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Lessons
Science for Kids - Anatomy – Muscular System – 10/02/09

Summary Description
This is the fourth in a series of 8 lessons that introduces the student to human anatomy.

Learning Objectives
To have the student learn a few key facts about the muscular system.

Approximate Time for Lesson
40 minutes

Suggested Maturity Level for Instruction
Student should be able to read simple words and perform simple addition and subtraction. Also, student should be able to sit still and engage in one-on-one conversation.

References:
Muscular System, Discovery Kids - http://yucky.discovery.com/noflash/body/pg000123.html

Your Muscles, KidsHealth - http://kidshealth.org/kid/htbw/muscles.html#

Materials Needed
1. Internet Access – Pull up the following:
    a. Picture of the muscular system (go to http://www.limef.com/productImages/17025_Lg.jpg)

    b. Video of the muscular system (go to http://www.youtube.com/watch?v=RsWNyqnHQ2I)

Preparation
Make sure you have materials open, printed and/or available prior to beginning the lesson.

Script
Introduction (5 minutes)
1. Teacher: Ok. So last lesson we learned about the circulatory system. Can you tell me some important things that the circulatory system does for your body? [Engage the Student in conversation but come to the point that any of the following is correct: 1) the circulatory system helps deliver air to your cells, 2) the circulatory system helps remove waste from your body, 3) the circulatory system helps fight sickness and disease, and 4) the circulatory system helps fix cuts and scrapes by stopping the bleeding from damaged skin]

2. Teacher: Good. Now today, we're going to learn about muscles. I'm sure you've heard about muscles, but you're going to learn some new and fantastic things about them. All of your muscles together are called the muscular system. Can you say "muscular system"? [Have the Student repeat the word "muscular system" several times]

3. Teacher: Great, so are you ready to learn about the muscular system? [Get positive response from Student and begin lesson]

Lesson (30 minutes)

1. Teacher: OK. Let's talk muscles. Can you tell me why we need muscles? [Engage the Student in conversation]

2. Teacher: Those are some good answers. There's only one main reason why we need muscles – to keep our body moving. In fact, if we didn't have muscles (or if your muscles didn't work), we would be on the floor, not able to stand up, not able to even move. Here's a picture of the muscular system. [Show the Student the picture of the muscular system]

3. Teacher: Actually, when I say "move", I'm not only talking about the way you move your arms, legs or any part of your body, but about other movement in your body that you may not know about. For example, did you know that your heart is a muscle? We learned about the heart in our lesson on the circulatory system, but your heart is actually a muscle that helps pump blood throughout your body so that your cells can get air.

4. Teacher: The heart keeps pumping, even when you're sleeping. But when was the last time you remembered to tell your heart to keep pumping? Well, never. You know why? Because the heart is a special kind of muscle that moves all by itself. And the thing is, you have even more muscles that move by themselves! What do you think about that? [Engage the Student in conversation]

5. Teacher: Anyway, because some muscles move by themselves like the heart, and others only by you wanting to move them like the muscles in your arms, scientists put muscles into 3 groups: 1) cardiac muscle, 2) smooth muscle, and 3) skeletal muscle. Let's learn about each one.

6. Teacher: The cardiac muscle is very special – there's only one cardiac muscle in your body, the heart. Like I said before, it doesn't need you to tell it to keep pumping because it does it anyway. Since the cardiac muscle doesn't need you to tell it to keep moving, it's called an involuntary muscle. "Involuntary" means something that happens without you wanting it to happen.

7. Teacher: The smooth muscles are also involuntary – it moves without you even knowing about it. It's called smooth muscle because that's how it looks – smooth with one layer on top of another, without any ridges or bumps. An example of a smooth muscle is your stomach. Your stomach contracts and relaxes to help food move throughout your body. Your esophagus, which is the tube that comes from your mouth and goes to your stomach, is also a smooth muscle that contracts and relaxes to help food get from your mouth to your stomach after you've swallowed your food.

8. Teacher: And finally, the muscles that you know best, the skeletal muscles, are the ones that you can move when you want them to move. As we learned in our lesson on the skeletal system, these muscles are connected to your bones by tendons. Each skeletal muscle looks like a bunch strips. Examples of skeletal muscles are the muscles in your arms, hands, legs, and feet. Can you think of where in your body you have other skeletal

muscles? [Engage the Student in conversation but come the point that basically anywhere in your body that you can move by will has skeletal muscle]

9. Teacher: Good. Since skeletal muscles move when you want them to, these muscles are called voluntary muscles. "Voluntary" means something that happens only when you want them to happen.

10. Teacher: Now guess how many cardiac, smooth, and skeletal muscles you have in your body? [Engage the Student in conversation]

11. Teacher: Actually, we have more than 630 muscles in our body! And did you know that out of all those muscles, not even one of them is made to push? To say it another way, all of your muscles in your body pull. For example, try to bend your arm. [Have the Student bend her arm]

12. Teacher: It's actually the muscles on top of your upper arm, called the bicep, that pulls your arm up so that you can bend it. But guess what? That same bicep only pulls and can't push your arm back straight. So guess which muscle pulls your arm back straight? [Engage the Student in conversation]

13. Teacher: That's this muscle right here. [Point to the bottom of your upper arm] The muscle here is called the tricep, and it pulls the arm back straight whenever your bicep pulls your arm into a bend. And this is how muscles work. For each part of your body that bends one way, there's another muscle that pulls it the opposite way. So this is how muscles can always be pulling but never pushing. Understand? [Engage the Student in conversation]

14. Teacher: Good. Now, before we finish, let's watch this short video on muscles – it will help you understand some of the stuff we learned today as well as teach you a couple of new things. [Show the Student the video on muscles]

15. Teacher: OK - time for review. Go stand up and get in front of the class (consider inviting other members of the family also to set the stage). [Ask Student the following:

    a. Can you name any of the 3 kinds of muscles we have? Any one of the following: 1) cardiac, 2) smooth, and 3) skeletal.

    b. Which of the 3 kinds of muscles is voluntary muscle? Skeletal

    c. Do skeletal muscles pull or push? They pull

    d. Where is the biggest muscle in our body located? In our rear end - it's called the gluteus maximus (based on the video)

Teacher reviews any questions that the Student missed].

Wrap Up (5 minutes)

Teacher: [Clapping] You did GREAT! Wonderful job! Are there any questions that you have regarding our muscular system? [Engage in conversation with the Student and follow up with questions you cannot answer by researching the Internet]