

Teacher's Guide

This guide includes:

- Standards
- Related Links
- Discussion Questions
- Activities for Students
- Reproducible Materials

Standards

This guide correlates with the following National Health Education Standards:

Students will:

- Comprehend concepts related to health promotion and disease prevention to enhance health.
- Analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.
- Demonstrate the ability to access valid information and products and services to enhance health.
- Demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.
- Demonstrate the ability to use decision-making skills to enhance health.
- Demonstrate the ability to use goal-setting skills to enhance health.
- Demonstrate the ability to practice health-enhancing behaviors and avoid or reduce health risks.
- Demonstrate the ability to advocate for personal, family, and community health.

National Health Education Standards:
<http://www.cdc.gov/healthschools/sher/standards/index.htm>



Grades 9 to 12 • Human Body Series Nervous System

As it transmits messages between your brain and body, your nervous system controls an amazing amount of the things you do, like walking, talking, thinking, reading, writing, and breathing. The activities in this Teacher's Guide will help students make their own connections with how the brain and the nervous system work.

Related KidsHealth Links

Articles for Teens:

Brain and Nervous System

TeensHealth.org/en/teens/brain-nervous-system.html

Concussions

TeensHealth.org/en/teens/center/concussions-ctr.html

Learning Disabilities

TeensHealth.org/en/teens/learning-disabilities.html

Cerebral Palsy

TeensHealth.org/en/teens/story-cerebral-palsy.html

Epilepsy

TeensHealth.org/en/teens/epilepsy.html

Meningitis

TeensHealth.org/en/teens/meningitis.html

Encephalitis

TeensHealth.org/en/teens/encephalitis.html

Migraine Headaches

TeensHealth.org/en/teens/migraines.html

Discussion Questions

Note: The following questions are written in language appropriate for sharing with your students.

1. What does the nervous system do? How does it transmit messages between the brain and body? Discuss some of the things your nervous system controls in your body. Are there things your body does automatically? How does that work?
2. The nervous system has three main parts. What does each part do?
3. There are five sections of the brain. Which part controls movement? Thinking? Emotions? Breathing? Growing? Temperature?
4. How does the nervous system work with each of the five senses?
5. What are some disorders of the nervous system? What are possible causes of these disorders?



Activities for Students

Note: The following activities are written in language appropriate for sharing with your students.

Nervous Nellie's Study Game

Objectives:

Students will:

- Identify the parts and functions of the nervous system
- Create and play a game to reinforce learning about the nervous system

Materials:

- Computer with Internet access, TeensHealth.org “Brain and Nervous System” article
- “Nervous Nellie’s Study Game” handout
- Index cards, scissors, pen

Class Time:

- 1 hour

Activity:

Nervous Nellie has an upcoming quiz on the brain and nervous system. To prepare for the test, she created a game to help her study (which is really just strengthening her neural memory connections, right?). You can do the same. Follow the directions on the “Nervous Nellie’s Study Game” handout to make and play the game and give your brain a workout to get in shape for your quiz.

Extension:

Visit TeensHealth.org and research a brain or neurological disorder. Share this information with your classmates in a 2-minute presentation. Be sure to include the effects on the body and the cause, if known.



Nervous System Diagram

Objectives:

Students will:

- Draw diagrams of the brain and nervous system
- Identify the parts of the brain and nervous system and their functions

Materials:

- Computer with Internet access, TeensHealth.org “Brain and Nervous System” article
- Paper or poster board
- Markers, colored pencils

Class Time:

- 1 hour

Activity:

After reading the TeensHealth.org articles related to the nervous system, draw a diagram of the brain and nervous system. Clearly label the parts and briefly cite their functions. Use the TeensHealth.org interactive diagram of the brain, in the “Brain and Nervous System” article, as a guide for your drawing of the brain.

Extension:

Discuss how other body systems, like the respiratory or circulatory systems, work together with the nervous system. Brainstorm other bodily functions and activities that involve multiple body systems and name the systems. Double-check the facts at:

TeensHealth.org/en/teens/body-basics.html

Reproducible Materials

Handout: Nervous Nellie’s Study Game

KidsHealth.org/classroom/9to12/body/systems/nervous_system_handout1.pdf

Quiz: Nervous System

KidsHealth.org/classroom/9to12/body/systems/nervous_system_quiz.pdf

Quiz Answers: Nervous System

KidsHealth.org/classroom/9to12/body/systems/nervous_system_quiz_answers.pdf



Name: _____

Date: _____

Nervous Nellie's Study Game

Directions: Fold 22 index cards in half lengthwise. Write the vocabulary words in the list below on the top half of the cards, and brief definitions on the bottom half. (You can find the definitions in the TeensHealth.org “Brain and Nervous System” article.) Cut the cards in half, put a dot on the back of the word cards, and place the cards face down and spread out. Turn one dot card and one plain card over for each turn to try to match a word with a definition. Turn both face down when they don’t match, and both face up when they do match. Repeat until all are face up.

Autonomic nervous system

Brain

Brain stem

Cerebellum

Cerebral palsy

Cerebrospinal fluid

Corpus callosum

Cortex

Epilepsy

Hemispheres

Hippocampus

Hypothalamus

Meninges

Meningitis

Nervous system

Neurons

Parasympathetic nervous system

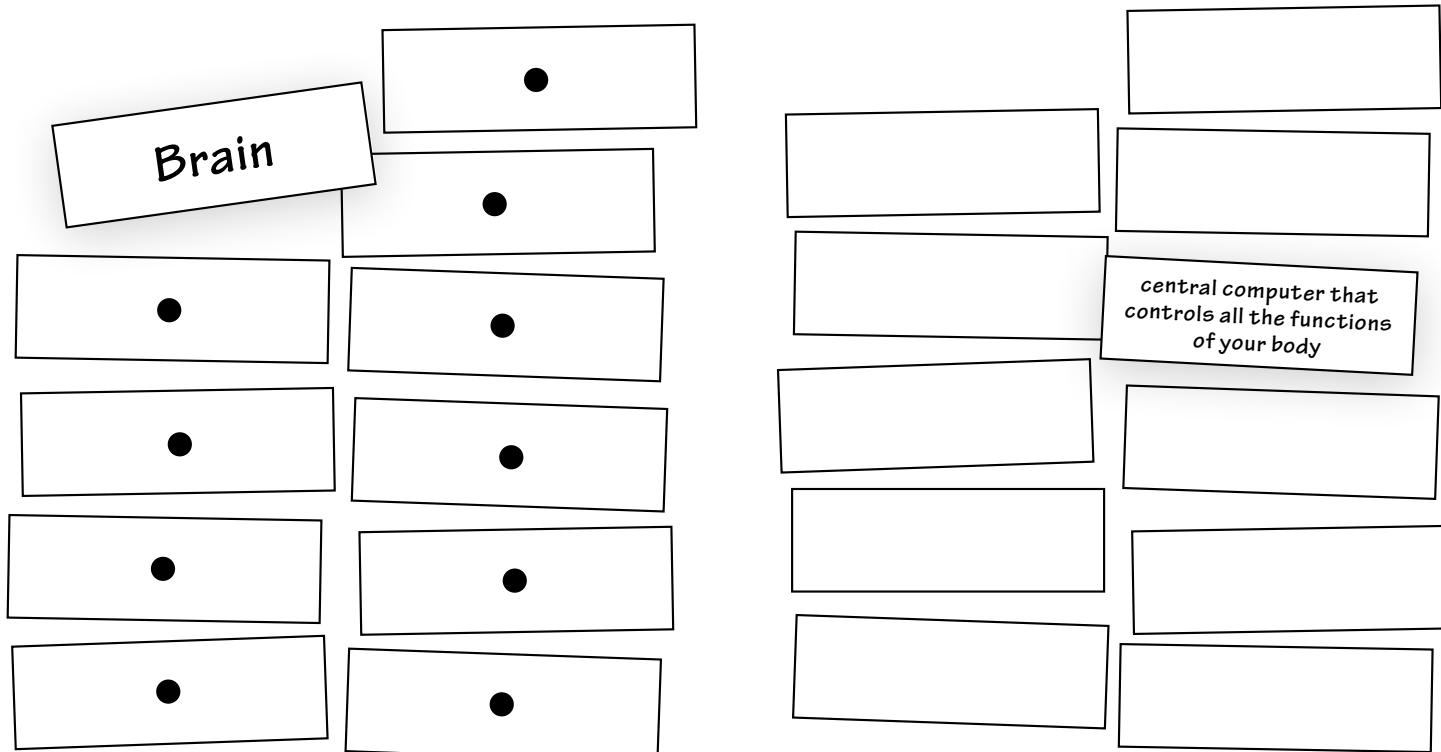
Peripheral nervous system

Pituitary gland

Spinal cord

Sympathetic nervous system

Thalamus



**Name:** _____**Date:** _____

Quiz

Instructions: Answer each question.

1. Your _____ is the boss of your body and controls everything you do.
2. The nervous system is made up of the brain, spinal cord, and _____.
3. The spinal cord helps carry _____ back and forth between your body and brain.
4. How many nerves are in your body to send messages to brain and back?
 - a. dozens
 - b. hundreds
 - c. thousands
 - d. millions
 - e. billions
5. What kinds of things are your brain and nervous system in charge of?
 - a. walking and running
 - b. thinking and talking
 - c. feeling and sleeping
 - d. breathing and growing
 - e. all of the above
6. How much does the average brain weigh?

7. A nerve cell is also called a _____.

8. Name the five main parts of the brain and one function of each:

9. The peripheral nervous system:
 - a. is in the brain
 - b. includes nerves branching out from the spinal cord to the body
 - c. helps with peripheral vision

10. Breathing, digestion, sweating, and shivering are all functions of the _____ nervous system.

11. Both the brain and spinal cord are protected by _____.

12. Neurons relay information to each other through a complex _____ process.

13. Name one function of cerebrospinal fluid:



Quiz Answer Key

1. Your brain is the boss of your body and controls everything you do.
2. The nervous system is made up of the brain, spinal cord, and nerves.
3. The spinal cord helps carry messages or signals back and forth between your body and brain.
4. How many nerves are in your body to send messages to brain and back?
 - a. dozens
 - b. hundreds
 - c. thousands
 - d. millions
 - e. billions
5. What kinds of things are your brain and nervous system in charge of?
 - a. walking and running
 - b. thinking and talking
 - c. feeling and sleeping
 - d. breathing and growing
 - e. all of the above
6. How much does the average brain weigh?
About 3 pounds.
7. A nerve cell is also called a neuron.
8. Name the five main parts of the brain and one function of each:
cerebrum, thinking or moving
cerebellum, balance or coordination
brain stem, breathing or circulation or digestion
hypothalamus, body temperature or appetite or sleep
pituitary gland, growth or metabolism
9. The peripheral nervous system:
 - a. is in the brain
 - b. includes nerves branching out from the spinal cord to the body
 - c. helps with peripheral vision
10. Breathing, digestion, sweating, and shivering are all functions of the autonomic nervous system.
11. Both the brain and spinal cord are protected by bone.
12. Neurons relay information to each other through a complex electrochemical process.
13. Name one function of cerebrospinal fluid:
(any one of the following: helps protect nerve tissue, keeps nerve tissue healthy, helps removes waste products from brain and spinal cord)