

Muscles of back, abdomen, inguinal canal

Muscles of the back

A) Heterchtonous muscles– they have been moved from the anterior side of the body, *innervation* anterior branches of spinal nerves

Classification: **spinohumeral group of muscles**
spinocostal group of muscles

Spinohumeral group of muscles

M. trapezius

M. Trapezius

- Flat muscle of triangular shape

O: squama ossis occipitalis,
spinous processes of all
cervical and thoracic vertebrae

I: spina scapulae, acromion and
acromial end of clavicle

F: adduction of scapula, elevation
of shoulder, it also pull shoulder
down

IN: n. accesorius

M. latissimus dorsi

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- flat wide muscle

O: spinous processes of caudal half of thoracic and all lumbar vertebrae, dorsal surface of sacrum

I: crista tuberculi minoris humeri

F: adduction, humeral extension, pronation- digging with hoe

IN: n. thoracodorsalis

M. levator scapulae

O: spinous processes C3-4

I: angulus superior scapulae

F: elevation of scapula

M. rhomboideus minor

O: spinous processes C6-7

I: margo medialis scapulae opposite fossa
supraspinata

F: pulls scapula medially and cranially

M. rhomboideus major

O: spinous processes Th1-4

I: margo medialis scapulae opposite
fossa infraspinata

F: pulls scapula medially and cranially

Common innervation: N. dorsalis scapulae

- Spinocostal group of muscles

musculus serratus posterior superior

O: C6- Th4

I: 2nd-5th rib

F: auxilliary inspiratory muscle

musculus serratus posterior inferior

O: Th11-12

I: last four ribs

F: auxilliary expiratory muscle

IN: Nn. intercostales

B) Autochthonous muscles

Original intrinsic back muscles, *innervation*: posterior branches of spinal nerves

Extensors of the spine

- I. Spinotransversal system**
- II. Sacrospinal system**
- III. Spinospinal system**
- IV. Transversospinal system**
- V. Short dorsal muscles**

I. Spinotransversal system

m. splenius capitis

O: spinous processes of caudal cervical and cranial thoracic vertebrae

I: lateral part of linea nuchae suprema and pr. mastoideus

m. splenius cervicis

O: spinous processes of Th4-6

I: transverse processes of atlas and axis

F: bilateral contraction – head dorsiflexion,

Unilateral contraction – lateroflexion and rotation

II. Sacrospinal system (*m. erector spinae*)

F: bilateral contraction- dorsiflexion of the spine

unilateral contraction- lateroflexion of the spine

m. erector spinae:

Uniform in its caudal part

O: spinous pr. of lumbar vertebrae, dorsal side of os sacrum and crista iliaca, it continues cranially as three muscles:

m. longissimus capitis:

O: transverse pr. of C4-Th5

I: pr. mastoideus

m. longissimus dorsi et cervicis:

I: pr. accesorius and pr. transversi of ribs till axis and ribs and pr. costarii

m. iliocostalis:

I: ribs and transverse pr. of caudal cervical vertebrae

III. Spinospinal system

m. spinalis thoracis

m. spinalis cervicis

Function of the system:

Bilateral contraction: dorsiflexion of spine

Unilateral contraction: lateroflexion of spine

- it is not present in lumbar part of the spine
- it often grows together with *m. longissimus*

IV. Transversospinal system

1. *m. semispinalis thoracis et cervicis*

O: transverse pr. of thoracic vertebrae

I: spinous pr. up to axis

2. *m. semispinalis capitis*

O: transverse pr. of cranial thoracic and articular pr. of caudal cervical vertebrae

I: squama ossis occipitalis- between linea nuchae superior et inferior.

3. *Mm. multifidi* – between transverse and spinous pr., most developed at lumbar spine

4. *Mm. rotatores* – between spinous pr. and vertebral arches, constant at Th spine

F: bilateral contraction – dorsiflexion of spine
unilateral contraction – lateroflexion and rotation of spine

Short back muscles (*mm. nuchae profundi*)

F: úklon, záklon, otočení na svoji stranu

m. rectus capitis posterior minor

O: tuberculum posterius atlantis

I: medial part of linea nuchae inferior

m. rectus capitis posterior major

O: pr. spinosus axis

I: middle part of linea nuchae inferior

m. obliquus capitis superior

O: pr. transversus atlantis

I: lateral part of linea nuchae inferior

m. obliquus capitis inferior

O: pr. spinosus axis

I: pr. transversus atlantis

Function: lateroflexion, dorsiflexion, rotation

Trigonum suboccipitale

Borders:

**m. rectus capitis posterior
major**

and both mm. obliqui

Content is arcus posterior
atlantis, a. vertebralis, n.
suboccipitalis

Fasciae of back muscles

***fascia thoracolumbalis* (aponeurosis) is significant**

The superficial sheet is aponeurosis of *m. latissimus dorsi*; the deep sheet is extended between 12th rib and *crista iliaca*, it forms borderline between *m. erector spinae* and *m. quadratus lumborum* – *aponeurosis lumbalis*.

Abdominal muscles

Abdominal muscles (*mm. abdominis*)

I. Ventral group:

1. *M. rectus abdominis* – intersectiones tendineae, it pulls the ribs down – expiratory muscle, anteflexion of the trunk. It participates in abdominal press.
2. *M. pyramidalis* – rudimentary

II. Lateral group

- 1. *M. obliquus externus abdominis*** – anteflexion of spine and elevation of pelvis, unilateral contraction – contralateral rotation of trunk, abdominal press
- 2. *M. obliquus internus abdominis*** – the same function
- 3. *M. transversus abdominis***
abdominal press, expiratory muscle

Vagina m. recti abdominis

VAGINA MUSCULI RECTI ABDOMINIS

III. Dorsal group

1. *Mm. intertransversarii laterales lumborum* – six pairs

2. *M. quadratus lumborum* – unilateral contraction – lateroflexion of spine,
bilateral – extension of lumbar spine and fixation of 12th rib.

**Innervation: nn. intercostales
plexus lumbalis**

Abdominal fasciae

Fascia abdominis superficialis (continues to funiculus spermaticus)

Fascia transversalis (continues to funiculus spermaticus)

Inguinal canal (*canalis inguinalis* – CI)

It is located above *lig. inguinale* – it is weakened area in abdominal wall

Inuinal ligament= reinforced caudal edge of aponeurosis of *m. obliquus abdominis externus* (fromSIAS to *tuberculum pubicum*)

CI starts in abdominal cavity as *anulus inguinalis profundus* and opens out into subcutaneous area as *anulus inguinalis superficialis* (borders – *crus mediale* and *laterale* and *fibrae intercrurales*)

Anterior wall CI – aponeurosis of *m. obliquus abdominis externus*

Posterior wall CI – *fascia transversalis* (reinforcements *false inguinalis* and *lig. interfoveolare*)

Inferior wall CI – *lig. inguinale*

Superior wall CI – bounds of *m. obliquus abdominis int.* and *m. transversus abdominis*

(it forms *m. cremaster* in man)

Funiculus spermaticus passes through canalis inguinalis in man (during prenatal development – the testes), liamentum teres uteri in woman.

Weakened place– inguinal herniae (direct and indirect).

Weakened areas of abdominal wall:

Under *ligamentum inguinale* there are spaces (*lacuna vasorum* and *lacuna musculorum*), through which the nerves and vessels get from pelvic cavity to the thigh.

Muscles of pelvic floor

Diaphragma pelvis

m. levator ani (m. pubococcygeus, m. iliococcygeus)

m. coccygeus

Elevation and closing of rectum

Diaphragma urogenitale (ventrally + caudally)

m. transversus perinei profundus (+ *m. sphincter urethrae*)

m. transversus perinei superficialis

Inervation: plexus sacralis

Function: flexible bottom of pelvic cavity, support of organs (uterus)

Muscles of external genital organs:

m. ischiocavernosus

m. bulbospongiosus

(*m. sphincter ani externus*)

Fossa ischiorectalis

medially – m. levator ani

laterally – m. obturatorius internus

dorsally – lig. sacrotuberale and m. gluteus maximus

content: adipose tissue, nerves and vessels (canalis pudendalis=Alcocki)

Thank you for your
attention!