

<i>Musculoskeletal System</i>	Grade 5 Biology		
<h2 style="margin: 0;">Lesson Plan</h2>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%; padding: 5px; text-align: center;">Safety Notes</td> <td style="padding: 5px;">Adult supervision and extra help is always appreciated!</td> </tr> </table>	Safety Notes	Adult supervision and extra help is always appreciated!
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<p>Description Students will learn the relations between muscle, bones, joints and ligaments while completing the Musculoskeletal System activities.</p>			
<p>Materials</p> <ul style="list-style-type: none"> - A pencil or pen - Colouring pencils, crayons or markers - Muscle (ex: Towels, clothes, scarves, blankets) - Joint (ex: ping pong ball, tennis ball, a roll of tape) - Bone (ex: cutlery, bottles, rulers, straws) 			
<p>Science Background</p> <ol style="list-style-type: none"> 1. Musculoskeletal System - The Musculoskeletal System includes 6 features of the body; the muscles (musculo), tendons, ligaments, bones (skeletal), joints and cartilage. All of these components give your body support, stability and movement. You are using this system when you are catching a ball, running or just even standing still. 2. Muscles - Muscles are found between our bones and skin. The human body has 640 skeletal muscles. Muscles contract and relax which is what causes their movement. The muscle consists of many filaments that are side by side and connected. Filaments are layers of thin strings that help with contracting and relaxing the muscle. At the end of the muscle, we have the tendons that connect our muscles to our bones. Ligaments connect bones to other bones. This helps to move one bone in relation to the other bone. 3. Joints - Joints are where two or more bones meet. You actually have more joints in your body than you have bones. Joints are important because they allow your body to move. There are 3 different types of joints but we will be focusing on the synovial joints; the ones that are fully movable and are mostly found in limbs, such as arms and legs. These joints have a pocket of fluid between the bones that act like grease. Without these joints, your bones would be hitting each other causing friction and eroding the bones over time. Joints allow our limbs and our body to go in many different directions from a wave goodbye to vigorous break-dancing. If we take a look at the direction of two joints, the knee and the shoulder. We can see the knee is meant to only go in one direction while the shoulder is meant to go in multiple directions. Since your knee has to support the weight of your body, it has to be very strong hence, why it is only bending one direction. The shoulder, however, can go in almost every direction to give 			

you a variety of movements, this makes the shoulder more susceptible to injury. The more movement you have in a joint the more fragile and unstable it is. That is why you hear more about dislocated shoulders than dislocated knees.

Activity Procedure

For this activity we will be using household items to make a visual representation of a human leg.

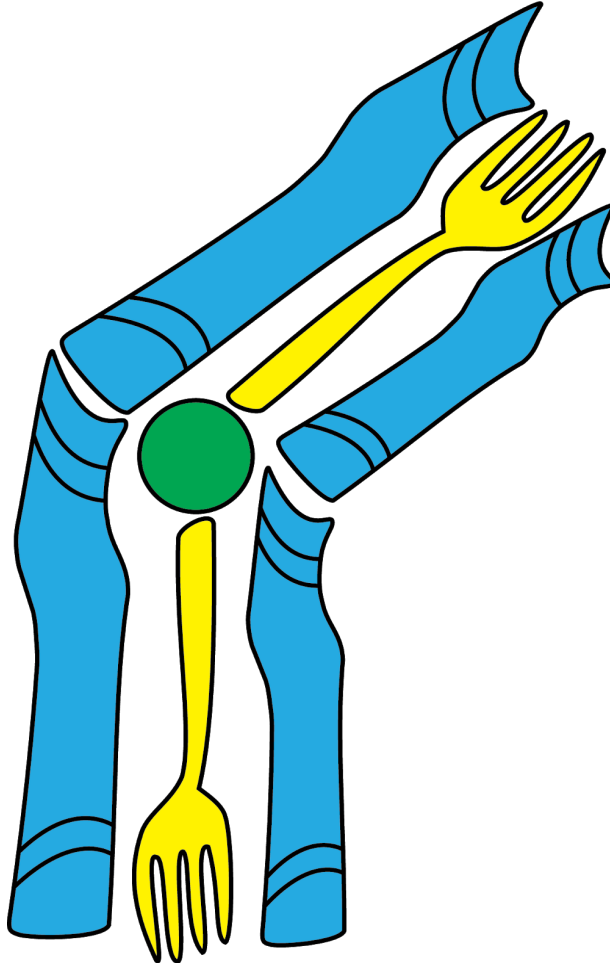
1. First to create the bone, place any long rigid object you can find (ex. cutlery) in the shape of a leg atop a flat surface.
2. Now place a ball (ex. ping pong) in the correct spot to represent the joint in your leg (hint: where does your leg bend?).
3. Finally using a soft material (ex. towels) fill out the areas where you would find muscle on your leg.
4. Now that you've created your joint, complete the handout.

Debrief

The primary role of the musculoskeletal system is movement and support. The system is made up of multiple parts that all have their special function. The bones within the “leg” that you have created are the supports, the muscles allow movement and the joint allows areas to pivot and move certain ways! Try to move the leg in the proper motion of the knee joint! Have fun exploring and researching the movement of joints in your body and the purpose of the musculoskeletal system.

Activity Follow-Up: Create a Human Joint (Answer Key)

1. Draw the knee joint that you created using household objects below
2. Colour all the muscles BLUE, all the bones YELLOW and all the joints GREEN



3. Put your arms straight up into the air and then bring them down to your sides. What kind of joint best describes your shoulder's movement?
 - c. **Ball-and-Socket Joint (movement in all directions)**
4. Put your arms straight out in front of you and then touch your fingertips to your shoulders. What kind of joint best describes your elbow's movement?
 - a. **Hinge Joint (movement in one direction)**