

CHAPTER 25

In this unit, you will be looking at how your body works! You will be looking at many of your **organs**. **Organs** are parts of your body that have special jobs to do. In the next three chapters, you will be exploring your:

Heart
Lung
Stomach
Intestines
Kidneys
Liver
Gall bladder
and Pancreas
("pan-kree-as")



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

Skin, muscle and bones

But wait a minute!
My skin, muscles
and bones are not
organs, are they?

**You bet they
are!**

Let's take a look at your **skin** first...

Think of your skin like a sandwich baggie. It keeps everything inside of you safe. It does not let water to leak in or out of your body. It can bend very easily. And, if it gets opened up, it can be resealed (with a little help of course!)

Not only is your skin your largest organ, it also has a few other cool jobs:

- It protects you from diseases by keeping them outside of your body (unless you have a cut in your skin!)
- It keeps your muscles and organs from getting hurt by covering you up!
- By covering up your body, it helps you stay warm and to cool off.
- Your skin also allows you to sweat. Sweat is made in sweat glands which are found in your skin. You may think sweating is not a great thing to do, **but it is!** Every time you sweat, your skin is cooling you down. This is pretty important while you are running around on a hot summer day, don't you think?
- Your skin also contains a large amount of hair. Hair is found all over your body. The main purpose of your hair is to keep you warm.



I ONLY ASKED
FOR A HUG.
WHY DID SHE
RUN AWAY?

Like all of your organs, your skin is made of small objects called **cells**. Nearly every part of your body is made up of cells. Think of them like building blocks... all of those blocks can be put together to make all kinds of things, right? Cells are able to grow, reproduce and carry out certain jobs to keep the organism alive!

Well, to make your skin, you have to make lots of sheets of these cells (like pancakes!) and stack them on top of each other!

You are always making new sheets of skin cells inside of your body. These new sheets of cells (called the "**dermis**") push towards the outside of your body. So, the skin you can see on your body are the oldest sheets of skin cells you have! This outer layer of cells is known as your **epidermis** ("eh-pih-dur-miss").

But if I am always making new layers of cells, why doesn't my skin get really, really, really thick as I get older?



Your skin does not get thicker, because you are always losing those oldest sheets of skin cells! **That's right!** Every time you rub against something, you are scraping off these cells! In fact, you may lose as many as 30,000 of these cells every minute!



Enough about skin...

Let's take a look at your muscles!

The **muscles** in your body are just as important to you as your skin.

Your life would end very quickly if you did not have any muscles in your body. You may not look like a weight lifter, but nearly half of your body weight is muscle!

Every single thing that moves on your body uses at least one muscle! Eating, breathing, walking, blinking, **everything!**

You will be exploring one of three different kinds of muscles today...

Skeletal muscle - these are the muscles that you can see and feel. When a weight lifter bends his arms to make his muscles look much bigger, you are looking at skeletal muscle!

You also have smooth muscle and cardiac muscle, which you will learn about these muscles in later chapters!

For now, let's take a closer look at your skeletal muscles



There are over 600 muscles in your body that work together to help you move. And they do this without pushing!

That's right, muscles cannot push, they can only pull!



Whenever you move a part of your body, there is always at least one muscle that is pulling. It is never pushing!

For example, when you bend your elbow, one muscle pulls your arm up.

When you straighten your arm, muscle pulls your arm back down!

When you bend your elbow to see your muscles in your arm, you are making the muscles in your arm **contract**, (this means "to shorten") and slide over each other, just like an opening a sliding glass door!

If you look at a sliding glass door, you really have two doors that are the same size and are standing next to each other. Let's say that each door is three feet long. When the doors are closed, and standing together, they are taking up six feet of space.

But, when you **open** a sliding glass door, you are moving one of the doors on top of the other. You are not changing the size of either door...they are still each three feet long. What you are changing is the length of space they take up. Since they are on top of each other, they are only taking up three feet of space. It appears that they have shortened their space, haven't they? This is what happens to muscles when they contract... the muscles always stay the same size, they only slide on top of each other and appears to shorten.

Skeletal muscles are what make your bones move! They can do this because they are attached to your bones by groups of cells called **tendons**. However, the job of your bones is not only to help you move. They have two more very important jobs:

Your bones protect many of your organs.

and

Your bones give you your shape.

(without bones, you would be a sack of skin and blood...yuck!)

Your skull, rib cage and spine all protect very, very important organs in your body! Your skull acts like a helmet, protecting your brain. Your rib cage surrounds some very important organs like your heart and lungs. And inside your spine you will find your spinal cord which controls your senses!

How many bones do you have?

When you were born, you had over 300 bones in your body. As you get older, many of these bones start to grow together. By the time you are an adult, you will probably have about 200 bones in your body!

That's right...bones can grow! They are very much alive!

Your bones are connected to each other with strong bands of cells called **ligaments**.

(don't confuse **ligaments** with tendons!)



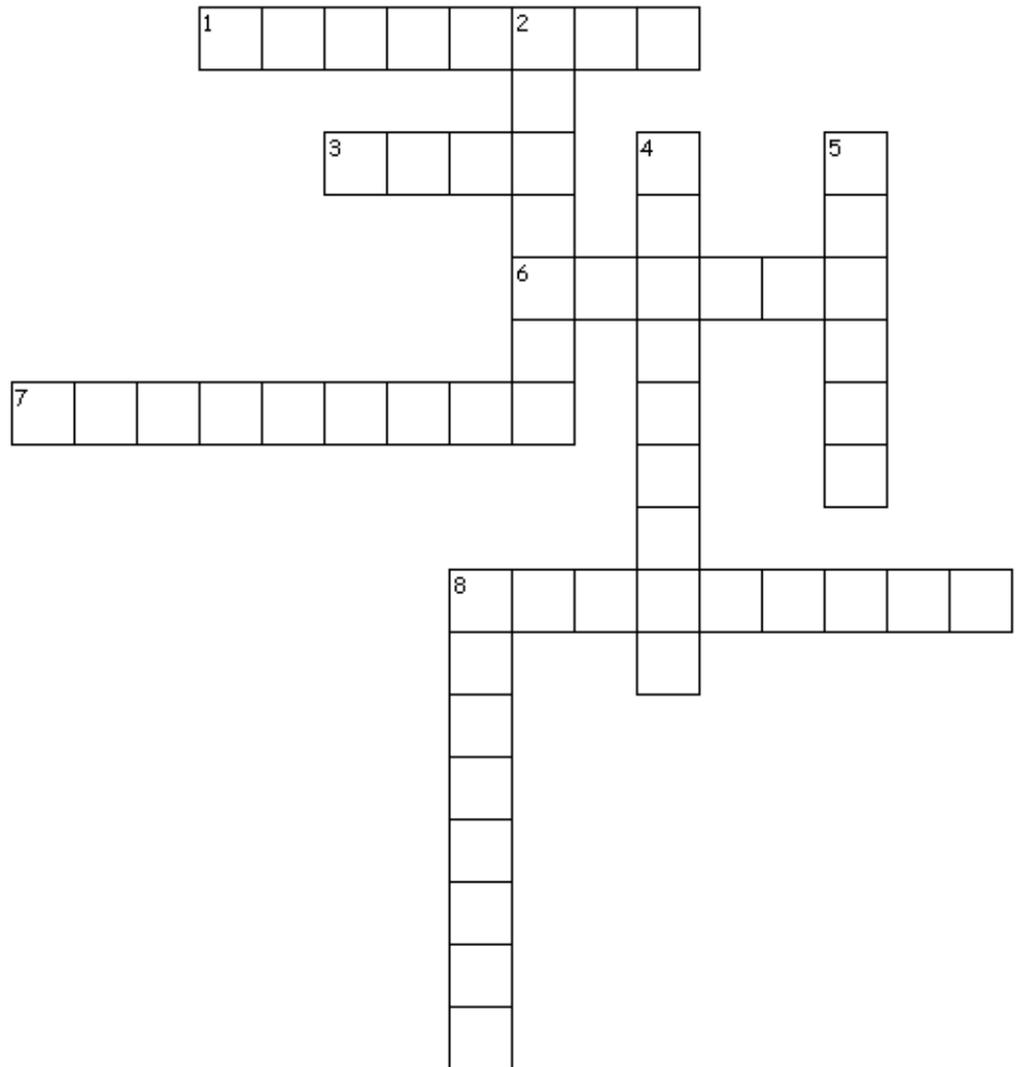
Your bones do not rub against each other (that would be painful), so they have a cushion between them called **cartilage**.

Your skin, muscles and bones are organs that all work together to protect you from dangers in your environment. In the next chapter, you are going to learn how two more of your organs work together to keep you alive...

Place the answers to the following clues in the boxes below. Each box should contain one letter.

Across

1. type of muscle which stretches to allow your bones to move
3. the largest organ of the human body that protects the body
6. parts of the body that have special jobs to do
7. the outer layer of skin cells that can be seen outside of your body
8. a "cushion" of cells between your bones to keep them from rubbing together



Down

2. groups of cells that attach your skeletal muscles to your bones
4. bands of cells that connect your bones together
5. an organ that helps you to move everything in your body
8. "to shorten"

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

- | | |
|------------------------|---|
| _____ Organs | 1) the largest organ of the human body that protects the body |
| _____ Skin | 2) bands of cells that connect your bones together |
| _____ Epidermis | 3) groups of cells that attach your skeletal muscles to your bones |
| _____ Muscle | 4) a "cushion" of cells between your bones to keep them from rubbing together |
| _____ Skeletal muscles | 5) an organ that helps you to move everything in your body |
| _____ Tendons | 6) the outer layer of skin cells that can be seen outside of your body |
| _____ Ligaments | 7) type of muscle which stretches to allow your bones to move |
| _____ Cartilage | 8) "to shorten" |
| _____ Contract | 9) parts of the body that have special jobs to do |

Which one is right? Circle the correct answer.

1. Your skin is made from a collection of _____.

- a. cells
- b. muscles
- c. cartilage

2. New skin is always being formed _____.

- a. outside your body
- b. inside your body
- c. inside and outside your body

3. What body part keeps your bones from grinding into each other?

- a. cartilage
- b. tendons
- c. ligaments

4. The number of bones in your body _____.

- a. increases as you get older
- b. decreases as you get older
- c. stays the same your whole life

5. Your muscles can _____.

- a. only push
- b. only pull
- c. push and pull

6. Which of the following are true?

- a. your muscles allow you to sweat
- b. sweating helps to keep you warm
- c. your skin protects your organs