

Lesson Nine: Exercise and Muscles

Saturday morning, as Noelle walked past the boys' bedroom, she heard some strange sounds. Knocking on the door, she asked hesitantly, "Everything OK in there?"

Michael's out of breath voice answered, "Yep, just working out, Sis. I want to strengthen my legs so I would be ready to go on our next bicycle ride without getting sore muscles afterwards."

"Haha, OK, it just sounded like someone was choking or gasping in there, so I wanted to make sure all was well," Noelle replied.

"Very funny," Michael responded.

Later, at breakfast, Michael mentioned his plan to Dad.

"That's a great idea, Son. People who work hard with any part of the body make the muscles of that part very strong. All serious athletes make regular strength or endurance exercises, or sometimes both, part of their training regime. It's a great way to prepare your body for the sport you participate in, as well as just a way to stay in shape and benefit your overall health."

"So you don't think Michael is going a bit overboard, Dad?" inquired Noelle.

"Not at all," was Dad's answer. "Think about it. The blacksmith has big, strong muscles in his arms because he uses them so much. You are using your muscles every day, and this helps them to grow."

As a physical therapist, Dad had many opportunities to work with people who were dealing with muscle issues. "Once I saw a little girl who had been very sick for a long time, and had to lie in bed for many weeks. Before her sickness, she had plenty of strong, healthy muscles in her arms and legs like most children, just from running and playing each day."

"After her sickness, she could hardly walk ten steps, and would rather sit and look at her toys than try to lift them. She had to make new muscles as fast as possible. It was only after months of physical therapy to help rebuild her muscles, which had started to waste away, and increase her endurance through some cardio activity - in her case, walking on the treadmill several times weekly until she was able to go outside and play, run, and ride her bike again, helped to bring her back to the state of health she had been in before her sickness."

“Wow, Dad,” interjected Marie, “I’m glad you were able to help her recover.”

“Yes, my job is a blessing, both to me and to others,” Dad said.

“There’s something else you kids should know about muscles,” Dad continued.

“Idle habits make weak muscles. So idleness is an enemy to the muscles. In today, so many children sit around all day and play computer games, or sit on their other electronic devices, and they don’t get enough physical activity to keep their bodies healthy. They are well on their way to becoming like the little girl I told you about – they are allowing their muscles to waste away voluntarily. I know that today, it’s very easy to get sidetracked by the technology available to us. But you need to remember to set limits. That’s why Mom and I felt it was important to start riding bikes together as a family. We wanted to keep our bodies healthy and active, so our muscles don’t atrophy.”

The children looked impressed with the new bit of knowledge they had just gained, as Dad went on.

“There is another enemy to the muscles I want to tell you about. Muscles are lean meat. Fat meat could not work your joints for you as the muscles do. You know that as Christians, we do not drink alcohol because of what God’s Word has to say about it. But there is much more to this conviction than just not being drunk. It’s also about being a good steward. God gave each one of us just ONE body to care for. Alcohol does absolutely nothing to benefit our health, and is actually very harmful to the body in many ways. Take our muscles, for example. Alcohol often changes a part of the muscles to fat, and so it takes away a part of their strength. In this way, people often grow overweight from drinking beer, because it contains alcohol, as you will soon learn. But they can not work any better on account of having this fat. They are not any stronger with it – just heavier.

“Alcohol is also bad for the liver, it dulls the senses and the brain, and has so many other negative affects on the health of your body,” continued Dad. “That’s another reason why, as Christians, we don’t believe that consuming alcohol honors God, Who wants us to take care of the bodies He gave us. Remember, God made us in His own image. We should respect that, and take care of our bodies in a way that honors Him.”

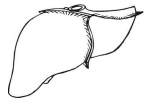
There were heads nodding in agreement all around the kitchen as everyone finished their breakfasts. Many minds were considering with thankfulness the healthy breakfast they had just eaten, and the wisdom of Christian parents who were eager to share biblical principals that would not only guide them in their lives if applied, but also keep them in better health.

Lesson Nine: Dangers of Alcohol Consumption

Drinking alcohol can damage many parts of the body. Here are some things to know:



Consuming alcohol affects the brain by causing you to think less clearly, but it also affect your coordination and cause mood changes.



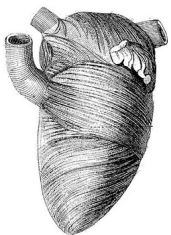
Drinking alcohol can cause damage to the liver, one of your body's main detoxifying organs, causing it to work less efficiently. This can contribute to a host of other problems.



Alcohol can cause your pancreas to produce toxins that can lead to pancreatitis. This dangerous inflammation of the blood vessels prevents your digestive system from working properly.



Drinking alcohol can weaken your immune system. Without a strong immune system, your body can get sick much more easily. People who are chronic alcohol drinkers are much more susceptible to sicknesses like pneumonia. Even just drinking alcohol once in awhile can make it harder for your body to fight off infection for up to 24 hours.



Drinking alcohol can also damage your heart, causing problems such as arrhythmia (irregular heart beat), high blood pressure, cardiomyopathy (stretching and drooping of the heart muscle), and even stroke.

Drinking alcohol can also increase your risk of certain cancers, including those of the liver, breast, mouth, esophagus, and throat.

Is it any wonder that God, who gave each of us just one body, would warn us in his Word about the dangers of strong drink?

Lesson Nine: How Exercise Causes Muscles to Grow

The weight lifting exercises we relate to muscle growth actually cause muscle damage. Wait a minute....can this be true? In fact, it's that very action of causing muscle damage that kicks in the body's natural repair response to cause the muscles to grow as they repair themselves!



Find the answers to the following questions:

When do the muscles which have become damaged from exercising actually begin to grow - when they are exercising, or when they are at rest?

Explain how this happens:

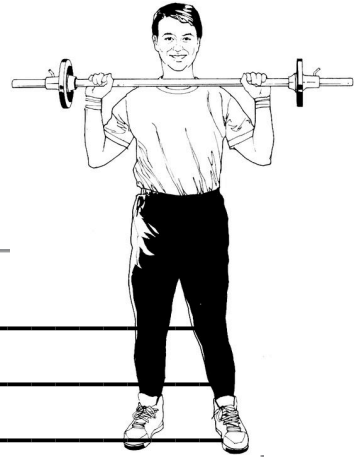
Why do muscles need to have rest in order to grow?

How does lack of sleep inhibit muscle growth?

Looking at what you have just learned, is it a good idea to do weightlifting exercises for the same body part every day? Why or why not?

Lesson Nine: What Causes Sore Muscles?

Do some research to find out what causes sore muscles after exercising, and how that happens. Record your findings below.



A large rectangular box containing 25 horizontal lines for writing. The lines are evenly spaced and extend across most of the width of the box. The box is empty, intended for the student to record their research findings.

Lesson Nine: Foods for Healthy Muscles

There are many foods which can help you to build healthy muscle, and others which can be detrimental in helping you to build healthy muscle. Study these lists. It may be helpful to tear this page out and stick it to your refrigerator so you can remember which foods are muscle-building and which are not.

Muscle Building Foods:

Fruit and vegetables

Lean Meat

Eggs

Nuts (walnuts, almonds, & Brazil)

Beans and Legumes

Whole Grains (especially steel cut or whole grain oats – not quick oats)

Greek Yogurt (unsweetened)

Avocados

Healthy Fats (olive oil, coconut oil, organic butter, ghee, avocado oil)

Cottage Cheese

Whey Protein Concentrate (look at ingredients for healthy varieties)

Pure water – be sure to get enough!

As always, choose organic options where available.

Detrimental to Muscle-Building:

Sugar in any form

Artificial Sweeteners

Processed Foods

Unhealthy Fats (canola or vegetable oil, margarine, too much animal fat)

White flour

White Rice

Alcoholic Beverages

Artificial Ingredients such as flavors, colors, and other chemicals.

As with the rest of your body, your muscles need healthy, whole foods to stay healthy.



Lesson Ten: A Field Trip to Learn About Nerves

“How do your muscles know when to move?” asked Michelle the next morning, who was deep in thought as she worked on fine tuning her skill in making her marionette puppet march.

“That’s a good question,” answered Mom, “and one that you can ask today when we go to Dr. Cozart’s office for our field trip with Mrs. Cozart and Elijah and Ellie. I’m sure Dr. Cozart will be able to explain that very well.”

Just a few hours later, Michelle got her chance to ask the chiropractor that very question as she stood arm in arm with her little friend Ellie, Dr. Cozart’s daughter, who was just her age.

“Dr. Cozart, how do my muscles know when they are supposed to move?”

“Well, Michelle, let’s see if I can answer that. You’ve all seen the telephone wires, by which messages are sent from one place to another, all around the world. While you may be too young to understand how this is done, it may help to understand that you each have something inside of you, by which you are sending messages almost every minute while you are awake.”

Michelle gave her rapt attention as Dr. Cozart continued, “In your head, you have a brain. Of course, this is the part of you which thinks. But there is more to your brain than just its ability to daydream and wonder and consider. Your brain is your most precious body part, as it controls so many other things in your body. In fact, God gave you a strong box made of bone to keep it in – your skull. Your skull protects your brain.

“Your brain is like the central telephone office to which all those telephone wires go to. Little white cords, called nerves, connect the brain with the rest of the body.

Dr. Cozart further explained, “A large cord, called the spinal cord, lies safely in a bony case made by the spine, and many nerves branch off from this.”

By now, every child’s eyes were focused intently as the doctor continued to share his knowledge of the subject with them.

“If you put your finger on a hot stove, in an instant, a message goes on the nerve “telephone line” to your brain. It tells that wise thinking part that your finger will burn if it stays on the stove.

“In another instant, the brain sends back a message to the muscles that move that finger, saying, ‘contract quickly, bend the joint, and take that poor finger away so that it will not be burned.’”

“Wow, Dad,” interrupted Dr. Cozart’s son Elijah, “that sounds like it would take too much time, and that my finger would be burned by the time it gets the message to get off the stove!”

Dr. Cozart smiled. “You can hardly believe that there was time for all this sending of messages; because as soon as you felt the hot stove, you pulled your finger away. But you really could not have pulled it away, unless the brain had sent word to the muscles to do it. Now, you know what we mean when we say, “As quick as thought.” Surely nothing could be quicker.”

“That’s pretty amazing,” said Marie, as the other children’s faces showed their agreement with her statement.

“You see,” continued Dr. Cozart, “that the brain has a great deal of work to do, as it has to send so many orders. There are some muscles which are moving quietly and steadily all the time, though we take no notice of the motion.

“You don’t even have to think about breathing, and yet the muscles work all the time, moving your chest. If we had to think about it every time we breathed, we wouldn’t have time to think of any thing else.”

Even Mom and Mrs. Cozart were learning new things from this field trip. Mom was taking notes for things to discuss at home later as the doctor continued.

“There is one part of the brain that takes care of this type of work for us. It sends the messages about breathing, and keeps the breathing muscles and many other muscles faithfully at work. It does all this without our needing to know or think about it at all.

“Are you beginning to see that your body is a busy workshop, where many kinds of work are being done all day and all night? Although we lie still and sleep at night, the breathing must go on, and so must the work of those other organs that never stop until we die.”

“I guess that’s why God made this type of muscle work something that we didn’t have to even think about,” answered Noelle. “Wasn’t that kind of Him to allow our brains to work in this way, so we could still think about so many other things while we breathe without having to think about that?”

“His plans are always best,” answered the doctor with a smile.

Lesson Ten: Facts About the Spinal Cord

Here are some interesting facts about your spinal cord:

Your spinal cord and brain together make up your body's central nervous system.

Your spinal cord works directly with your muscles, sending responses to them without having to send them to your brain first.

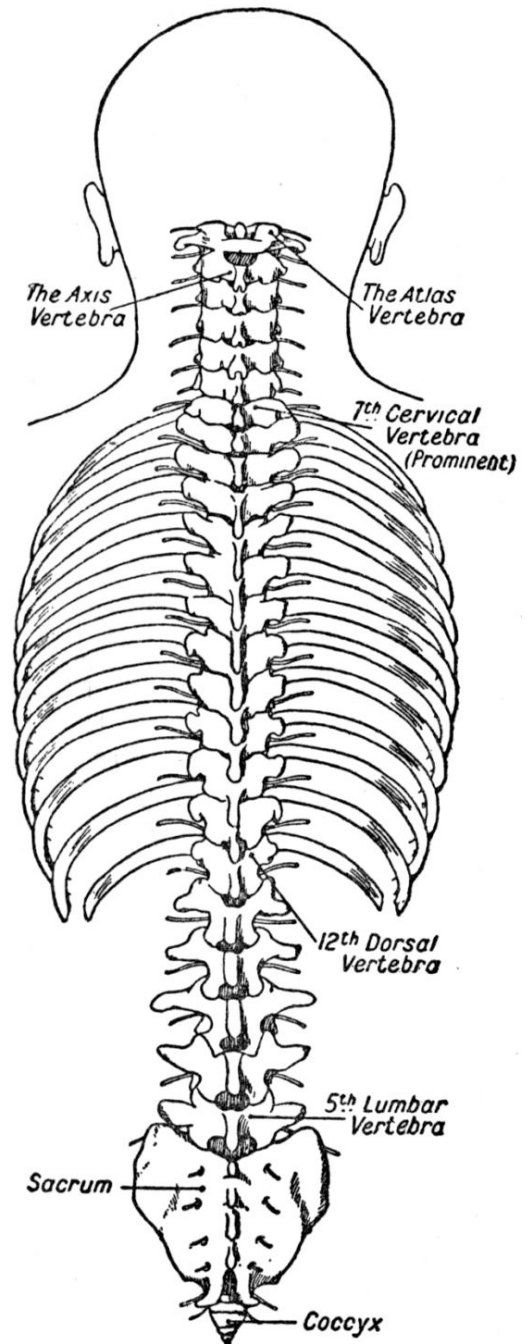
The spinal cord is a bundle of nerves which runs straight down your back and is protected by the vertebrae of your spinal column.

As you grow, the five vertebrae at the bottom of your spinal column fuse together to make the coccyx, or tailbone, which protects your spinal cord when you sit down too hard.

The blood is supplied to your spinal cord by three arteries that run from the brain through the entire length of the spinal cord.

If your spinal cord is damaged, it could cause paralysis.

The most common cause of spinal cord trauma in the United States is due to automobile accidents.



Lesson Ten: What Does a Chiropractor Do?

Do some research or interview a local chiropractor (with your parent's permission) to see just what services a chiropractor offers, and write your findings below.



Lesson Ten: The Benefits of Chiropractic Care

Here is some interesting information regarding the broad spectrum benefits of chiropractic care:

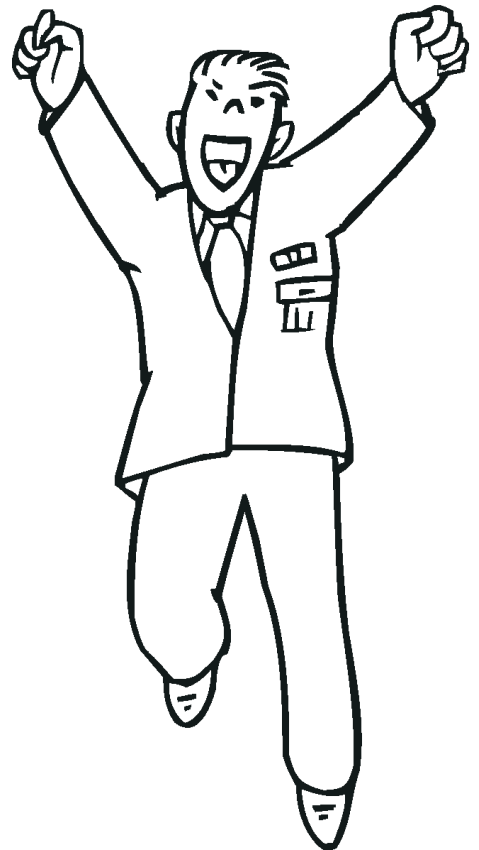
Chiropractic care focuses on disorders of the musculoskeletal system and the and how they can affect your general health.

Chiropractic care is used most often to treat neuromusculoskeletal complaints, including but not limited to back pain, neck pain, pain in the joints of the arms or legs, and headaches; but it can help your Insides work better also.

Chiropractic care may help improve blood pressure, digestion and other conditions.

Doctors of Chiropractic practice a drug-free, hands-on approach to health care that includes patient examination, diagnosis and treatment.

Chiropractors have broad diagnostic skills and are also trained to recommend therapeutic and rehabilitative exercises, as well as to provide nutritional, dietary and lifestyle counseling.*



*Special thanks to Dr. Jason Cozart of Pennsylvania Chiropractic and Rehab Center, Waynesburg, Pennsylvania

Lesson Ten: Helpful and Harmful Habits for Your Nerves

We may not give much thought to our nerves until they begin to hurt or give us some other problem, but, because our nerves do so much for our body, it is very important to develop habits to keep our nerves healthy, and also to abstain from potential habits that can harm our nerves. Here are some tips:

Tips for Healthy Nerves:

Get enough healthy fats. Your brain, spinal cord, and nerves are coated with a layer of myelin, which is a fat that insulates your nervous system. Eating enough healthy fat each day will help maintain the health of your nerves. Essential fatty acids, such as those in shark liver oil, flax seed oil, and some other sources, are very beneficial for your nerves, particularly those in your brain.

Give your nerves some regular exercise! Like the rest of our bodies, our nerves need to be exercised to stay in top condition. An activity such as drawing with great precision or writing as neatly as you can can help keep your nervous system finely tuned.

Make sure you feed your nerves. In addition to the essential fatty acids mentioned above, your nerves need natural sources of certain vitamins to stay healthy. Vitamin D, which may be obtained from spending some time outside in the sun each day, or via a natural supplement, is one of the vitamins which is supportive of the nervous system.

Things That May Harm Your Nerves:

Injury is one of the main causes of nerve damage. Whether the injury is due to an accident or self-inflicted, such as repetitive blows to the nerves, which may occur during activities such as boxing or martial arts. Damaged nerves cause a lot more side effects than simply not feeling pain in the area that has been damaged; damaging the nerves in this way prohibits the nerves from doing their job, and may affect more than just the nerves which have been damaged.

Dehydration prohibits proper nerve function, and may bring pain. You may notice that, if you don't get enough pure water to drink, you may develop a headache. Your nerves, like the rest of your body, need pure water to function properly. Soda, juice, milk, and other liquids to not take the place of pure water, and may even make dehydration worse.

Eating processed foods without the nutrients God intended for our bodies to run on can affect not only the nerves, but the entire body in a negative way. Make sure you eat a balanced diet of healthy, REAL foods, not boxed processed items being sold as "food."