Anatomy & Physiology I

The power of exercise is a big thing I this world what is the right way to exercise and lose weight. If you diet and don't exercise you're not going to have any success just like if you exercise but you don't watch what you eat. It also depend on if you have a lot of muscle or not, because muscle weights more than fat. As a personal trainer I believe that working out is a very important thing in everybody's day to day lives not only to stay in shape and loss weight but for great muscle strength too. So I will be talking about the structure of a muscle fiber, and how a muscle contracts. Also in this paper I will be talking about an exercise, the muscles that are involved in the exercise, and how repeated exercising with affect your body.

The muscle is a very complex part of the body. Muscle fibers are bundles inside the fascicles. The epimysium is the connective tissue that covers the entire muscle. It is a dense layer of collagen fibers. The connective tissue fiber of the perimysium divide the skeletal muscle into a series of compartment that contain bundles of muscle fibers called fascicle. Within the fascicles the more delicate connective tissue is the endomysium surrounds the individual muscle fibers. The collagen fibers of the epimysium, perimysium, and endomysium come together to form either a bundle which is called a tendon. Or a broad sheet called an aponeurosis. The tendon and aponeurosis usually connect skeletal muscle to bone. The sarcolemma is the plasma membrane of a muscle fiber surrounds the sarcoplasm or cytoplasm of the muscle fiber. The myofibril is a bundle of protein filaments called myofilaments. There are two types of myofilaments. The first is actin which is the thin filament, whereas the second one is myosin which is

the thick filament. Myofibrils are bundles of thin and thick filament they are organized into repeating function units called sarcomeres. The sarcoplasmic reticulum is a membrane complex related to the smooth endoplasmic reticulum of other cells, and stores calcium. The sarcoplasmic reticulum forms a tubular network around each individual myofibril. On either side of the T tubule, the tubules of the sarcoplasmic reticulum enlarge, fuse, and forms expanded chambers called terminal cisternae. The combination of it all is called a trid.

The steps of a muscle contraction starts with action potation sends a neuron down the axon. Then the Acetylcholine released into synapse. The next step is the acetylcho linestsmse triggers chemically gated channel of the motor end plate to open sodium enters the cell, then local depolarization. If local depolarization is great enough to open the voltage gated channels will open and let more sodium in. The action potential occurs when this happens all the way down the sarcolemma and T-tubules. The next step is action potential goes down the T-tubules triggers the release of calciu from the terminal cisternae into the sarcoplasm. Calcium binds to transition of actin protein which moves tropomyosin to revel binding sites. Finally myosin head attaches t the binding sites of actin and flexes which makes a contraction. The sliding filament theory is defined as the theory which describes the process used by muscles to contract. The theory explains that the thick and thin filaments within the sarcomere slide past one another, shortening the entire length of the sarcomere. At a very basic level each muscle fiber is made up of smaller fibers called myofibrils. These contain even smaller structures called actin and myosin filaments. These filaments slide in and out between each other to form a muscle contractions. The role of calcium in muscle contractions is that it simply acts as the trigger for a muscle to contract. Basically, calcium ions help start the action potential to signal muscles fibers to enter a state

of contraction and start depolarization for to accomplish a muscle contraction. How ATP works is. When myosin is phosphorylated given a phosphate by ATP and thus given energy, while the ATP becomes ADP it moves one notch down on the actin. This process happens to make the muscle contract.

One of the most basic exercise would be abdominal crunches. There are quite a few muscles you work when you doing crunches. On your posterior side you work your latissimus dorsi which is your big lower back muscle. On your anterior side you work the rectus abdominus the transverse abdominals which are deep to the rectus abdominus and they run vertical. On your side of your thoracic cavity there is your external and internal oblique's. The external oblique's run downward and inward and the deeper ones run upward and outward. All the muscle actually stop short of the middle of the abdominal area with all connection continuing with layers on connective tissue. To work all the muscle in your abdomen to get the desired outcome is fairly simple. Just work it with the "vacuum" this exercise is simple to do and can produced results. To start just pull the belly button toward the spine and hold of fifteen seconds and breathe normal. You're supposed to work out for at least a half hour each day. When you're working the muscle you want to work doing three sets of ten is usually plenty. The systems that you would work would be your diaphragm. Such as the respiratory system to work on your breathing. Also your integumentary system because it's good for you to sweat.

I hope this paper helped you understand the structure of a muscle fiber. Also how the muscle contracts. Hope all this information helped you learn more about the muscle and how it they work. Also how abdomen crunches are beneficial.

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