

HEALTH AND THE PHYSICAL BODY

Grades 7-8

STUDENT JOURNAL

This journal belongs to:



THE GOOD AND THE BEAUTIFUL



Grades 7-8

HEALTH & THE PHYSICAL BODY

STUDENT JOURNAL



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INSTRUCTIONS

This Student Journal accompanies *The Good and the Beautiful Health and the Physical Body* science unit. It contains all the worksheets and journal pages that are needed to complete the unit. Each student will need his or her own copy of the science journal.

The Health and the Physical Body lesson extensions are also found here. These extensions are optional for older students (grades 7–8) to complete on their own. Each extension is accompanied by lined paper so the student can keep his or her work in one place.

Have each student take his or her time to create high-quality work as the activities and worksheets are completed. Students may enjoy looking back on their past discoveries when they've finished.

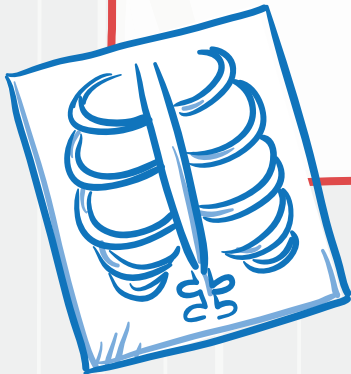
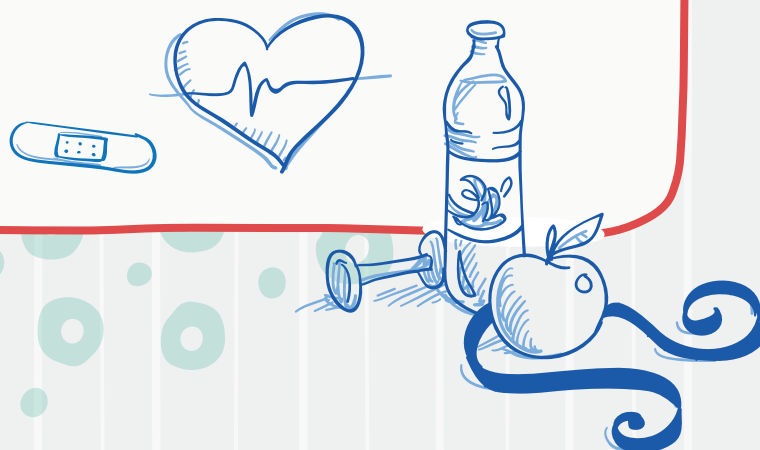
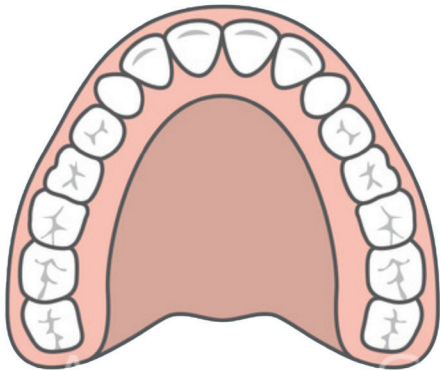


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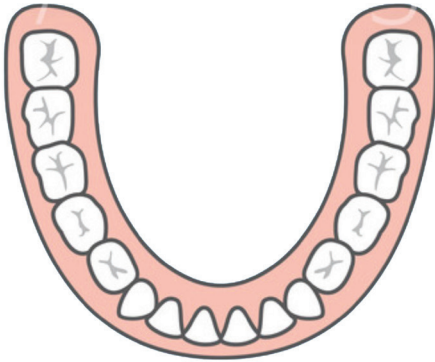


BREAK IT DOWN



used to bite
(color blue)

used to cut
and tear
(color green)



used to grind
(color red)

1

what happened to the apple when you chewed it?
Describe how it changed.

2

what did your tongue do as you chewed?

3

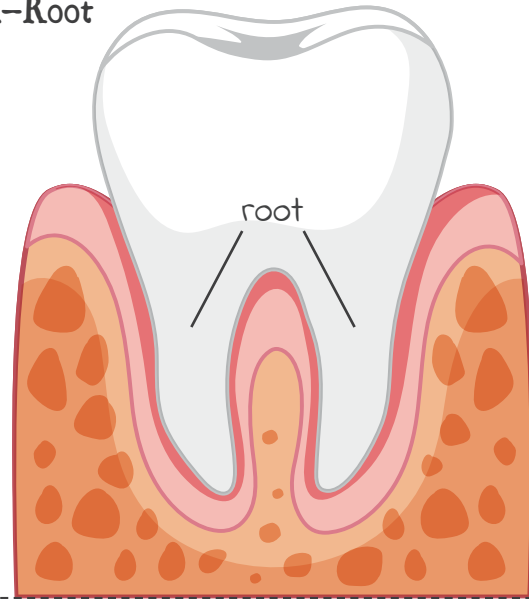
what did your tongue do once the apple was broken down and ready to be swallowed?

PARTS OF A TOOTH

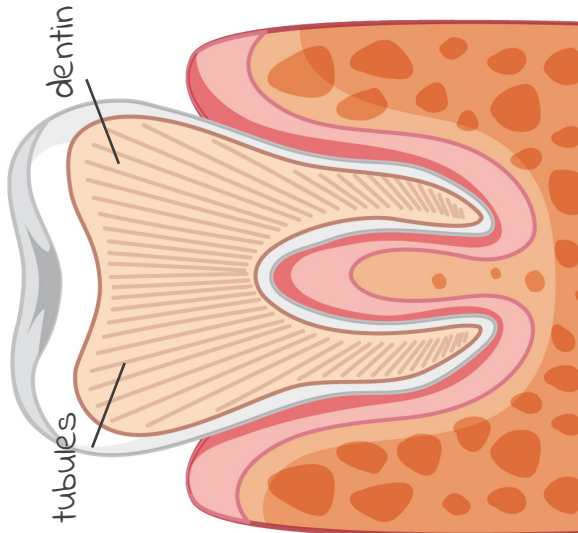


PARTS OF A TOOTH LAYERED BOOK

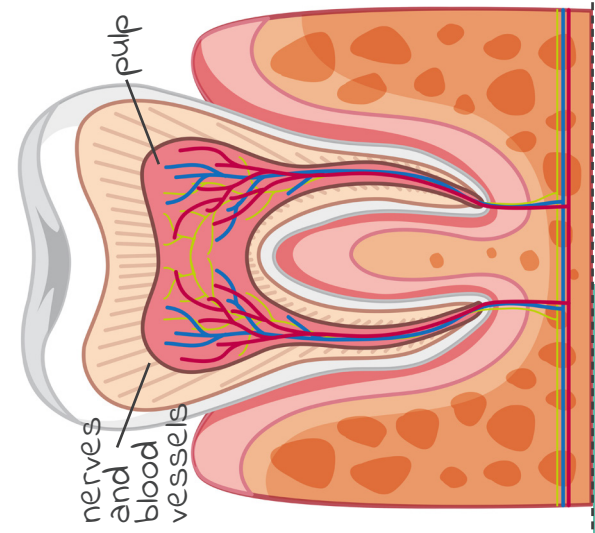
1-Root



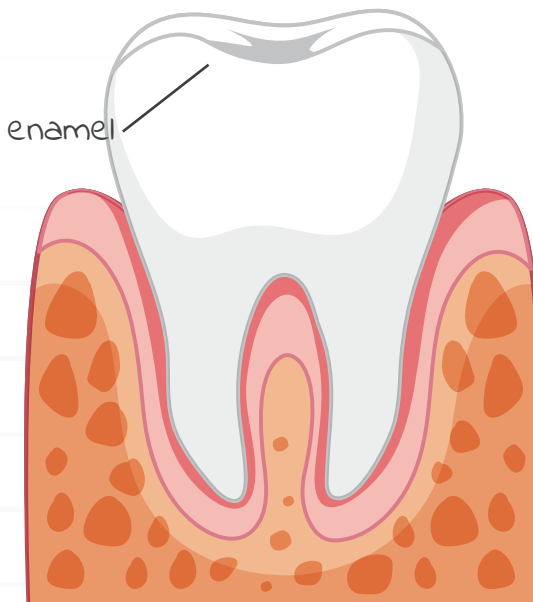
2-Dentin



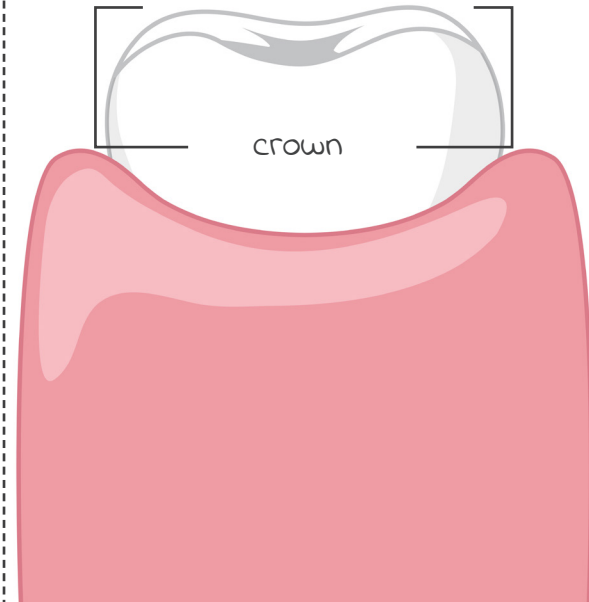
3-Pulp



4-Enamel



5-Crown



BILE ACTIVITY

HYPOTHESIS

1 what do you think will happen when the oil is added to the water?

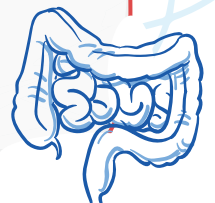
2 what do you think will happen when dishwashing liquid is added to the oil and water?

RESULTS

what did the oil do when added to the water?

what happened to the oil after the dishwashing liquid was stirred in? write down what you observed.

How does this activity demonstrate the way lipids are broken down in the body?



EXTENSION

Instructions:

1. Read the information below.
2. On the next page, list and explain at least three things that can happen when the body is dehydrated.
3. List three healthy habits you can start today to stay hydrated.

Dangers of Dehydration

Did you know that a human can live up to 40 days without food but only around seven days without water? Water is such a vital part of our well-being. Dehydration causes an imbalance in the body's internal sodium and electrolyte levels, affecting all major systems of the body in these ways:

- Lack of physical coordination
- Lowered ability to pay attention
- Impairment of decision-making abilities
- Impairment of executive function abilities, or the ability to think clearly and make good decisions
- Risk of seizures, brain swelling, kidney failure, shock, coma, and even death

What is the progression of symptoms when becoming dehydrated?

Our bodies lose water every day through breathing, urinating, and sweating. That water must be replaced through the foods that we eat and by drinking enough water every day.

You may have heard it said before—when you are thirsty,

you are already dehydrated! Our bodies have ways of telling us when we are dehydrated. At first, we might feel thirsty or tired and may even begin to develop a headache. This is often followed by feelings of grouchiness and a decline in mental and physical capabilities.

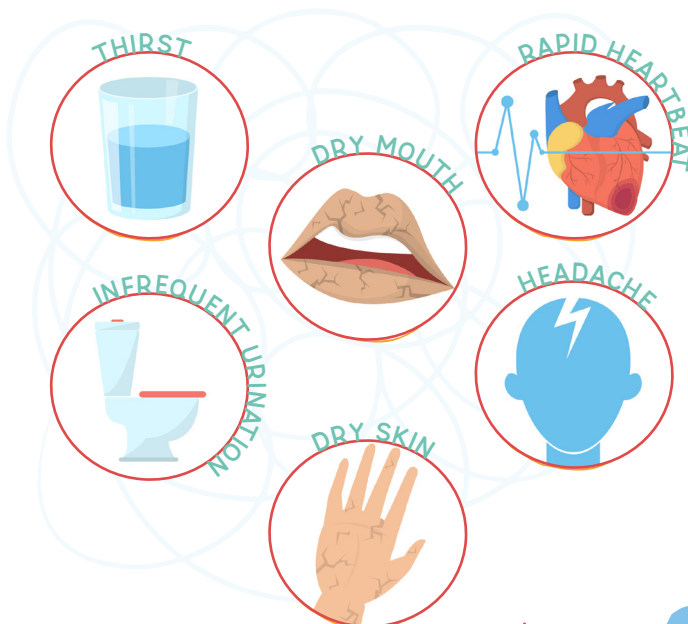
What happens inside our bodies when we become dehydrated?

As your body loses water, it sends a signal to your kidneys to hold onto any water they can. This means you urinate less, and urinating less means that your body is not eliminating toxic waste products that can cause illness. Your blood becomes thicker, making it harder for your cardiovascular system to function properly.

Dehydration increases the risk of exhaustion and hinders your body's ability to regulate internal body temperature. This can cause your body temperature to rise above normal, also known as hyperthermia, which can cause damage to the brain and organs.



Signs of Dehydration



How to Prevent Dehydration

It's important to recognize the early signs of dehydration and respond quickly to them by replacing fluids that have been lost. Plain water is always the best option for replenishment, and drinking plenty every day is the best way to avoid dehydration, especially on hot or humid days. If you suspect you or someone you're with is dehydrated, seek help from an adult or a medical professional.

- Periodically rest in a cool, shaded spot.
- Dress appropriately on warm or humid days in loose-fitting clothes and even a hat if possible.
- Drink extra water before beginning any sport or activity, and drink more water every 20 minutes or so.
- Avoid exercising or playing sports during the hottest part of the day.
- Stay away from too much caffeine.

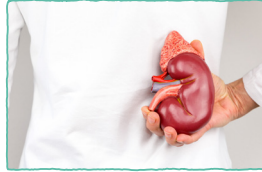
EXTENSION

Instructions:

1. Read the information below.
2. Write a list of reasons that a person might need a kidney transplant.
3. In your own words, explain the kidney donation process in at least four sentences.

Kidney Transplants

Can you believe that there are more than 100,000 adults and children who are waiting for a kidney donation in the United States? According to the National Kidney Foundation, one person is added to the waitlist every nine minutes.

**Why are so many people waiting for a kidney donation?**

We can live with one kidney, but when both fail, a new one is needed. There are many reasons that kidneys can fail, including diabetes, kidney diseases such as polycystic kidney disease, or chronic glomerulonephritis, which causes the kidney to become inflamed and leads to scarring of the nephrons.

When a kidney isn't functioning as it should, or fails to work at all, a treatment called dialysis can be used to rid the body of toxins, waste, and excess water. Dialysis takes the place of many functions of a healthy kidney and can help people with kidney disease live. But there are some cases where a new kidney is needed. People of

all ages need kidney donations—even children as young as one year old have been recipients of a donor kidney.

There are two major types of kidney donations.

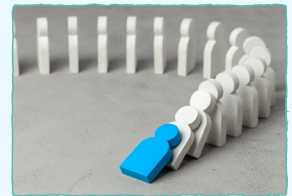
- A **deceased-donor transplant** is when a person has recently died and has consented, or the family has consented, to donate organs, such as his or her kidney.
- A **living-donor transplant** is when a kidney is taken from a living person. Only one kidney is needed to replace the two kidneys in the patient.

In the US, about two-thirds of kidney donations are from deceased donations, and the remaining one-third are from living donors.

A matching process helps to find the best possible option for each patient that needs a kidney transplant. Things such as the most urgent need, blood type, body size, and location help to make a good match, hoping to ensure the kidney is not rejected by the recipient's body.

Dylan's Story

On the Johns Hopkins Medicine website, there is an amazing story of a kidney donor, Dylan. While attending college, Dylan read an article about kidney donation, specifically people donating a kidney to a stranger. He decided that if he could do something to help someone else, he should. After lots of research and talking with other people who were also kidney donors, Dylan decided he wanted to donate a kidney. There is a process to go through that includes a thorough medical and psychological screening, which Dylan underwent.



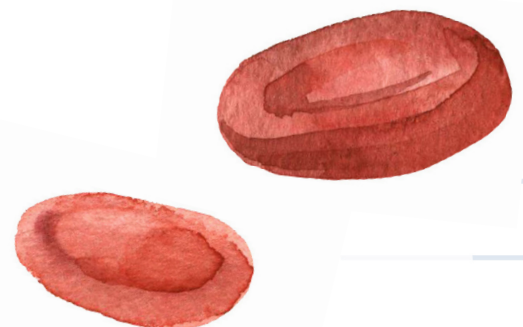
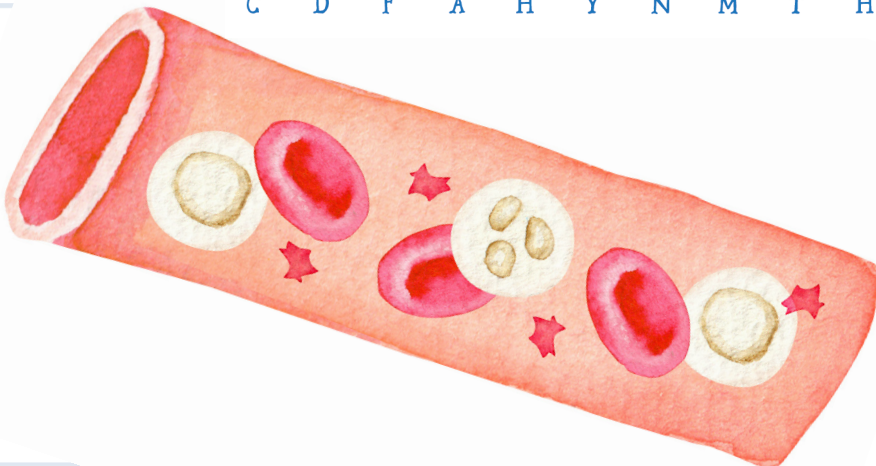
Dylan's donation created what is referred to as a domino effect. Sometimes a person is willing to be a living kidney donor for someone he or she knows who needs a kidney, but the two are not compatible. When this happens, that donor's information is placed into a database that tracks donors and recipients. When Dylan agreed to be a donor to anyone who needed a kidney, his information was entered into that database. From there, it was determined that Dylan could donate to patient #1, and patient #1's donor could donate to patient #2, and so on. When Dylan received the phone call that a match had been found for his kidney, he learned that his donation initiated a chain of donations that would help four patients! Dylan wanted to help someone in need, and through his sacrifice he helped four people increase their quality of life and even saved lives!

PARTS OF THE BLOOD WORD SEARCH

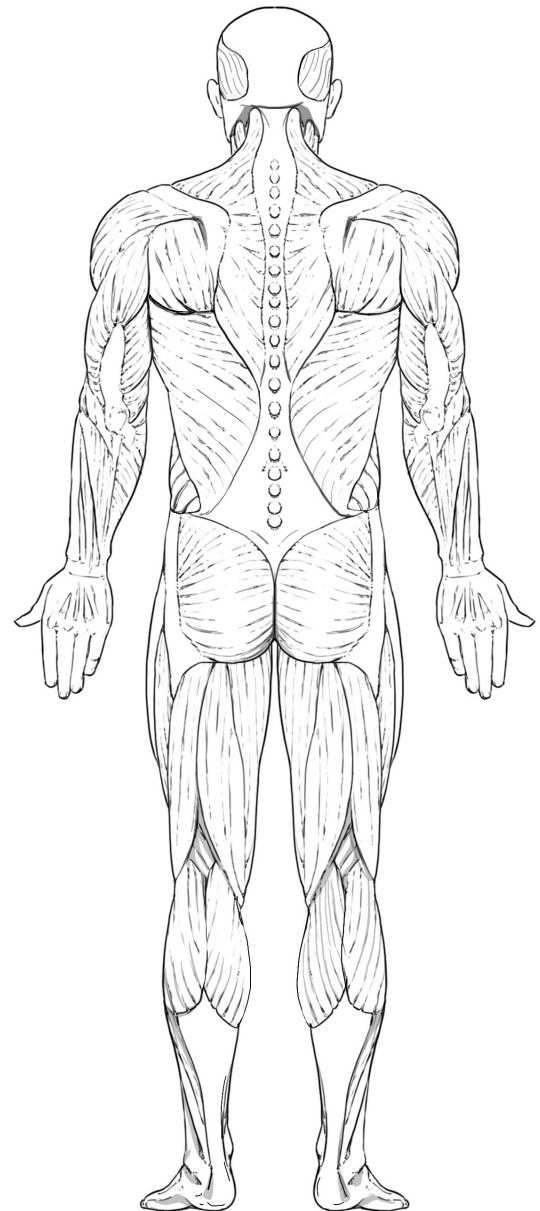
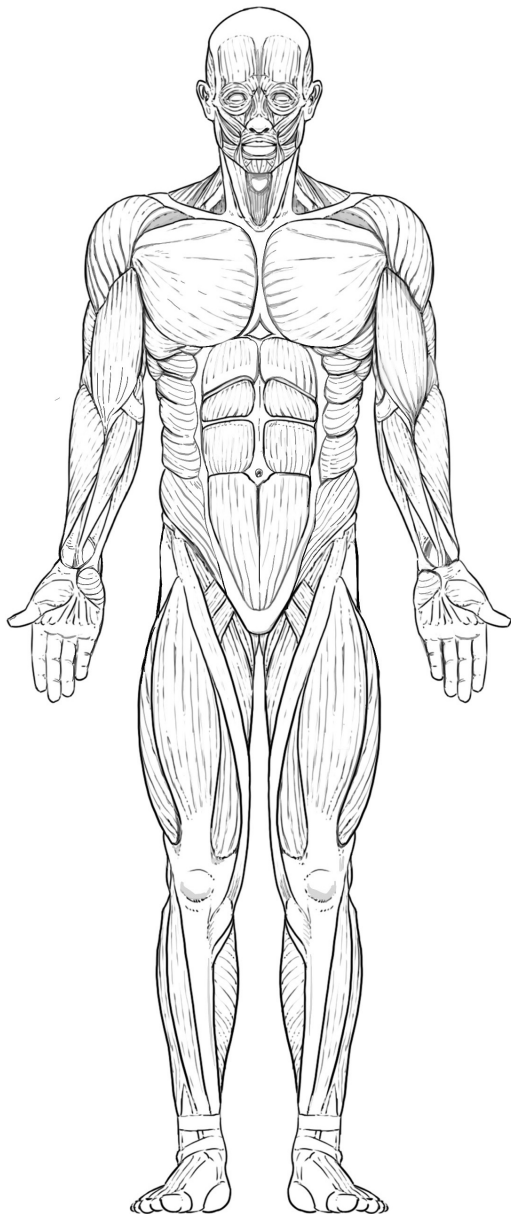
Find the words in the box below in the word search.

BLOOD VESSEL CLOT PLATELETS
PLASMA RED BLOOD CELLS WHITE BLOOD CELLS

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| P | C | W | C | O | S | H | Q | M | C | F | X | S | J | A |
| L | H | M | L | W | W | G | V | D | G | Q | C | T | B | E |
| A | E | A | O | R | Y | I | N | A | B | Z | M | S | C | P |
| T | I | W | T | Q | N | D | K | R | L | O | U | F | F | L |
| E | R | E | D | B | L | O | O | D | C | E | L | L | S | B |
| L | U | U | X | B | D | I | T | F | J | X | H | Z | C | T |
| E | T | A | C | W | N | X | B | N | Q | J | X | B | M | G |
| T | W | X | K | H | A | G | Z | X | D | U | M | N | E | R |
| S | T | G | V | E | N | H | X | G | L | L | F | K | O | Q |
| W | H | I | T | E | B | L | O | O | D | C | E | L | L | S |
| B | T | A | K | G | E | I | E | P | P | U | T | G | L | C |
| U | B | L | O | O | D | V | E | S | S | E | L | W | E | R |
| C | X | R | T | H | S | Q | Z | P | L | A | S | M | A | S |
| C | D | F | A | H | Y | N | M | T | H | G | R | I | J | M |



MAJOR MUSCLE GROUPS



Muscle Group Key

Biceps
Triceps
Abdominal Muscles
Quadriceps
Hamstrings

Pectorals
Obliques
Deltoids
Gastrocnemius
Gluteals

Instructions:

1. Read the information below.
2. On the next page, write a definition for muscle fatigue.

EXTENSION

Muscle Fatigue

Have you ever gone on a really long walk, rode your bike for a great distance, or skied down the slope of a mountain? When you were done, did your legs, arms, or other parts of your body feel tired and even shaky? If so, that feeling is called **muscle fatigue**.

Exercise Experiment

To test out muscle fatigue, if you are able to, exercise your quadriceps by doing some wall squats. Complete these steps:

1. Stand up against a wall with your back to the wall.
2. With your back still against the wall, move your feet out in front of you (away from the wall). Place your feet shoulder-width apart.
3. Squat down like you are about to sit in a very small chair until your knees form a 90-degree angle.
4. Rise up, keeping your back straight.
5. Repeat until you are too tired to continue. (10–20 squats may be a good goal.)

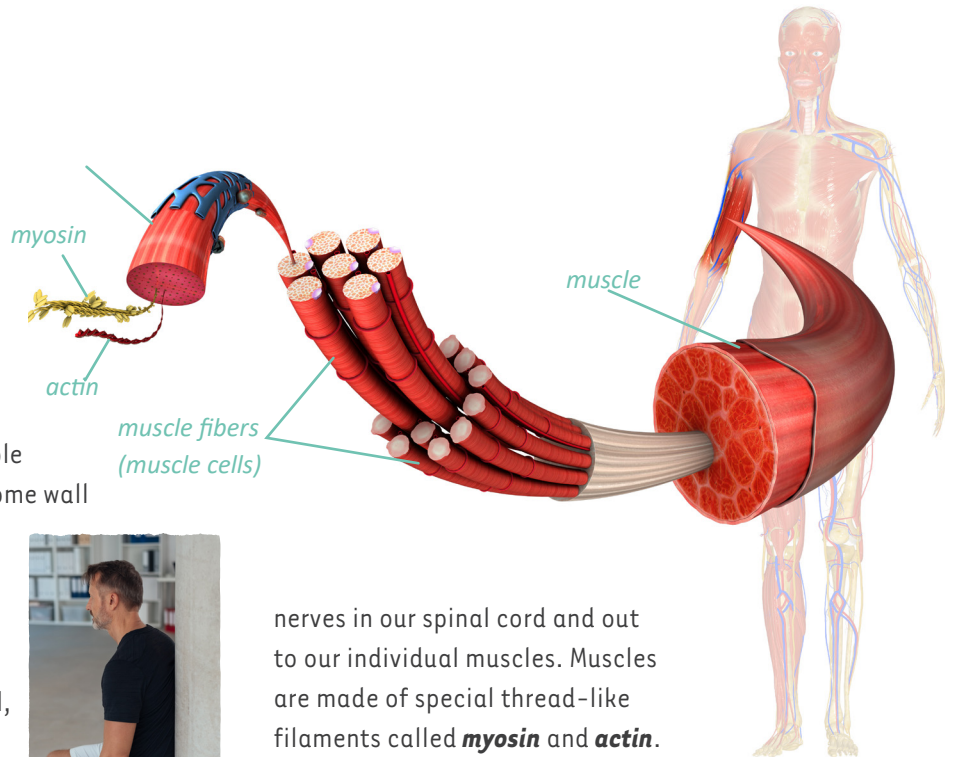


Do your legs feel shaky? If not, see if you can do a few more. Once you feel like there is no way your muscles could allow you to do another squat, you're experiencing muscle fatigue.

What Is Muscle Fatigue?

Why do you think your muscles tire and cannot produce as much force as they could originally? In the experiment, your first few squats were the most powerful, but additional squats became increasingly difficult.

Our muscles contract and relax when our brain sends a message (as an electrical impulse) down through



nerves in our spinal cord and out to our individual muscles. Muscles are made of special thread-like filaments called **myosin** and **actin**.

When a nerve gives the electrical signal to contract, myosin filaments pull actin filaments closer together and shorten the muscle fiber. When the nerves can no longer generate signals or the muscle fibers weaken in their ability to contract, this is muscle fatigue. Our bodies were purposefully designed to feel muscle fatigue so we can recognize our physical limits.

Muscle Soreness

Our muscles become larger as we continually challenge them through exercise and other use. When we exercise strenuously, sometimes our muscles get tiny tears that can cause soreness for a few days. As our bodies repair these tears, the muscle tissues become stronger, which leads to bigger and stronger muscles overall.

Chronic Muscle Fatigue

Usually as we rest, our muscle fatigue ends. However, some people have chronic fatigue. This is where the fatigue does not stop, even after a lot of rest. Scientists, doctors, and other researchers are working to better understand these conditions to help those with chronic muscle fatigue.



GENETIC TESTS & FINGERPRINTS

1

what color are your eyes? _____

Is this a dominant or recessive trait? _____



2

what shade is your hair? _____

Is this a dominant or recessive trait? _____

3

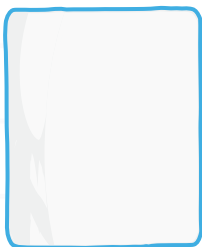
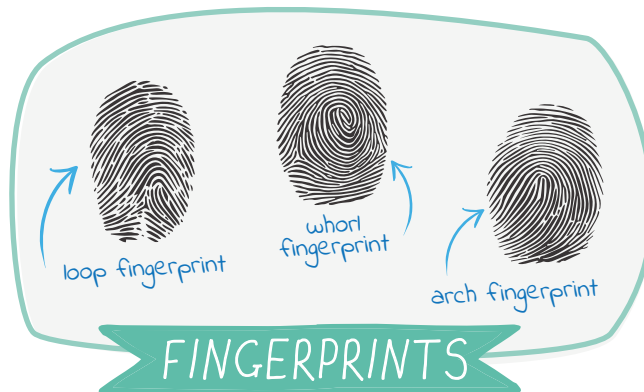
Are your earlobes attached or unattached? _____

Is this a dominant or recessive trait? _____

4

Are you able to curl your tongue? _____

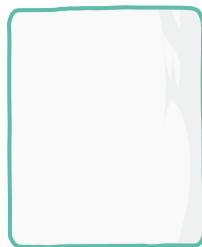
Is this a dominant or recessive trait? _____



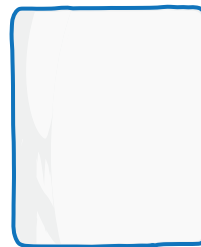
Thumb



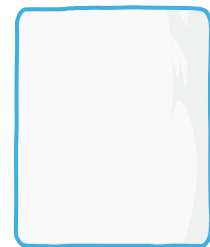
Index Finger



Middle Finger



Ring Finger



Pinky Finger