superficial cervical veins from compression?
62. Which cervical muscles fix the hyoid bone during the swallowing?
63. Which cervical muscles pull the larynx downward during the swallowing?
64. Which bilateral neck muscles contraction bend the head and neck forward?
65. Which unilateral cervical muscles contraction bend the neck to the righ/left sides?
66. Which cervical muscles move the neck backward?
67. Which neck muscles move the head backward?
68. Which cervical muscles help in rotation the head and neck to the sides?
69. Which neck muscles act on the atlantooccipital joint?
70. Which neck muscles act on the atlantoaxial joint?
71. Which cervical muscles work as the accessory muscles of inspiration? When they function as the inspiratory muscles?
72. Describe the cervical triangles. Name the muscles that form the borderlines of each of them.

73. Name the cervical fasciae (use the classification by Shevkunenko).
74. What layers of the proper cervical fasciae do you know?
75. Enumerate the muscles invested by the proper cervical fascia layers.
76. Describe the topography of the two proper cervical fascia layers.
77. What visceral organs are in the cervical cavity?
78. Describe the disposition of visceral and parietal layers of the endocervical fascia.
79. Name the nerve and vessels which are covered by the endocervical fascia parietal layer.
80. Name the muscles that covered by the prevertebral cervical fascia.
81. Enumerate the fat containing spaces of the neck.
82. Explain the topography of the cervical spaces.
83. Describe the content and communications of the fascial cervical spaces.
84. What is the clinical importance of the interfascial neck spaces?
85. What are the borderlines of the interscalene space?
86. What are the boundaries of the antescalene space?
87. What do the interscalene space contain?
88. What do the antescalene space contain?
89. Describe the previsceral space and its connections.
90. Describe the retrovisceral space and its connections.

PRACTICAL SKILLS

Head

1. Epicranius, *epicranius*; надчерепная мышца:
• occipitofrontalis, m. occipitofrontalis; затылочно-лобная мышца;
• temporoparietalis, m. temporoparietalis; височно-теменная мышца.
2. Anterior auricular, superior auricular, posterior auricular muscles, *auriculares anterior*, *superior et posterior*; передняя ушная, верхняя и нижняя ушная мышца.
3. Corrugator supercilii, *corrugator supercilii*; мышца сморщивающая бровь.
4. Procerus, *procerus*; мышца гордецов.
5. Orbicularis oculi, *orbicularis oculi*; круговая мышца глаза:
• lacrimal part, *pars lacrimalis*; слезная часть;
• palpebral part, *pars palpebralis*; вековая часть;
• orbital part, *pars orbitalis; глазничная часть.*
6. Nasalis, *nasalis*; носовая мышца:
• transverse part, *pars transversa*; поперечная часть;

• alar part, *pars alari*s, крыльная часть;

• *depressor septi nasi,* мышца опускающая перегородку носа.

7. Orbicularis oris, *orbicularis oris*, круговая мышца рта:

• labial part, *pars labialis*; губная часть;

• marginal part, *pars marginalis*; краевая часть.

8. Levator labii superioris, *levator labii superioris*; мышца поднимающая верхнюю губу.

9. Zygomaticus major, *zygomaticus major*; большая скуловая мышца.

10. Zygomaticus minor, zygomaticus minor; малая скуловая мышца.

11. Risorius, *risorius*; мышца смеха.

12. Depressor anguli oris, *depressor anguli oris*; мышца опускающая угол рта.

13. Levator anguli oris, *levator anguli oris*; мышца поднимающая угол рта.

14. Depressor labii inferioris, *depressor labii inferioris*; мышца опускающая нижнюю губу.

15. Mentalis, *mentalis*; подбородочная мышца.

16. Buccinator, *buccinator*; щечная мышца.

17. Masseter, *masseter*; жевательная мышца.

18. Temporalis, *temporalis*; височная мышца.

19. Lateral pterygoid, *pterygoideus lateralis*; латеральная крыловидная мышца.

20. Medial pterygoid, *pterygoideus medialis*; медиальная крыловидная мышца.

Neck

1. Platysma, *platysma*; подкожная мышца шеи.

2. Sternoclieidomastoid, *sternocleidomastoideus*; грудино-ключично-сосцевидная мышца.

3. Omohyoid, *omohyoideus*; лопаточно — подъязычная мышца.

4. Sternohyoid, *sternohyoideus*; грудино — подъязычная мышца.

5. Strenothyroid, *sternothyroideus*; грудино — щитовидная мышца.

6. Thyrohyoid, *thyrohyoideus*; щито — подъязычная мышца.

7. Genioglossus, *genioglossus*; подбородочно — язычная мышца.

8. Hyoglossus, *hyoglossus*; подъязычно — язычная мышца.

9. Styloglossus, *styloglossus*; шилоязычная мышца.

10. Stylopharyngeus, *stylopharyngeus*; шилоглоточная мышца.

11. Digastric, *digastricus*; двубрюшная мышца.

12. Stylohyoid, *stylohyoideus*; шилоподъязычная мышца.

13. Mylohyoid, *mylohyoideus*; челюстно-подъязычная мышца.

14. Geniohyoid, *geniohyoideus*; подбородочно-подъязычная мышца.

15. Anterior scalene, *scalenus anterior*; передняя лестничная мышца.

16. Middle scalene, *scalenus medius*; средняя лестничная мышца.

17. Posterior scalene, *scalenus posterior*; задняя лестничная мышца.

18. Longus colli, *longus colli*; длинная мышца шеи.

19. Longus captis, *longus capitis*; длинная мышца головы.

20. Rectus capitis anterior, *rectus capitis anterior*; передняя прямая мышца головы.

21. Rectus capitis lateralis, *rectus capitis lateralis*; латеральная прямая мышца головы.

22. Rectus capitis posterior major, *rectus capitis posterior major*; большая задняя прямая мышца головы.

23. Rectus capitis posterior minor, *rectus capitis posterior minor*; малая задняя прямая мышца головы.

24. Obliquus capitis superior, *obliquus capitis superior*; верхняя косая мышца головы.

25. Obliquus capitis inferior, *obliquus capitis inferior*; нижняя косая мышца головы.

26. Anterior region of neck, *regio cervicalis anterior*; передний треугольник шеи.

27. Sternocleidomastoid region of neck, *regio sternocleidomastoidea;* грудино-ключично-сосцевидная область шеи.

28. Lateral region of neck, *regio cervicalis lateralis*; латеральная область шеи.

29. Posterior region of neck, *regio cervicalis posterior*; задняя область шеи.

30. Lateral cervical triangle, *trigonum colli laterale*; латеральный треугольник шеи.

31. Medial cervical triangle, *trigonum colli mediale*; медиальный треугольник шеи:

• Carotid triangle, (*trigonum caroticum*); сонный треугольник;

• omotracheal, *trigonum omotracheale*; лопаточно-трапециевидный треугольник;

• submandibular, *trigonum submandibulare*; поднижнечелюстной треугольник;

• Pirogov`s triangle; треугольник Пирогова;

• retromandibular fossa, *fossa retromandibularis; позадичелюстная ямка.*

Literature

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6. *Lecture* material.

Topic 2

MUSCLES AND FASCIAE OF THE BACK, CHEST. DIAPHRAGM. MUSCLES AND FASCIAE OF THE ABDOMEN. WEAK PLACES OF THE ADOMEN. INGUINAL CANAL

INTRODUCTION TO THE TOPIC

To know the anatomy of the back muscles is important to study the next anatomy topics. To know the attachment of the back muscles and their action is necessary for traumatologists to determine the variants of the bony fragment displacement in case of fracture of shoulder girdle bones, spine and ribs and choose the treatment tactic.

Chest muscles play very important functional role in prosess of breathing. Some chest muscles are attached to the shoulder girdle bones and humerus providing their movements.

To know anatomy of the chest muscles is necessary in clinical practice: during surgery in the thoracic cavity; to understand the mechanisms of shoulder joint dislocation and tactics of their reposition; to determine the variants of the bony fragment displacement in case of fracture of shoulder girdle bones and humerus.

The diaphragm does not only separate thoracic and abdominal cavities but also serves as a main respiratory muscle. The great vessels (aorta and inferior vena cava), thoracic duct, esophagus, sympathetic trunk and splanchnic nerves pass through the diaphragm. The surgical treatment in case of diaphragmatic hernias requires good knowledge of the diaphragm structure.

Abdominal muscles form the walls of the abdominal cavity. They bend the spine, and they are involved in respiration. All doctors, especially surgeons, obstetricians, gynecologists and general practitioners often have to meet the pathology of the anterior abdominal wall and pathology of abdominal organs.

Doctors need to know the “weak” places of the abdominal walls to understand the hernia formation and location because hernias often require urgent surgery.

Before studying the topic, you need to know:

1. The principles of the muscle work.

2. The structure of the thorax, vertebral column, pelvic bones, humerus, scapula.

3. The types of the movements at the intervertebral, sternocostal, costovertebral joints, shoulder joints, sternoclavicular and acromioclavicular joints.

SELF-STUDY GOALS

After independently studying the topic, the student should know: the anatomy of the occipital region, back, chest, abdominal muscles, their points of attachment and functions; know the structure of the diaphragm, its openings and the formations passing through them; fasciae of the back and chest, sheath of rectus abdominis muscle. The student should know the walls of the inguinal canal, borderlines of superficial and deep inguinal rings; content of the inguinal canal; folds of anterior abdominal wall peritoneum; know weak points of the anterior, superior, posterior abdominal walls (linea alba, umbilical region, lumbar triangles, diaphragmatic triangles.

TOPIC CONTENT

- Anatomy of the muscles of the back and occipital region, fasciae.
- Superficial back muscles — trapezius, latissimus, rhomboids, levator scapulae, superior and inferior serratus posterior muscles.
- Deep back muscles: autochthonous — splenius muscles, lateral tract: erector spinae muscle (iliocostal, longissimus, spinalis); medial tract (semispinalis, multifidus, rotators), interspinous; deep muscles of ventral origin: the levator rib muscle, the anterior intertransverse muscles of the neck and the lateral intertransverse muscles of the lumbar region; muscles of the occipital region — the superior and inferior oblique muscles of the head, the major and minor rectus muscles.
- Fasciae of the back.
- Autochthonous muscles of the chest and their functions.
- The muscles of the chest, related to the bones of the upper limb, their functions.
- Diaphragm: structure, topography and functions.
- Muscles of inhalation and exhalation.
- Fasciae of the chest.
- Abdominal muscles: lateral muscles (external oblique, internal oblique, transverse); anterior muscles (rectus; pyramidal); posterior muscles (quadratus lumborum).
- Rectus sheath: above the navel; below the navel; linea alba.

- Abdominal press (participates in flexion of the spine and torso, produces lateral movements, rotates the spine; participates in respiratory movements, physiological functions).
- Formation and contents of the inguinal canal.
- The walls of the inguinal canal (superior — lower borders of the internal oblique and transverse abdominal muscles, inferior — inguinal ligament, anterior — aponeurosis of the external oblique abdominal muscle, posterior — transverse fascia,).
- Superficial inguinal ring: medial and lateral crus of the inguinal ligament, reflected ligament, intercrural fibers.
- Deep inguinal ring: inguinal falx, transverse fascia.
- Lumbar triangle and space, linea alba, diaphragm triangles.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	Find the corresponding muscles on the corpse, and find bony projections (tubercles, tubers, crests) on the skeleton
Revise the appropriate textbook chapters on the relevant bones	—
Revise the studied material while showing muscles on the preparation	When revising the topic, check the following: • English and Latin names of the muscle • the place of attachment of the muscle • muscle functions
Group the studied muscles according to the functional principle	It is necessary to differentiate synergistic muscles (flexors, extensors, abductors, adductors, etc.) and antagonist muscles
Determine the location of the studied muscles on yourself and check their function	The action of the muscles is checked due to the characteristics of the joint on which they act (flexors, extensors, etc.)
Check the possible movements in this joint, determine the axes of these movements	Given the shape of the joint and the number of movement axes, check the movements on the frontal, sagittal and vertical axes
Write down new Latin terms	Write the terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. Give the classification of the back muscles according to the location and origin.
2. Enumerate the superficial muscles of the back.
3. Describe the origination and insertion of the superficial back muscles.
4. Describe the functions of superficial back muscles.
5. Which of the back muscles attached to the upper limb do you know?
6. Enumerate muscles of the back that pronate the humerus.
7. Which of the back muscles attached to the ribs do you know?
8. Which of the deep back muscles do you know?
9. Describe the position, attachment, functions of the short deep back muscle.
10. Describe the position, attachment, functions of the long deep back muscle.
11. Which back muscles act as adittional muscles of inspiration?
12. Which muscle of the back move the scapula upward, downward, medialy?
13. Which muscles of the back bend the head and neck backward?
14. Which muscles of the back bend the neck to the left/right side?
15. Enumerate the back muscles that rotate the neck.
16. Enumerate the back muscles which rotate the vertebral column to sides.
17. Enumerate the back muscles which extend the vertebral column.
18. Which muscles of the back bend the vertebral column to the right/left side?
19. Describe the muscles of the back in layers sequentially from deep to superficial.
20. What are the back fasciae do you know?
21. Give the information about the layers of the proper back facia (position, attachment).
22. What is the function of the erector spinae muscle?
23. Explain the borderlines of the lumbar (Lestfaft's) rhombus.
24. Describe the boundaries of the lumbar triangle (Pty's triangle).
25. Explain their clinical importance of the lumbar triangle and rhombus. Why are they called the 'weak' places of the back?
26. Give the classification of the chest muscles.
27. Which truncipetal muscles of the chest do you know?
28. Which truncifugal muscles of the chest do you know?
29. Which of the chest muscles attach to the upper limb?
30. Enumerate the proper chest muscles.
31. What are the proper chest muscles functions?

32. What are the functions of the chest muscles attached to the upper limb?
33. Describe the localization, origination and insertion of the chest muscles related to the upper limb.
34. Explain the position, points of attachmen of each proper chest muscle. Describe the functions of these muscles.
35. Which chest muscles can move the scapula?
36. Which chest muscles move the clavicle?
37. Which chest muscles can move the humerus?
38. Which chest muscles can move the ribs?
39. Name the inspiratory muscles.
40. Name the expiratory muscles.
41. Enumerate the chest fasciae.
42. Explain the topography of the proper pectoral fascia layers.
43. Describe the relations of the pectoral fasciae to the mammary gland.
44. Explain the topography of the endothoracic fascia.
45. Describe the boundaries and explain the significance of 3 the pectoral triangles.
46. Give the abdominal muscles classification.
47. Name the anterior abdominal muscles.
48. Name the lateral abdominal muscles.
49. What muscle of posterior group do you know?
50. Give the information about the origination, attachment, direction of muscular fibres, functions of anterior abdominal muscles.
51. Give the information about the origination, attachment, direction of muscular fibres, functions of lateral abdominal muscles.
52. Describe the attachment and functions of the quadratus lumborum muscle.
53. Which abdominal muscles move the vertebral column?
54. What is the prelum abdominale?
55. Which muscles form the intraabdominal pressure?
56. What is the significans of prelum abdominale?
57. What fasciae are in the abdominal cavity?
58. Give the information about proper abdominal fascia: its layers and their location.
59. Where are the intercrural fibers located? Where is their origin? What is between them?
60. Describe the endoabdominal fascia position.
61. Name the layers of the anterior abdominal wall in order beginning from the skin.
62. Name the layers of the lateral abdominal wall.
63. Name the layers of the posterior abdominal wall.

64. Which abdominal cavity walls do you know?
65. Name all the “weak points” of the abdominal walls.
66. Why these places of the abdominal walls are called “weak points”?
67. What is the “weak points” clinical importance?
68. Give the definition and components of the hernia.
69. How and why can the hernia be formed?
70. Enumerate the causes and risk factors of herniation.
71. Describe the formation of the musculus rectus abdominis sheath.
72. What are the differences between the layers of the rectus abdominis muscle sheath above the navel and 3—4 cm below it?
73. Explain the formation and position of the arcuate line.
74. Describe the formation and properties of white line (linea alba) above and below the navel.
75. Where is the canalis inguinalis situated?
76. What is the direction of the inguinal canal?
77. What is the length of the inguinal canal?
78. How many walls does the inguinal canal have?
79. Describe the anterior, posterior, inferior, superior walls of the canalis inguinalis
80. Describe the borderlines of the superficial inguinal ring.
81. Where can the superficial inguinal ring be palpated?
82. What is the normal size of the superficial inguinal ring?
83. Where is the deep inguinal ring located?
84. Give the characteristic of the deep inguinal ring boundaries.
85. What does the inguinal canal contain in males?
86. What does the inguinal canal contain in females?
87. Is the male inguinal canal wider then female?
88. Why do the inguinal hernias occur more often in males than in females?
89. What are borderlines of the lumbar rhombus (Lesgaft’s)?
90. What are the borderliness of the lumbar triangle (Pty’s)?
91. Where are the muscular parts of the diaphragm situated?
92. Where is the location of the diaphragmal tendinous center?
93. What muscular parts of the diaphragm are distinguished?
94. Describe the weak points of the diaphragm.
95. What legs of the diaphragm do you know?
96. Describe the formation and topography of the aortic and oesophageal diaphragmatic orifices.
97. What tissue forms the boundaries of the aortic and esophageal openings?
98. Why cannot the aorta be compressed by the muscle fibers of the diaphragm during diaphragm contraction?

99. What structures pass together with the esophagus through the esophageal hiatus?

100. What structure passes together with the aorta through the aortic opening?

101. Describe the slits between diaphragmatic crura.

102. What opening of the tendinous center do you know? What does it contain?

103. Which organs of thoracic and abdominal cavity adjoin the diaphragm?

104. What are the diaphragmal triangles filled with?

105. Why the sternocostal ang lumbocostal triangles are termed "weak points" of the diaphragm?

106. Using the previous topics, name all the muscles of inspiration: main respiratory muscles, accessory respiratory muscles.

107. Using the previous topics, name all the muscles of expiration.

PRACTICAL SKILLS

Muscles and topography of back

1. Trapezius, *trapezius*; трапецевидная мышца.
2. Latissimus dorsi, *latissimus dorsi*; широчайшая мышца спины.
3. Levator scapulae, *levator scapulae*; мышца поднимающая лопатку.
4. Rhomboid major, *rhomboideus major;* большая ромбовидная мышца.
5. Rhomboid minor, *et m. rhomboideus minor*; малая ромбовидная мышца.
6. Serratus posterior superior, *serratus posterior superior*; верхняя задняя зубчатая мышца.
7. Serratus posterior inferior, *serratus posterior inferior*; нижняя задняя зубчатая мышца.
8. Splenius cervicis, *splenius cervicis*; ременная мышца шеи.
9. Splenius capitis, *splenius capitis*; ременная мышца головы.
10. Erector spinae, *erector spinae*; мышца выпрямляющая позвоночник:
- iliocostalis, *iliocostalis*; подвздошно-реберная мышца;
- longissimus, *longissimus*; длиннейшая мышца;
- spinalis, *spinalis*; остистая мышца.

11. Transversospinales, *transversospinales*; поперечно-остистая мышца.
12. Interspinales cervicis, thoracis and lumborum, *interspinales cervicis*, *thoracis*, *lumborum;* межостистые мышцы шеи, грудной клетки, поясницы.
13. Intertransversarii, *intertransversarii*; межпоперечные мышцы.
14. Lumbar triangle, *trigonum lumbale*; поясничный треугольник.
15. Lumbar rhombus, *rhombus lumbalis; поясничный ромб.*

Muscles and topography of chest

1. Pectoralis major, *pectoralis majo;* большая грудная мышца.
2. Pectoralis minor, *pectoralis minor*; малая грудная мышца.

3. Serratus anterior, *serratus anterior*; передняя зубчатая мышца.

4. Subclavius, *subclavius*; подключичная мышца.

5. External intercostal muscles, *intercostales externi*; наружные межреберные мышцы.

6. Levatores costarum, *levatores costarum*; мышцы поднимающие ребра.

7. Internal intercostal muscles, *intercostales interni*; внутренние межреберные мышцы.

8. Subcostales, *subcostales*; подреберные мышцы.

9. Transversus thoracis, *transversus thoracis*; поперечная мышца груди.

10. Clavipectoral triangle, *trigonum clavipectorale*; грудино-ключичный треугольник.

11. Pectoral triangle, *trigonum pectorale*; грудиой треугольник.

12. Subpectoral triangle, *trigonum subpectorale*; подгрудной трегольник.

Muscles and topography of abdomen

1. Rectus abdominis, *rectus abdominis*; прямая мышца живота.

2. Pyramidalis, *pyramidalis*; пирамидальная мышца.

3. External oblique muscle of abdomen, *obliquus externus abdominis*; наружная косая мышца живота.

4. Internal oblique muscle of abdomen, *obliquus internus abdominis*; внутренняя косая мышца живота.

5. Transversus abdominis, *transversus abdominis*; поперечная мышца живота.

6. Quadratus lumborum, *quadratus lumborum*; квадратная мышца поясницы.

7. Superficial inguinal ring, *anulus inguinalis superficialis*; поверхностное паховое кольцо.

8. Deep inguinal ring, *anulus inguinalis profundus*; глубокое паховое кольцо.

9. White line, *linea alba*; белая линия.

10. Umbilical ring, *anulus umbilicalis*; пупочное кольцо.

Diaphragm

1. Central tendon, *centrum tendineum*; сухожильный центр.

2. Muscular part; мышечная часть.

3. Sternal part of the diaphragm, *pars sternalis diaphragmae*; грудинная часть диафрагмы.

4. Costal part of the diaphragm, *pars costalis diaphragmae*; реберная часть диафрагмы.

5. Lumbar part of the diaphragm, *pars lumbalis diaphragmae*; поясничная часть диафрагмы.

6. Medial crus, *crus mediale*; медиальная ножка.

7. Intermediate crus, *crus intermedium*; промежуточная ножка.

8. Lateral crus, *crus laterale*; латеральная ножка.

9. Median arcuate ligament, *ligamentum arcuatum medianum*; срединная дугообразная связка.

10. Medial arcuate ligament, *ligamentum arcuatum mediale*; медиальная дугообразная связка.

11. Lateral arcuate ligament, *ligamentum arcuatum laterale*; латеральная дугообразная связка.

12. Aortic hiatus, *hiatus aorticus*; аортальное отверстие.

13. Oesophageal hiatus, *hiatus oesophageus*; пищевое отверстие.

14. Caval opening, *foramen venae cavae inferioris*; отверстие нижней полой вены диафрагмы.

15. Sternocostal triangle, *trigonum sternocostale*; грудино-реберный треугольник.

16. Lumbocostal triangle, *trigonum lumbocostale;* пояснично-реберный треугольник.

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6. *Lecture* material.

Topic 3

MUSCLES AND FASCIAE OF THE SHOULDER GIRDLE, UPPER ARM, FOREARM AND HAND. TOPOGRAPHY OF THE UPPER LIMB

INTRODUCTION TO THE TOPIC

The muscles of the shoulder girdle and upper arm provide the movements in the shoulder and elbow joints. The muscle or joint diseases lead to disorders of movements in these joints. In turn, the muscle inactivity causes the pathological changes in the muscles that worsens the disease process.

To decide on a correct diagnosis, understand the pathogenesis of the disease and to treat successfully, a doctor must know the anatomy and function of the shoulder girdle and upper arm muscles. The knowledge of the structure of these muscles is necessary to determine the way of humeral fragments in fractures.

For the correct diagnostics of diseases or injuries of forearm and hand muscles, as well as for determining the displacement of bone fragments in fractures, and for correct treatment of fractures, a doctor should know the anatomy and function of these muscles.

A good knowledge of topographical anatomy of upper limb is very helpful in understanding the innervation of the upper limb muscle, finding the arterie, veinss and nerves, passing in the muscular canals and grooves formed by these muscles.

Before studying the topic, you should know:

1. The principles of the muscle work.
2. The structure of the humerus, radius, ulna, bones of hand.
3. The types of the movements at the shoulder, elbow, radioulnar, wrist joints and joints of hand.

SELF-STUDY GOALS

After independently studying the topic, the student should know: the muscles of the shoulder girdle, their points of attachment and function, the topography of the axillary region (axillary fossa, its borders; axillary cavity, its walls), the topography of the upper arm (humeromuscular canal, bicipitaal grooves, cubital fossa).

Having stugied the topic independently, the student should be aware of: the muscles of the forearm, their points of fixation and function; muscles of the hand, points of their fixation and function; topography of the forearm (ulnar, radial and middle grooves); topography of the hand (carpal canal, grooves), synovial sheaths of the hand.

TOPIC CONTENT

- Muscles of the shoulder girdle — ventral group: subscapularis muscle; coracobrachialis muscle. Dorsal group: deltoid muscle; supraspinatus muscle; infraspinatus muscle; teres minor; teres major.
- Upper arm muscles — anterior group (flexors): biceps brachii; brachialis muscle; posterior group (extensors): triceps brachii; anconeus muscle.
- The axillary fossa, its borderlines.
- The axillary cavity, its walls: medial, lateral, anterior; posterior.
- Boundaries of foramen quadrilaterum, trilaterum, their contant.
- Triangles of the anterior chest wall — claviopectoral, pectoral, subpectoral.
- Upper arm topography: canalis humeromuscularis, sulcus bicipitalis medialis and lateralis.
- Forearm muscles — anterior group: 1st layer: pronator teres; flexor carpi radialis; palmaris longus; flexor carpi ulnaris;
- 2nd layer: flexor digitorum superficialis;
- 3rd layer: flexor pollicis longus; flexor digitorum profundus;
- 4th layer: pronator quadratus.
- Posterior group of the forearm muscles. Superficial layer, radial subgroup: brachioradialis muscle; extensor carpi radialis longus; extensor carpi radialis brevis. Superficial layer, ulnar subgroup: extensor digitorum; extensor digiti minimi; extensor carpi ulnaris; Deep posterior forearm muscles: supinator; abductor pollicis longus, extensor pollicis brevis; extensor pollicis longus; extensor indicis.
- Muscles of the hand. Eminence of the thumb (thenar): abductor pollicis; flexor pollicis brevis; opponens pollicis; adductor pollicis muscle. Eminence of the little finger (hypothenar): palmaris brevis; abductor digiti minimi muscle; opponens digiti minimi. Middle muscle group of the hand: lumbricals; palmar inrerosseous, dorsal interosseous.
- Walls of the cubital fossa.
- Ulnar, radial and median grooves of the forearm.
- Three channels of the wrist joint palmar surface — radial carpal, ulnar carpal, carpal tunnel.
- Six osteofibrous canals of the wrist joint dorsal surface.
- Formation of the hand synovial sheaths.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	Find the corresponding muscles on the corpse, and find bony projections (tubercles, tubers, crests) on the skeleton
Revise the appropriate textbook chapters on the relevant bones	—
Revise the studied material while showing muscles on the preparation	When revising the topic, check the following: • English and Latin names of the muscle • the place of attachment of the muscle • muscle functions
Group the studied muscles according to the functional principle	Differentiate between synergistic muscles (flexors, extensors, abductors, adductors, etc.) and antagonist muscles
Determine the location of the studied muscles on yourself and check their function	The action of the muscles is checked due to the characteristics of the joint on which they act (flexors, extensors, etc.)
Check the possible movements in this joint, determine the axes of these movements	Given the shape of the joint and the number of movement axes, check the movements on the frontal, sagittal and vertical axes
Write down new Latin terms	Write the terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. Explain the upper limb regions.
2. What grpop of the shoulder girdle muscles do you know?
3. Name the anterior group of the shoulder girdle muscles.
4. Name the posterior muscles the shoulde girdle.
5. Describe the origination, insertion, functions of the shoulder girdle muscles.
6. Classify the upper arm muscles.
7. Name the anterior upper arm group (flexors).
8. Name the posterior upper arm muscles (extensors).

9. Describe the origination, insertion, functions of the brachial muscles.
10. Classify the forearm muscles.
11. Enumerate the anterior forearm muscles.
12. Which of the anterior antebrachial muscles form the 1^{st}, 2^{nd}, 3^{rd}, 4^{th} layer?
13. Enumerate the posterior forearm muscles.
14. Which of the posterior forearm muscles compose the superficial layer?
15. Which of the posterior forearm muscles form the deep layer?
16. Describe origination, insertion, functions of the antebrachial muscles.
17. Where are the muscles of the hand positioned?
18. Give the classification of the hand muscles.
19. Enumerate the thenar muscles.
20. Enumerate the hypothenar muscles.
21. Enumerate the muscles comprising the middle group on the hand.
22. Describe the origination, insertion, function of the hand muscles.
23. Which muscles can move the shoulder joint?
24. Which muscles flex the upper arm in the shoulder joint?
25. Which muscles extend the upper arm?
26. Which muscles adduct the upper arm?
27. Which muscles abduct the upper arm?
28. Which muscles pronate the upper?
29. Which muscles supinate the upper arm?
30. Which muscles move the elbow joint?
31. Which muscles move the distal radioulnar joint?
32. Which muscles flex the forearm in the elbow joint?
33. Enumerate the muscles which work as extensors of the elbow joint.
34. Enumerate the muscles which work as pronators of the forearm.
35. Enumerate the muscles which work as supinators the forearm.
36. Which musclular group can move the wrist joint?
37. Enumerate the muscles which work as flexors of the hand.
38. Enumerate the muscles which work as extensors of the hand.
39. Enumerate the muscles which work as adductors of the hand.
40. Enumerate the muscles which work as abductors of the hand.
41. Which muscles act on the metacarpophalangeal joint?
42. Which muscles move the interphalangeal joints?
43. Which muscles flex the thumb? 2—5 fingers?
44. Which muscles extend the thumb? 2—5 fingers?
45. Which muscles adduct the thumb? 2—5 fingers?
46. Which muscles abduct the thumb? 2—5 fingers?
47. Describe the fasciae of the shoulder girdle, upper arm, forearm and hand (their position, attachment and relations to surrounding muscles).
48. Describe fibrous and osteofibrous sheaths of the forearm, their content.

49. Desribe the borderlines of the anatomical snuff box.
50. Where are the flexor and extensor retinacula?
51. What canals are formed under the extensor retinaculum?
52. Describe the tendons of muscles passing under the extensor retinaculum (name them in order).
53. Explain the structure of the palmar aponeurosis.
54. What is the difference between axillary fossa and axillary cavity?
55. Name the walls of the axillary cavity.
56. Which muscles form each of the axillary cavity wall?
57. Describe the axillary cavity content.
58. What are the borderlines of the quadriangular space?
59. Name the vessels and nerves passing through the quadriangular space.
60. What are the borderlines of the triangular space?
61. Name the vessels pass through the qtriangular space.
62. Describe the borderlines of the humeromuscular canal.
63. Explain the borderlines of the medial and lateral bicipital grooves.
64. Which muscles form the boundaries of fossa cubiti? Describe its content.
65. Which muscles bound the ulnar forearm groove?
66. Which muscles bound radial groove?
67. Which muscles form borderlines of the median groove?
68. Enumerate the synovial sheaths of the hand.
69. How are the synovial sheaths formed?
70. What are the speial features of the thumb and little finger synovial sheaths? Explain their clinical importance.

PRACTICAL SKILLS

Muscles of shoulder girdle

1. Deltoid, *deltoideus*; дельтовидная мышца.
2. Supraspinatus, *supraspinatus*; надостная мышца.
3. Inraspinatus, *infraspinatus*; подостная мышца.
4. Subclavius, *subclavius;* подключичная мышца.
5. Teres minor, *teres minor*; малая круглая мышца.
6. Teres major, *teres major*; большая круглая мышца.
7. Subscapularis, *subscapularis*; подлопаточная мышца.

Muscles of upper arm

1. Coracobrachialis, *coracobrachialis*; клювовидно-плечевая мышца.
2. Biceps brachii, *biceps brachii*; двуглавая мышца плеча.
3. Brachialis, *brachialis*; плечевая мышца.

4. Triceps brachii, *triceps brachii*; трехглавая мышца плеча.

5. Anconeus, *anconeus*; локтевая мышца.

Muscles of forearm

1. Brachioradialis, *brachioradialis*; плечелучевая мышца.

2. Pronator teres, *pronator teres*; круглый пронатор.

3. Flexor carpi radialis, *flexor carpi radialis*; лучевой сгибатель запястья.

4. Palmaris longus, *palmaris longus*; длинная ладонная мышца.

5. Flexor digitorum superficialis, *flexor digitorum superficialis*; поверхностный сгибатель пальцев.

6. Flexor carpi ulnaris, *flexor carpi ulnaris*; локтевой сгибатель запястья.

7. Flexor pollicis longus, *flexor pollicis longus*; длинный сгибатель большого пальца кисти.

8. Flexor digitorum profundus, *flexor digitorum profundus*; глубокий сгибатель пальцев.

9. Pronator quadratus, *pronator quadratus*; квадратный пронатор.

10. Extensor carpi radialis longus, *extensor carpi radialis longus*; длинный лучевой разгибатель запястья.

11. Extensor carpi radialis brevis, *extensor carpi radialis brevis*; короткий лучевой разгибатель запястья.

12. Extensor digitorum, *extensor digitorum*; разгибатель пальцев.

13. Extensor digiti mimimi, *extensor digiti minimi*; разгибатель мизинца.

14. Extensor carpi ulnaris, *extensor carpi ulnaris*; локтевой разгибатель запястья.

15. Abductor pollicis longus, *abductor pollicis longus*; длинная мышца отводящая большой палец кисти.

16. Extensor pollicis brevis, *extensor pollicis brevis*; короткий разгибатель большого пальца кисти.

17. Extensor pollicis longus, *extensor pollicis longus*; длинный разгибатель большого пальца кисти.

18. Extensor indicis, *extensor indicis*; разгибатель указательного пальца.

19. Supinator, *supinator*; супинатор.

Muscles of hand

Thenar group

1. Abductor pollicis brevis, *abductor pollicis brevis*; короткая мышца отводящая большой палец кисти.

2. Flexor pollicis brevis, *flexor pollicis brevis*; короткий сгибатель большого пальца кисти.

3. Opponens pollicis, *opponens pollicis*; мышца противопоставляющая большой палец кисти.

4. Adductor pollicis, *adductor pollicis*; мышца приводящая большой палец кисти.

Hypothenar group

1. Palmaris brevis, *palmaris brevis*; короткая ладонная мышца.

2. Abductor digiti minimi, *abductor digiti minimi*; мышца отводящая мизинец.

3. Flexor digiti minimi brevis, *flexor digiti minimi brevis*; короткий сгибатель мизинца.

4. Opponens digiti minimi, *opponens digiti minimi*; мышца противопоставляющая мизинец.

Middle group

1. Lumbricales, *lumbricales*; червеобразные мышцы кисти.

2. Palmar interossei, *interossei palmares*; ладонные межкостные мышцы.

3. Dorsal interossei, *interossei dorsales*; тыльные межкостные мышцы.

4. Palmar aponeurosis, *aponeurosis palmaris; ладонный апоневроз.*

Topography of upper limb

1. Axillary fossa, *fossa axillaris*; подмышечная ямка.

2. Axillary cavity, *cavitas axillaris*; подмышечная впадина.

3. Triangular opening, *foramen trilaterum*; трехстороннее отверстие.

4. Quadrangular opening, *foramen quadrilaterum*; четырехстороннее отверстие.

5. Clavipectoral triangle, *trigonum clavipectorale*; ключично-грудной треугольник.

6. Pectoral triangle, *trigonum pectorale*; грудной трегольник.

7. Subpectoral triangle, *trigonum subpectorale*; подгрудной треугольник.

8. Medial bicipital groove, sulcus bicipitalis medialis; медиальная борозда двуглавой мышцы.

9. Lateral bicipital groove, sulcus bicipitalis lateralis; латеральная борозда двуглавой мышцы.

10. Cubital fossa, *fossa cubitalis*; локтевая ямка.

11. Radial groove, *sulcus radialis*; лучевая борозда.

12. Median groove, *sulcus medianus*; срединная борозда.

13. Ulnar groove, *sulcus ulnaris*; локтевая борозда.

14. Flexor retinaculum, *retinaculum musculorum flexorum*; удерживатель сухожилий сгибателей.

15. Extensor retinaculum, *retinaculum musculorum extensorum*; удерживатель сухожилий разгибателей.

16. Carpal tunnel, *canalis carpalis*; канал запястья.

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6. *Lecture* material.

Topic 4

THE MUSCLES, FASCIAE AND TOPOGRAPHY OF THE LOWER LIMB

INTRODUCTION TO THE TOPIC

The material of this topic is necessary to study the next anatomy topics. Knowing the anatomy of these muscles you can understand the topography of the pelvic region and femur, and the course of the neurovascular bundles that is important for surgical manipulations. The knowledge of the muscle location and functions is necessary to determine the displacement of the bone fragments in case of fractures and to choose correct treatment of the patients having fractures.

Leg muscles are involved in walking and maintaining the body in upright position; they move the distal part of the lower limb, the foot. The muscles of the foot move toes, support arched shape of the foot.

This knowledge is necessary in surgery on the leg and foot, to understand the mechanisms of fractures, dislocation of the foot joints, to choose correct treatment of fractures and dislocations.

Fossae, sgrooves, canals of the lower limb transmit the vessels and nerves. To know their topography is needed to provide first aid in case of major vessel injury and in surgery on the lower limbs. Knowledge of the femoral canal structure allows you to diagnose femoral hernias and to find the treatment strategy.

Before studying the topic, you need to know:

1. The principles of the muscle work.
2. The structure of the femur, tibia, fibula, bones of foot.
3. The types of the movements at the hip, knee, ankle joints and joints of foot.

SELF-STUDY GOALS

After independently studying the topic, the student should know: the muscles and fasciae of the pelvic girdle, thigh, leg, foot, their points of attachment and functions; topography of the pelvis and thigh: (supra- and infrapiriform fo-

ramina; obturator canal; muscular and vascular lacunae; iliopectineal groove and fossa; anterior femoral groove; femoral triangle; adductor canal, femoral canal); topography of leg and foot (popliteal fossa; Gruber's (cruropopliteal) canal, superior and inferior musculoperoneal canals; medial and lateral plantar grooves); synovial sheaths of the foot.

TOPIC CONTENT

- Anatomy of the pelvic muscles. Anterior group — iliopsoas, iliacus, psoas major, psoas minor. Posterior group — gluteus maximus, gluteus medius, gluteus minimus, tensor fascia lata, piriformis, obturatorius internus, obturatorius externus, quadratus femoris, gemellus superior, gemellus inferior muscles.
- Anatomy of the thigh muscles. Anterior group — quadriceps, Sartorius. Posterior group — semitendinosus, semimembranosus, biceps femoris, popliteal. Medial group — pectineus, adductor magnus, adductor longus, adductor brevis, gracilis muscles.
- Fasciae of the pelvis and thigh.
- Topography of the pelvic girdle and thigh: supra- and infrapiriform foramina; obturator canal; muscular and vascular lacunae; iliopectineal groove and fossa; anterior femoral groove; femoral triangle; adductor canal, femoral canal (walls, openings)).
- Anatomy of the leg muscles. Anterior group — tibialis anterior, extensor digitorum longus, extensor hallucis longus. Lateral group — long peroneus, short peroneus. Posterior group — superficial layer: triceps surae (gastrocnemius, soleus) and plantaris muscle; deep layer: flexor digitorum longus, tibialis posterior, flexor hallucis longus.
- Foot muscles anatomy. Dorsal surface — extensor digitorum brevis, extensor hallucis brevis. Plantar surface: muscles of the medial group — abductor hallucis, flexor hallucis brevis, adductor hallucis muscle. Muscles of the lateral group — the abductor of the little toe, the short flexor of the little toe. Muscles of the middle group — flexor digitorum brevis, quadratus plantae, lumbrical muscles (4), interosseous muscles (3 plantar muscles and 4 dorsal muscles).
- Topography of the leg and foot: popliteal fossa; Gruber's (cruropopliteal) canal; lower and upper musculoperoneal canals; medial and lateral plantar grooves.
- The formation of the topographic formations, inlet and outlet openings, relationship with each other.
- Synovial sheaths of the foot.

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	Find the corresponding muscles on the corpse, and find bony projections (tubercles, tubers, crests) on the skeleton
Revise the appropriate textbook chapters on the relevant bones	—
Revise the studied material while showing muscles on the preparation	When revising the topic, check the following: • English and Latin names of the muscle • the place of muscle attachment • muscle functions
Group the studied muscles according to the functional principle	Differentiate between synergistic muscles (flexors, extensors, abductors, adductors, etc.) and antagonist muscles
Determine the location of the studied muscles on yourself and check their function	The action of the muscles is checked due to the characteristics of the joint on which they act (flexors, extensors, etc.)
Check the possible movements in this joint, determine the axes of these movements	Given the shape of the joint and the number of movement axes, check the movements on the frontal, sagittal and vertical axes
Write down new Latin terms	Write the terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR SELF-CONTROL

1. Explain the regions of the lower limb.
2. Classify the pelvic muscles.
3. What anterior pelvic muscles do you know?
4. What posterior pelvic muscles do you know?
5. Describe the origination, insertion, functions of all the pelvic muscles.
6. Give the classification of the thigh muscles.
7. What anterior thigh muscles do you know?
8. What the medial thigh muscles do you know?
9. What posterior thigh muscles do you know?

10. Describe the origination, insertion, functions of each thigh muscle.
11. Give the classification of the leg muscles.
12. What muscles form anterior leg group?
13. What muscles form lateral leg group?
14. What muscles form posterior leg group?
15. Which posterior leg muscles form the superficial layer?
16. Which posterior leg muscles form the deep layer?
17. Describe the origination, attachment, action of each leg muscle.
18. Give the classification of the foot muscles.
19. Enumerate the dorsal foot muscles.
20. Enumerate the plantar foot muscles.
21. Which of the plantar muscles form the medial group?
22. Which of the plantar muscles form the lateral group?
23. Which of the plantar muscles form the middle group?
24. Describe the origination, insertion, functions of each foot muscle.
25. Which pelvic mucles flex the vertebral column?
26. Which pelvic muscles help to keep the vertical position of the body?
27. Which muscles move the hip joint?
28. Enumerate the anterior, posterior, medial muscles of the thigh.
29. Which muscles extend the thigh?
30. Which muscles pronate the thigh?
31. Which supinator muscles of the hip joint do you know?
32. Which adductor muscles of the hip joint do you know?
33. Which muscles can move the leg in the knee joint?
34. Which flexor muscles of the knee join do you know?
35. Which extensor muscles of the knee join do you know?
36. Which pronator muscles of the leg do you know?
37. Which supinator muscles of the leg do you know?
38. Which musclular groups can move the foot?
39. Which muscles flex the foot in the ankle joint?
40. Which muscles provide the foot extension?
41. Which muscles adbuct the foot in the ankle joint?
42. Which muscles adduct the foot in the ankle joint?
43. Which muscles supinate the foot in the ankle joint?
44. Which muscles pronate the foot in the ankle joint?
45. Which muscles act on the metatarsophalangeal and interphalangeal joints?
46. Which muscles flex the 1st toe?
47. Enumerate the flexors of 2—5 toes.
48. Enumerate the extensors of the big toe.
49. Name the adductors of the hallux and 2—5 toes.

50. Which muscles abduct the hallux and 2—5 toes?

51. Enumerate the fasciae of the pelvis, thigh, leg, foot.

52. Describe the lower limb fasciae attachment and relations to surrounding muscles.

53. What fibrous sheaths of the thigh do you know?

54. Explain the topography of the leg retinacula.

55. How many canals are located under the inferior extensor retinaculum?

56. What tendons are in the osteofibrous canasl under the inferior extensor retinaculum (in order)?

57. What canals are situated under the inferior peroneal retinaculum? What do they contain?

58. How many canals are located under the flexor retinaculum? What do they contain?

59. Explain the plantar aponeurosis topography.

60. Explain the borderlines of the suprapiriform and infrapiriform foramina.

61. Explain the obturator canal walls. What does it transmit?

62. What are the borderlines of lacuna vasorum and lacuna musculorum?

63. What do the lacunae contain?

64. What structures form the femoral triangle walls?

65. Which grooves are situated within the femoral triangle?

66. What canal start from the lower angle of the femoral triangle?

67. Describe the walls of the adductor canal. What does it contain?

68. Where is the adductor canal lower opening?

69. Explain the borderlines of the fossa poplitea. What does it contain?

70. Which canal start from the lover corner of the popliteal fossa?

71. Explain the walls of the cruropopliteal canal and its content.

72. Which canal start from the cruropopliteal canal?

73. Describe the borderlines of the inferior musculoperoneal canal. What does in contain?

74. Describe the borders of the superior musculoperoneal canal. What does it contain?

75. What muscles form the borderlines of the medial plantar groove? What vessels and nerve are here?

76. What muscles form the boundariesof the lateral plantar groove? What vessels and nerve are situated here?

PRACTICAL SKILLS

Pelvic muscles

1. Iliopsoas, *iliopsoas*; подвздошно-поясничная мышца.

2. Psoas major, *psoas major*; большая поясничная мышца.

3. Iliacus, *iliacus*; подвздошная мышца.

4. Psoas minor, *psoas minor*; малая поясничная мышца.

5. Piriformis, *piriformis*; грушевидная мышца.

6. Obturator internus, *obturatorius internus*; внутренняя запирательная мышца.

7. Gluteus maximus, *gluteus maximus*; большая ягодичная мышца.

8. Gluteus medius, *gluteus medius*; средняя ягодичная мышца.

9. Gluteus minimus, *gluteus minimus*; малая ягодичная мышца.

10. Superior gemellus, *gemellus superior*; верхняя близнецовая мышца.

11. Inferior gemellus, *gemellus inferior*; нижняя близнецовая мышца.

12. Quadratus femoris, *quadratus femoris*; квадратная мышца бедра.

13. Obturator externus, *obturatorius externus*; наружная запирательная мышца.

14. Tensor fasciae latae, *tensor fasciae latae*; напрягатель широкой фасции бедра.

Muscles of thigh

15. Sartorius, *sartorius*; портняжная мышца.

16. Quadriceps femoris, *quadriceps femoris*; четырехглавая мышца бедра.

17. Rectus femoris, *rectus femoris*; прямая мышца бедра.

18. Vastus lateralis, *vastus lateralis*; латеральная широкая мышца бедра.

19. Vastus intermedius, *vastus intermedius*; промежуточная широкая мышца бедра.

20. Vastus medialis, *vastus medialis*; медиальная широкая мышца бедра.

21. Gracilis, *gracilis*; тонкая мышца.

22. Pectineus, *pectineus*; гребенчатая мышца.

23. Adductor longus, *adductor longus*; длинная приводящая мышца.

24. Adductor brevis, *adductor brevis*; короткая приводящая мышца.

25. Adductor magnus, *adductor magnus*; большая приводящая мышца.

26. Biceps femoris, *biceps femoris*; двуглавая мышца бедра.

27. Semitendinosus, *semitendinosus*; полусухожильная мышца.

28. Semimembranosus, *semimembranosus*; полуперепончатая мышца.

Muscles of leg

29. Tibialis anterior, *tibialis anterior*; передняя большеберцовая мышца.

30. Extensor digitorum longus, *extensor digitorum longus*; длинный разгибатель пальцев.

31. Extensor hallucis longus, *extensor hallucis longus*; длинный разгибатель большого пальца стопы.

32. Peroneus longus, *peroneus longus*; длинная малоберцовая мышца.

33. Peroneus brevis, *peroneus brevis*; короткая малоберцовая мышца.

34. Triceps surae, *triceps surae*; трехглавая мышца голени.

35. Gastrocnemius, *gastrocnemius*; икроножная мышца.

36. Calcaneal (Achilles) tendon, *tendo calcaneus seu Achillis*; пяточное или Ахиллово сухожилие.

37. Soleus, *soleus*; камбаловидная мышца.

38. Plantaris, *plantaris*; подошвенная мышца.

39. Popliteus, *popliteus*; подколенная мышца.

40. Flexor digitorum longus, *flexor digitorum longus*; длинный сгибатель пальцев.

41. Tibialis posterior, *tibialis posterior*; задняя большеберцовая мышца.

42. Flexor hallucis longus, *flexor hallucis longus*; длинный сгибатель большого пальца стопы.

Muscles of foot

43. Extensor digitorum brevis, *extensor digitorum brevis*; короткий разгибатель пальцев.

44. Extensor hallucis brevis, *extensor hallucis brevis*; короткий разгибатель большого пальца стопы.

45. Abductor hallucis, *abductor hallucis*; мышца отводящая большой палец стопы.

46. Flexor hallucis brevis, *flexor hallucis brevis*; короткий сгибатель большого пальца стопы.

47. Adductor hallucis, *adductor hallucis*; мышца приводящая большой палец стопы.

48. Flexor digitorum brevis, *flexor digitorum brevis*; короткий сгибатель пальцев.

49. Quadratus plantae, *quadratus plantae*; квадратная мышца подошвы.

50. Lumbricals, *lumbricales*; червеобразные мышцы.

51. Interossei plantares, *interossei plantares*; подошвенные межкостные мышцы.

52. Interossei dorsales, *interossei dorsales*; тыльные межкостные мышцы стопы.

53. Abductor digiti minimi, *abductor digiti minimi*; мышца отводящая мизинец стопы.

54. Flexor digiti minimi, *flexor digiti minimi brevis*; короткий сгибатель мизинца.

Topography of the lower limb

55. Superior extensor retinaculum, *retinaculum musculorum extensorum superius*; верхний удерживатель разгибателей.

56. Inferior extensor retinaculum, *retinaculum musculorum extensorum inferius*; нижний удерживатель разгибателей.

57. Flexor retinaculum, *retinaculum musculorum flexorum*; удерживатель сухожилий сгибателей.

58. Superior peroneal retinaculum, *retinaculum musculorum peroneorum superius*; верхний удерживатель сухожилий малоберцовых мышц.

59. Inferior peroneal retinaculum, *retinaculum musculorum peroneorum inferius*; нижний удерживатель сухожилий малоберцовых мышц.

60. Suprapiriform foramen, *foramen suprapiriforme*; надгрушевидное отверстие.

61. Infrapiriform foramen, *foramen infrapiriforme*; подгрушевидное отверстие.

62. Obturator canal, *canalis obturatorius*; запирательный канал.

63. Muscular space, *lacuna musculorum*; мышечная лакуна.

64. Vascular space, *lacuna vasorum*; сосудистая лакуна.

65. Femoral triangle, *trigonum femorale*; бедренный треугольник.

66. Iliopectineal groove, *sulcus iliopectineus*; подвздошно-гребенчатая борозда.

67. Anterior femoral groove, *sulcus femoralis anterior*; передняя бедренная борозда.

68. Adductor canal, *canalis adductorius*; приводящий канал.

69. Popliteal fossa, *fossa popliteal*; подколенная ямка.

70. Cruropliteal canal, *canalis cruropopliteus*; голено-подколенный канал.

71. Canalis musculoperoneus superior; верхний мышечно-берцовый канал.

72. Canalis musculoperoneus inferior; нижний мышечно-берцовый канал.

73. Medial planatar groove, *sulcus plantaris medialis*; медиальная подошвенная борозда.

73. Lateral plantar groove, *sulcus plantaris lateralis*; латеральная подошвенная борозда.

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6. *Lecture* material.

Topic 5
MAJOR CONTROL: MYOLOGY

INTRODUCTION TO THE TOPIC

This lesson is aimed at generalizing the studied material and revising it. It allows the student to go through the nodal points of the myology once again and fix them.

SELF-STUDY GOALS

After revising the topic material, the student should be able to do computer major test on LMS; identify the muscles on a corpse and be able to show them. Student should describe the points of muscle origination and attachment, functions; features of the course and structure of fasciae, topographic formations and their significance.

TOPIC CONTENT

REVISE:

- Classification of muscles (lecture material).
- Muscles, their attachment points and function in accordance with the plan (see the table below).
- Features of the course of fascia.
- Fossae, canals, openings, triangles, spaces, grooves and other topographic formations.
- Muscle development, developmental anomalies (lecture material).
- All Latin terms (see the list of practical skills).

METHODOLOGICAL RECOMMENDATIONS FOR STUDYING THE MATERIAL

Activity	Step Description
Read the introduction to the topic	—
Study the corresponding section in literature sources	Find the corresponding muscles on the corpse, and find bony projections (tubercles, tubers, crests) on the skeleton

The end of Table

Activity	Step Description
Revise the appropriate textbook chapters on the relevant bones	—
Revise the studied material while showing muscles on the preparation	When revising the topic, check the following: • English and Latin names of the muscle • the place of attachment of the muscle • muscle functions
Revise the features of the fascia course, muscle-fascial topographic formations	Demonstrate the fasciae on a corpse or diagrams and tables
Revise the classification of muscles, stages of muscle development, and developmental anomalies based on the lecture material	—
Write down new Latin terms	Write the terms in your notebook (see the list of Practical skills)
Check your knowledge with self-control questions	Answer the questions given in the assignment

QUESTIONS FOR MAJOR MYOLOGY

1. Describe the structure of a muscle. Describe the fasciae of the body (the definition of the fascia; the types of the fasciae, general arrangement; the function).
2. Describe the masticatory muscles (names, attachment, action).
3. Describe the features of the muscles of facial expression.
4. Which muscles open and close the eyes and the lips?
5. Which muscle forms the cheek?
6. Which muscles move the temporomandibular joint (elevate, depress, provide side-by-side movements, protrude, retract the mandible)?
7. Enumerate the fasciae of the head and describe their position.
8. Explain the fascial spaces of the head: names, walls and communications.
9. Describe the cervical triangles: names, borders, content.
10. Name the fasciae of the neck and describe their arrangement.
11. Describe the fascial spaces in the neck: names, walls and communications.

12. Name the muscles which flex, rotate the head and neck, move them backward, to the sides.

13. Name the muscles of the back in layers (in order from superficial to deep).

14. Describe the “weak points” of the back (lumbar rhombus and lumbar triangle): their borders and clinical importance.

15. Name the muscles which bend the thoracic and lumbar parts of the vertebral column forward, backward, to the sides; rotate them.

16. Describe the fasciae of the back: names, arrangement.

17. Name the main and accessory muscles of inspiration (inhalation).

18. Name the main and accessory muscles of exspiration (exhalation).

19. Give the describtion of the diaphragm: the parts, crura of the lumbar part of the diaphragm, their attachment.

20. What openings does the diaphragm have?

21. What organs pass through the diaphragmal openings and through the spaces between the crura of the lumbar part?

22. Give the information about the fasciae of the chest: names, arrangement, fascial spaces and their clinical importance.

23. Explain the position of the chest triangles: names, borders.

24. Describe the walls of the axillary cavity: anterior, posterior, medial and lateral.

25. Describe the borders of the foramen trilaterum and quadrilaterum.

26. Enumerate the muscles of the anterior and lateral abdominal walls in layers (in order from superficial to deep).

27. Describe the functions of the anterior and lateral abdominal muscles; describe their fasciae. What fascia lines them from inside?

28. Name the posterior abdominal muscle. Describe its function. Which muscles of the back adjoin it posteriorly? What fascia lines it from inside?

29. Describe the regions of the anterior abdominal wall.

30. Name the “weak” points of the abdomen. Why are they called “weak” ppinta?

31. Describe the walls of the inguinal canal: superior, inferior, anterior, posterior. Describe the superficial and deep inguinal rings. Explain the clinical importance of this canal.

32. Name the muscles in the anterior and posterior compartments of the upper arm? What are their common actions?

33. What muscles act on the shoulder joint, moving the arm: flex, extend, rotate medially and laterally, abduct and adduct?

34. Describe the boundaries of the bicipital grooves and humeromuscular canal.

35. What muscles form the anterior forearm group? What are their common actions?

36. What muscles form the posterior forearm group? What are their general actions?

37. Describe the boundaries of the cubital fossa and its grooves.

38. Describe the borders of the median, radial and ulnar grooves of the forearm.

39. Describe the flexor retinaculum and carpal canals: names, walls, content.

40. Describe the extensor retinaculum and extensor canals of the forearm.

41. What muscles act on the elbow joint: flex, extend, rotate forearm medially and laterally?

42. Name the muscle groups of the hand. Name the muscles of the thenar, describe their arrangement and function.

43. Name the muscle groups of the hand. Name the muscles of the hypothenar, describe their arrangement and function.

44. Name the muscle groups of the hand. Name the muscles of the palmar depression; describe their arrangement and function.

45. Describe the arrangement of the antebrachial muscles tendons, their synovial sheaths on the hand.

46. Describe the structure of the palmar aponeurosis.

47. Name the internal and external pelvic muscles. Describe their actions.

48. Describe the boundaries of foramen suprapiriforme and infrapiriforme? What is their function?

49. Which muscles move the hip joint (flexion, extension, pronation, supination, adduction, abduction)?

50. Which muscles form the muscle groups in the thigh (anterior, medial, posterior)?

51. Describe the common action of each thigh muscular group.

52. Describe the boundaries of the lacuna vasorum and musculorum; their location, relations between them. What vessels, nerves and muscle do they transmit?

53. Describe the borderlines of the femoral triangle.

54. Describe the boundaries of the adductor canal; where does it open and what does it transmit?

55. Which muscles form the muscle groups in the leg (anterior, lateral, posterior)? Describe the general action of each group.

56. Which muscles move the knee joint (flexion, extension, pronation, supination)?

57. Describe theborderlines and content of the popliteal fossa.

58. What canal is a direct continuation of the popliteal fossa?

59. Describe the boundaries of the cruropopliteal canal, superior and inferior musculoperoneal canals. What is their function?

60. Which muscles act on the talocrural joint and the joints of the foot, moving the foot (flex, extend, rotate medially and laterally, abduct and adduct)?

61. Describe the muscles of the foot dorsum (names, arrangement, function).

62. Name the plantar muscle groups. Describe the muscles of the medial group (names, arrangement, function).

63. Name the plantar muscle groups. Describe the muscles of the lateral group (names, arrangement, function).

64. Name the plantar muscle groups.

65. Describe the muscles of the middleplantar group (names, arrangement, function).

66. Enumerate the fasciae of the thigh.

67. Describe the position of the hiatus saphenus. What is its practical importance?

68. Describe the extensor retinacula (superior and inferior) and extensor canals of the leg.

69. Describe the flexor retinaculum and flexor canals of the leg.

70. Describe the peroneal retinacula (superior and inferior). The tendons of which muscle pass under these retinacula?

71. Describe the arrangement of the tendons of the crural muscles and their synovial sheaths on the foot; describe the structure of the plantar aponeurosis.

PRACTICAL SKILLS:

Muscles of the head

1. Epicranius, *epicranius*; надчерепная мышца:

a) occipitofrontalis, m. occipitofrontalis; затылочно-лобная мышца;

b) temporoparietalis, m. temporoparietalis; височно-теменная мышца.

2. Anterior auricular, superior auricular, posterior auricular muscles, *auriculares anterior*, *superior et posterior*; передняя ушная, верхняя и нижняя ушная мышца.

3. Corrugator supercilii, *corrugator supercilii*; мышца сморщивающая бровь.

4. Procerus, *procerus*; мышца гордецов.

5. Orbicularis oculi, *orbicularis oculi*; круговая мышца глаза:

a) lacrimal part, *pars lacrimalis*; слезная часть;

b) palpebral part, *pars palpebralis*; вековая часть;

c) orbital part, *pars orbitalis; глазничная часть.*

6. Nasalis, *nasalis*; носовая мышца:

a) transverse part, *pars transversa*; поперечная часть;

b) alar part, *pars alari*s, крыльная часть;

c) *depressor septi nasi,* мышца опускающая перегородку носа.

7. Orbicularis oris, *orbicularis oris*, круговая мышца рта:

a) labial part, *pars labialis*; губная часть;

b) marginal part, *pars marginalis*; краевая часть.

8. Levator labii superioris, *levator labii superioris*; мышца поднимающая верхнюю губу.

9. Zygomaticus major, *zygomaticus major*; большая скуловая мышца.

10. Zygomaticus minor, zygomaticus minor; малая скуловая мышца.

11. Risorius, *risorius*; мышца смеха.

12. Depressor anguli oris, *depressor anguli oris*; мышца опускающая угол рта.

13. Levator anguli oris, *levator anguli oris*; мышца поднимающая угол рта.

14. Depressor labii inferioris, *depressor labii inferioris*; мышца опускающая нижнюю губу.

15. Mentalis, *mentalis*; подбородочная мышца.

16. Buccinator, *buccinator*; щечная мышца.

17. Masseter, *masseter*; жевательная мышца.

18. Temporalis, *temporalis*; височная мышца.

19. Lateral pterygoid, *pterygoideus lateralis*; латеральная крыловидная мышца.

20. Medial pterygoid, *pterygoideus medialis*; медиальная крыловидная мышца.

Muscles and topography of the neck

21. Platysma, *platysma*; подкожная мышца шеи.

22. Sternoclieidomastoid, *sternocleidomastoideus*; грудино-ключично-сосцевидная мышца.

23. Omohyoid, *omohyoideus*; лопаточно — подъязычная мышца.

24. Sternohyoid, *sternohyoideus*; грудино — подъязычная мышца.

25. Strenothyroid, *sternothyroideus*; грудино — щитовидная мышца.

26. Thyrohyoid, *thyrohyoideus*; щито — подъязычная мышца.

27. Genioglossus, *genioglossus*; подбородочно — язычная мышца.

28. Hyoglossus, *hyoglossus*; подъязычно — язычная мышца.

29. Styloglossus, *styloglossus*; шилоязычная мышца.

30. Stylopharyngeus, *stylopharyngeus*; шилоглоточная мышца.

31. Digastric, *digastricus*; двубрюшная мышца.

32. Stylohyoid, *stylohyoideus*; шилоподъязычная мышца.

33. Mylohyoid, *mylohyoideus*; челюстно-подъязычная мышца.

34. Geniohyoid, *geniohyoideus*; подбородочно-подъязычная мышца.

35. Anterior scalene, *scalenus anterior*; передняя лестничная мышца.

36. Middle scalene, *scalenus medius*; средняя лестничная мышца.

37. Posterior scalene, *scalenus posterior*; задняя лестничная мышца.

38. Longus colli, *longus colli*; длинная мышца шеи.

39. Longus captis, *longus capitis*; длинная мышца головы

40. Rectus capitis anterior, *rectus capitis anterior*; передняя прямая мышца головы.

41. Rectus capitis lateralis, *rectus capitis lateralis*; латеральная прямая мышца головы.

42. Rectus capitis posterior major, *rectus capitis posterior major*; большая задняя прямая мышца головы.

43. Rectus capitis posterior minor, *rectus capitis posterior minor*; малая задняя прямая мышца головы.

44. Obliquus capitis superior, *obliquus capitis superior*; верхняя косая мышца головы.

45. Obliquus capitis inferior, *obliquus capitis inferior*; нижняя косая мышца головы.

46. Anterior region of neck, *regio cervicalis anterior*; передний треугольник шеи.

47. Sternocleidomastoid region of neck, *regio sternocleidomastoidea;* грудино-ключично-сосцевидная область шеи.

48. Lateral region of neck, *regio cervicalis lateralis*; латеральная область шеи.

49. Posterior region of neck, *regio cervicalis posterior*; задняя область шеи.

50. Lateral cervical triangle, *trigonum colli laterale*; латеральный треугольник шеи.

51. Medial cervical triangle, *trigonum colli mediale*; медиальный треугольник шеи.

a) carotid triangle, (*trigonum caroticum*); сонный треугольник;

b) omotracheal, *trigonum omotracheale*; лопаточно-трапециевидный треугольник;

c) submandibular, *trigonum submandibulare*; поднижнечелюстной треугольник;

d) Pirogov`s triangle; треугольник Пирогова;

e) retromandibular fossa, *fossa retromandibularis; позадичелюстная ямка.*

Muscles and topography of back

52. Trapezius, *trapezius*; трапецевидная мышца.

53. Latissimus dorsi, *latissimus dorsi*; широчайшая мышца спины.

54. Levator scapulae, *levator scapulae*; мышца поднимающая лопатку.

55. Rhomboid major, *rhomboideus major;* большая ромбовидная мышца.

56. Rhomboid minor, *et m. rhomboideus minor*; малая ромбовидная мышца.

57. Serratus posterior superior, *serratus posterior superior*; верхняя задняя зубчатая мышца.

58. Serratus posterior inferior, *serratus posterior inferior*; нижняя задняя зубчатая мышца.

59. Splenius cervicis, *splenius cervicis*; ременная мышца шеи.

60. Splenius capitis, *splenius capitis*; ременная мышца головы.

61. Erector spinae, *erector spinae*; мышца выпрямляющая позвоночник.

62. iliocostalis, *iliocostalis*; подвздошно-реберная мышца.

63. longissimus, *longissimus*; длиннейшая мышца.

64. spinalis, *spinalis*; остистая мышца.

65. Transversospinales, *transversospinales*; поперечно-остистая мышца.

66. Interspinales cervicis, thoracis and lumborum, *interspinales cervicis*, *thoracis*, *lumborum;* межостистые мышцы шеи, грудной клетки, поясницы.

67. Intertransversarii, *intertransversarii*; межпоперечные мышцы.

68. Lumbar triangle, *trigonum lumbale*; поясничный треугольник.

69. Lumbar rhombus, *rhombus lumbalis; поясничный ромб.*

Muscles and topography of chest

70. Pectoralis major, *pectoralis major* большая грудная мышца.

71. Pectoralis minor, *pectoralis minor*; малая грудная мышца.

72. Serratus anterior, *serratus anterior*; передняя зубчатая мышца.

73. Subclavius, *subclavius*; подключичная мышца.

74. External intercostal muscles, *intercostales externi*; наружные межреберные мышцы.

75. Levatores costarum, *levatores costarum*; мышцы поднимающие ребра.

76. Internal intercostal muscles, *intercostales interni*; внутренние межреберные мышцы.

77. Subcostales, *subcostales*; подреберные мышцы.

78. Transversus thoracis, *transversus thoracis*; поперечная мышца груди.

79. Clavipectoral triangle, *trigonum clavipectorale*; грудино-ключичный треугольник.

80. Pectoral triangle, *trigonum pectorale*; грудиой треугольник.

81. Subpectoral triangle, *trigonum subpectorale*; подгрудной трегольник.

Muscles and topography of abdomen

82. Rectus abdominis, *rectus abdominis*; прямая мышца живота.

83. Pyramidalis, *pyramidalis*; пирамидальная мышца.

84. External oblique muscle of abdomen, *obliquus externus abdominis*; наружная косая мышца живота.

85. Internal oblique muscle of abdomen, *obliquus internus abdominis*; внутренняя косая мышца живота.

86. Transversus abdominis, *transversus abdominis*; поперечная мышца живота.

87. Quadratus lumborum, *quadratus lumborum*; квадратная мышца поясницы.

88. Superficial inguinal ring, *anulus inguinalis superficialis*; поверхностное паховое кольцо.

89. Deep inguinal ring, *anulus inguinalis profundus*; глубокое паховое кольцо.

90. White line, *linea alba*; белая линия.

91. Umbilical ring, *anulus umbilicalis*; пупочное кольцо.

Diaphragm

92. Central tendon, *centrum tendineum*; сухожильный центр.

93. Muscular part; мышечная часть.

94. Sternal part of the diaphragm, *pars sternalis diaphragmae*; грудинная часть диафрагмы.

95. Costal part of the diaphragm, *pars costalis diaphragmae*; реберная часть диафрагмы.

96. Lumbar part of the diaphragm, *pars lumbalis diaphragmae*; поясничная часть диафрагмы.

97. Medial crus, *crus mediale*; медиальная ножка.

98. Intermediate crus, *crus intermedium*; промежуточная ножка.

99. Lateral crus, *crus laterale*; латеральная ножка.

100. Median arcuate ligament, *ligamentum arcuatum medianum*; срединная дугообразная связка.

101. Medial arcuate ligament, *ligamentum arcuatum mediale*; медиальная дугообразная связка.

102. Lateral arcuate ligament, *ligamentum arcuatum laterale*; латеральная дугообразная связка.

103. Aortic hiatus, *hiatus aorticus*; аортальное отверстие.

104. Oesophageal hiatus, *hiatus oesophageus*; пищевое отверстие.

105. Caval opening, *foramen venae cavae inferioris*; отверстие нижней полой вены диафрагмы.

106. Sternocostal triangle, *trigonum sternocostale*; грудино-реберный треугольник.

107. Lumbocostal triangle, *trigonum lumbocostale;* пояснично-реберный треугольник.

Muscles of shoulder girdle

108. Deltoid, *deltoideus*; дельтовидная мышца.
109. Supraspinatus, *supraspinatus*; надостная мышца.
110. Inraspinatus, *infraspinatus*; подостная мышца.
111. Subclavius, *subclavius;* подключичная мышца.
112. Teres minor, *teres minor*; малая круглая мышца.
113. Teres major, *teres major*; большая круглая мышца.
114. Subscapularis, *subscapularis*; подлопаточная мышца.

Muscles of upper arm

115. Coracobrachialis, *coracobrachialis*; клювовидно-плечевая мышца.
116. Biceps brachii, *biceps brachii*; двуглавая мышца плеча.
117. Brachialis, *brachialis*; плечевая мышца.
118. Triceps brachii, *triceps brachii*; трехглавая мышца плеча.
119. Anconeus, *anconeus*; локтевая мышца.

Muscles of forearm

120. Brachioradialis, *brachioradialis*; плечелучевая мышца.
121. Pronator teres, *pronator teres*; круглый пронатор.
122. Flexor carpi radialis, *flexor carpi radialis*; лучевой сгибатель запястья.
123. Palmaris longus, *palmaris longus*; длинная ладонная мышца.
124. Flexor digitorum superficialis, *flexor digitorum superficialis*; поверхностный сгибатель пальцев.
125. Flexor carpi ulnaris, *flexor carpi ulnaris*; локтевой сгибатель запястья.
126. Flexor pollicis longus, *flexor pollicis longus*; длинный сгибатель большого пальца кисти.
127. Flexor digitorum profundus, *flexor digitorum profundus*; глубокий сгибатель пальцев.
128. Pronator quadratus, *pronator quadratus*; квадратный пронатор.
129. Extensor carpi radialis longus, *extensor carpi radialis longus*; длинный лучевой разгибатель запястья.
130. Extensor carpi radialis brevis, *extensor carpi radialis brevis*; короткий лучевой разгибатель запястья.
131. Extensor digitorum, *extensor digitorum*; разгибатель пальцев.
132. Extensor digiti mimimi, *extensor digiti minimi*; разгибатель мизинца.

133. Extensor carpi ulnaris, *extensor carpi ulnaris*; локтевой разгибатель запястья.

134. Abductor pollicis longus, *abductor pollicis longus*; длинная мышца отводящая большой палец кисти.

135. Extensor pollicis brevis, *extensor pollicis brevis*; короткий разгибатель большого пальца кисти.

136. Extensor pollicis longus, *extensor pollicis longus*; длинный разгибатель большого пальца кисти.

137. Extensor indicis, *extensor indicis*; разгибатель указательного пальца.

138. Supinator, *supinator*; супинатор.

Muscles of hand

139. Abductor pollicis brevis, *abductor pollicis brevis*; короткая мышца отводящая большой палец кисти.

140. Flexor pollicis brevis, *flexor pollicis brevis*; короткий сгибатель большого пальца кисти.

141. Opponens pollicis, *opponens pollicis*; мышца противопоставляющая большой палец кисти.

142. Adductor pollicis, *adductor pollicis*; мышца приводящая большой палец кисти.

143. Palmaris brevis, *palmaris brevis*; короткая ладонная мышца.

144. Abductor digiti minimi, *abductor digiti minimi*; мышца отводящая мизинец.

145. Flexor digiti minimi brevis, *flexor digiti minimi brevis*; короткий сгибатель мизинца.

146. Opponens digiti minimi, *opponens digiti minimi*; мышца противопоставляющая мизинец.

147. Lumbricales, *lumbricales*; червеобразные мышцы кисти.

148. Palmar interossei, *interossei palmares*; ладонные межкостные мышцы.

149. Dorsal interossei, *interossei dorsales*; тыльные межкостные мышцы.

150. Palmar aponeurosis, *aponeurosis palmaris; ладонный апоневроз.*

151. Axillary fossa, *fossa axillaris*; подмышечная ямка.

152. Axillary cavity, *cavitas axillaris*; подмышечная впадина.

153. Triangular opening, *foramen trilaterum*; трехстороннее отверстие.

154. Quadrangular opening, *foramen quadrilaterum*; четырехстороннее отверстие.

155. Clavipectoral triangle, *trigonum clavipectorale*; ключично-грудной треугольник.

156. Pectoral triangle, *trigonum pectorale*; грудной трегольник.

157. Subpectoral triangle, *trigonum subpectorale*; подгрудной треугольник.

158. Medial bicipital groove, sulcus bicipitalis medialis; медиальная борозда двуглавой мышцы.

159. Lateral bicipital groove, sulcus bicipitalis lateralis; латеральная борозда двуглавой мышцы.

160. Cubital fossa, *fossa cubitalis*; локтевая ямка.

161. Radial groove, *sulcus radialis*; лучевая борозда.

162. Median groove, *sulcus medianus*; срединная борозда.

163. Ulnar groove, *sulcus ulnaris*; локтевая борозда.

164. Flexor retinaculum, *retinaculum musculorum flexorum*; удерживатель сухожилий сгибателей.

165. Extensor retinaculum, *retinaculum musculorum extensorum*; удерживатель сухожилий разгибателей.

166. Carpal tunnel, *canalis carpalis*; канал запястья.

Pelvic muscles

167. Iliopsoas, *iliopsoas*; подвздошно-поясничная мышца.

168. Psoas major, *psoas major*; большая поясничная мышца.

169. Iliacus, *iliacus*; подвздошная мышца.

170. Psoas minor, *psoas minor*; малая поясничная мышца.

171. Piriformis, *piriformis*; грушевидная мышца.

172. Obturator internus, *obturatorius internus*; внутренняя запирательная мышца.

173. Gluteus maximus, *gluteus maximus*; большая ягодичная мышца.

174. Gluteus medius, *gluteus medius*; средняя ягодичная мышца.

175. Gluteus minimus, *gluteus minimus*; малая ягодичная мышца.

176. Superior gemellus, *gemellus superior*; верхняя близнецовая мышца.

177. Inferior gemellus, *gemellus inferior*; нижняя близнецовая мышца.

178. Quadratus femoris, *quadratus femoris*; квадратная мышца бедра.

179. Obturator externus, *obturatorius externus*; наружная запирательная мышца.

180. Tensor fasciae latae, *tensor fasciae latae*; напрягатель широкой фасции бедра.

Muscles of thigh

181. Sartorius, *sartorius*; портняжная мышца.

182. Quadriceps femoris, *quadriceps femoris*; четырехглавая мышца бедра.

183. Rectus femoris, *rectus femoris*; прямая мышца бедра.

184. Vastus lateralis, *vastus lateralis*; латеральная широкая мышца бедра.

185. Vastus intermedius, *vastus intermedius*; промежуточная широкая мышца бедра.

186. Vastus medialis, *vastus medialis*; медиальная широкая мышца бедра.

187. Gracilis, *gracilis*; тонкая мышца.

188. Pectineus, *pectineus*; гребенчатая мышца.

189. Adductor longus, *adductor longus*; длинная приводящая мышца.

190. Adductor brevis, *adductor brevis*; короткая приводящая мышца.

191. Adductor magnus, *adductor magnus*; большая приводящая мышца.

192. Biceps femoris, *biceps femoris*; двуглавая мышца бедра.

193. Semitendinosus, *semitendinosus*; полусухожильная мышца.

194. Semimembranosus, *semimembranosus*; полуперепончатая мышца.

Muscles of leg

195. Tibialis anterior, *tibialis anterior*; передняя большеберцовая мышца.

196. Extensor digitorum longus, *extensor digitorum longus*; длинный разгибатель пальцев.

197. Extensor hallucis longus, *extensor hallucis longus*; длинный разгибатель большого пальца стопы.

198. Peroneus longus, *peroneus longus*; длинная малоберцовая мышца.

199. Peroneus brevis, *peroneus brevis*; короткая малоберцовая мышца.

200. Triceps surae, *triceps surae*; трехглавая мышца голени.

201. Gastrocnemius, *gastrocnemius*; икроножная мышца.

202. Calcaneal (Achilles) tendon, *tendo calcaneus seu Achillis*; пяточное или Ахиллово сухожилие.

203. Soleus, *soleus*; камбаловидная мышца.

204. Plantaris, *plantaris*; подошвенная мышца.

205. Popliteus, *popliteus*; подколенная мышца.

206. Flexor digitorum longus, *flexor digitorum longus*; длинный сгибатель пальцев.

207. Tibialis posterior, *tibialis posterior*; задняя большеберцовая мышца.

208. Flexor hallucis longus, *flexor hallucis longus*; длинный сгибатель большого пальца стопы.

Muscles of foot

209. Extensor digitorum brevis, *extensor digitorum brevis*; короткий разгибатель пальцев.

210. Extensor hallucis brevis, *extensor hallucis brevis*; короткий разгибатель большого пальца стопы.

211. Abductor hallucis, *abductor hallucis*; мышца отводящая большой палец стопы.

212. Flexor hallucis brevis, *flexor hallucis brevis*; короткий сгибатель большого пальца стопы.

213. Adductor hallucis, *adductor hallucis*; мышца приводящая большой палец стопы.

214. Flexor digitorum brevis, *flexor digitorum brevis*; короткий сгибатель пальцев.

215. Quadratus plantae, *quadratus plantae*; квадратная мышца подошвы.

216. Lumbricals, *lumbricales*; червеобразные мышцы.

217. Interossei plantares, *interossei plantares*; подошвенные межкостные мышцы.

218. Interossei dorsales, *interossei dorsales*; тыльные межкостные мышцы стопы.

219. Abductor digiti minimi, *abductor digiti minimi*; мышца отводящая мизинец стопы.

220. Flexor digiti minimi, *flexor digiti minimi brevis*; короткий сгибатель мизинца.

Topography of the lower limb

221. Muscular space, *lacuna musculorum*; мышечная лакуна.

222. Vascular space, *lacuna vasorum*; сосудистая лакуна.

223. Femoral triangle, *trigonum femorale*; бедренный треугольник.

224. Iliopectineal groove, *sulcus iliopectineus*; подвздошно-гребенчатая борозда.

225. Anterior femoral groove, *sulcus femoralis anterior*; передняя бедренная борозда.

226. Adductor canal, *canalis adductorius*; приводящий канал.

227. Popliteal fossa, *fossa popliteal*; подколенная ямка.

228. Cruropliteal canal, *canalis cruropopliteus*; голено-подколенный канал.

229. Canalis musculoperoneus superior; верхний мышечно-берцовый канал.

230. Canalis musculoperoneus inferior; нижний мышечно-берцовый канал.

231. Medial planatar groove, *sulcus plantaris medialis*; медиальная подошвенная борозда.

232. Lateral plantar groove, *sulcus plantaris lateralis*; латеральная подошвенная борозда.

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