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 lower limb**
Course	Medical 1,2,3,4, military,dental
Number of hours	3

Kiev -2017

1. Specific objectives:

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

1.1 Classify muscles of the lower extremity.

1.2 Demonstrate the muscles of the lower limb, the place where they begin and attach, and define their functions.

1.3 Determine the involvement of individual muscles of the lower limb in the implementation of certain types of movements.

2. Basic level of training

Students must know and be able to:

2.1. Know lectures on general osteology, arthrology and myology.

2.2. Demonstrate areas of the lower extremity.

2.3. Demonstrate and describe individual lower limb bones.

2.4. Describe the joints, movements in which provide muscles of the lower extremity.

2.5. Describe possible movements in the joints of the lower extremity.

3. Organization of the content of educational material

Study material is studied in a logical sequence from the central to the peripheral parts of the lower limb with the involvement of structural and logical schemes, tables, drawings, which reflect the content of the main issues of the topic, using anatomical drugs and dummies.

4. Content of educational material

The muscles of the lower limb are divided into muscles of the pelvic belt, muscle of the thigh, muscle legs and feet muscles: musculi cinguli pelvici, muscle femoris, musculi cruris, muscle of the foot (musculi pedis).

Inner group:

M. iliopsoas bends the lower extremity in the hip joint and turns the thigh outward.

M.obturatorius internus, the upper twin **m.piriformis**, the lower **m.gemellus inferior** muscles turn the thigh outward and divert it.

External group:

M.gluteus maximus extends the lower extremity in the hip joint and turns it outwards.

M.gluteus médius diverts the thigh, the front beams rotate it to the middle, and the rear to the outside.

M.gluteus minimus draws a hip, the front beams turn it to the middle, and the rear to the outside.

M.tensor fasciae latae tightens a wide hip fascia, strengthens the knee joint in a protruded state.

M.obturatorius exernus rotates the hip externally, takes part in bending the hip joint.

Thigh muscle:

Front group:

M.sartorius bends the hip joint, draws its thigh and turns it outside, bends the knee joint.

M.quadriceps femoris is a powerful extension of the lower extremity in the knee joint, and the straight **m.rectus femoris** additionally bends the lower extremity in the hip joint.

Rear group:

M.biceps femoris extenses the hip joint, bends the knee and, with a bent knee joint, turns the shin out.

M.semitendinosus extenses the hip joint and bends the knee, rotates to the middle of the shin when bending in the knee joint.

M.semimembranosus extenses the hip joint and bends the knee, rotates to the middle of the shin when bending in the knee, pulling out the capsule of the knee joint.

Medium group:

M.pectineus performs flexion in the hip joint, leads to the thigh.

The thin muscle **m.gracilis** leads to the thigh, flexes and promotes the knee joint.

M.adductor brevis leads to the thigh and performs flexion and supination in the hip joint.

M.adductor magnus leads to the thigh and participates in the expansion of the hip joint.

M.adductor longus leads to the thigh and performs flexion and supination in the hip joint.

Leg muscles:

Front group:

M.tibialis anterior performs the extension of the foot in the adnexal-tibia and suppines the foot.

M.extensor digitorum longus performs the extension of the foot in the interphalangeal, pleural-phalangeal (II-V), supra-tibia joints.

The long muscle extensor of the thumb (m.extensor hallucis longus) expands the thumb.

Rear group:

M.triceps surae , which consists of mucous membranes (m.gastrocnemius) and floss (m.soleus), performs the flexion of the foot, reduction and supination in the adnexal-tibia joint.

M.plantaris performs the flexion of the foot in the supra-abdominal joint, pulls the capsule of the knee joint.

M.orliteus performs the bending of the lower limb in the knee joint, tightens its capsule, pierces the shin.

M.flexor digitorum longus performs the bending of the II-V of the fingers in the interphalangeal, pleural joints, bends the foot in the tibia joint.

M.flexor hallucis longus.

M.tibialis posterior performs the flexion of the foot .

Side Group:

M.fibularis longus performs the flexion of the foot in the adnexa-tibia, removing and attracting the foot.

M.fibularis brevis performs the flexion of the foot in the abdominal-abdomen by removing and holding the foot.

Foot muscles:

Back foot muscles:

M.extensor digitorum brevis.

M.extensor hallucis brevis.

Muscles of the sole of the foot:

M.abductor hallucis;

M.flexor hallucis brevis;

M.adductor hallucis;

M.abductor digiti minimi

M.flexor digiti minimi

M.orrons digiti minimi);

M.flexor digitorum brevis);

M.quadratus plantae.

M.lumbricales bend in the foot in the pleural phalanx (II-V) joints, leading these fingers towards the thumb.

M.interossei: soles - lead the fingers III, IV, V to the second, the hindquarters - the first muscle leads the second to the big one, the others release the II, III, IV fingers to the little finger.

5. Methodology of organization of educational process in practical lesson

5.1. Preparatory stage

5.1.1 Formation of motivation for the purposeful study of the anatomy of the muscles of the lower limb for the purpose of professional activity: Knowledge of the anatomy of the muscles of the lower limb is the basis for the formation of the clinical thinking of surgeons, orthopedic traumatologists and doctors of sports medicine.

5.1.2 Conduct standardized control of the initial level of students' training:

- by tests of the educational theme "Anatomy of muscles of the lower extremity".
- on questions of control of the basic and initial levels of knowledge.

5.2. The main stage

Practical work of students with the use of anatomical preparation of human corps, moldings, drawings on "Muscles of the lower extremity" is carried out. Self-study by students of the topic is controlled by a teacher. During this control, the individual techniques of the teacher are implemented to facilitate the study of complex anatomical components, as well as the necessary consultations are carried out.

5.3. The final stage

Evaluates the current activity of each student during the class.

Standardized final control is carried out.

An analysis of student activity is conducted.

Announced evaluation of the activities of each student and recorded in the journal of attendance records and student success.

An adult group at the same time puts the marks in the record of the record of success and visits of studies by students, the teacher assures them with their signature.

The teacher informs the students about the topic of the next lesson and methodical methods for preparing for it.

regarding preparation for it.

6. Attachments. Means for control:

- practical tasks concerning illustrations in the manual "Anatomy of a person. Control of independent preparation of students for practical classes »
- questions for controlling the basic level of knowledge of students
- A question for controlling the initial level of knowledge of students
- A question for controlling the final level of student knowledge
- test tasks of format A

1. **Practical tasks** regarding illustrations in the manual "Anatomy of man. Control of independent preparation of students for practical classes »:
   - to work out in the manual different colors of the scheme and drawings in accordance with the subject of the lesson.

2. Questions for controlling the basic level of knowledge of students:

2.1. Name and show the lower limbs.

2.2. Name and demonstrate the sacrum and caudal, lower limb bones.

2.3. Name and demonstrate the connections of the lower limb bones.

2.4. Describe the overall structure of the skeletal muscle as an organ.

2.5. Determine what is referring to the auxiliary apparatus of skeletal muscles.

2.6. Classify the muscles in shape, position, fiber direction, joints and functions.

2.7. Identify the following main characteristics of the skeletal muscles, such as the concept of the onset and attachment of muscles and their action on the joints.

3. Questions for controlling the entry level knowledge of students:

3.1. Name the muscles of the middle group of muscles of the sole.

3.2. Name the back muscles of the shin.

3.3. Name the place of attachment of the big mitral muscle.

3.4. Name the place of the start of a long drive muscle.

3.5. Name the muscles of the lateral group of muscles of the sole.

3.6. Name the muscles of the front and middle groups of hip muscles.

3.7. Name the attachment of the two-headed hip muscle.

3.8. Name the place of the beginning of the transverse muscle.

3.9. Name the lateral and anterior tibia muscles.

3.10. What is the function of the soles of the interstitial muscles?

3.11. Name the place of attachment of the large actuating muscle.

3.12. Name the place of the beginning of the direct muscle of the thigh.

3.13. What is the function of the back of the intramuscular muscles of the sole?

3.14. Name the attachment of the half-tone muscle.

3.15. Name the function of the sternum muscles of the foot.

4. Questions to control the final level of student knowledge:

4.1. Classify the muscles of the lower extremity.

4.2. Name and demonstrate the internal muscles of the pelvic girdle, their start and attachment, and determine the movements that individually perform each muscle.

4.3. Name and demonstrate the outer muscles of the pelvic girdle, start and attach them, and determine the movements that each muscle performs separately.

4.4. Name and show the front thigh muscles, start and attach them and determine the movements that each of the muscles performs separately.

4.5. Name and show the median hip muscles, start and attach them, and determine the movements that each of the muscles performs separately.

4.6. Name and show the back muscles of the thigh, start and attach them, and determine the movements that each of the muscles performs separately.

4.7. Name and demonstrate the anterior muscles of the shin, start and attach them, and determine the movements that each of the muscles performs separately.

4.8. Name and demonstrate the lateral leg muscles, start and attach them, and determine the movements that each of the muscles performs separately.

4.9. Name and show the back muscles of the shin, start and attach them, and determine the movements that each of the muscles performs separately.

4.10. Name and demonstrate the muscles of the back of the foot and determine the movements that they perform.

4.11. Name and demonstrate the muscles of the middle group of muscles of the sole and determine the movements that they perform.

4.12. Name and demonstrate the muscles of the lateral group of muscles of the sole and determine the movements that they perform.

4.13. Name and demonstrate the muscles of the middle group of the muscles of the sole and determine the movements that they perform.

4.14. What are the muscles that make flexion and extension in the hip joint?

4.15. What are the muscles that drive and pull in the hip joint?

4.16. What are the muscles that rotate in the hip joint to the outside and to the middle?

4.17. What are the muscles that bend and bend in the knee joint?

4.18. What are the muscles that rotate in the knee outside and to the middle?

4.19. What are the muscles that make flexion and extension in the adnexal-tibia joint?

4.20. What are the muscles that perform flexion and extension in the pleural phalangeal and interphalangeal joints of the foot?

4.21. What are the muscles that carry out the removal and removal in the pleural phalanx joints?

Test tasks "KROK-1"

1. During the final game, the basketball player damaged the right shin, resulting in the impossibility of bending the right foot. The team doctor found that the tendon is damaged, which is fixed to the tuber calcanei. Which muscle tendons have been damaged?

A. M. triceps surae.
B. M. extensoris hallucis longi.
C. M. tibialis anterioris.
D.M. biceps femoris.
E. M. sartorii.

2. A child with a sore wound was delivered to the clinic
the soles of the right foot. When surgically treating a wound doctor
He discovered a stiff tendon from the sinew axis in the projection of os cuboideum The patient has limited elevation of the lateral edge stop What function of the muscle is broken?

A. M. triceps surae.
B. M. tibialis anterior.
C. M. extensor digitorum longus.
D. M. quadriceps femoris.
E.M. peroneus longus.

3. Due to the fracture of the tibia, there were
Damaged muscle of the anterior group of the shin. Function of which muscle can be broken?

A. M. extensor hallucis longus.
B. M. flexor digitorum tenderness.
C. M. fibularis longus.

D.M. soleus.
E.M. extensor digitorum brevis.

4. An athlete basketball player complains about pain in the back , ankle sprain, increasing during walking. Which of the tendons of muscle is probably damaged?
A. M. fibularis longus.
B. M. tibialis posterior.
C. M. flexor digitorum longus.
D.M. triceps surae.
E. M. fibularis brevis.

5. As a result of the accident, the patient experienced severe pain and edema in the anterior abdominal region, the reversal of the foot is impossible, the hind limb flexion is limited. Which function of the muscles of the leg probably suffered?
A. M. flexor digitorum longus.
B. M. tibialis anterior.
C. M. flexor hallucis longus.
D. M. fibularis longus.
E. M. fibularis brevis.

6. In a patient with knife wounds, the thigh is complicated extension of the shin. Which of the muscles got worse?
A. M. biceps femoris.
B. M. gracile.
C. M. sartorius.
D. M. quadriceps femoris.
E.M. semitendinosus.

7. A man, 52 years old, as a result of the fall is torn heel tendon What is the motion in the adrenal-spinal cord joint will be broken?
A. Expansion
B. Bending.
C. Disposal.
D. Bringing.
E. Expansion and removal.

8. During a car accident, the boy was split up patella. What function of the muscle it will be affected?
A. M. sartorius.
B. M. biceps femoris.
C. M. quadriceps femoris.

D.M. semitendinosus.
E. M.semimembranosus.

9. During a car accident in a man, 42 years old,damaged muscles of the middle group of the thigh. What kind of movement hips can not perform sick?
A. Rotation.
B. Disposal.
C. Bending.
D. Expansion
E. Bringing.

10. During the final game basketball player has damaged the bottom third of the hind leg, resulting in it becoming it is impossible to bend the right foot. What muscle did the doctor find during the examination?
A. M. biceps femoris.
B.M. triceps surae.
C. M. tibialis anterior.
D.M. sartorius.
E. M. extensor hallucis longus.

11. During a car accident in a man, 27 years old, the muscles of the anterior group of the leg were damaged. What movement of the foot will be disturbed in the patient?
A. Bringing.
B. Bending.
C. Disposal.
D. Expansion
E. Rotation.

12. At the reception office of the hospital delivered sick with a cut wound of the lower third of the shin with sides of the small-shoulder edge of the foot. At inspection it was found that the patient can not attract and bend the foot.
What muscles are damaged?
A. M. fibularis longus, m. tibial anterior.
B. M. fibularis longus, m. fibularis brevis
C. M. tibialis anterior, m. tibial posterior.
D. M. tibialis anterior, m. flexor hallucinous longus.
E. M. tibialis posterior, m. flexor hallucinous longus.

13. The hospital's reception department is delivered a man with a deep cut-off wound of the lower third the anterior tibia, resulting in it not can turn off the stop. What muscle is damaged?

A. M. extensor hallucis longus.
B. M. extensor digitorum longusing.
C. M. tibialis anterior.
D. M. tibialis posterior.
E.M. flexor hallucis longus.

14. During a car accident, a woman was injured the lower third of the median surface of the thigh, in as a result, he can not throw a sick leg on a healthy one sedentary state (in the absence of damage to the bones). Which muscle was injured?

A.M. semitendinosus.
B.M. semimembranous.
C. M. sartorius.
D. M. gracilis.
E. M. quadriceps femoris.

Answers

1	2	3	4	5	6	7	8	9	10	11	12	13	14
A	E	A	D	B	D	B	C	E	B	D	B	C	C