

# To the Beat of My Heart

**Skills:** Science, Physical Activity, Health

**Objective:** Students will learn that taking care of your heart is more than moving your body; it's about checking in on your stress levels.

## Background

Stress occurs when the body has to react (usually suddenly) to certain situations either mentally, emotionally, or physically. Stress is a part of everyday life, coming from events that happen all around us. They could be triggered by something or someone external, our own bodies, or our own thoughts. The effects of stress can be good or bad, depending on the response to it.

When faced with any threat—physical or emotional—the body's defenses kick into high gear in a rapid, automatic process known as the “fight-or-flight” response. The heart pounds in the chest. Muscles tense up. Breath coming faster. Every sense is on red alert.

The “fight-or-flight” stress response involves a cascade of biological changes that prepare us for emergency action. When danger is sensed, a small part of the brain called the hypothalamus sets off a chemical alarm. The sympathetic nervous system responds by releasing a flood of stress hormones, including adrenaline, norepinephrine, and cortisol. These stress hormones race through the bloodstream, readying us to either flee the scene or battle it out.

Heart rate and blood flow to the large muscles increase so we can run faster and fight harder. Blood vessels under the skin constrict to prevent blood loss in case of injury. Pupils dilate so we can see better, and our blood sugar ramps up, giving us an energy boost and speeding up reaction time. At the same time, body processes not essential to immediate survival are suppressed. The digestive and reproductive systems slow down, growth hormones are switched off, and the immune response is inhibited.

The biological stress response is meant to protect and support. It's what helped our stone age ancestors survive the life-or-death situations they commonly faced. In the modern world, most of the stress we feel is in response to psychological rather than physical threats.

Extended or repeated activation of the stress response takes a heavy toll on the body. Prolonged exposure to stress increases risk of everything from heart disease, obesity, and infection to anxiety, depression, and memory problems. Because of the widespread damage it can cause, it is essential to learn how to deal with stress in a positive way and reduce its impact on your daily life.

## P.A.S.S.

### GRADE 3

**Health**—1.8,10; 3.1  
**Physical Activity**—1.3;  
3.2,3; 4.4; 5.3

### GRADE 4

**Health**—1.8,10; 3.1  
**Physical Activity**—1.1;  
3.2,3; 4.1; 7.1

### GRADE 5

**Health**—1.2,8,11; 6.2  
**Physical Activity**—4.1;  
7.1,3  
**Earth Science**—3.3

Sources: “Stress and Health: Effects of Stress on the Body,” Buzzle.com: Intelligent Life on the Web, <http://www.buzzle.com/articles/stress-health-effects-body.html>; “Understanding Stress: Signs, Symptoms, Causes, and Effects,” Helpguide.org, [http://www.helpguide.org/mental/stress\\_signs.htm](http://www.helpguide.org/mental/stress_signs.htm)

## Activities

1. Read and discuss background.
2. Students will create a footprint course in which players can hop from print to print.
  - Give each student a piece of chalk.
  - Students will trace around their shoes, spacing prints close together for quick hops, farther apart for long jumps, single prints close together for hops, farther apart for long jumps, single prints for one-foot hops and a mixture of routes that send hoppers around corners and spinning into spirals.
  - After players finish connecting footprints into one big game board, everyone lines up ready to hop aboard.
  - Variations: The lead hopper will add follow-the-leader gestures.
  - Hoppers will jump in clapping rhythm or hop in time to the beat of recorded music. Play a short, fast piece so that players really have to hop to it to finish or a long, slow piece that causes hopping players to become graceful ballet dancers.
3. Students will follow the directions below to take an imaginary trip through the solar system:
  - Stand comfortable with your feet slightly apart.
  - Imagine that you are taking a trip through the solar system:
    - The first planet you come to is MERCURY, which travels very fast. Shake your whole body, arms and legs, as fast as you can.
    - The next planet is VENUS, which is surrounded by beautiful clouds. Let your arms circle freely around your body and float easily above your head.
    - And now to planet EARTH, where you find plants and trees. As you breathe in, draw your hands upwards through your trunk and stretch your branches out toward the sky.
    - On MARS there are polar ice caps. Reach your arms overhead toward the North Pole. Then bring them down as you reach forward toward the South Pole.
    - Beyond Mars there are ASTEROIDS flying around at very high speeds. Make fists with both hands and pound on your chest.
    - JUPITER is the largest planet on your journey. Extend your arms out around your body, becoming as heavy and powerful as possible.
    - SATURN is surrounded by rings. Swing your arms around your waist, encircling your body.
    - URANUS has five moons in its orbit. Flick your fingers outwards five times in different directions. Then do it again.
    - NEPTUNE was named after the mythical ruler of the sea. Let your

## Resources Needed

chalk

open paved area or sidewalk

arms become like ocean waves that rise and fall all around your body.  
—PLUTO is the farthest planet from the sun, and it is extremely cold.  
Shake and shiver your whole body as you feel how freezing it is out there.

—Now imagine standing back on the earth, feeling the warmth of the sun shining down on your whole body. Let the sun shower you with its rays of warmth and comfort.

—Close your eyes and relax completely.

4. Students will follow directions below:

—Stand comfortable with your legs and arms relaxed.

—Imagine that you are going to visit your favorite health club.

—As you walk in the door you notice some new exercise machines. They are designed to energize and relax your whole body. You decide to try each one:

HEAD TAPPER—Bounce your fingers lightly on your head and neck.

SCALP SCRATCHER—Give yourself a shampoo with your fingers.

CHEEK SLAPPER—Slap the tips of your fingers against your cheeks.

EAR TUGGER—Pull gently on the tops of your ears as though you were raising your antennae.

SHOULDER SQUEEZER—Lace your fingers behind your head and press your elbows back.

WING FLAPPER—Place your hands on your shoulders and flap your elbows up and down and around in circles.

CHEST STRETCHER—Clasp your hands together behind your seat and bend forward as you lift up your arms.

RIB POUNDER—Pound your elbows against the sides of your waist as you shift your weight from one foot to the other.

FINGER FLICKER—Open and close your fists as fast as you can.

ARM FLINGER—Fling one arm at a time around in a big circle.

BELLY THUMPER—Thump your belly with the palms of your hands.

SEAT SPANKER—Give yourself some taps on the seat with both hands.

BACK BUMPER—Use your fists to pound up and down along the sides of your spine.

TAIL WAGGER—Wiggle your tail like a puppy coming out of the ocean.

KNEE KNOCKER—Lift one knee at a time to meet the opposite fist.

FOOT STOMPER—Kick one foot up at a time to the outside and touch the palms of your hands.

BODY BOPPER MACHINE—Turn on lots of machines at the same time and let everything happen at once!

5. My Space Exercising

—Students walk in place one minute.

—Students march in place one minute.

### Source

Belknap, Martha, *Stress Relief for Kids: Taming Your Dragons*, Whole Persons, 2006.  
Gregson, Bob, *The Outrageous Outdoor Games Book*, McGraw-Hill, 1984.

## Vocabulary

**dilate**—to make or grow larger or wider

**hormone**— a product of living cells that circulates in body fluids (as blood) or sap and produces a specific and often stimulating effect on cells usually at a distance from the place where it is made

**physical**—of or relating to the body

**pupil**—the usually round opening in the iris that contracts and expands to control the amount of light entering the eye

**react**—to act or behave in response

**response**—a reaction of a living thing to a stimulus

**stress**—a physical, chemical, or emotional factor that causes bodily or mental tension and may be involved in causing some diseases

**sympathetic nervous system**—the part of the autonomic nervous system that is concerned especially with preparing the body to react to situations of stress or emergency, that controls expansion of the pupil of the eye and air passages, increases the heart rate, slows digestion, and narrows most blood vessels, and that is made up of nerve fibers that trigger the release of norepinephrine

**threat**—something that causes feelings of insecurity or anxiety

- Students jog in place one minute.
  - Students walk/march/jog one minute
  - Students imaginary Jump Rope
6. Students put their names on blank sheets of paper.
    - Each student spends one minute drawing whatever he/she likes, then passes the drawing to his/her neighbor.
    - Continue passing until each child has drawn each each drawing.
    - Students discuss their drawings.
  7. Students will organize their desks or cubbies.
    - Set a timer from 30 minutes to 1 ½ hours.
    - Students will clean out their desks or cubbies by placing alike in piles—school supplies, graded homework, completed homework, unfinished homework, miscellaneous objects to take home, etc.
    - Students will use folders to file graded, completed and uncompleted homework.
    - Each student will clean his/her desk, cubby or locker with a cleaning product that is safe for kids.
    - When cleaning is complete students will discuss how they feel after taking on a project and completing it.
  8. Students will lie down comfortably and close their eyes while following the directions below:
    - Imagine you are stretched out in the sun on a warm day.
    - Your body is wax. You are like a huge candle.
    - As the sun shines, your toes begin to melt.
    - Then your feet and ankles begin to melt.
    - Feel the warm sun on your legs. Your knees are melting...and then your thighs.
    - Your seat and hips begin to melt.
    - Your lower body is soft and warm.
    - Feel your fingers melting into the grass. Then your hands and wrists melt away.
    - Your elbows begin to melt... and then your shoulders.
    - Feel the warm sun on your chest and neck.
    - Let your whole body melt into the earth.
    - You are completely relaxed and comfortable.
    - You are completely at peace.
  9. Find a book that any level in the class can read.
    - Take turns passing a book around for your students to read at story time.
    - Have a story theme day, where students dress up and experience the world from the book.