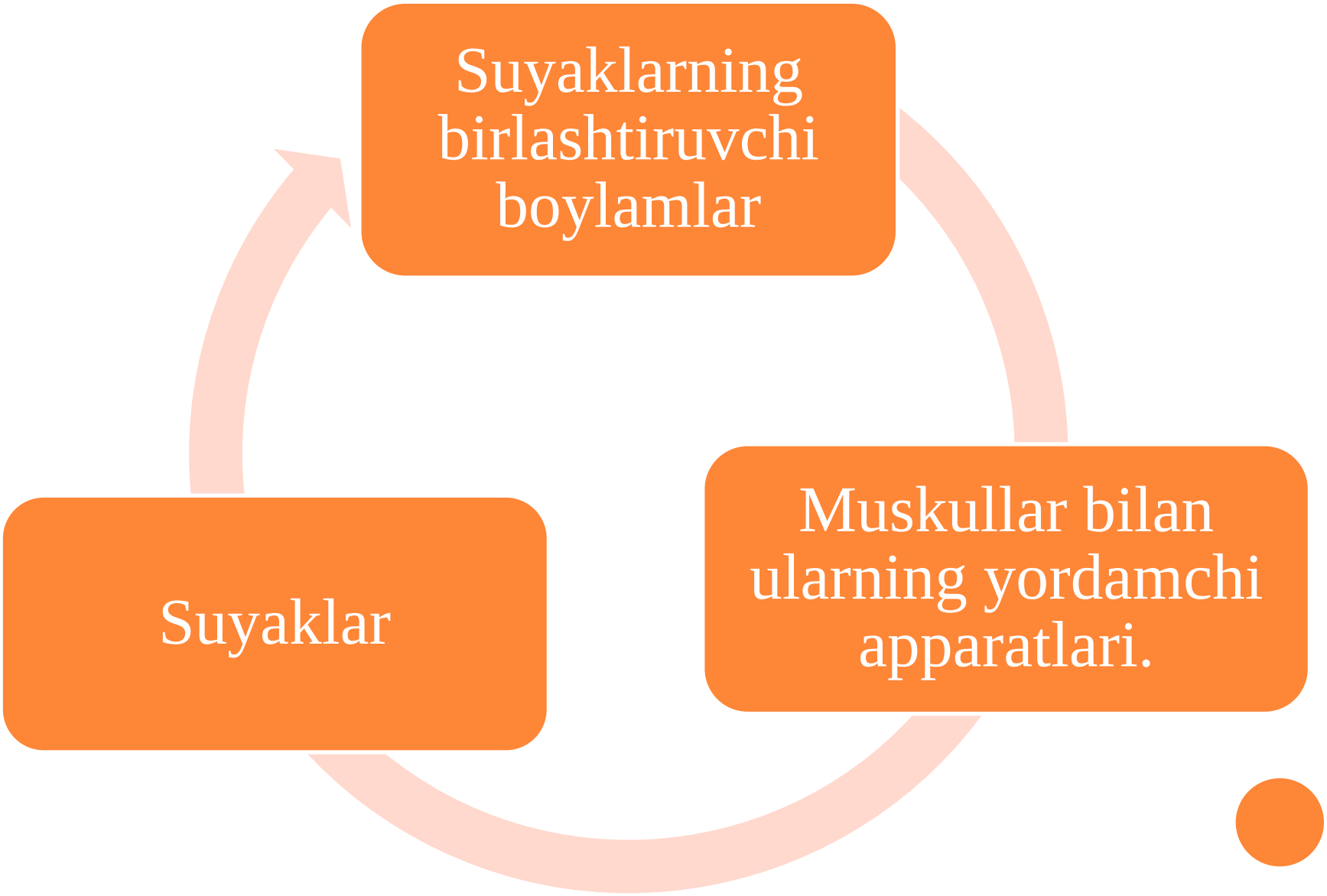
TAYANCH – HARAKAT A’ZOLARI SISTEMASI

Дарс режаси

1. Суякларнинг тузилиши
2. Суякларнинг классификацияси
3. Таянч ҳаракат системаси вазифалари
4. Суякларнинг ривожланиши
5. Скелетнинг тузилиши

Xarakat sistemasi organizmning ko‘p qismini tashkil qiladi yoki gavdaning umumiy og‘irligiga nisbatan 72,45% tashkil etadi. Muskullar gavdaning 2/5, suyaklar esa 1/5-1/7 qismning tashkil etadi.

Odamda harakati tayanch – xarakat sistemasi yordamida yuzaga chiqadi, bu sistema uchta tarkibiy qismdan tashkil topgan:



Suyak biriktiruvchi to‘qimadan tashkil topgan bo‘li6, alohida suyaklar nerv tolasi, qon tomirlari bilan ta’minlangan organ hisoblanadi.

Suyak to‘qimasi qattiq, birikturuvchi to‘qima bo‘lib, suyak hujayralari osteotsitlardan tashkil topgan. Suyak hujayralarida ko‘p o‘simtalar bo‘lib, ular bir-biriga qo‘shilishidan alohida plastinkalar — govers plastinkalari hosil bo‘ladi. Bu plastinkalar tartib bilan ustma-ust joylashishidan govers ustunchalari — minoralari hosil bo‘ladi, ularning ichi kovak bo‘lganligidan govers kanallari deb ataladi. Bu kanallarda qon tomirlari va nerv tolalari joylashadi.

Har qanday suyakning ustki qismida suyak hujayralari zich joylashib, suyakning qattiq (kompakt) qavatini tashkil etadi. Bu qavat tagidagi xujayralar siyrak joylashgan bo‘-ladi. Ular murakkab tuzilgan bo‘lib, suyakning pishiqligini oshiradi. Bu qavat *g‘ovak qavat* deb ataladi. U uzun suyaklarning ikki uchida yaxshi ko‘rinadi. Fovak qavatda qonning shaklli elementlari hosil bo‘lgani uchun u *qon hosil qiluvchi organ—qizil ilik* deb ataladi. Yassi suyaklarning ba’zi qismlarida, masalan, kurak suyagida bu qavat bo‘lmaydi.

Suyakning ximiyaviy tarkibi

ossein va osseomukoid degan organik modda

Anorganik moddalarga: kalsiy, fosfor, magniyli va boshqa mineral tuzlar

Harakatlanish tizimining umumiy anatomiyasi.

Tana shaklini ushlab turuvchi skelit, bog'lovchi to'qimalar tuzilmasida bog'langan suyaksimon va tog'ay elementlardan shakllanadi. Uning qismlari skelet muskullari yordamida harakatlantiriladi yoki mahsus holat va vaziyatda ushlab turiladi. Keng qamrovli harakatlanish tizimi atamasi o'z ichiga skelet va muskullarni oladi. Passiv harakatlanish tizimi skletlar va ularning birlashmalaridan iborat bo'lsa , active harakatlanish tizimi o'z ichiga Poyalar va ularning qo'shimcha tuzilmalarini (poya g'iloflari,kesmasimon suyaklar) oladi O'zlarining ushlab turish vazifasidan tashqari, sklet elementlari va ularning birlashmalari muskullarga harakat davomida tayanch sifatida hizmat qiladi sklet elementlari, birlashmalari va muskullari birgalikda harakatlanish organlarini hosil qiladi . SHu bilan birga sklet elementlari organlar sistemasini himoya qilish vazifasini ham bajaradi (bosh suyagi,umurtqa kanali, ko'krak qafasi).

Human Anatomy and Physiology. Nega Assefa Alemaya University Yosief Tsige Jimma University.In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education 2003. 66-79

THE GENERAL frame work of the body is built up mainly of a series of bones, supplemented, however, in certain regions by pieces of cartilage; the bony part of the framework constitutes the skeleton. ong Bones.—The long bones are found in the limbs, and each consists of a body or shaft and two extremities. The body,or diaphysisis cylindrical, with a central cavity termed the medullary canal;the wall consists of dense, compact tissue of considerable thickness in the middle part of the body, but becoming thinner toward the extremities; within the medullary canal is some cancellous tissue, scanty in the middle of the body but greater in amount toward the ends. The extremitiesare generally expanded, for the purposes of articulation and to afford broad surfaces for muscular attachment. They are usually developed from separate centers of ossification termed epiphyses,and consist of cancellous tissue surrounded by thin compact bone. The medullary canal and the spaces in the cancellous tissue are filled with marrow. The long bones

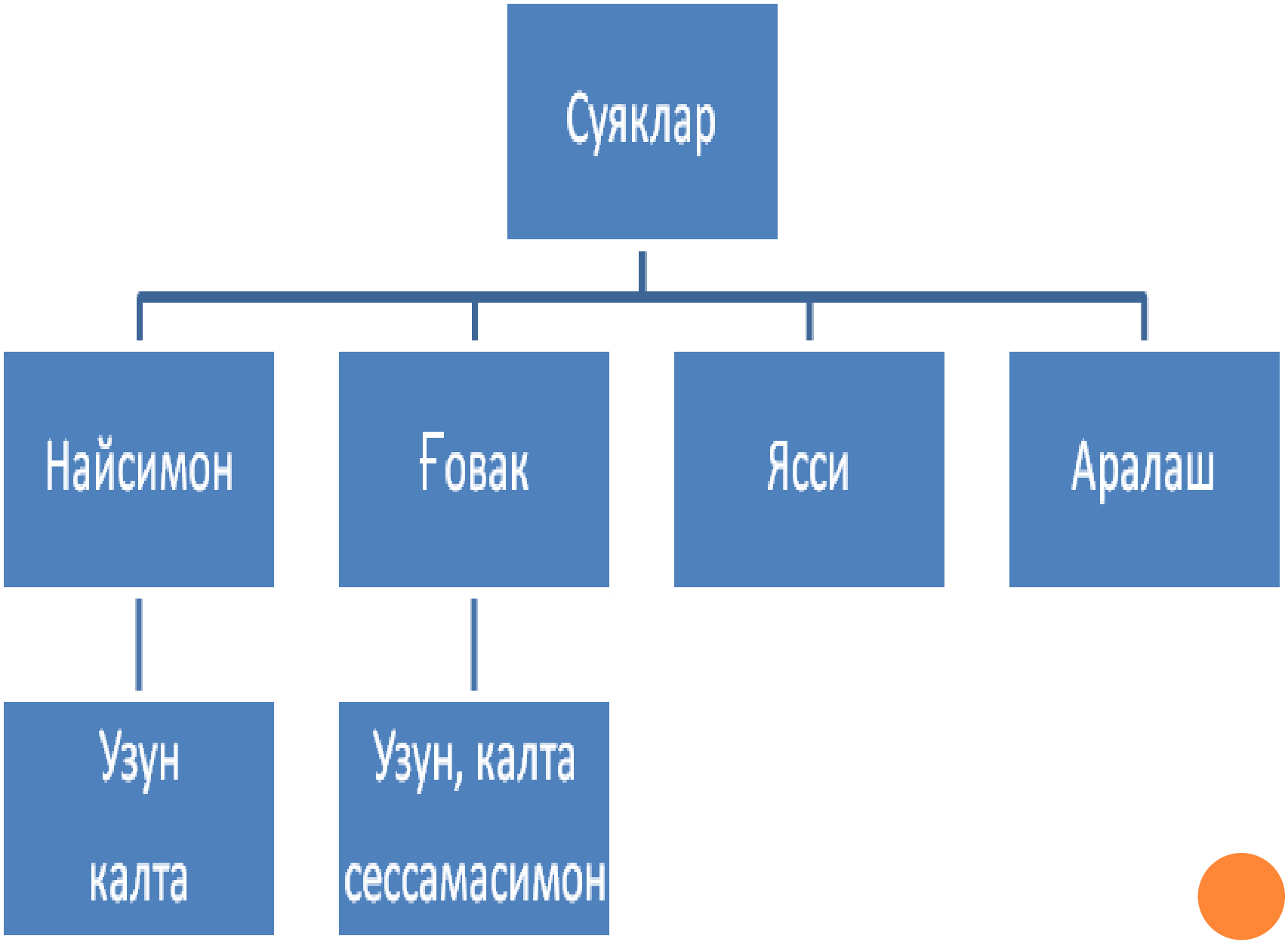
are not straight, but curved, the curve generally taking place in two planes, thus affording greater strength to the bone. The bones belonging to this class are: the clavicle, humerus, radius, ulna, femur, tibia, fibula, metacarpals, metatarsals,and phalanges.

Human Anatomy and Physiology. Nega Assefa Alemaya University Yosief Tsige Jimma University.In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education 2003. 66-79

Odam skeleti embrionning dastlabki davrlarida yosh biriktiruvchi to‘qimadan tuzilgan bo‘lib, u asta-sekin suyakka aylana boradi. Embrion 2 oyligida suyakning diafizida suyakka aylanish nuqtalari hosil bo‘la boshlaydi. Bola tug‘ilgandan keyin ikkilamchi suyakka aylanish nuqtalari hosil bo‘la boshlaydi. Shundan keyin suyakka aylanish protsessi tezlashadi. Bolalar suyagi o‘lchami, proporsiyasi va tarkibi bilan kattalar suyagidan farq qiladi.

Suyaklar 2 xil rivojlanadi. Agar suyakka aylanish nuqtalari mezenxima to‘qimasidan hosil bo‘lib, bundan to‘g‘ri suyak rivojlansa, *birlamchi suyakka aylanish* deyiladi. Masalan, miya qutisining ba’zi bir suyaklari ana shunday rivojlanadi. Ba’zi suyaklar tog‘ay hujayralaridan rivojlanadi, bunga *ikkilamchi suyakka aylanish* deyiladi.

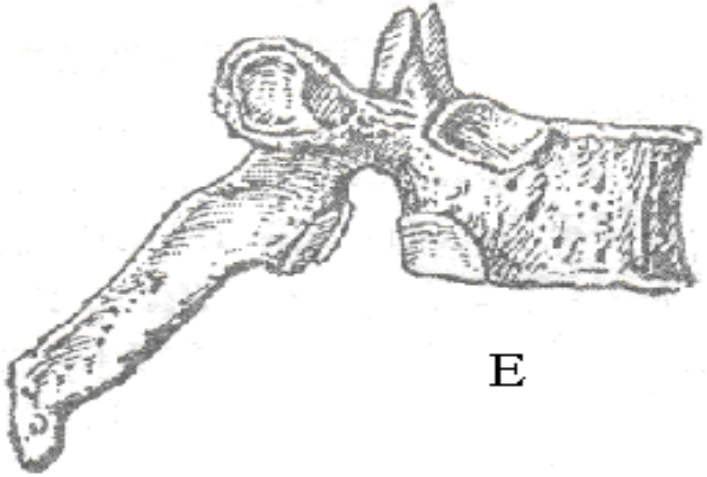
Masalan, uzun naysimon suyaklar diafizi tog‘ay ustligi tagidagi tog‘ay hujayralaridan rivojlana boshlaydi. Bunda suyak osteoblast hujayralari hisobiga o‘sib boradi. Bunday tipdagi suyakka aylanish *perexondral suyakka aylanish* deb ataladi.


Суяклар
Найсимон
Fовак
Ясси
Аралаш
Узун калта
Узун, калта сессамасимон

А

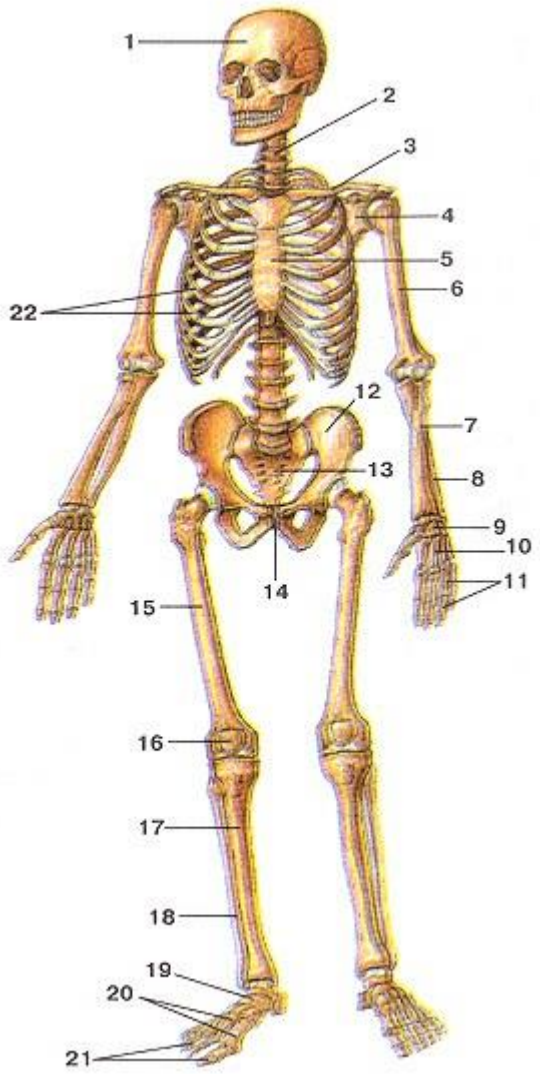
Б

Д

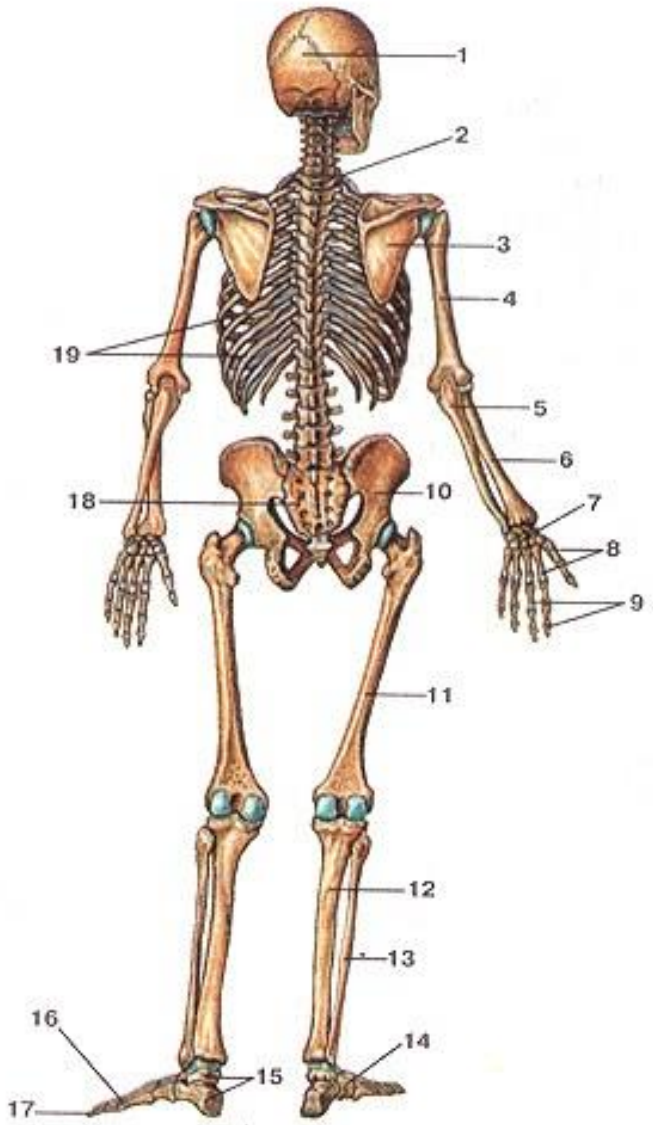


Е

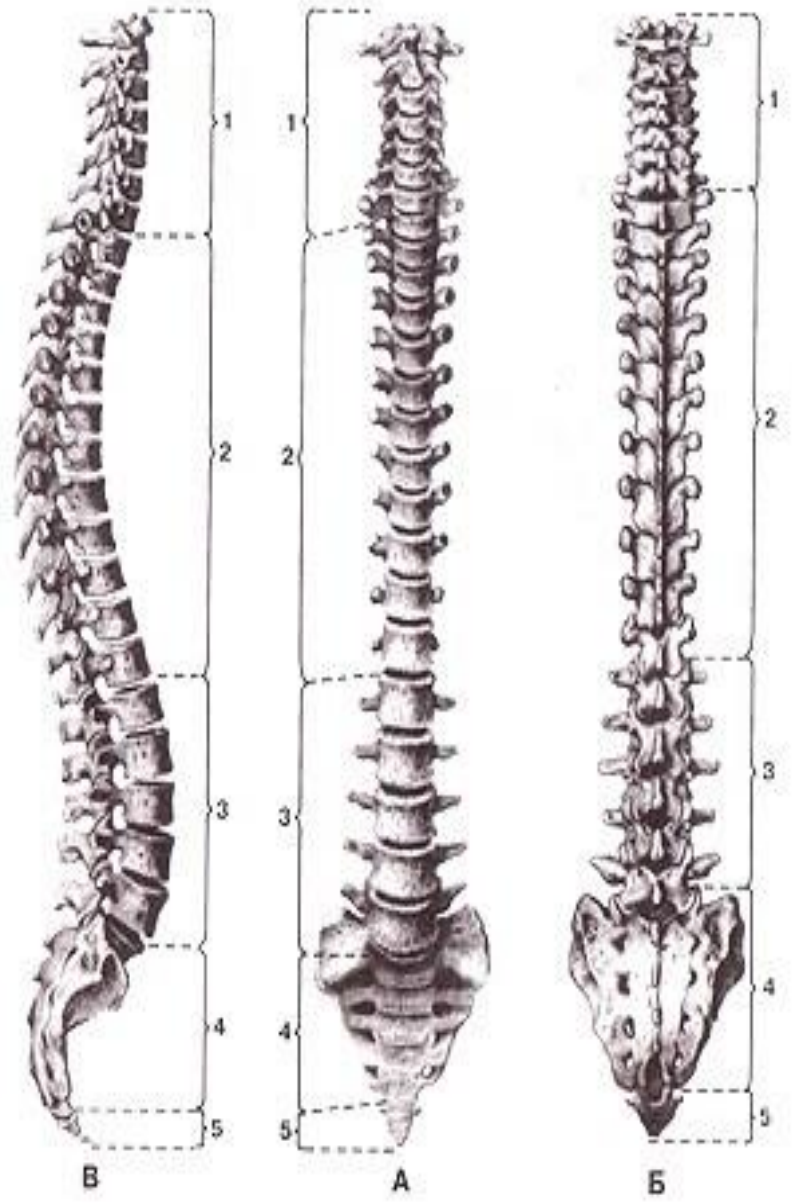

Химоя
Иммунитет
Харакат
Таянч харакат аъзолари
Яратувчанлик
Таянч
Минерал тузлар депоси



1-cranium; 2-columna vertebralis; 3-clavicula; 4-scapula; 5-sternum; 6-humerus; 7-radius; 8-ulna; 9-ossa carpi; 10-ossa metacarpi; 11-pha-langes digitorum manus; 12-os coxae; 13-os sacrum; 14-symphisis pubica; 15-osfemoris; 16-patella; 17-tibia; 18-fibula; 19-ossa metatarsi; 20-ossa tarsi; 21-phalanges digitorum pedis; 22-cosiae (compages thoracis)



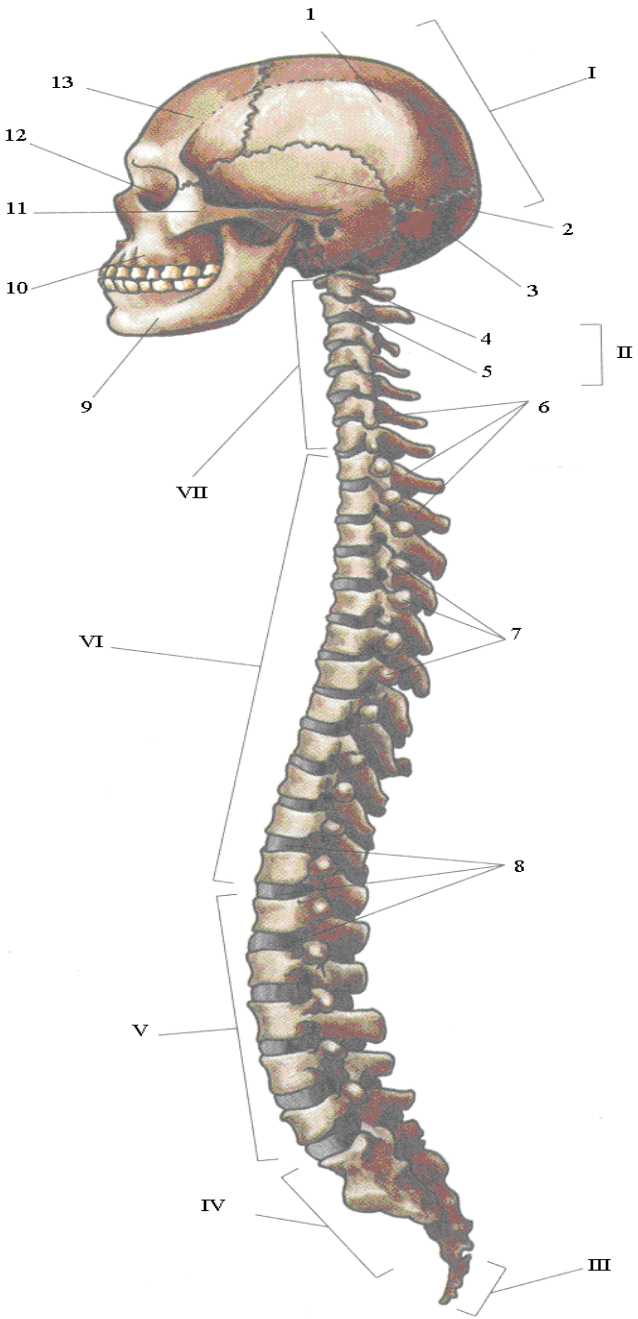
-CRANIUM; 2-COLUMNA VERTEBRALIS; 3-SCAPULA; 4-HUMERUS; 5-ULNA; 6-RADIUS; 7-OSSA CARPI; 8-OSSA METACARPI; 9-PHALANGES DIGITORUM MANUS; 10-OS COXAE; 11-OS FEMORIS; I2-TIBIA; I3-FIBULA; 14-OSSA PEDIS; 15-OSSA TARSI; 16-OSSA METATARSI; 17-PHALANGES DIGITORUM PEDIS; I8-OS SACRUM; I9-COSTAE (COMPAGES THORACIS).

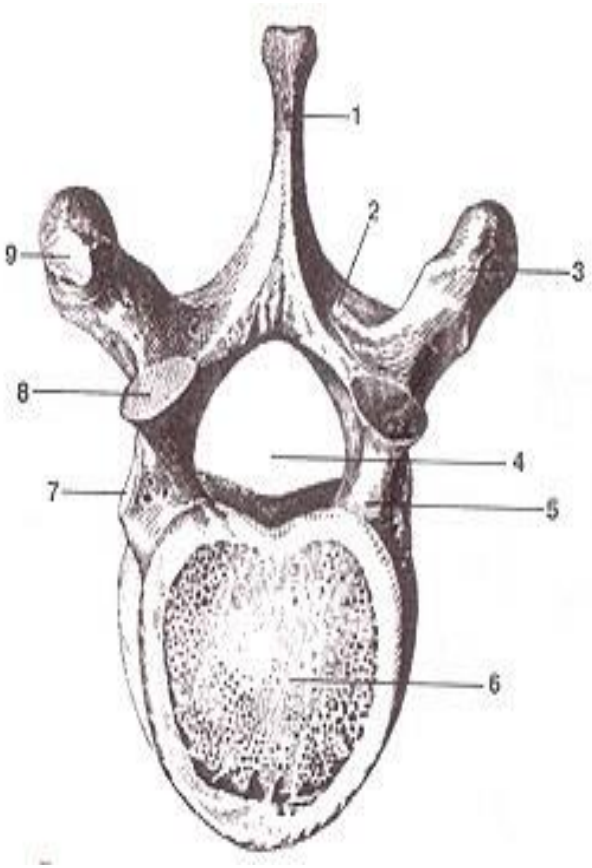


Umurtqa teshiklari birlashib, umurtqa pog‘onasi kanalini hosil qiladi, uning ichida orqa miya joylashadi.

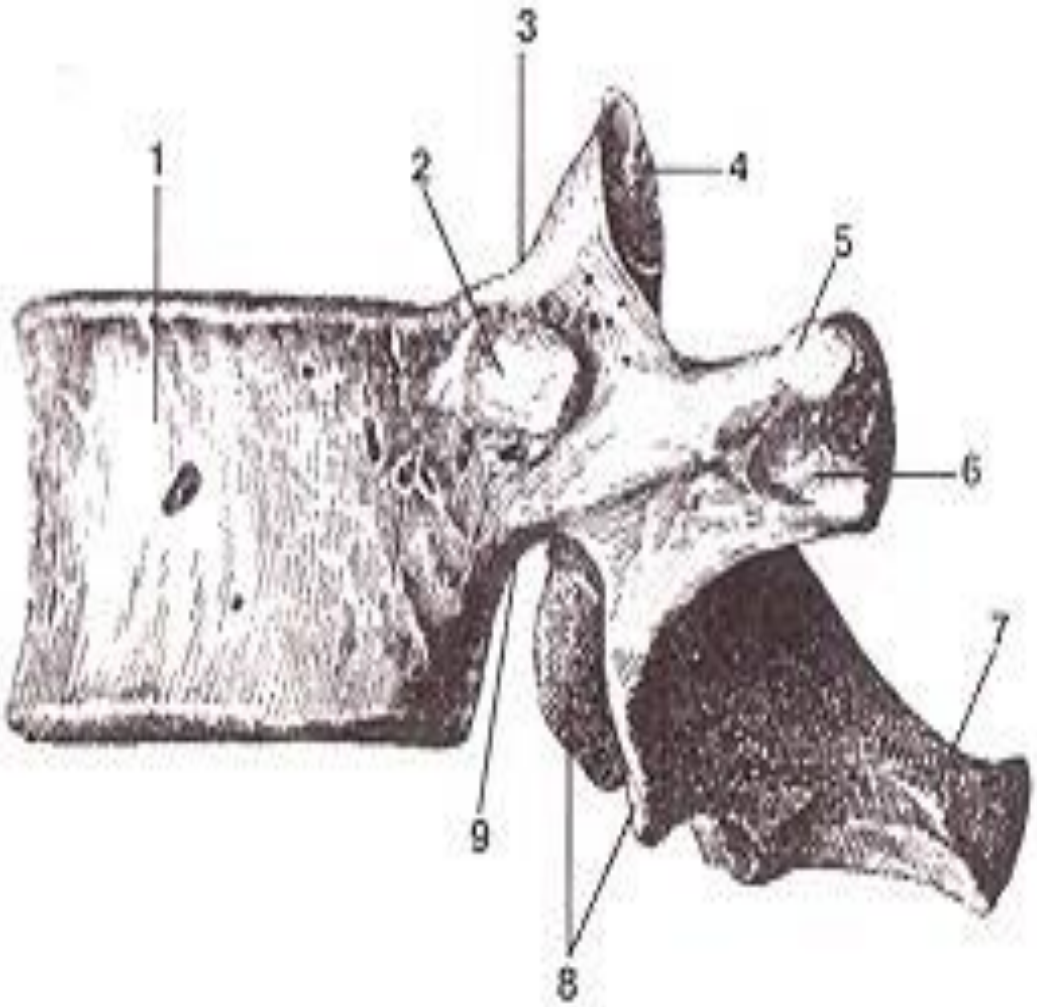
Umurtqa pog‘onasining bo‘yin, bel kismlari oldinga bir oz bo‘rtib chiqqan bo‘lib, *lordoz* deyiladi.

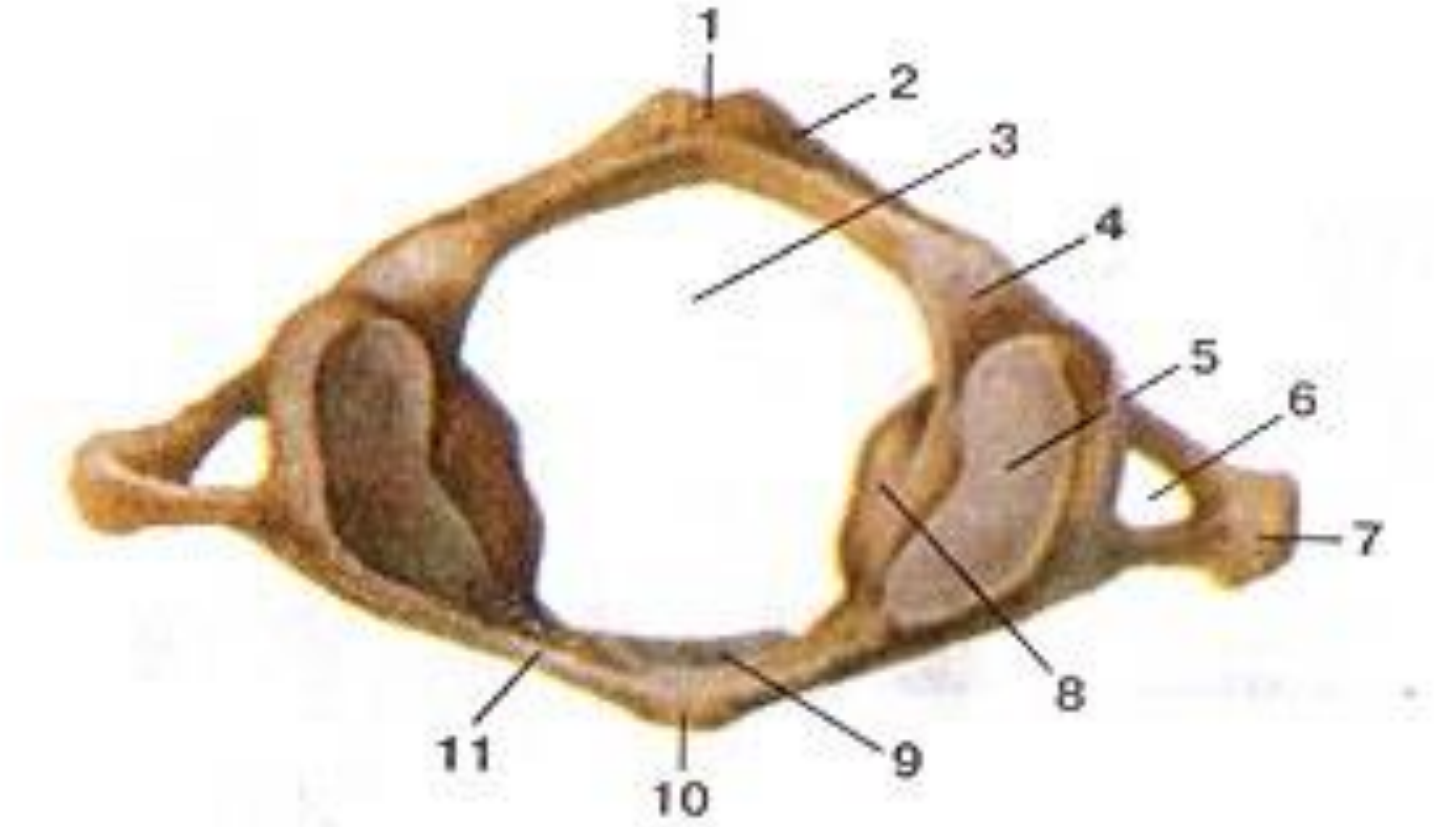
Ko‘krak va dumg‘aza qismlari orqaga bo‘rtgan bo‘lib, kifoz deyiladi.


1
I
13
12
11
2
10
3
4
II
5
9
6
VII
VI
7
8
V
IV
III

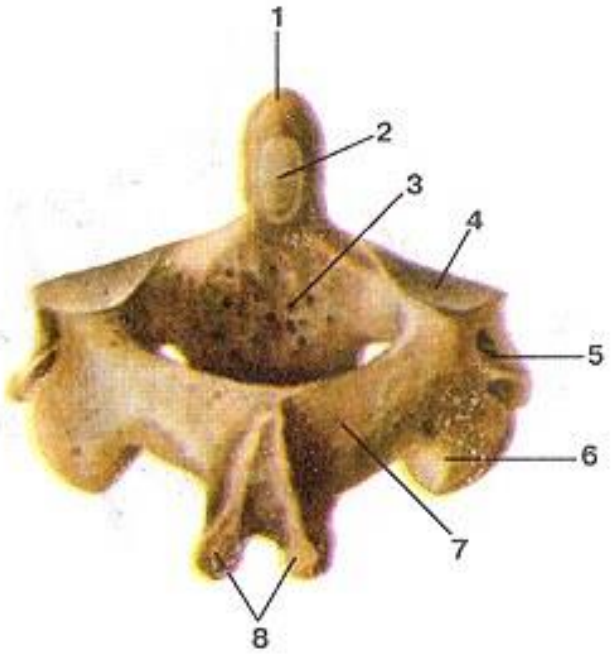


Ko‘krak umurtqalari (vertebrae thoracales) 12 ta bo‘lib, 1-dan 12-gacha bir oz yiriklashib boradi. Umurtqa teshigi yumaloq bo‘ladi. Ko‘krak umurtqalari tanasida qovurg‘aning boshi kelib birikishi uchun va yon o‘simtasida qovurg‘a dumbogi birikishi uchun bo‘g‘im yuzalari bo‘ladi. Orqa o‘simtasi uzun, uchi qirrali bo‘lib, pastga bir-birining ustiga mingashib turadi.

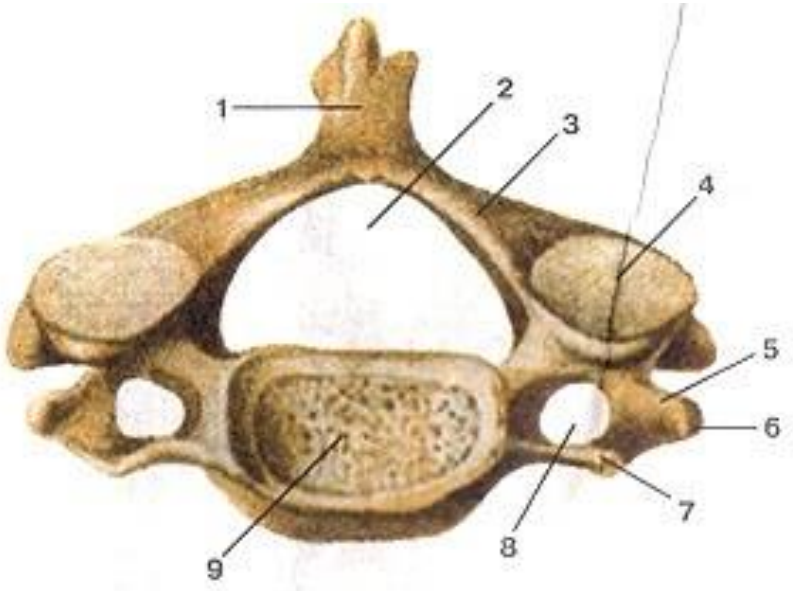

1
2
3
4
5
6
7
8
9


1
2
3
4
5
6
7
8
9
10
11

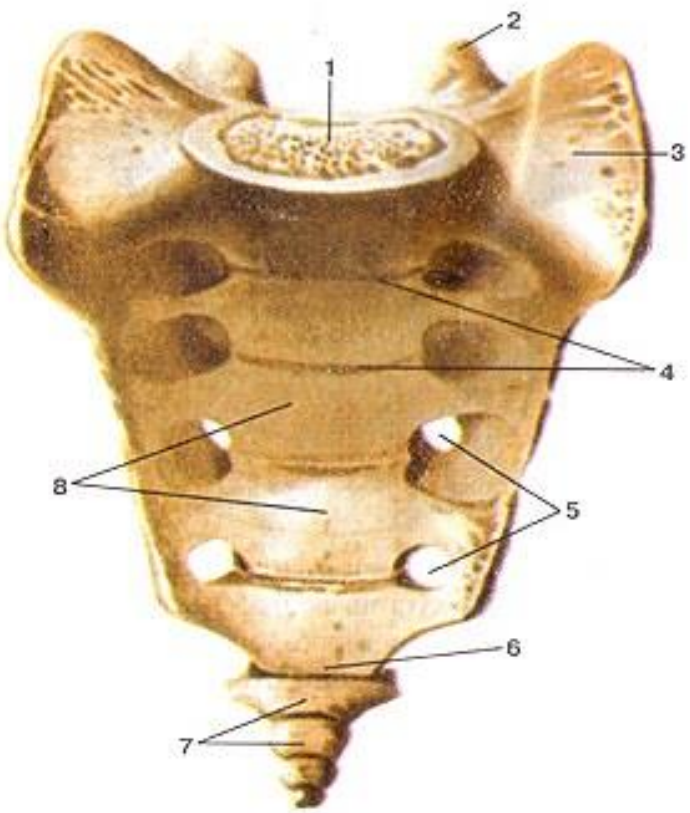
Buyin umurtqalari (vertebrae carvicales) bo‘g‘im o‘simtalari qiyshiq, orqa o‘simtalari ayri shaklda, umurtqa teshigi uchburchak, mayda va yon o‘simtasida yon teshik bo‘ulishi bilan boshqa umurtqalardan farq qiladi. Bo‘yinning birinchi umurtqasi *atlant*, ikkinchisi *aksis* deyiladi. Atlant halqa shaklida bo‘lib, tanasi va o‘tkir o‘simtasi bo‘lmasligi bilan bo‘yinning boshqa umurtqalaridan farq qiladi. Atlantda orqa va oldingi yoylar bo‘lib, ularda oldingi va orqa do‘mboqlar bor. Umurtqa teshigi boshqa umurtqalarnikidan kattaroq. Aksis yoki ikkinchi bo‘yin umurtqasi tishsimon o‘simtasi bo‘lishi, yuqorigi bo‘gim o‘simtalari bo‘lmasligi bilan bo‘yinning boshqa umurtqalaridan farq qiladi. U bo‘yin umurtqasining orqa o‘simtasi uzun, yo‘g‘on va ikkiga ayrilmagan bo‘lib, tirik odamda teri ostida bilinib turadi.



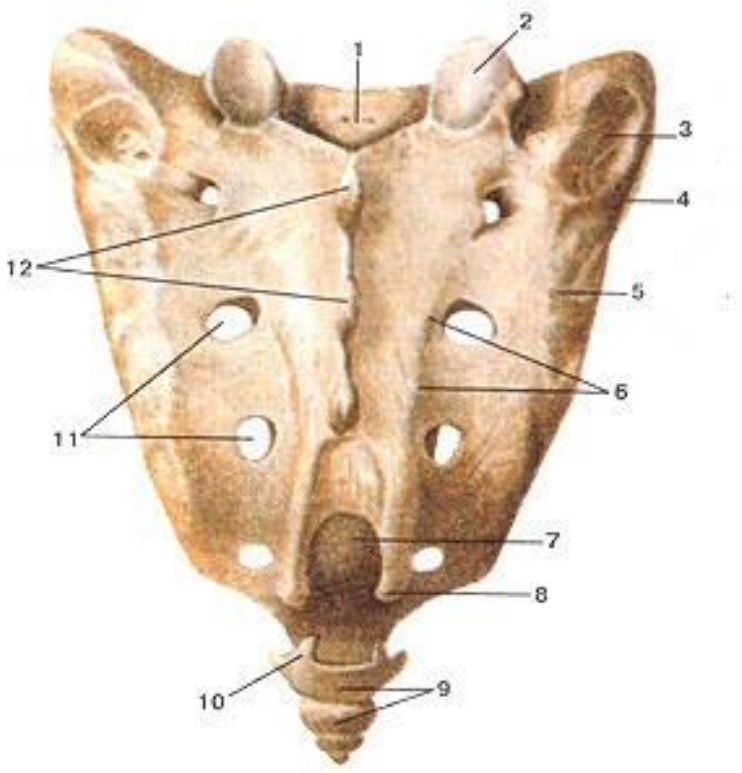
Vertebra cervicalis secunda
I - dens; 2- facies articularis posterior; 3- corpus vertebrae; 4- facie articularis superior; 5 - processus transversus; 6- processus articular! inferior; 7 - arcus vertebrae; 8 - processus spinosus.
Fig. 7. The second cervical vertebra (axis).



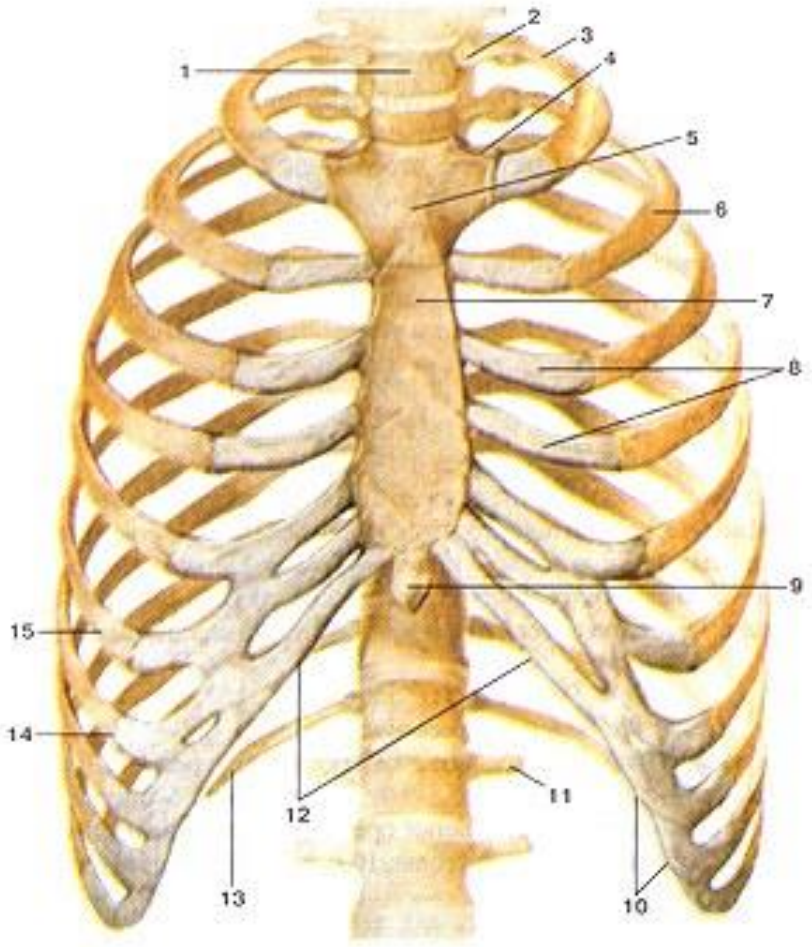
Vertebra cervicalis
1-processus spinosus; 2-foramen vertebrale; 3-arcus vertebrae; 4-processus articularis superior; 5-processus transversus; 6-tuberculum posterius processus transversus; 7-tuberculum caroticum; 8-foramen transversarium; 9-corpus vertebrae



Dumg‘aza suyagi (os sacrum) uchburchak shaklda, odam yoshligida ayrim umurtqalardan iborat bo‘ladi, keyinchalik ular birlashib, yaxlit dumg‘aza umurtqasini hosil qiladi. Dumg‘aza suyagining yuqorigi tomoni keng bo‘lib *asosi*, pastki tomoni tor bo‘lib *uchi* deyiladi. Yon tomonida quloqsimon bo‘g‘im yuzasi joylashgan. Shu yuza bilan u nomsiz suyakka birlashadi.

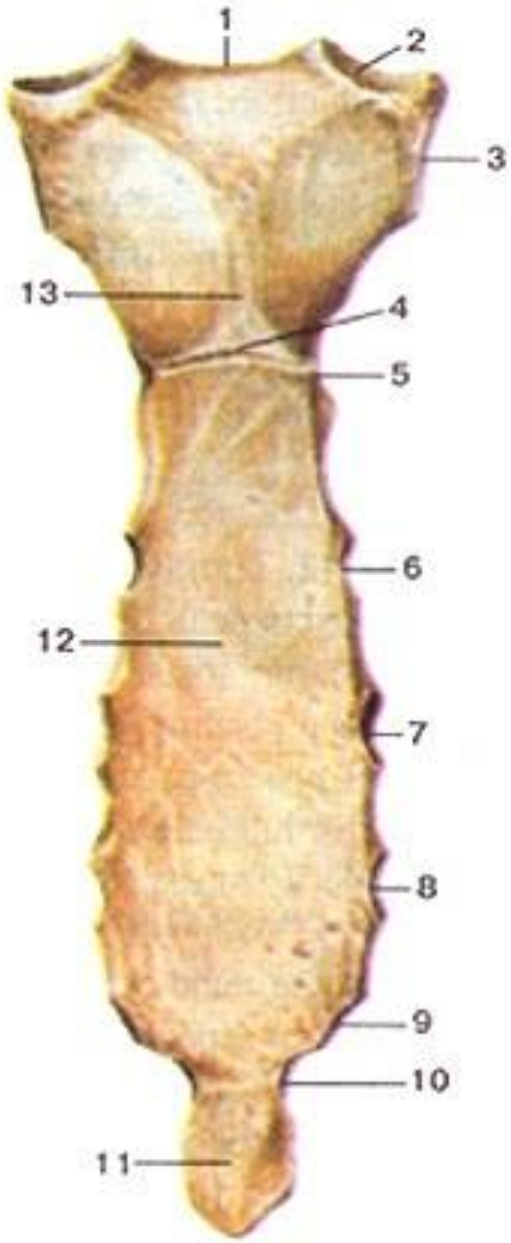


Dumg‘aza suyagining oldingi tomonida ko‘ndalang chiziqlar bo‘lib, ular har qaysi umurtqaning birikish chegarasini ifodalaydi. Suyakning oldingi va orqa tomonida dumg‘aza teshiklari bo‘ladi. By teshiklar umurtqa o‘ymalarining qo‘shilishidan hosil bo‘ladi. Umurtkalar orqa o‘simtalarining birlashib ketishidan dumg‘azaning o‘rta qirrasi, yon o‘simtalarining birlashib ketishidan tashqi qirrasi, bo‘g‘im o‘simtalarining birlashib ketishidan bo‘g‘im qirrasi hosil bo‘ladi. Umurtqa teshiklari birlashib, dumg‘aza kanalini hosil qiladi. Suyakning yuqori orqa tomonida bir juft bo‘g‘im o‘simtasi joylashgan. Shu o‘simta bilan u V bel umurtqasiga birikadi.



Thorax

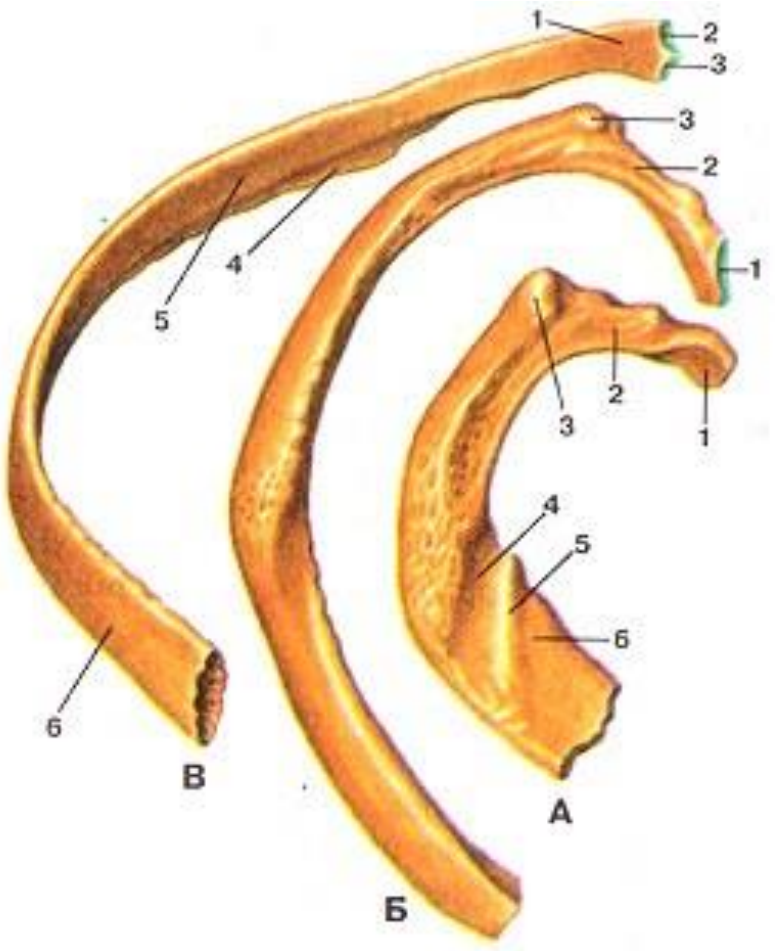
1-vertebra thoracica (Thl); 2-caput costae primae; 3-costa prima; 4-incisura clavicularis sterni; 5-manubrium sterni; 6-costa II; 7-corpus sterni; 8-cartilagines costales; 9-processus xiphoideus; 10-arcus costal-is; 11-processuscostalis vertebrae lumbalis (LI); 12-angulus infraster-nalis; 13-costa XI I; 14-costaVII; 15-costa VIII.



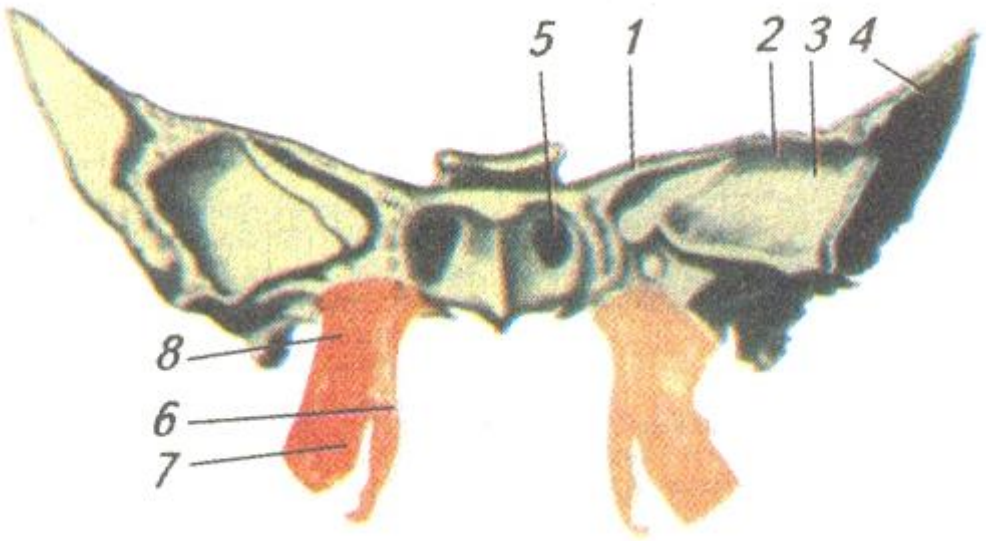
Sternum

1-incisura jugularis; 2-incisura clavicularis; 3-incisura costalis I; 4-angulus sterni; 5-incisura costalis II; 6-incisura costalis III; 7-incisura costalis IV; 8-incisura costalis V; 9-incisura costalis VI; 10-incisura costalis VII; 11 -processus xiphoideus; 12-софи5 sterni; 13-manubrium sterni.

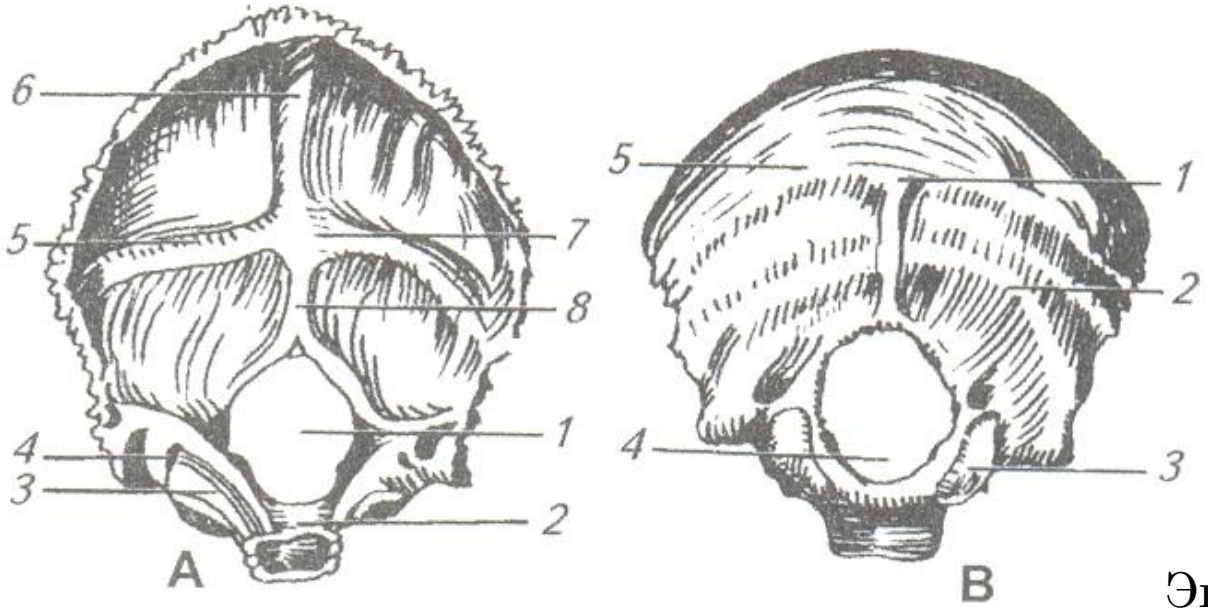
Costae



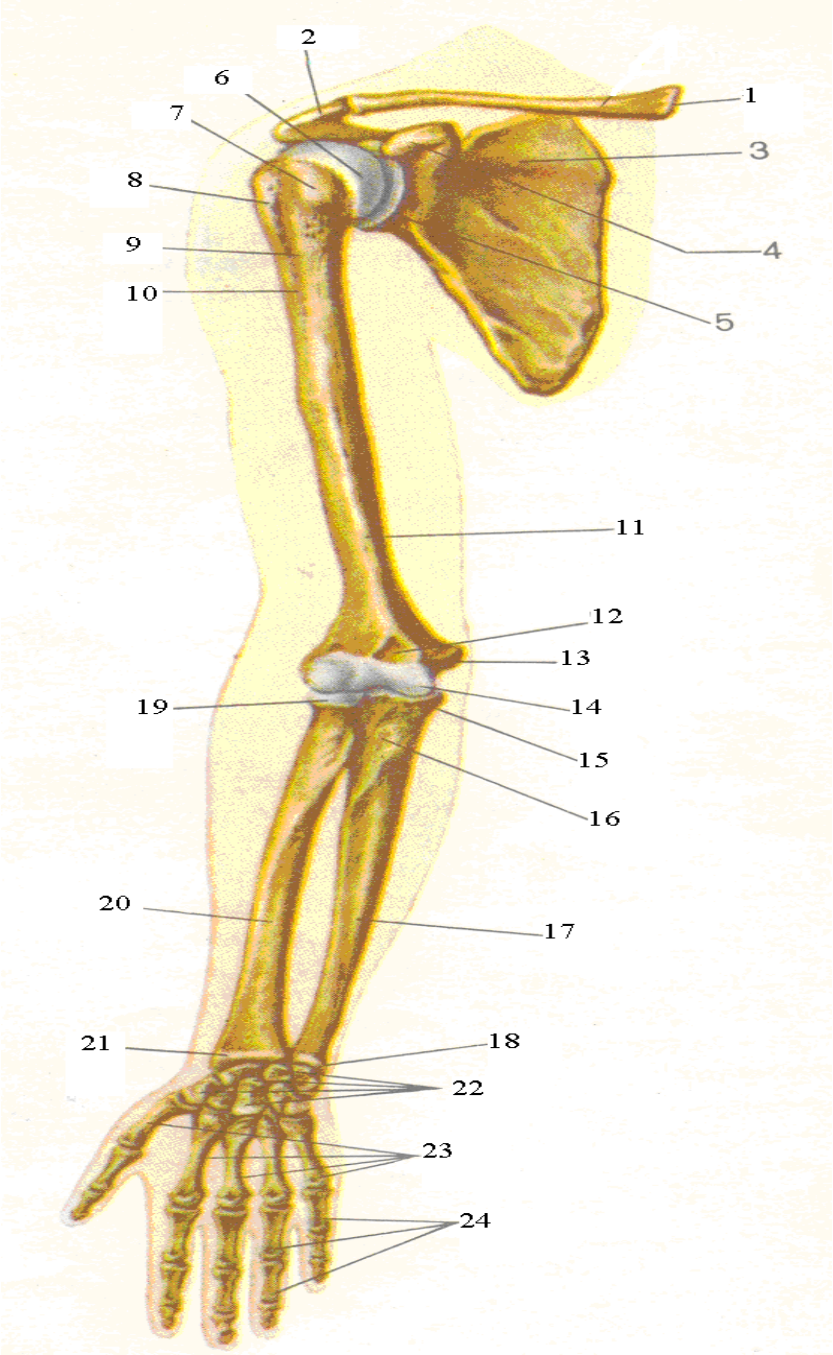
Qovurg‘alar orqa suyakli qismidagi boshi va do‘mboqlari bilan umurtqalar tanasiga va ko‘ndalang o‘sig‘iga birikadi. Boshi bilan ikki umurtqa tanasi o‘rtasidagi bo‘g‘ini yuzasiga bosh bo‘g‘in hosil qilib birikadi. Ikkinchi bo‘g‘im esa qovurg‘a do‘mbog‘i ko‘ndalang o‘sig‘ining o‘rtasidagi bo‘g‘im sathiga birikadi. XI va XP qovurg‘alar ko‘ndalang o‘simtalar bilan bo‘g‘im xosil qilmaydi. I, XI va XII qovurg‘alarning boshi ikkita umurtqa orasiga kirmasdan, o‘ziga qarashli umurtqa tanasi bilan birikadi.

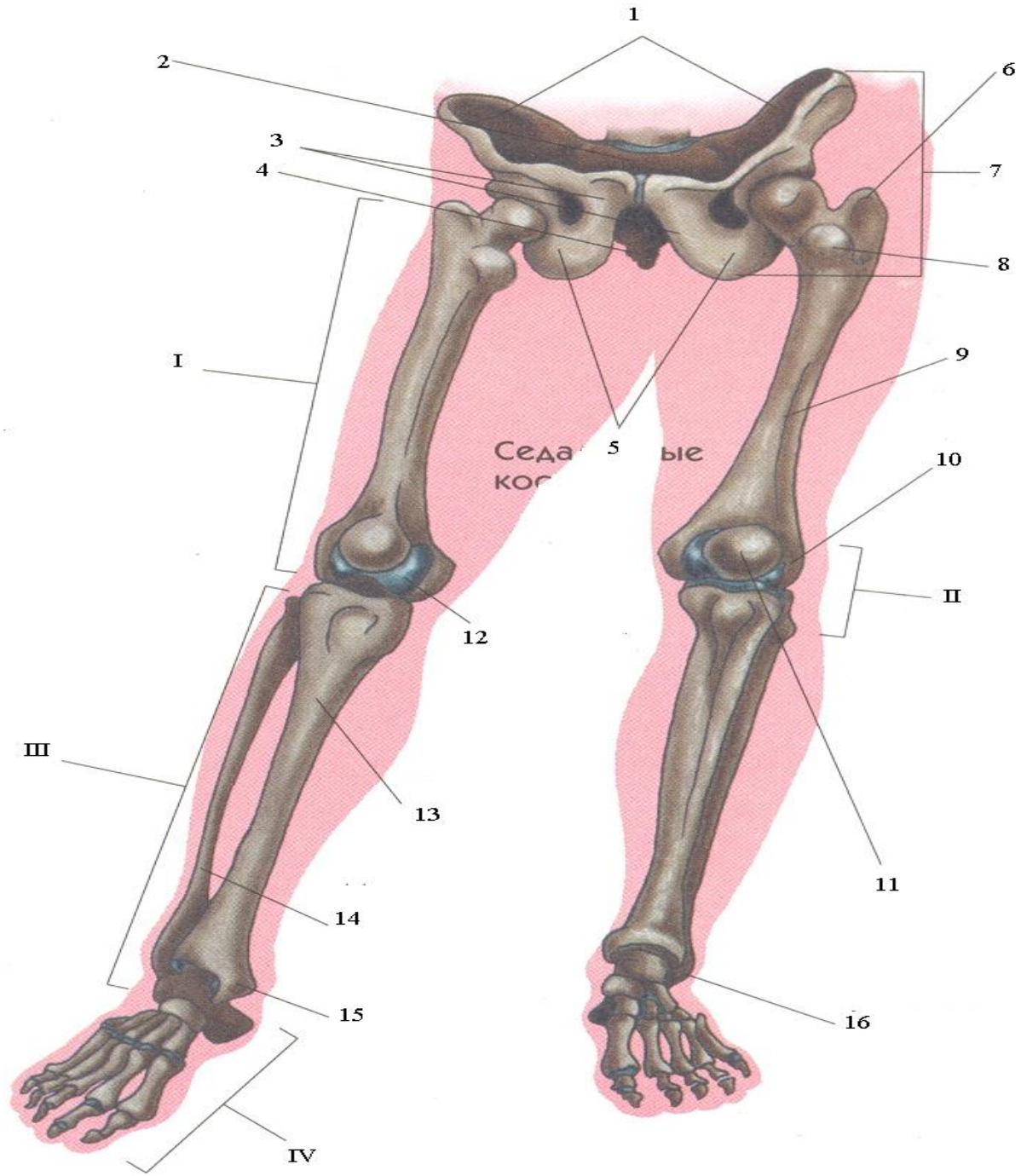


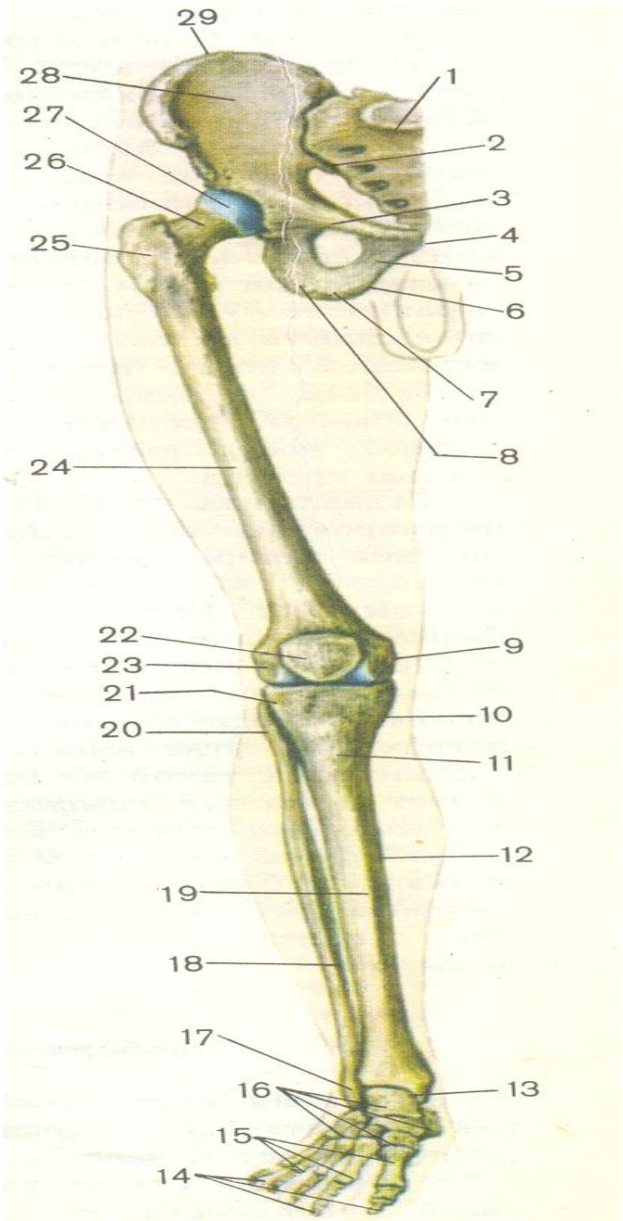
Понасимон суяк.

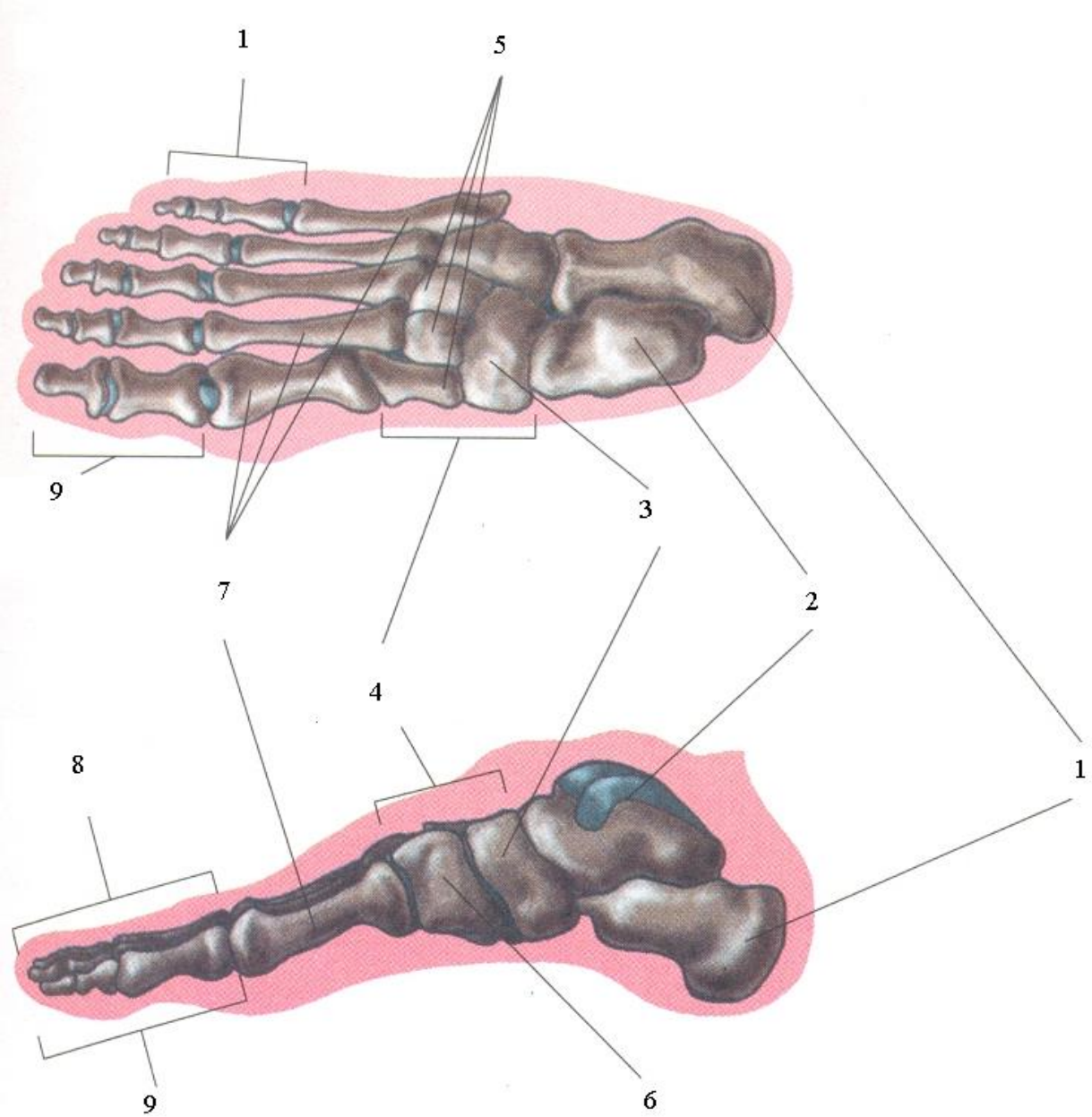


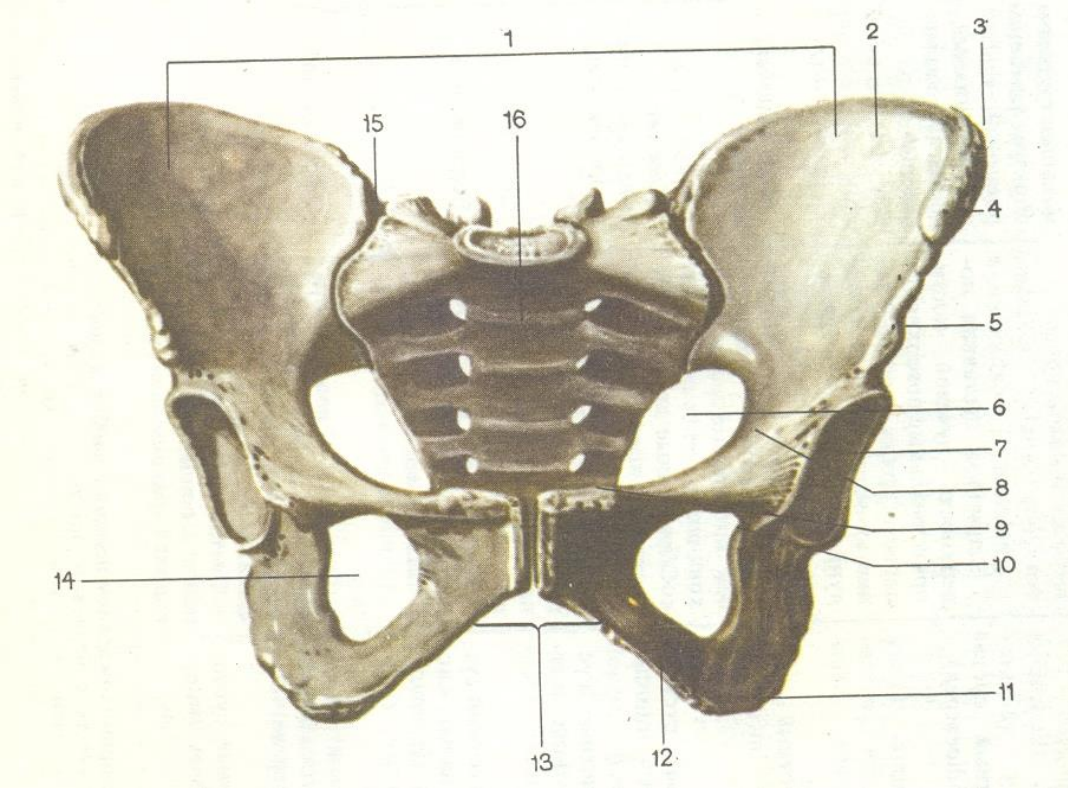
Энса суяги.

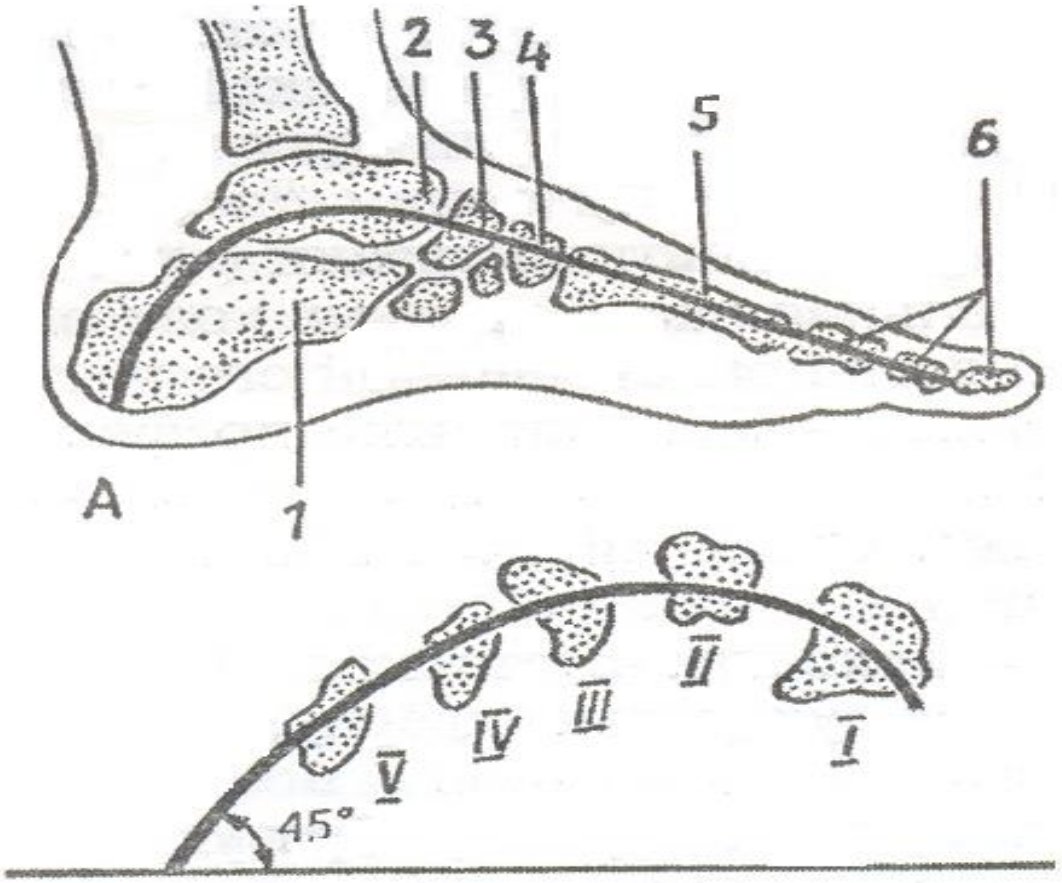

2
6
7
8
9
10
1
3
4
5
11
12
13
19
14
15
16
20
17
21
18
22
23
24


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
I
II
III
IV


29
28
27
26
25
24
22
23
21
20
19
18
17
16
15
14
1
2
3
4
5
6
7
8
9
10
11
12
13


1
5
9
3
7
2
4
8
1
9
6


1
2
3
15
16
4
5
6
7
8
9
10
14
11
13
12



Товон гумбази схемаси.

Asosiy adabiyotlar ro’yxati

1. Rajamurodov Z.T., Rajabov A.L. “Odam va hayvonlar fiziologiyasi” T.: Tib. Kitob. 2010 y.
2. Nuriddinov.E.N. “Odam fiziologiyasi” T.: “A’loqachi” 2005 y.
3. Almatov K.T., Allamuratov.Sh.I. “Odam va hayvonlar fiziologiyasi” T.: Universitet. 2004 y.
4. Xudoyberdiev.R.E.,I.K.Axmedov. “Odam anatomiyasi” T.: “Ibn Sino” 1993 y.
5. Ahmedov.A. “Odam Anatomiyasi” T.: “Iqtisod moliya” 2007 y.
6. R.Boxodirov “Odam anatomiyasi” T.: “O‘zbekiston”, 2006 y.

- I.K.Axmedov “Atlas odam anatomiyasi”T.: “Uzb. Milliy ensiklopediyasi”1998y.
- **Human Anatomy and Physiology. Nega Assefa Alemaya University Yosief Tsige Jimma University.In collaboration with the Ethiopia Public Health Training Initiative, The Carter Center, the Ethiopia Ministry of Health, and the Ethiopia Ministry of Education 2003. 114-116**

Elektron ta’lim resurslari

- www.tdpu.uz
- www.pedagog.uz
- www.physiology.ru/handbooks.html
- www.curator.ru/e-books/b22.***html***