CHAPTER 26

In the last chapter, you learned that your skin, muscles and bones are very important organs that help you survive. In this chapter, you will learn about how your muscles and bones work together with two different organs.

THIS WEEK YOU WILL BE LEARNING ABOUT YOUR....

Heart and **Lungs**

Let's start with your **heart!**

Think of your heart as a pump that is busy moving blood all the time! Do you remember learning about muscles in the last chapter? Well, your heart is made of a different kind of muscle known as **cardiac muscle** ("car-dee-ack"). **Cardiac** is a scientific word that means "heart."

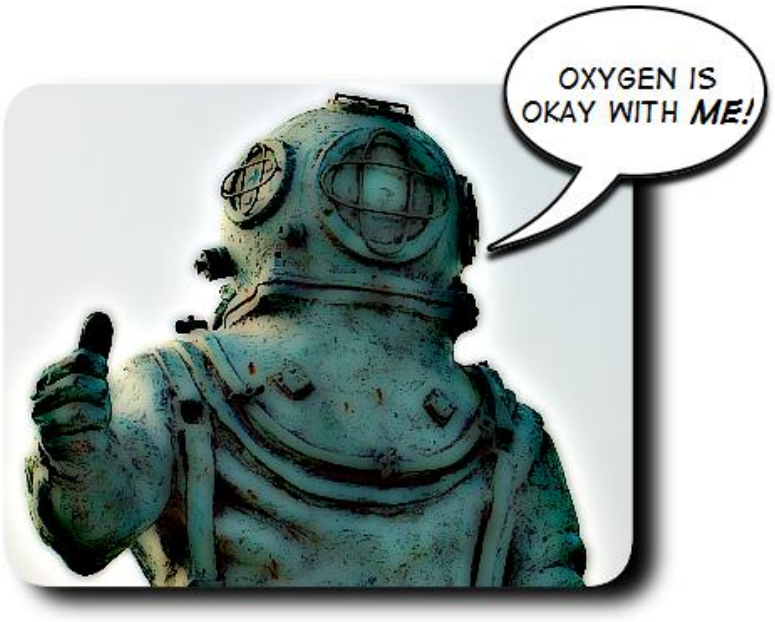
This muscle is not attached to any bones, which is different from what you learned about **skeletal muscle**.

Your heart **contracts** around 70 times a minute when you are resting. It speeds up when you are running, jumping or exercising!

Every time the cardiac muscle in your heart contracts, it gets very tense for a very short period of time. If you have ever felt your heart beating before, you are feeling your cardiac muscle contract!

The heart's main job is to pump blood that has nutrients and a very important gas known as **oxygen** ("ox-e-gen") to all of the muscles and organs in your body. It is these nutrients and oxygen that your body needs to stay alive!

In order to pump this blood, your heart needs some kind of plumbing to move this fluid. So, the "pipes" that are used to move blood out of your heart are known as **arteries**. Arteries are very good at moving your blood around, but they are too big to reach every part of your body. Therefore, your arteries get smaller and smaller until they become the smallest possible "pipe" that can be used to carry blood. These tiny "pipes" are known as **capillaries** ("cap-ill-air-eez").



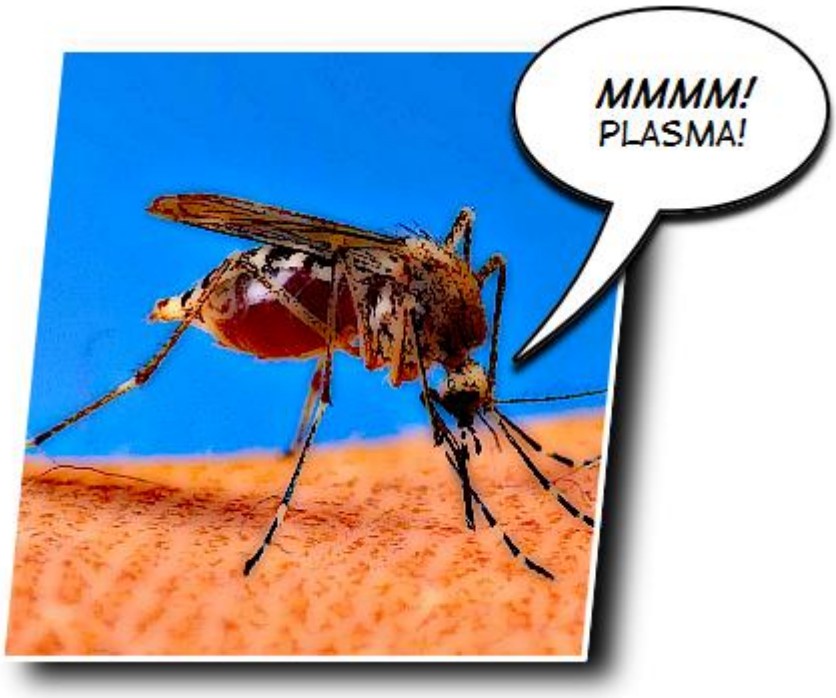
All of the blood moving around your body must return to the heart to be pumped out again. The large "pipes" that carry blood back into the heart are known as **veins** (try to say "vanes").

So why does my heart beat faster when I am exercising?

Your body needs more oxygen and nutrients when you are exercising. So, when you are running and jumping, your heart must pump the blood faster for your body to get the extra oxygen and nutrients it needs.

At rest, your body does not need as many resources. During this time, your heart does not contract as fast!

Your blood is just as important as the heart that pumps it!



All of the blood in your body is made up of a clear liquid that is called **plasma**. The plasma helps everything that is in your blood to flow easily through your arteries, capillaries and veins. It is the large amount of **red blood cells** in your plasma that gives your blood a red color!

These red blood cells are responsible for carrying oxygen to all of the muscles and organs of your body.

Your blood also has **white blood cells**. Think of these cells as an army in your body. Their job is to attack anything that should not be in you (like a bacteria!) It is the white blood cells that work very hard to keep you healthy!

But how does the oxygen from the air get into my blood?

Every cell in your body needs oxygen in order to survive. No oxygen...no life!

When you breathe in air, it travels into your body and goes into your **lungs.** A fancy word for "breathing in" is called **inhale.** But if the oxygen goes into your lungs, how does the rest of your body use this resource.

The oxygen has to reach every one of your cells in order for you to survive!

Your heart pumps blood out of its arteries and into the smaller capillaries that surround your muscles and organs, this includes your lungs!

The oxygen gets picked up by the red blood cells in your blood as they pass over the lungs. Think of your red blood cells like a taxi. They show up at your lungs when you bring air to them, and then carry this gas away to all of the cells in your body!

After your red blood cells are done picking up all of the oxygen in your lungs, they begin to deliver it to the rest of your body. At this time, you have to **exhale.** This means that your body breathes out all of the gas in your lungs that you do not need to survive! Pretty cool, huh?

This "taxi service" happens every time you breathe...which is about 20 times a minute.

You need to thank your muscles for keeping you breathing! Your lungs are like two spongy balloons that can be filled up with air... but you don't see a balloon fill up with air on its own, do you? (If you do...stay away from it!)

Nope! You have to use some of your energy to force air into that balloon! Your lungs work the same way...

You don't have to think about breathing do you? You just do it naturally, without thinking. This is because a large skeletal muscle in your body (called the **diaphragm**... "die-a-fram") is contracting every time you breathe!

Your diaphragm is found under your lungs. It is shaped like a dome with your lungs resting on top of it!!! When your diaphragm contracts, it flattens out and gives your lungs more room to fill up with air. (inhaling!) This is when your red blood cells come in and pick up the oxygen.

Once your diaphragm relaxes, it goes back to its dome shape. This action squeezes the lungs and forces the leftover gas out through your nose and mouth! (exhaling!)

It is true that your heart and lungs rely on muscles to keep you alive. But there are many other organs that are working together, right now, to do the very same thing!

Next week, you will be taking a look at three of these organs:

Stomach, Kidneys and Intestines

Unscramble the words below:

1. boclddrollees _____
2. cisaualcedrcm _____
3. treseiar _____
4. slapma _____
5. ipcrisaella _____
6. cacradi _____
7. evnsi _____
8. ldswcheilbeootl _____

Write the definitions for each word:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

Match the words in the first column to the best available answer in the second column.

_____ Cardiac	1) the liquid part of your blood
_____ Cardiac muscle	2) part of the blood that carries oxygen to all of the muscles and organs of your body
_____ Arteries	3) a kind of muscle that is only found in the heart
_____ Capillaries	4) "pipes" that are used to move blood out of your heart
_____ Veins	5) large "pipes" that carry blood back into the heart
_____ Plasma	6) the smallest possible "pipe" that can be used to carry blood
_____ Red blood cells	7) parts of the blood that attack anything that should not be in you
_____ White blood cells	8) anything related to the heart

Imagine you are a red blood cell that is inside a human body. Describe your journey as you are pumped throughout the body.