

The Muscular System

Chapter 15 Lesson 3

Functions of the Muscular System

- Without muscles, nothing in your body would work.
- Muscles pump blood through your body, move food through your digestive system, and control the movement of air in and out of your lungs.
- Muscles work in *complementary*- or opposing actions. These are shortening of a muscle- contraction, and lengthening of a muscle- extension.
- Muscle contraction is triggered by nerve impulses.
- Nerve impulses stimulate muscle fibers by a means of tiny, button like endings called *motor end plates*.

Structure of the Muscular System

- A muscle is composed of a bundle of fibers. The major muscles in the body are made up of hundreds of bundles.
- A muscle fiber is made up of even smaller units called *myofibrils*.
- Each myofibril is in turn made up of microscopic filaments called *actin* and *myosin*. These are proteins that control muscle contraction.

Types of Muscles

- Your body has three basic types of muscle tissue: smooth muscle, skeletal muscle, and cardiac muscle.
- **Smooth Muscles-** *are types of muscles concerned with movement of internal organs.* Smooth muscles are called involuntary muscles because they work without a person's conscious control.
- **Skeletal Muscles-** *are the striped, or striated muscles attached to bones that cause body movement.* Skeletal muscles are voluntary meaning they are under a person's conscious control. Skeletal muscles are classified according to the action they perform. **Flexors** are *muscles that close a joint.* **Extensors** are *muscles that open a joint.*

Types of Muscles cont.

- **Cardiac Muscles-** *are a special type of striated tissue that forms the walls of the heart.* This unique muscle allows the walls of the heart to contract rhythmically about 100,000 times a day. Cardiac muscle is involuntary.

Care of the Muscular System

- An unused muscle will **atrophy**, *meaning waste away*.
- To maintain **muscle tone**- *the natural tension in fibers of a muscle*- you need to keep active and eat balanced, nutritious meals.
- The more you use your muscles, the more balanced and strong they become.

Problems of the Muscular System

- Muscles ache after physical activity due to lactic acid buildup. As the lactic acid dissipates, the pain goes away. Sore muscles and bruises are a temporary condition, other however can have a lasting impact on a persons health and lifestyle.
- **Myasthenia Gravis-** *a disorder in which the muscles become weak and easily fatigued.* Most commonly this affects the eyelids, which may become droopy and cause double-vision.
- **Muscular Dystrophy-** *an inherited disorder characterized by a progressive wasting away of skeletal muscles.* Early detection is critical since although there is no cure, exercise can delay the onset.

Injury Related Muscle Problems

- **Muscle-strain-** a strain or “pulled muscle”, is a tearing or stretching of muscle fibers as a result of suddenly pulling them too far. Treatment consists of applying ice to the affected area to reduce the swelling, and rest.
- **Bruise-** a discolored area under the skin resulting from a leakage of blood after an injury. Ice or a cold pack can reduce the pain and swelling of a large bruise.
- **Tendinitis-** is the inflammation of a tendon, usually caused by overuse. Symptoms include pain, tenderness, and restricted movement in the muscle attached to the tendon. Treatment includes anti-inflammatories, ultrasounds, or injections.
- **Hernia-** a protrusion of an organ or tissue through a weak area in the muscle. Most common in the abdomen where the intestines push through the abdominal wall. Surgery is almost always required to repair a hernia.