Walch Science Literacy Series
Health

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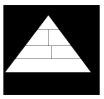
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Lesson 10

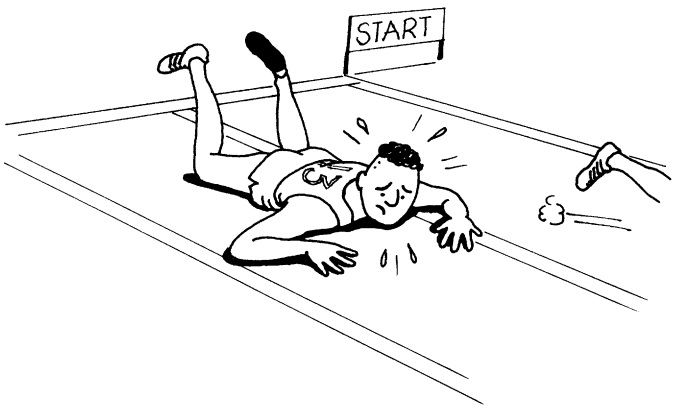
The Running Experiment

All summer long, Charlie had been bragging that he was the fastest runner on the block. Today he was going to prove it. The neighborhood was having its annual block party, and it included a race. The competition looked tough this year—some kids were on the track team at school—but Charlie wasn't worried in the least. You see, he had been carrying out a foolproof plan.

For the past two weeks, he had done little more than rest. For the first few days, he was in bed with the flu. "If resting helps me get better when I'm sick," he figured, "then resting as much as possible when I'm well should make me a stronger runner. I'll be able to save up all my energy for the race." So after the flu, Charlie continued to lie around the house. He barely walked, let alone ran. Two friends even carried Charlie to the starting line—he *really* wanted to save his energy.

"On your mark. Get set. Go!"

How do you think Charlie did in the race? You probably guessed it. He barely took a step before he collapsed. He couldn't run at all. He needed several weeks of physical therapy to regain his strength. What had happened?



In order for your body systems to work properly, they must be used. For example, when muscles aren't used for a long period of time, they become weak. You may have noticed this effect if you have ever been in bed for a couple of days due to illness. When you first start walking around, your

legs may feel wobbly. Your leg muscles have weakened because they haven't been used for a while. Without a certain amount of daily stress and strain, muscles eventually shorten in a process called **atrophy**. An arm that has been in a cast for several weeks will show signs of atrophy. It will be noticeably smaller than the other arm. Charlie's muscles had started going through atrophy and could not support his body, especially during quick motions.

Charlie was also affected by stiff **joints**. His joints became stiff because they had not been put through their usual daily range of motions. Without exercise, joints can become unmovable.

Of course, rest is an important part of your health. You should try to sleep eight hours each night. During an illness or injury, rest helps your body fight disease-causing microorganisms and build new cells. But remember that rest prepares your body for activity, not for more rest.

1. Why did Charlie collapse at the beginning of the race?

_____

_____

_____

2. Why is atrophy of muscles a particular concern for astronauts who spend months in orbiting space stations?

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3. Staying in bed much longer than you should or being inactive when you are physically able to be active can have psychological effects. Explain what some of these might be.

_____

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4. Charlie's situation is an example of a **cause-and-effect relationship**. A cause makes something happen. An effect is whatever happens because of the cause. Actually, Charlie experienced a chain of causes and effects. One cause led to an effect, which became the cause of another effect, and so on. Here's the chain of causes and effects for Charlie's situation. Read across each row.

Causes	Effects
Charlie gets the flu.	He gets a lot of rest.
He gets a lot of rest.	He gets better.
He gets better.	He thinks a lot of rest will make him stronger for the race.
He thinks a lot of rest will make him stronger for the race.	He stays in bed for two weeks.
He stays in bed for two weeks.	His muscles undergo atrophy.
His muscles undergo atrophy.	He collapses at the race.
He collapses at the race.	He needs physical therapy to get better.

Show a chain of causes and effects for a situation that happened recently to you or to someone you know. The chain might include certain actions, emotions, and objects. Think about the situation carefully to recognize each cause and effect. You can arrange the "links" of the chain in a table, as above, or use an arrow between each cause and effect.

Lesson 18

Sexually Transmitted Diseases

"Yes, I know you can get diseases by having sex. But I don't see what the big deal is. I mean, I'm not going to get AIDS because I'm not a homosexual and I don't use drugs. And diseases like syphilis can be cured. So, even if I did get that, it's not a problem. Right?"

Wrong. These ideas are examples of myths about **sexually transmitted diseases (STDs)**. Sexually transmitted diseases are infections that spread from one person to another through sexual contact. You have probably heard of STDs and may recall some facts about them from a health class. But if you're like most people, you have also heard some of the myths about STDs and may believe some of them to be facts. The following table compares the myths about STDs with the facts.

Myths	Facts
1. STDs are rare.	About 12 million new cases of STDs are identified each year in the United States. At this rate, one out of every four Americans will someday contract an STD. Among the most common STDs are chlamydia, trichomoniasis, genital warts, and herpes.
2. Only homosexuals and drug users get AIDS.	Certain groups of individuals are at a greater risk than others of contracting AIDS. These include male homosexuals and intravenous drug users who share needles. However, heterosexuals are the fastest growing group of people getting AIDS. Out of about 580,000 total AIDS cases reported in the U.S. as of 1997, about 45,000 of them are heterosexuals.
3. STDs like gonorrhea can be cured, so it's no big deal if you get them.	It is true that chlamydia, gonorrhea, and syphilis can be cured with antibiotics. But several effects make these STDs a "big deal." • If left untreated, these diseases can cause lifelong problems, such as infertility in men and women, arthritis, heart conditions, and brain damage. Newborns may suffer blindness or deformities from an infected mother. Some untreated cases result in death.

Myths	Facts
	• In many cases, there are no early symptoms or they go unnoticed. By the time later symptoms occur, permanent damage may be done. • Early symptoms that do occur are painful and unsightly. They include milky discharges from the penis or vagina; abdominal pains; swelling and inflammation of the anus, vagina, and eyes; genital sores; rashes; and hair loss.
4. Some STDs go away on their own.	The symptoms may go away but the disease and its effects do not. Symptoms of some STDs occur in stages or cycles. • The first symptom of syphilis, for example, is usually a sore on the genitals, rectum, or mouth. The sore will disappear in a week or two even if left untreated. One to three months later, rashes, fever, bone aches, and hair loss may occur. Organ and tissue damage and mental illness can occur 10 to 25 years later if the disease is left untreated. • Herpes causes genital sores, body ache, and fever. These symptoms go away within a few weeks, but the herpes virus remains in the body. During low resistance, such as times of stress, the virus attacks again. Such attacks may take place several times a year.
5. "It can't happen to me."	That's what most of the 12 million people who contract an STD each year said. STDs affect all age groups, all races, male or female, heterosexual or homosexual. These diseases are becoming a greater problem among teens because, according to studies, teens today are more likely to • begin sexual activity at an earlier age • have more than one sex partner throughout their teens and early twenties • neglect safe sex practices, such as the use of condoms, even when they know about them The bottom line: If you are having sex, you are taking a risk of getting sexually transmitted diseases.

1. The best way to guard against the myths of STDs is to arm yourself with the facts. Then you can use the facts to make informed decisions about your sexual activity. On a poster, make a chart like the following one. Fill in the chart with information gathered from reference books, health magazines, brochures, and interviews with medical professionals. Use the library, doctors' offices, and the Internet to find information. Collect all your information before organizing it into the chart so that you make the chart big enough.

Disease	**Type of Germ that Causes It**	**Symptoms**	**Treatments**	**Other Characteristics**
Chlamydia				
Trichomoniasis				
Pelvic inflammatory disease (PID)				
Genital warts (HPV)				
Herpes				
Gonorrhea				
Syphilis				
AIDS				

2. On a separate sheet of paper, write a myth about STDs in general or about a particular STD. Then argue against this myth with facts. Set up this exercise as a conversation between two friends.