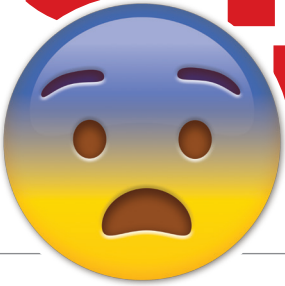


STRESSED OUT?



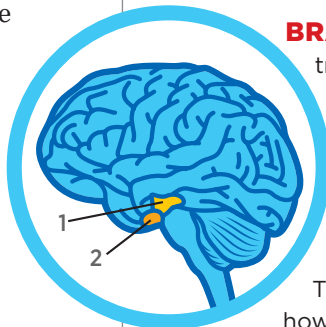
Learn how the body responds to stress—and healthy ways to cope

Your Body Under Pressure

Think of a time you were stressed. You may remember your heart racing, palms sweating, shoulders tensing up.

These reactions are part of the body's natural stress response. When the brain perceives a situation to be threatening, it triggers a surge of hormones that prepare the body for the challenge.

Known as “fight or flight,” the stress response evolved to help us survive. But it is also triggered by events that aren't life-threatening. This can include academic and relationship pressures, or even stress from being over-connected to technology and social media. Some stress is helpful, like keeping you energized to study for a test. But constant stress can take a toll on a person's emotions and body, which can lead to serious health problems.

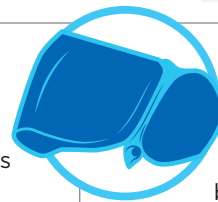


BRAIN: The body's stress response is triggered when the brain's hypothalamus (1) sends a signal to the pituitary gland, located at the base of the brain (2). This gland then signals the adrenal glands (located above the kidneys) to release stress hormones. These hormones change how organs and systems act to prepare the body to fight or take flight.

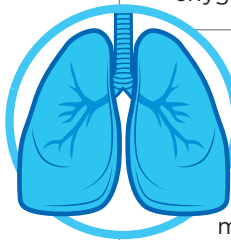
Fast Fact: Adrenaline, norepinephrine, and cortisol are the body's major stress hormones.



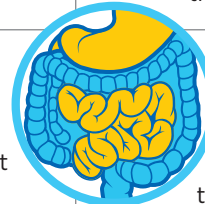
HEART: Heart rate and blood pressure increase so that blood travels through the body faster. This helps deliver oxygen to power muscles.



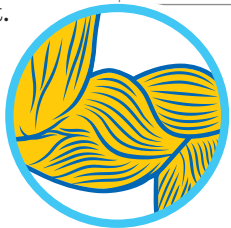
LIVER: The liver causes more glucose (blood sugar) to be released into the bloodstream. This powers cells in the body.



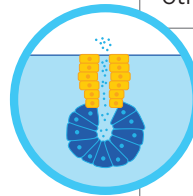
LUNGS: Breathing rate increases to deliver more oxygen throughout the body to power muscles and tissues.



STOMACH/INTESTINES: Digestion decreases. This redirects energy that would be used to break down food to power other parts of the body.



MUSCLES: Muscles tense up to prepare the body for action.



SWEAT GLANDS: Stress-triggered sweat is chemically different from sweat that cools the body. Stress sweat interacts with bacteria on the skin to cause body odor. Researchers aren't exactly sure why we sweat when stressed.

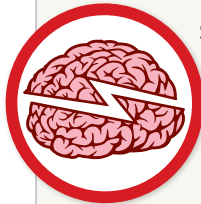
► **More Info:** For additional facts about health, visit scholastic.com/headsup and teens.drugabuse.gov.

⚠️ Chronic Stress

Ongoing, or chronic, stress does not allow the body's stress hormones to return to normal levels. This can lead to health problems. Chronic stress can:

- * Increase the risk of getting sick because stress can weaken your immune system
- * Cause sleep problems because of the energy surge brought on by stress hormones
- * Lead to injuries or migraine headaches from constant muscle tension
- * Increase the risk of certain mental health problems, such as anxiety and depression
- * Lead to problems with learning and memory
- * Increase the risk for chronic health problems such as heart disease, obesity, and diabetes

Stress and Misusing Drugs: Not a Good Mix



Some people may think that drugs can help them deal with stress. But drugs can actually make it harder to cope by causing the body's stress response to be hyperactive. Here are some examples:

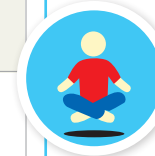
- * Some drugs, such as stimulants, have similar effects to stress. These effects include increased heart rate, blood pressure, and feelings of anxiety. This can cause a stronger reaction to stressful events.
- * Some drugs such as alcohol may be calming at first, but frequent use can raise stress hormone levels. This increases irritability and anxiety. Short-term withdrawal, such as a hangover, can have the same effect.
- * Both stress and drug use can make a person more impulsive and impair decision making. They can also change how the brain perceives pleasure. These effects increase the risk for drug use and for developing an addiction.

Tips to Help You Cope



MOVE YOUR BODY:

Regular aerobic exercise activates the body's stress response. But this is actually "good stress" and helps the body cope with psychological stress.



MEDITATE:

Meditation and deep breathing exercises can decrease blood pressure and improve symptoms of anxiety and depression.



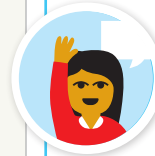
TAKE A TIME-OUT:

Stepping away from distractions, such as social media and texting, may be stressful at first, but with practice can help you relax.



DO ONE THING AT A TIME:

If you feel overwhelmed with multitasking, try to tackle one challenge at a time.



GET SUPPORT:

If you are stressed, ask for help from your family, friends, or a professional, such as a doctor or school counselor.

DID YOU KNOW? If you experience stress during a test, you may feel your mind "go blank." This happens because norepinephrine—a stress hormone—may temporarily disrupt brain circuits that are used to recall memories.

Tip: If you experience your mind going blank, pause for a moment, take a deep breath, and try to relax to help the hormone surge ease off. *You've got this.*



HEADS UP
REAL NEWS ABOUT DRUGS AND YOUR BODY

STRESSED OUT?

Learn how the body responds to stress—and healthy ways to cope.

Your Body Under Pressure

Think of a time you were stressed. Do you remember your heart racing, your breathing shallow, or your hands shaking?

These reactions are part of the body's natural stress response. When the brain perceives a situation to be threatening, it triggers a surge of hormones that prepare the body for the challenge.

Known as "fight or flight," the stress response enables the body to respond to stress. It is also triggered by events that aren't life-threatening. This can include academic and extracurricular pressures, or even stress from being teased, bullied, or teased.

But stress can be helpful. Like sending you energized to study for a test. The constant stress can take a toll on a person's mind and body, which can lead to serious health problems.

► More info on additional facts about health, visit scholastic.com/headsup or teens.drugabuse.gov

BRAIN: The body's stress response is triggered when the brain's hypothalamus sends a signal to the pituitary gland, located at the base of the brain. The gland then signals the adrenal glands located above the kidneys to release hormones. These hormones change how organs and systems act to prepare the body to fight or take flight.

HEART: Heart rate and blood pressure increase as blood flows through the body faster. This helps deliver oxygen to power muscles.

LUNGS: Breathing rate increases to deliver more oxygen throughout the body to power muscles and tissues.

MUSCLES: The constant stress can take a toll on a person's mind and body, which can lead to serious health problems.

HEAT: Heart rate and blood pressure increase as blood flows through the body faster. This helps deliver oxygen to power muscles.

LIVER: The liver breaks down glucose (blood sugar) for the released energy in the bloodstream. This process occurs in the body.

STOMACH/INTESTINES: Digestion decreases. The stomach's ability to break down food is slowed down.

SWEAT GLANDS: Stress triggered sweat is chemically different from sweat that cools the body. Stress sweat releases extra energy from why we sweat when stressed.

STRESSED OUT?

Learn how the body responds to stress—and healthy ways to cope.

Stress is a part of life, but students may have difficulty coping and feel overwhelmed, which can increase the risk for drug use. The article “Stressed Out?” helps explain how the body’s stress response system works, as well as the health consequences of ongoing (chronic) stress. Students will learn how their bodies respond to stress, and how they can manage under pressure.

Critical-Thinking Questions

- 1) What is the fight-or-flight response and why is it an important process in the body? *(The fight-or-flight response prepares the body to face a challenging situation. It helps focus the brain to make decisions quickly and boosts energy in the body if a physical reaction is needed. This is important because fight or flight evolved to help us survive.)*
- 2) Beyond helping you to survive in emergencies, how can stress be helpful to you? What are some examples? *(Stress can increase focus, energy, and responsiveness. This can be helpful in giving you focus for studying for a test and energy to play sports. [Additional answers may apply.]*
- 3) How can pressures in everyday teen life lead to health problems? *(Constant stress from problems might lead to chronic stress, in which the body's stress response system is not allowed to return to normal levels. This has many health risks including illness; sleep problems; migraine headaches; mental health problems; problems with learning and memory; and chronic health problems such as heart disease, obesity, and diabetes. It can also increase the risk for drug use and for developing an addiction.)*

Writing Prompts

- What are signs that may indicate a person is experiencing chronic stress?
- Explain how chronic stress may increase a person's risk of using drugs.
- How might chronic stress as a teenager impact a person's life into adulthood? Support your answer with evidence from the text.

Paired Reading/Writing Prompts

- “Stress and Drug Abuse: The Brain Connection,” <http://headsup.scholastic.com/students/stress-and-drug-abuse>

Writing Prompt: Explain how situations in a person's life that result in chronic (ongoing) stress might put him or her at risk for using drugs.

Tiered Vocabulary Tools:

Visit scholastic.com/headsup/stress-vocabulary-tools for vocabulary printables that support the student article and lesson.

Student Work Sheet: “Stress Test”

The skills sheet on the reverse side has students critically analyze what they have learned in the article.

Answer Key:

Part 1: 1. c; 2. e; 3. b; 4. a; 5. d

Part 2: Answers will vary but should include specific evidence from the work sheet as well as the student article about the specific body reactions to stress and the reasons for them.

Part 3: Answers will vary.

Additional Student Resource:

“Nine Tips to Help You Cope With Stress,” teens.drugabuse.gov/blog/post/nine-tips-help-you-cope-stress

Research Topic:

Read the blog entry: “Teens and ‘Nomophobia’: Cell Phone Separation Anxiety” at teens.drugabuse.gov/blog/post/teens-and-nomophobia-cell-phone-separation-anxiety. Conduct your own cell phone research. How often do you check your phone, and what is your stress level when you don't have phone access?

[Continue to work sheet on next page.]

SUBJECT

- Science Literacy
- English Language Arts
- Health/Life Skills

COMMON CORE STANDARDS

RST.6-8.1 and RST.9-10.1

- Cite specific textual evidence to support analysis of science and technical texts.

NEXT GENERATION SCIENCE STANDARDS

MS-LS1-3 and HS-LS1-2

- From Molecules to Organisms: Structures and Processes

NATIONAL SCIENCE EDUCATION STANDARDS

- Structure and Function in Living Things
- Personal and Community Health

Additional Teaching Resources:

- headsup.scholastic.com/teachers
- teens.drugabuse.gov

STRESS TEST

PART 1

MATCH THE RESPONSE

When you feel under stress, your body's stress response system kicks into gear to tackle the situation. Match each body organ below with the way in which it responds to stress.



1. Heart

a. Tense to protect against injury.



2. Brain

b. Releases glucose into the bloodstream to power cells.



3. Liver

c. Rate increases to push blood through the body faster.



4. Muscles

d. Activity decreases so energy can be used in other parts of the body.



5. Stomach/Intestines

e. Signals the release of the hormones adrenaline and cortisol.

PART 2

THINK ABOUT IT

Use information from this work sheet, as well as the article "Stressed Out?" to respond to the questions below. Record your answers on a separate sheet of paper.

1. Identify a situation in which you experienced stress.

2. Write about how your body responded to the stressful event, and explain why your body reacted the way it did.

3. What strategies will you use to reduce this type of stress in the future?

Be sure to use evidence from the texts to support your answer. Write in complete sentences.

PART 3

COPING WITH STRESS

Stress-release strategies can help you cope with day-to-day stress so that it doesn't turn into chronic stress. Pick one of the exercises below and try it for at least 10 minutes every day for a week. Report back to your class how it helped you or not.



1. Deep Breathing Focus: Find a quiet space. Breathe deeply through your nose for a count of four. Hold your breath for a count of two. Then, let the breath out through your mouth for a count of four. Try to continue for 10 minutes or more.



2. Physical Activity: Lace up and go for a walk or a run. Try to get your heart pumping, but not so much that you can't talk. In fact, you might ask a friend or family member to join you to help make it more fun!



3. Step Away From Your Phone: This exercise is best for those "attached" to their phones. Put your phone away and do not check it for two hours or four hours or a whole day. Let your parents know, and ask them not to call you unless it's absolutely necessary, and then pick up only for them. At first you may feel more stressed and worried about what you are missing. But see if it gets better as each day goes by. Track your progress.

VOCABULARY LIST FROM "STRESSED OUT?"

- **academic** (*adjective*): relating to school or learning
- **activate** (*verb*): to make active or more active
- **addiction** (*noun*): a brain disorder or illness associated with compulsive (uncontrollable) behavior, such as drug use, despite negative consequences
- **adrenal gland** (*noun*): one of a pair of glands located near the kidneys that produces hormones, including adrenaline (epinephrine) and norepinephrine
- **adrenaline** (*noun*): a chemical hormone released in the body when a person feels afraid or threatened; also called epinephrine, it has many effects on the body including causing the heart to beat faster
- **aerobic** (*adjective*): involving oxygen
- **aerobic exercise** (*noun*): physical activity such as running that causes an increase in heart and breathing rates to increase the amount of oxygen that is delivered to muscles
- **anxiety** (*noun*): a feeling of fear or worry
- **bacterium** (*sing.*)/**bacteria** (*pl.*) (*noun*): a type of microscopic single-celled organism that sometimes causes disease in other living things
- **base** (*noun*): the lower part of an object that acts as a support
- **blood pressure** (*noun*): the force caused by the blood pressing against the blood vessels that carry blood through the body (arteries); high blood pressure is connected to a higher risk for heart disease
- **cell** (*noun*): the smallest unit that makes up a living organism. Some organisms are made of only one cell, but others, like humans, are made of trillions of cells.
- **chemical** (*noun*): a substance such as an element or a mix of elements (compound) that can occur naturally or be made by a chemical process
- **chronic** (*adjective*): occurring over a long period of time or repeatedly
- **circuit** (*noun*): a path between points over which signals can move
- **constant** (*adjective*): continually occurring without stopping
- **cope** (*verb*): to handle a problem successfully
- **cortisol** (*noun*): a chemical hormone produced and released in the body when a person experiences stress; it has many effects in the body including causing cells to produce glucose
- **depression** (*noun*): a condition in which a person feels sad and hopeless and may have difficulty concentrating and thinking
- **develop** (*verb*): to grow or cause something to become larger or more advanced
- **diabetes** (*noun*): a serious disease in which the body cannot properly control the amount of glucose in the blood
- **digestion** (*noun*): the process by which the body breaks down food into simpler chemicals that can be used by cells
- **disrupt** (*verb*): to stop the normal working of something
- **evolve** (*verb*): to change over time. Living creatures evolve through a process called natural selection, which helps each generation of a species to pass on genetic traits that are best suited to their environment
- **frequent** (*adjective*): happening often
- **gland** (*noun*): one of several organs in the body that make and release substances, such as hormones, into the body
- **glucose** (*noun*): a type of sugar found in nature, including in living organisms
- **heart disease** (*noun*): a condition in which the heart works abnormally
- **hormone** (*noun*): a chemical produced by cells and released into the bloodstream that has specific effects on the body
- **hyperactive** (*adjective*): extremely active or too active

[Continued on next page.]

VOCABULARY LIST FROM "STRESSED OUT?"

- **hypothalamus** (*noun*): the part of the brain important for controlling hormone release and regulating automatic processes such as sleep and hunger
- **impair** (*verb*): to damage or weaken something
- **impulsive** (*adjective*): doing something or tending to do something suddenly without careful planning or thought
- **meditation** (*noun*): the act or process of sitting quietly to relax the mind
- **migraine** (*noun*): a type of very bad, chronic headache
- **multitask** (*verb*): to do many things at one time
- **norepinephrine** (*noun*): a chemical hormone produced and released when the body is under stress; it has many effects on the body including increasing heart rate
- **obesity** (*noun*): a condition of being extremely overweight
- **organ** (*noun*): a structure in a plant or animal that performs a specific function, such as the brain or heart
- **perceive** (*verb*): to notice or become aware of something
- **pituitary gland** (*noun*): a gland that sits under the hypothalamus which produces and releases several hormones
- **pressure** (*noun*): the force produced when something pushes against something else
- **process** (*noun*): a series of actions taken in order to produce a certain result
- **psychological** (*adjective*): related to the mind and behavior
- **redirect** (*verb*): to change the path or direction of something
- **release** (*verb*): to allow out; to set free
- **similar** (*adjective*): almost the same as something else
- **stimulant** (*noun*): a chemical such as a drug that makes a person more active or energetic
- **strategy** (*noun*): a plan or method for reaching a certain goal
- **stress** (*noun*): a state of worry, anxiety, or tension caused by situations and problems in life
- **stress hormones** (*noun*): several chemicals produced and released in the body when a person feels threatened or afraid
- **surge** (*noun*): a sudden increase to a high level
- **technology** (*noun*): machines or equipment that are created or invented to solve problems or to do things more efficiently
- **temporarily** (*adjective*): for a limited time
- **tension** (*noun*): the physical condition of an object being stretched so that it becomes stiff; the emotional condition of being nervous or worried
- **threatening** (*adjective*): showing intention to cause harm
- **tissue** (*noun*): groups of cells that form the parts and organs in a plant or animal
- **toll** (*noun*): a cost
- **trigger** (*verb*): to cause something else to happen
- **withdrawal** (*noun*): the body's response when the presence of a drug to which it has adapted (gotten used to) is suddenly removed. Withdrawal symptoms can include pain, nausea, shaking, and anxiety