

The muscular system

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The significance of muscles :

- cause all kinds of movements;
- retain the body in vertical position;
- participate in formation of body cavities

The significance of the knowledge of muscles:

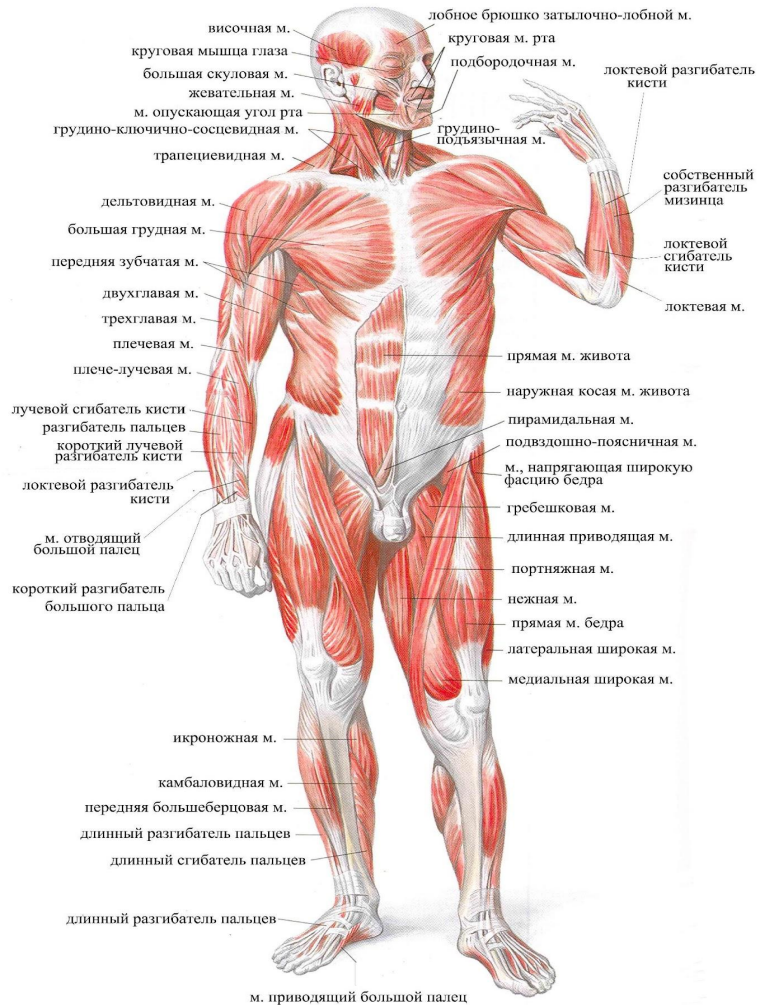
- the muscular system is an indicator of the state of health;
- doctor can influence on organism through the muscular system;
- muscles are in soft tissue composition of all the regions of body.

Newborns – 20-22 percent of body weight

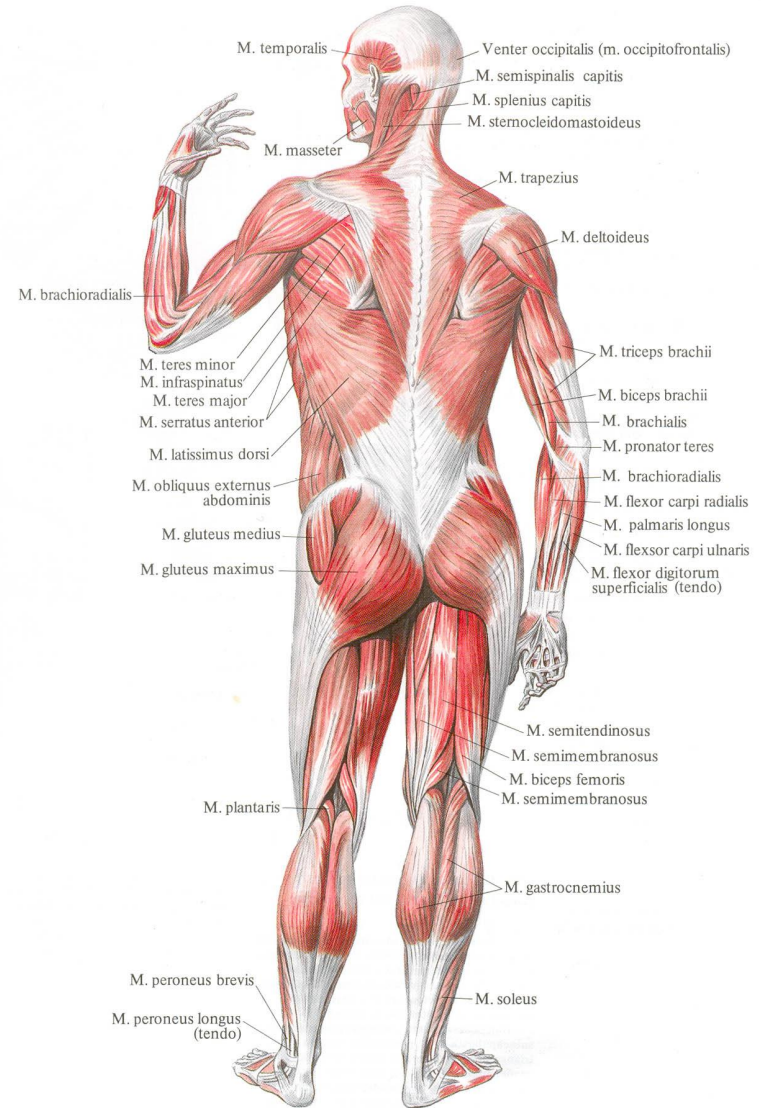
Adults – 40 percent of body weight

Seniles – 25-30 percent of body weight

The human body contains about 400 muscles



МЫШЦЫ ТЕЛА ЧЕЛОВЕКА
(вид спереди)



288. Мышцы тела человека; вид сзади.

Each muscle consists of:

- skeletal muscle tissue**
- connective tissue**
- blood and lymphatic vessels**
- nerves**

Striated muscle fibers:

- length —4-12cm
- thick —0,1mm

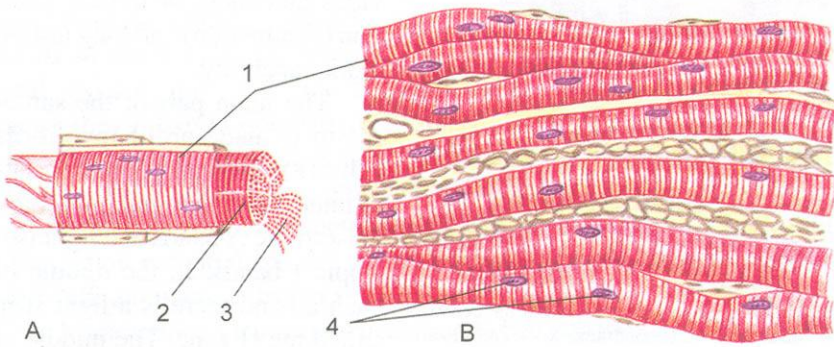
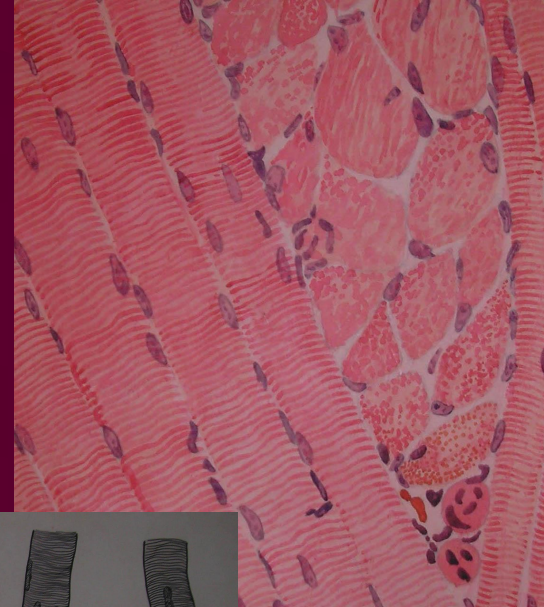


Fig. 17. Striated (skeletal) muscle tissue.

A — structure of muscle fibre; B — muscle fibers; 1 — myofiber; 2 — sarcolemma; 3 — myofibrils; 4 — nucleus.



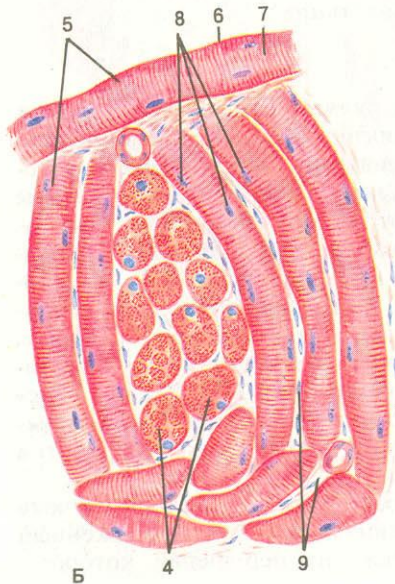
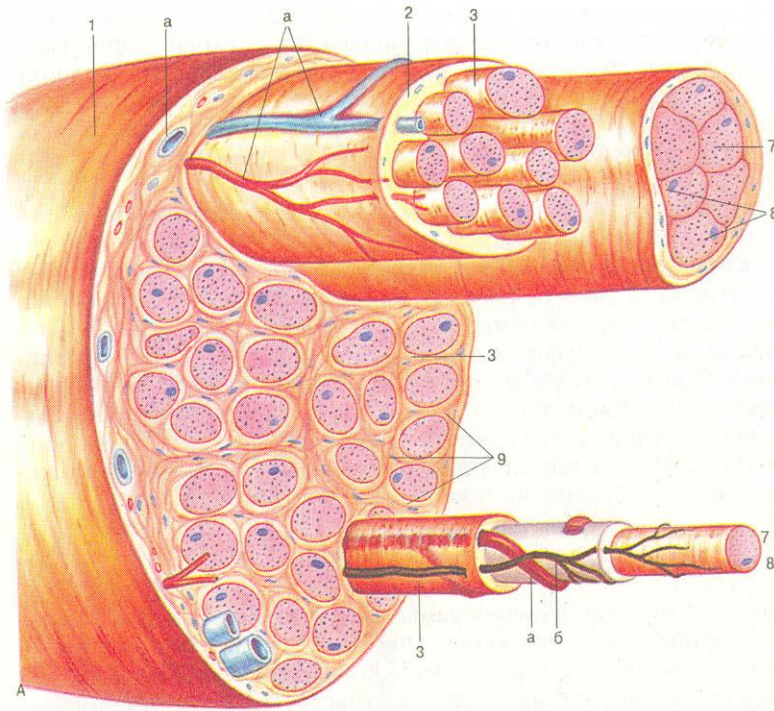
- sarcoplemma
- sarcoplasm
- nuclei
- myofibrils
- myoglobin



There are two kinds of skeletal fibers:

**white fibers- contain a lot of myofibrils;
a little myoglobin;
contract fast,
tire quickly.**

**red fibers- contain a lot myoglobin.
a little myofibrils,
contract slowly,
don't tire quickly**



Loose connective tissue forms:

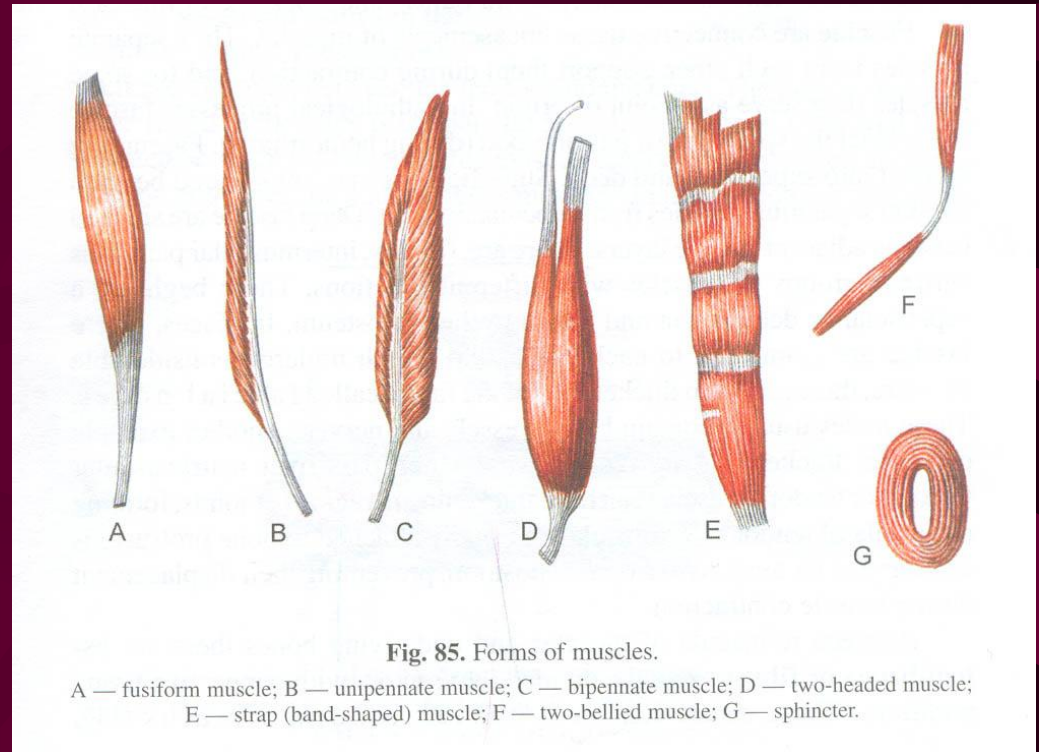
- endomysium
(around each muscle fiber)
- inner perymysium
(around several fibers)
- outer perymysium
(around whole muscle)

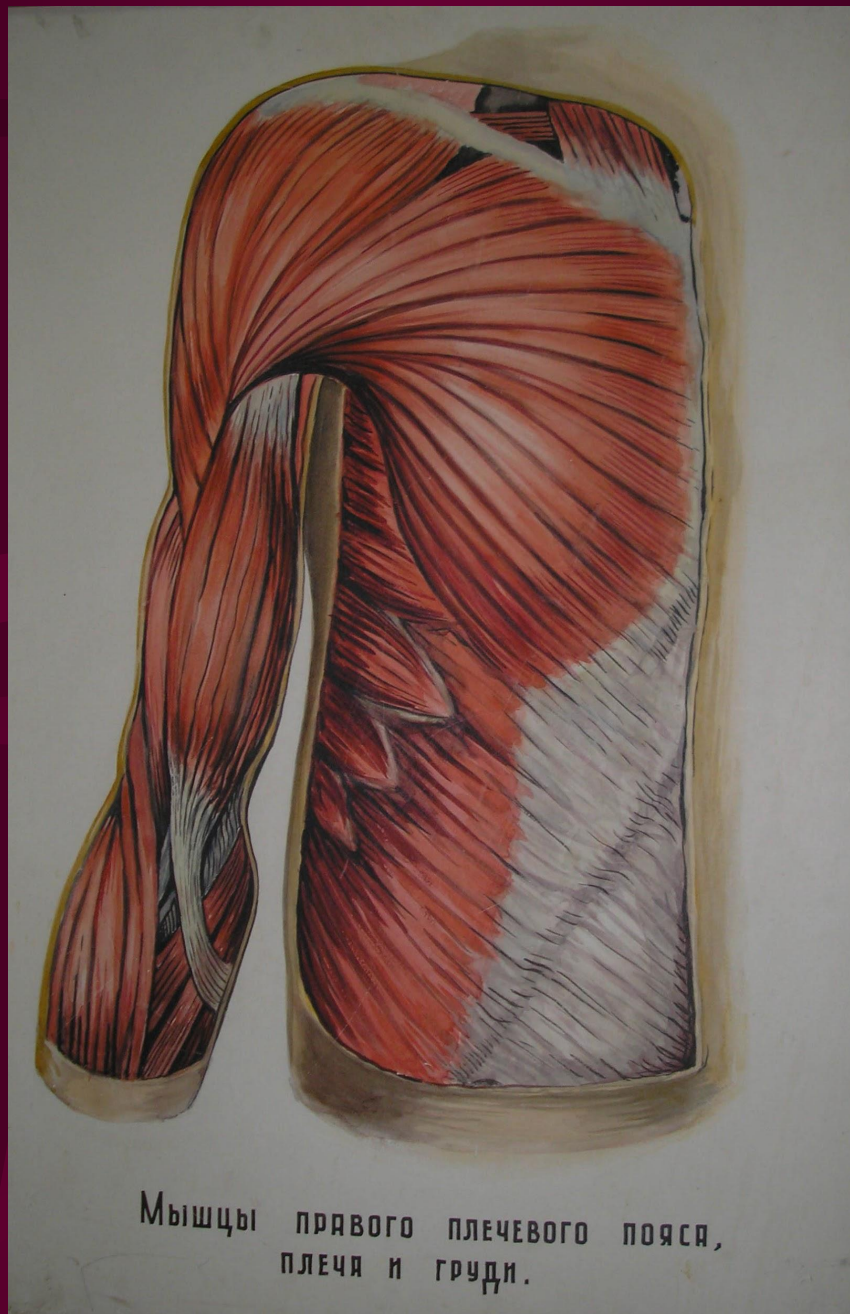
Functions of loose connective tissue:

- supports muscle fibers;**
- demarcates muscle fibers;**
- holds vessels, nerves**

Tendons- dense connective tissue

- initial
- end
- intermediate
- intramuscular
- tendons intersection
- aponeurosis





Мышцы правого плечевого пояса,
плеча и груди.

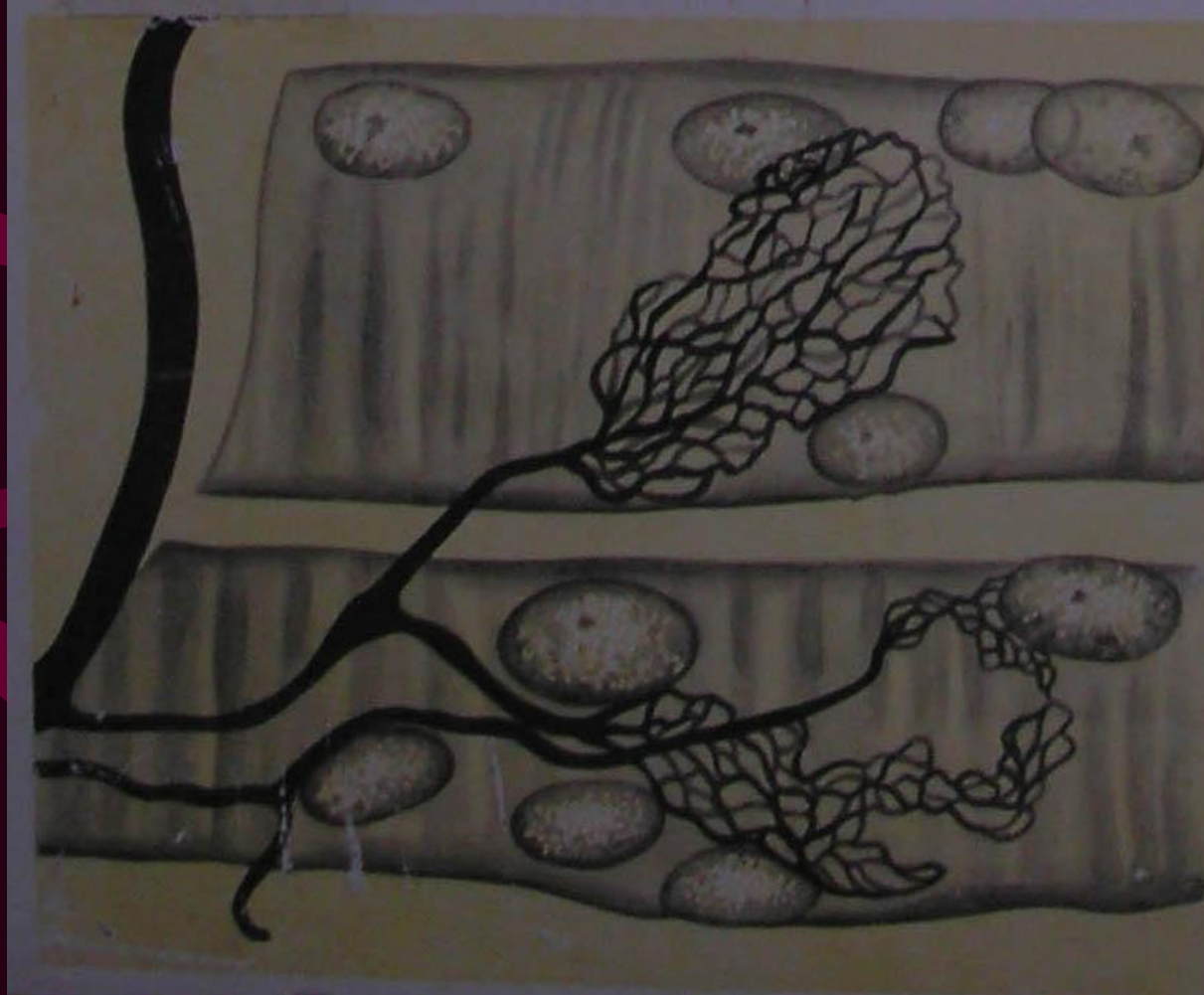
Vessels

- **artery**
- **vena**
- **lymphatic**

Nerves

- **motor**
- **sensory**
- **sympathetic**

Myon is a piece of striated muscle fiber with one motor nerve ending.



The myon is the structural unit of the muscles