BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

Department of human anatomy

GUIDELINES

Student's independent work during the preparation to practical lesson

Academic discipline	*HUMAN ANATOMY*
Module №	*1*
Content module №	*4*
The topic of the lesson	**Muscles of the back**
Course	1
Number of hours	*3*

Kiev 2017

1. Specific objectives:

After completing the course, the student must know and be able to:

1.1 To characterize muscle as the body muscles classify topography, shape, structure and functions and its family, understand the levels of muscles called the elements of the support system.

1.2 To analyze the movements of the joints of the human skeleton and define groups of muscles that affect them.

1.3 Identify the region of back.

1.4 To classify back muscles and joints that are leading the movement.

1.5 Demonstrate and describe the features of the anatomical structure of the back muscles.

1.6 Demonstrate the starting point and back muscles that attach to the skeleton.

1.7 To classify back muscles with the definition of antagonists and synergists.

1.8 To demonstrate the movements on the skeleton and the definition of a living person that muscle that moves and performs some joints.

2. Basic level of training.

Students must know and be able to:

2.1 Name formulation and demonstrate to the bone of the skeleton of the trunk and shoulder girdle, bones.

2.2 Demonstrate on the skeleton characteristics and possible spine motion in the spine.

2.3 Name and demonstrate to the drug (skeleton) bones of the shoulder girdle and upper limb free.

2.4 Name formulation and demonstrate the connection of bones of the chest.

2.5 Identify motion in the shoulder joint and back muscles that act on it.

2.6 Possess classification of the back muscles.

3. Organization of the content of educational material.

The teaching material is described in logical sequence with the involvement of structural and logical schemes, tables, drawings, which reflect the content of the main issues of the topic of practical classes.

Educational material.

The muscles and fascia of the body *(musculi et fasciae trunci).*

The muscles of the trunk are divided into muscles of the back, chest and abdomen. In this section the diaphragm is studied.

Muscle and fascia of the back *(musculi et fasciae dorsi)*

The back area is limited on the top by the outer occipital protuberance, the upper cardinal line, from below - the crests of the iliac bones and the coccyx, on the sides - Rear axillary lines. Consequently, the muscles located in the cervical region of the neck are the muscles of the back.

Muscles are back *(mm. dorsi) per share on surface topography and deep.*

Classification of back muscles:

Superficial back muscles (mm. Dorsi superficiales).

Trapezoidal muscle *(M. Trapezius).*

- *M. latissimus dorsi is the first layer of superficial back muscles.*

• *M. levator scapulae, mm. rhomboideus major et minor . This is the second layer of muscles.*

Mm.serrati superior et inferior posteriors. These are the muscles of the third layer.

The deep back muscles (mm. dorsi profundi).

(m. splenius capitis et cervicis) , muscle - rectifier spine (m. Erector spinae). Last consist of three : iliacrib (m. Iliocostalis), longest (m. Longissimus) andostovoho (m. Spinalis). This is a long, deep back muscle.It contains three muscles

mm. semispinales,

mm. multifidi,

mm. rotatores.

This group also includes interspinal muscles (mm. Interspinales), intertransversal muscles (mm. intertransversarii): chest, back of the neck, waist medial; suboccipital muscles (mm. suboccipitals).It's short deep back muscles.

- Front intertransversal neck muscles (mm. intertransversarii anteriores cervicis),

-Lateral transverse muscles of the waist (mm. intertransversarii laterales lumborum), muscle - lifts ribs (mm.levatores costarum).

Classification of the back muscles shape, structure

External muscles of the back.

First layer

• **Trapezial muscle** *(m. trapezius), flat triangular, is formed by the same name opposite muscle trapezoid shape. The muscle has a spacious beginning - from the outer occipital protuberance, the upper cardiac line, the ligament, the cervical spine of the VIIth cervix and all the thoracic vertebrae. It attaches to the acromial end of the collarbone, shoulder blade, acromonium. Muscle fibers - the beams are divided on the upper - down, middle - horizontal, lower - ascending, which in general converge. The upper bundles raise the shoulder blade and the entire shoulder belt, the lower one - it is lowered, the middle beams and the contraction of the entire muscle close the shoulder to the spine. The bilateral contraction of the muscle extends the head and neck.*

• **The broadest muscle of the back** *(m. Latissimus dorsi) starts from the median sacral iliac crests and from all spinous processes of the lumbar and lower thoracic vertebrae six from the lower three or four ribs. Aponeurotic beginning passes into flat muscle, its bundles converge, going from below upwards and laterally. The muscle is attached to the crest of the small hump of the shoulder bone. He leads, extenses and pulls the shoulder, and at a fixed shoulder tightens the torso, raises the last 3-4 ribs.*

Second layer

• **Muscle-blade lifts** *(m. levator scapulae) starts from the back hills of the transverse processes of the four upper cervical vertebrae and attaches to the upper corner of the scapula. The muscle rises the shoulder blade.*

• **Small diamond-shaped muscle** *(m. rhomboideus minor) starts from two spinous processes of the lower cervical vertebrae and attached to the medial zhrayu blades. The muscle rises and leads to the spine of the shoulder blade.*

• **Large diamond-shaped muscle** *(m. rhomboideus major) starts from the spinous processes of the upper four thoracic vertebrae and attached to the medial edge of the scapula below the scapular spine. The muscle leads to the spine and raises the shoulder blade.*

The third layer.

• **The upper back muscle** *(m. serratus posterior superior) starts two spinous processes of the lower cervical and upper thoracic vertebrae two and attached to the II-V ribs. The muscle rises.*

• **Lower back gear muscle** *(m. Serratus posterior inferior) starts two spinous processes of the lower thoracic and upper two lumbar vertebrae and attached to the lower four ribs. The muscle lowers the ribs, as the previous one is an auxiliary respiratory muscle.*

Deep muscles of the back (long)

T**he first (external) layer.**

• *M. splenius capitis starts from four spinous processes of the lower cervical and upper three or four thoracic vertebrae and attached to the mastoid and upper linea nuchae. Muscle turns its head towards the reduction, reducing its bilateral unbend.*

• *M. splenius cervicis starts from the spinous processes of*

IV - VII thoracic vertebrae and is attached to the rear transverse processes hills of the top two vertebrae. The muscle turns its head towards the contraction, and with a double contraction, the cervical spine is extended.

Muscles - rectilinear spine.

And the **lateral tract:**

• *Mm. iliocostalis lumborum begins her from the back surface of the sacrum and the iliac crest and attached to the corners of the lower eight ribs. The muscle extends the spine, lowering the ribs.*

• *Mm. iliocostalis thorac*is *starts at six corners of the lower ribs and attached to the corners of the upper six ribs and transverse processes of the cervical vertebra VII. The muscle extends the spine and cuts it to its side.*

• *Mm. Iliocostalis cervices starts angles III - VI edges and attached to the transverse processes IV - VI cervical vertebrae. The function of the club-rib muscle as a whole is to untwist the spine and bend it to your side. The neck section raises the ribs.*

Second layer

• *M. transversospinalis consists of three muscle groups:*

1) *Mm. semispinals*

2) *Start from the transverse processes "area attached to the vertebrae and spinous processes of the vertebrae upstream throughout the spine (from the sacrum to the second second cervical vertebra), tumbling 2-4 vertebrae. The muscles rotate the spine around its axis, bend in the opposite direction and extend it.*

3) Muscles-Rotators *(mm. rotatores) start downstream transverse processes of the vertebrae and attached to the upper spinous processes of the vertebrae (or tumbling through one vertebra). The muscles spin the spine.*

• *M. semispinalis capitis begins to cross the six upper thoracic vertebrae and five lower articular processes of the cervical vertebrae. .*

- *M. semispinalis cervicis starts from the transverse processes of the upper thoracic vertebrae and is attached to the spinous processes of the lower six cervical. The function is similar to the previous muscle.*
- *M. semispinalis thoracis starts from the processes of lower six thoracic vertebrae and attached to the spinous processes*

Third layer

- *Mm. interspinals lumborum keep the spine in an upright position*
- *Mm. Interspinales cervicis and* **chest** *(mm. interspinal e s th oracis*) *less developed, and chest - may be absent, their function is similar.*
- *Mm. intertransversarii:*
- *Mm. intertransversarii anteriores et poster iores* cervicis) *are located, respectively, between the front and rear transverse processes hills The transverse muscles of the chest in most cases are absent.*
- *Mm .levatores costarum short (breves) The function of the muscles is indicated in the title.*
- *Mm. rectus capitis posterior minor)*

Begins from the hindquarter of Atlanta and is attached to the median part of the lower card line. The muscle cuts its head in its direction, and with a double contraction - back.

5. Methodology of organization of educational process in practical lesson.

5.1. **Preparatory stage.**

5.1.1. To draw students' attention to the structural and functional unit, the features of the structure and function of the muscles. Formation of students' motivation for in-depth study of the main provisions of myology, the ability to perceive muscle as an organ.

5.1.2. Students' acquaintance with concrete goals and the plan of study on the material "Methodical recommendations for teachers" under item 1. - Specific goals; For item 3. Organization of the content of educational material.

5.1.3. Conduct standardized control of the initial level of students' training:

- By tests on a control topic;

-The control questions to check the initial level of student training.

5.2. **The main stage.** *Practical work of students mounted a muscular corpse, human skeleton, pictures of atlas, the textbook. It is recommended to repeat the bones of the trunk and their connections.*

First of all, it is necessary to master the complex classification of the muscles of the back, which is based on the principles of origin and location (embryological and topographical classification) of muscles. Consider the superficial muscles of the back, their groups:

- muscles that are attached to the shoulder girdle and shoulders, and the muscles that are attached to the ribs. Carefully study the beginning and attachment of each muscle, pay attention to the course and direction of their fibers, the location of the muscle relative to the joints. Determine the function of each muscle. In the same way, consider the deep muscles of the back, pay attention to the groups of deep muscles of the back:

Studying the deep (own) fascia of the back determine the beginning and attachment of its surface and deep leaves, find the place of their merger on the preparation.

5.3. **Final stage.** *Standardized control of the final level of knowledge is carried out. It evaluates the current success of each student during the class and is displayed in the log of the records of visits and progress, evaluation. Estimates are announced and the senior member at the same time puts them in a record of the success of attending classes by students, and the teacher certifies them with their signature.*
Students are informed about the topic of the next lesson and methodical methods, as well as preparation for it.

6. Attachments. Means for control:

- Tests
- Practical problems concerning illustrations teach. method. Mod-1 manual
- Control questions:

Attachments

The basic level of training . In yhidnyy knowledge and skills.

1.Name and show spine.
2. Demonstrate bone skeleton torso.
3.Show on the bones zone and free limbs place of attachment of muscles .
4.Which types of connections do the trunk bones have?
5. How are processes of the vertebrae connected?
6.Demonstrate connect the vertebrae to the skull.
7.What kinds of joints connecting the bones of the body from the shoulder girdle.
8.Determine movements are possible in the spine.
9.Name and show the connection of bones chest.
10.Determine motion in the shoulder joint.
11. Demonstrate the occipital bone in place for the attachment of muscles.

Questions for Initial knowledge:

1.Give the classification of muscle tissue.
2. What parts does the muscle have?
3.Name the auxiliary unit muscles.
4.Which grounds are muscles of the trunk classified by?
5. What is the classification of superficial back muscles.
6. What muscles are responsible for embryological classification of the deep back muscles.
7.Name multi-joint back muscles, and demonstrate their preparation.
9.Demonstrate back muscles participating in breathing.
10. Name the back muscles acting on atlanto- occipital joint.
11.To demonstrate superficial back muscles that do not start from the spinous processes.

Questions to control the final level of knowledge:

1. Give topographic classification of the back muscles .
2. Demonstrate and describe superficial back muscles.
3. Name and demonstrate the deep back muscles describe m'yaz- straighten mlyach spine .
4. Give embryological classification of the back muscles .
5. Describe the autochthonous muscles of the back of the first layer. Which leads to movement of joints?

6. Describe demonstrate the deep muscles of the back of the second layer. Which leads to movement of joints .
7. Describe demonstrate the deep muscles of the back of the third layer.
8. Demonstrate and describe the back muscles that act on the shoulder girdle.
9. Describe the muscles of the back surface of the first layer operating in the shoulder joint.
10. Describe the muscles of the back surface of the second layer which operate on the shoulder joint.
11. Describe the muscles of the back surface of the third layer operating in the shoulder joint.

Tests

1. In a woman of 59 years, leaky bumping was found in the back of the lumbar region triangle Diagnosis is established: the keel of the lumbar triangle. How limited is this triangle?
A.M.latissimus dorsi, m.obliquus ext.abdominis, cristae iliacae.
B. M.Serratus posterior inferior, m.latissimus dorsi, m.obliquus ext. abdominal
C. M.erector spinae, crista iliaca, m.obliquus int.abdominal.
D. M.erector spinae, m.obliquus ext. abdominal, m.obliquus int. abdominal
E. M.Transversal abdominal m. latissimus dorsi, m.quadratus lumborum.
2. Patients 40 years after the trauma of the mastoid process of the temporal bone can not turn your head into side of the damage. What muscles do not perform their function?
A. M. longissimus capitis, m. splenius capitis.
B. M. longissimus cervicis, m. splenius cervicis.
C. M. iliocostalis cervicis, m. splenius capitis.
D.M. longissimus capitis, m. spinal cervicis
E. M. spinalis capitis, m. semispinalis capitis.
3. Patient 20 years with damage to the front branches of the spinal nerves impaired innervation of the muscles of the ventral back. What muscles are damaged?
A. M. Rhomboideus , m. splenius capitis.
B. M. latissimus dorsi, m. splenius cervicis.
C. M. serratus posterior superior, m. serratus posterior inferior.
D.M. levator scapulae, m. erector spinae
E.M. Trapezius, m. rhomboideus major.
4. As a result of injuries, the patient is 36 years old transverse processes of the upper cervical vertebrae and muscle which is from them begins. What muscle is damaged?
A. M.levator scapulae.
B. M. rhomboideus minor.
C. M. trapezius.
D.M. serratus posterior superior.
E. M. rhomboideus major.
5. In a patient with 30 years of damage to the branches of the shoulder plexus resulted in loss functions of the tongue-capillary and trunk-folding muscles of the back. What muscles have lost functions?
A. M. Latissimus dorsi, m. levator scapulae, mm.rhomboidei.
B. M. splenitis capitis, m.splenius cervicis.
C. M. liocostalis thoracis, m.iliocostalis cervicis.
6. The victim 60 years of fracture of the upper part of the humerus as a result fall. Changes in the function of the muscle of the spine, which is attached to crista tuberculi minoris humeri What muscle is damaged?

A.M. Trapezius.
V. M. rhomboideus major.
C.M. rhomboideus minor
D.M. latissimus dorsi
E.M. serratus posterior superior.
7. A patient 40 years with damage to the back branches of the spinal nerves is disturbed innervation of autochthonous back muscles. What muscle has lost function?
A. M.erector spinae.
B. M.serratus posterior inferior.
C. M.serratus posterior superior.
D. M.levator scapulae.
E. M. M. rhomboideus minor.

8. In a patient after a thoracic injury, there is pain during breathing, especially at exhale What surface muscle of the back lowers the ribs and participates in the exhalation?
A. M. latissimus dorsi.
B. M.serratus posterior inferior.
C. M. rhomboideus major.
D.M. Trapezius.
E. M. serratus posterior superior.
9. At the victim 30 years a scalped wound of the cervical area as a result of the fall. Damaged subcutaneous muscles of the neck, which are attached to the ipeae nuchalis inferioris. What muscles are damaged?
A. M. Spinal Capitis, m. obliquus capitis inferior.
B. M. obliquus capitis inferior, m. obliquus capitis superior
C. M. obliquus capitis inferior, m. splenius capitis.
D.M. longissimus capitis, m. Spinal cord
E. M. rectus capitis posterior minor, m. rectus capitis posterior major, m. obliquus capitis superior
10. A severe 50 years diagnosed - right shoulder plexitis plexus, whose branches innervate the trunk muscle of the back. The patient can not bring the right shoulder to the spine. What muscle does not perform function?
A. M. latissimus dorsi.
B. M. rhomboideus major.
C. M. levator scapulae.
D.M. serratus posterior superior.
E. M. serratus posterior inferior.