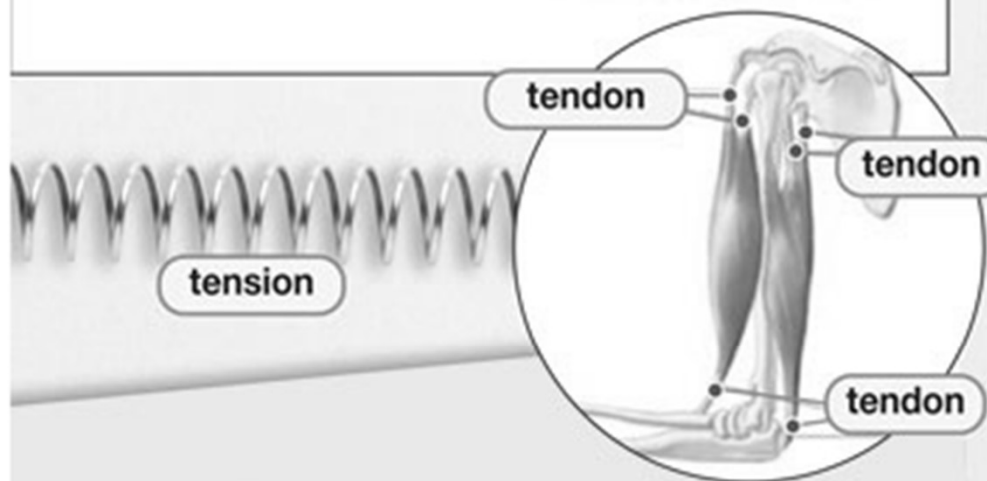
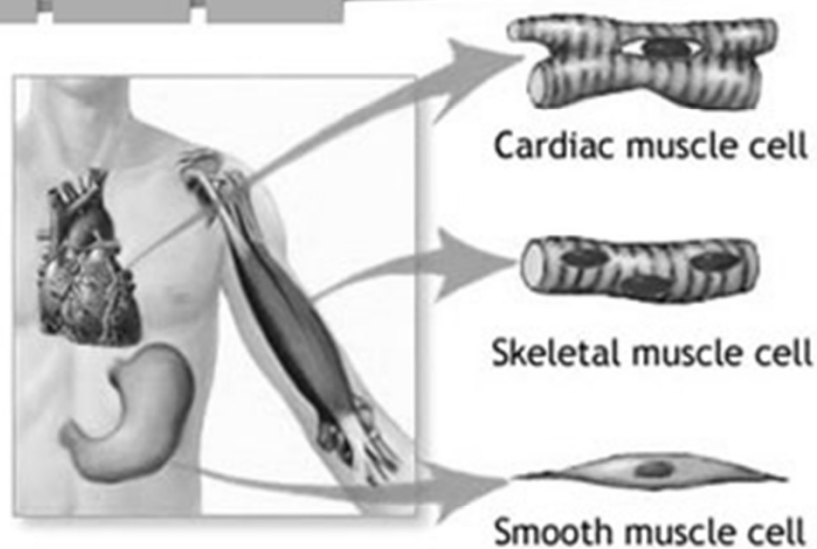


Physiotherapy

Unit 7 – Muscular System

7

Muscular System



voluntary

Muscle Types and Actions

There are three types of muscles. They include **cardiac muscle**, **skeletal muscle**, and **smooth muscle**.

Cardiac muscles are found in the walls of the heart. They are **involuntary**, with repeating sarcomeres. Cardiac muscles function like other body **tissues**. They use blood to deliver oxygen and nutrients.

Among skeletal muscles, **voluntary contractions** produce movement. Contractions create **tension**, which shortens muscles. **Tendons** and ligaments also assist in movement. Skeletal muscles have numerous fibers. These include red and white fibers. They also include **twitch** fibers. Fast twitch fibers produce higher action potential.

Smooth muscle is present in the vital organs. In the digestive system, these muscles help with digestion.

7

Muscular System



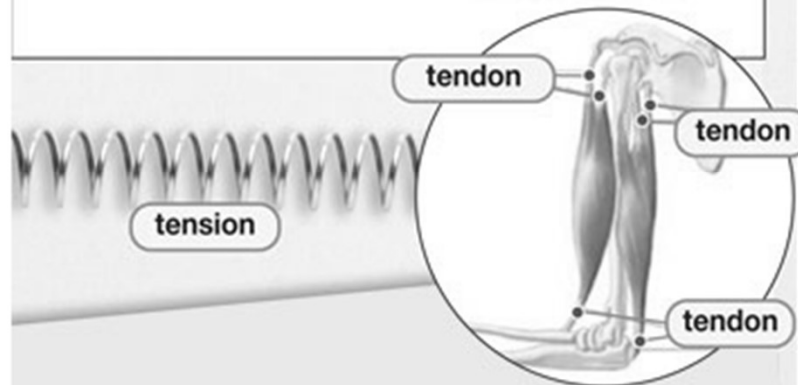
Cardiac muscle cell



Skeletal muscle cell



Smooth muscle cell



voluntary

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Smooth muscle is present in the vital organs. In the digestive system, these muscles help with digestion.

What are the different types of muscles?

There are three main types of muscles. They include skeletal muscles, cardiac muscles, and smooth muscles.

7

Muscular System



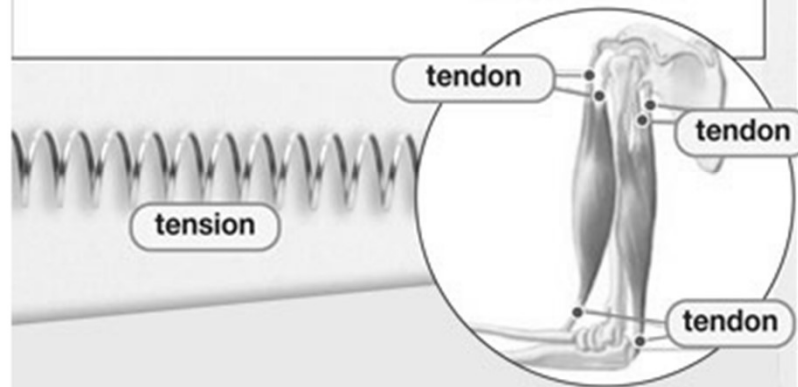
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Smooth muscle is present in the vital organs. In the digestive system, these muscles help with digestion.

What is the function of skeletal muscles?

Skeletal muscles are voluntary and assist in physical movements. These muscles contract when we move our limbs.

1 What is the main idea of the passage?

A types of muscles

B muscle contractions

C muscles can help us digest

D a comparison of twitch fibers

1 What is the main idea of the passage?

A types of muscles

B muscle contractions

C muscles can help us digest

D a comparison of twitch fibers

2 Which of the following does NOT help with the movement of skeletal muscles?

A tendons

B ligaments

C smooth muscle

D twitch fibers

2 Which of the following does NOT help with the movement of skeletal muscles?

A tendons

B ligaments

C smooth muscle

D twitch fibers

3 What is true about fast twitch fibers?

A They help with digestion.

B They deliver oxygen and nutrients.

C They create tension in muscles.

D They produce higher action potential.

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A a string-like body part that joins a muscle to a bone

B a muscle in the internal organs that can stretch and maintain tension

C a muscle that is connected to the skeleton

D a quick, small movement

E the muscle tissue of the heart

F a group of similar connected cells in an animal or plant

tissue

tendon

cardiac muscle

skeletal muscle

smooth muscle

twitch

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- | | |
|--|-------------------|
| A a string-like body part that joins a muscle to a bone | tendon ✓ |
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| C a muscle that is connected to the skeleton | skeletal muscle ✓ |
| D a quick, small movement | twitch ✓ |
| E the muscle tissue of the heart | cardiac muscle ✓ |
| F a group of similar connected cells in an animal or plant | tissue ✓ |

Listen to a conversation between a student and a professor. Mark the following statements as *True* or *False*.

1 Skeletal muscles produce involuntary movements.

False

2 Breathing produces involuntary contractions in the lungs.

True

3 Cardiac muscles produce involuntary movements.

True



Listen again and complete the conversation.

Student: What are the differences between **1)** _____ _____?

Professor: First, how many different types of muscles are there?

Student: Three. Skeletal muscles, smooth muscles, and cardiac muscles.

Professor: Good. **2)** _____ _____ differ from the others because they produce voluntary movements.

Student: And the others produce **3)** _____ _____?

Professor: Right.

Student: Aren't **4)** _____ _____ in vital organs?

Professor: Yes.

Student: So, when we breathe, isn't that **5)** _____? I don't quite understand how we distinguish between them.

Professor: The contraction of muscles in respiratory **6)** _____ is involuntary. Clearly, we need to breathe. We have little control over that.



Listen again and complete the conversation.

Student: What are the differences between **1) muscle types**?

Professor: First, how many different types of muscles are there?

Student: Three. Skeletal muscles, smooth muscles, and cardiac muscles.

Professor: Good. **2) Skeletal muscles** differ from the others because they produce voluntary movements.

Student: And the others produce **3) involuntary contractions**?

Professor: Right.

Student: Aren't **4) smooth muscles** in vital organs?

Professor: Yes.

Student: So, when we breathe, isn't that **5) voluntary** ? I don't quite understand how we distinguish between them.

Professor: The contraction of muscles in respiratory **6) tissue** is involuntary. Clearly, we need to breathe. We have little control over that.



Complete the conversation below with the phrases given. Then, take roles and act it out.

USE LANGUAGE SUCH AS:

What are the differences between ...?

How many different types of ... are there?

I don't quite understand how ...

Student A: You are a student. Talk to Student B about:

- types of muscles
- voluntary and involuntary contractions
- the location(s) of certain muscles

Student B: You are a professor. Talk to Student A about how to distinguish between types of muscles.

What are the differences between types of muscles? They include skeletal muscles, smooth muscles, and cardiac muscles.

And the others produce involuntary movements, right?

I don't quite understand how we distinguish between those movements.

What are the differences between types of muscles?

They include skeletal muscles, smooth muscles, and cardiac muscles.

And the others produce involuntary movements, right?

I don't quite understand how we distinguish between those movements.

A:

B: Well, please tell me: how many different types of muscles are there?

A: Three.

B: Very good. Skeletal muscles are different from the other types because they produce voluntary contractions.

A:

B: Yes, that's right.

A: So, when we swallow, is that action voluntary or involuntary?

B: Swallowing, though it occurs within the digestive system, is voluntary. We don't have to swallow. Movements that occur in our intestines when we digest are involuntary.

Muscle Types and Actions (Quick Facts)

1 There are three types of muscles. They include muscles, cardiac muscles, and smooth muscles.

2 Skeletal muscles produce movements.

3 Cardiac muscles and smooth muscles produce movements.

1 There are three types of muscles. They include skeletal muscles, cardiac muscles, and smooth muscles.

2 Skeletal muscles produce voluntary movements.

3 Cardiac muscles and smooth muscles produce involuntary movements.

Video Exercise



A lot of people think that 1) is only about treating injuries with machines and a(n) 2) program. But this is not true. At Moveo, they are very hands-on and many physiotherapists take courses in 3) therapy, joint mobilization, acupuncture and dry needling. They have the 4) to see where the root of the problem comes from. They have the skills to 5) up with the appropriate rehab program. They are movement specialists who find 6) patterns for change, they help the patient 7) their pain, control their muscle function, and help them get through their everyday lives. Their goal is to make sure the joints, the 8) and the ligaments work together, and are strong, stable and functional.

physiotherapy

come

techniques

exercise

functional

manage

manual

muscles

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