

BOGOMOLETS NATIONAL MEDICAL UNIVERSITY

Department of human anatomy

GUIDELINES

<i>Academic discipline</i>	HUMAN ANATOMY
<i>Module №</i>	1
<i>Content module №</i>	2
<i>The topic of the lesson</i>	Bones of the lower limb
<i>Course</i>	1 st
<i>Number of hours</i>	3

1. Specific objectives:

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

- 1.1. To determine and to show parts of the lower limbs.
- 1.2. Identify and demonstrate the bones that are in each of the lower limbs' sections .
- 1.3. To describe and display the anatomy of the pelvic, femur, tibia and fibula bones, foot bones and patella.

2. Basic level of preparation.

Students must know and be able to:

- 2.1. Define the anatomical plane and the axis of the human body and anatomical terms to indicate the location of the bones of the upper limb on these planes.
2. 2. Classify bones in shape.
2. 3. To call and show parts of a long tubular bone.

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.

4. The content of the material.

Skeleton of the lower limbs (bones The bottom limbs, *ossa membri inferioris*) consists of the pelvic girdle and free lower limbs.

Cingulum membri inferioris

Pelvic (hip) bone, *os coxae*, is formed with the iliac, pubic and sciatic bones, that are fused at the age of 14-22 years. In children under 14 years of age, these bones are separated from each other by cartilage layers. In the place of fusion of pelvic bones bodies on the outer surface of the pelvic bone is formed *acetabulum*. It is limited by the high edge of acetabular (*limbus [margo] acetabuli*), which contains the *incisura acetabuli*.

Ilium, osilium, is composed of the body of the ilium (*corpus ossis ilii*), which forms the upper part of the acetabulum, and extended ilium (*ala ossis ilii*). Curved line, *linea arcuata*, separates the inner surface of the body of ilium wing. Upper thickened and S-shaped curved edge of the ilium is called the iliac crest (*crista iliaca*), or iliac crest (*cris ossis ilii*). In iliac crests rough lines are visible for attachment of muscles of the abdomen, outer lip, *labium externum*, inner lip, *labium internum*, and an intermediate line, *linea intermedia*.

Sciatic bone, *os Ischii* consists of sciatic bones of the body (*corpus ossis ischii*), which supplements the bottom of the acetabulum, and branches of the sciatic bone (*ramus ossis ischii*).

Pubic bone, *ospubis*, consists of the body (*corpus ossis pubis*), upper branch of the pubic bone (*ramus superior ossis pubis*) and the lower branch of the pubic bone (*ramus Inferior Shake up pubis*). On top of the pubic bone is pubic mound, *tuberculum pubicum*. The lower edge of the upper branch of the pubic

bone that surrounds the obturator hole, which contains obturator sulcus (*sulcus obturatorius*), limited with the obturator tubercle (*tuberculum obturatorium anterius*) and unstable posterior obturator tubercle (*tuberculum obturatorium posterius*).

Skeleton of the free part of the lower limb

Free skeleton of the lower limb (*pars libera membri inferioris*) consists of the femur, tibia and fibula bones, patella, tarsals bones, shank and toes.

Femur (*os femoris*) - the largest long tubular bones of man. It has a body and two ends. At the end located proximal femoral *head, caput femoris*. In the visible head there is the femoral head fossa, *fovea capitis femoris*, which is attached to the ligament of the femoral head. Femoral *neck, collum femoris*, connects the head to the body of the femur at an angle of 120 -130 °, which is slightly less in women, depending on the width of the pelvis.

The body of the *femur, corpus ossis femoris, is* slightly curved forward. The back surface of the body is longitudinally rough *line, linea aspera*, which consists of the medial lip (*labium mediale*) and lateral lips (*labium laterale*). Proximal medial lip continues in the comb line (*linea pectinea*), reaching a small swivel.

The distal end of the femur consists of two inverse backwards condyle, medial condyle (*condylus medialis*) and lateral condyle (*condylus lateralis*).

Patella, *patella*, - the largest bone that lies in the thickness of the four-head muscle of the thigh. The joint surface of the knee is divided by a small vertical comb on two facets: a large lateral and a smaller mediocre; The front surface, *facies anterior*, patella has a shallow longitudinal grooves and easily palpated through the skin.

Tibia, tibia, - the long bone that has a body and two ends. The body of the *tibia, corpus tibiae*, a three-sided shape. The body has sharp cutting *edge, margo anterior*, lateral interosseous edge, *margo interosseus*, and medial edge, *margo medialis*. The front edge of the top thickens, forming the tuberosity of the tibia, *tuberositas tibiae*, which attaches the quadriceps tendon thigh. Between the edges there are three surfaces: medial surface, *facies medialis*, lateral surface, *facies lateralis*, and a rear surface, *facies posterior*.

The distal end of the tibia contains *malleolus medialis*. On the back bone there is *sulcus malleolaris*. Sagittal articular surface is smooth (medial) ankle, *facies articularis malleoli medialis*.

Fibula, fibula, (December. *Perone*), - the typical long tubular bones. The body of the fibula, *corpus fibulae*, slightly twisted and curved along the length of the medial side. The body of distinguished cutting edge, *margo anterior*, posterior edge, *margo posterior*, and medial interosseous sharp edge, *margo interosseus*. This region share the following surfaces: medial surface (*facies medialis*), the lateral surface (*facies lateralis*) and back surface (*facies posterior*). The back surface obliquely crosses medial ridge, *crista medialis*, which separates the starting point of the posterior tibial 'yaza and long flexor muscles of the thumb.

The distal end of the fibula forms the lateral ankle (*malleolus lateralis*).

Bones of the foot

At the foot (*pes*) there are *tarsus*, *metatarsus* and *digiti pedis*. The thumb of the foot is called **hallux**.

Ossa tarsi are placed in two rows - proximal (rear) and distal (front). The proximal (back) row consists of heel and abscesses, and distal (forward) - boat-shaped, cuboid and wedge-shaped bones.

Heel **bone, calcaneus**, - the shortest human cancellous bone. On top of the heel bone there are front, middle and rear talar articular surface (***facies articularis talaris anterior, media et posterior***), which form the joints of the talus bone. Between the middle and rear surfaces of the articular calcaneus placed groove, ***sulcus calcanei***. The average articular surface is placed on a process calcaneus - the so-called backwater talus bone (***sustentaculum tali***).

Talus **bone, talus**, has a body (***corpus tali***), neck (***collum tali***) and head (***caput tali***). The upper surface, ***facies superior***, medial block delimited by stone surfaces (***facies malleolar medialis***) and lateral surface of the stone (***facies malleolar lateralis***) using curved rolls unit.

Navicular bone, ***os naviculare***, located between talar and three sphenoid bones. On the back of the boat bone there is a concave articular surface for joints with the bone marrow, in the front there are three surfaces for joining with wedge-shaped bones, and on the side is a non-permanent surface for joining with a cuboid bone.

Cuboid bone, ***os cuboideum***, is located between the calcaneus and the basics IV and V metatarsal bone.

The bones of the toes, ***ossa digitorum pedis***, are shorter than the corresponding bones fingers. Each finger on the foot except I finger has three phalanges: proximal phalanx (***phalanx proximalis***), middle phalanx (***phalanx media***) and the distal phalanx (***phalanx distalis***). The skeleton of the first toe (***hallux***) has only proximal and distal phalanx. Phalanx with body and head basis (***corpus, basis et caput phalangis***).

5. Method of the educational process at the practical lesson.

5.1. Preparatory stage.

In order to form the motivation for learning activities focused theme emphasizes the importance of training for further education at our department and other departments of the university and for professional activities of physicians of any specialty.

Students meet specific goals and plan of occupation.

5.2. The main stage

The main stage involves the study at a poster (in drugs, models, drawings, photographs) using textbooks and atlases and guidance outlining's bone structure features LO noyi limbs.

Studying the anatomy of the pelvic bone starts with defining the boundaries between the clubs, sciatic and iliac bones. Studying the anatomy of the femur, first determine where its body, proximal and distal ends. Then study the structural features of each of these parts. After this set features patella anatomy.

Anatomy of the tibia and fibula bones studied, as well as the femur, since the definition of where their body, proximal and distal ends. If you examine Annie anatomy of the skeleton of the foot begins with determining parts of the foot.

5.3. Final stage.

- Assesses the current activity and the activity of each student during classes;
- A standardized final control students' knowledge on control issues final level of training of students;
- Announcement of students' evaluation;
- Group leader fills in assessment roll of the success and attendance of students, teacher assured them his signature;
- The teacher informs students with content topic next session, recommended instructional techniques training.

6. Applications. Tools for testing:

- practical problems regarding the illustrations in the manual "Human Anatomy. Control over the independent preparation of students for practical training "
 - the question for monitoring students' knowledge base
 - Initial questions for the students' knowledge
 - the question for final control of knowledge of students
 - tests of format (STEP 1)
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APPLICATIONS

Practical tasks:

1. Practical tasks on illustrations in the manual "Human Anatomy. Control over the independent preparation of students for practical training ":
 - Guide out different color schemes and designs according to the subject class.

Issues to monitor students' knowledge base

1. Identify the anatomical plane body and anatomical terms to indicate the location of the bones of the upper limb on these planes.
2. Classify the bones' shape.
3. What part of the long tubular bones.

Questions to control the final level of training

1. Call and show sections of the lower limbs and bones belonging to each department.
2. Determine the identity of individual first pelvic bone to the right or left lower second extremity.
3. Describe and show the structure of the ilium .
4. Describe and show the structure of the sciatic and pubic bone.
5. Identify the separate identity of the femur to the right or left lower limb and at contact and show its structure.
6. Describe and show the structure of the patella.
7. Identify the separate identity of the tibia to the right or left lower limb and at contact and show the structure of its proximal end.
8. Describe and show the structure of the body and the distal end of the tibia .
9. Identify individual fibula belonging to the right or left lower limb and at contact and show its structure.
10. Name and demonstrate departments and foot bones that form them.
11. Describe the structure and show the tarsal bone.