

Chapter 6 – Part 3: The Nervous System and Other Body Systems

Review pages 121-133 of the textbook for this section of the workbook

DEFINE YOUR KNOWLEDGE

The various organ systems of the body are what allow us to perform all the functions of life. The amount of activity that happens throughout these systems at any given moment of the day is overwhelming. Fortunately, most of this activity is involuntary, or occurs without our awareness of its occurrence. Understanding the basics of each system will allow a chiropractic therapy assistant to see how the many parts of the body are intertwined and work together to make up the amazing human body.

The Nervous System

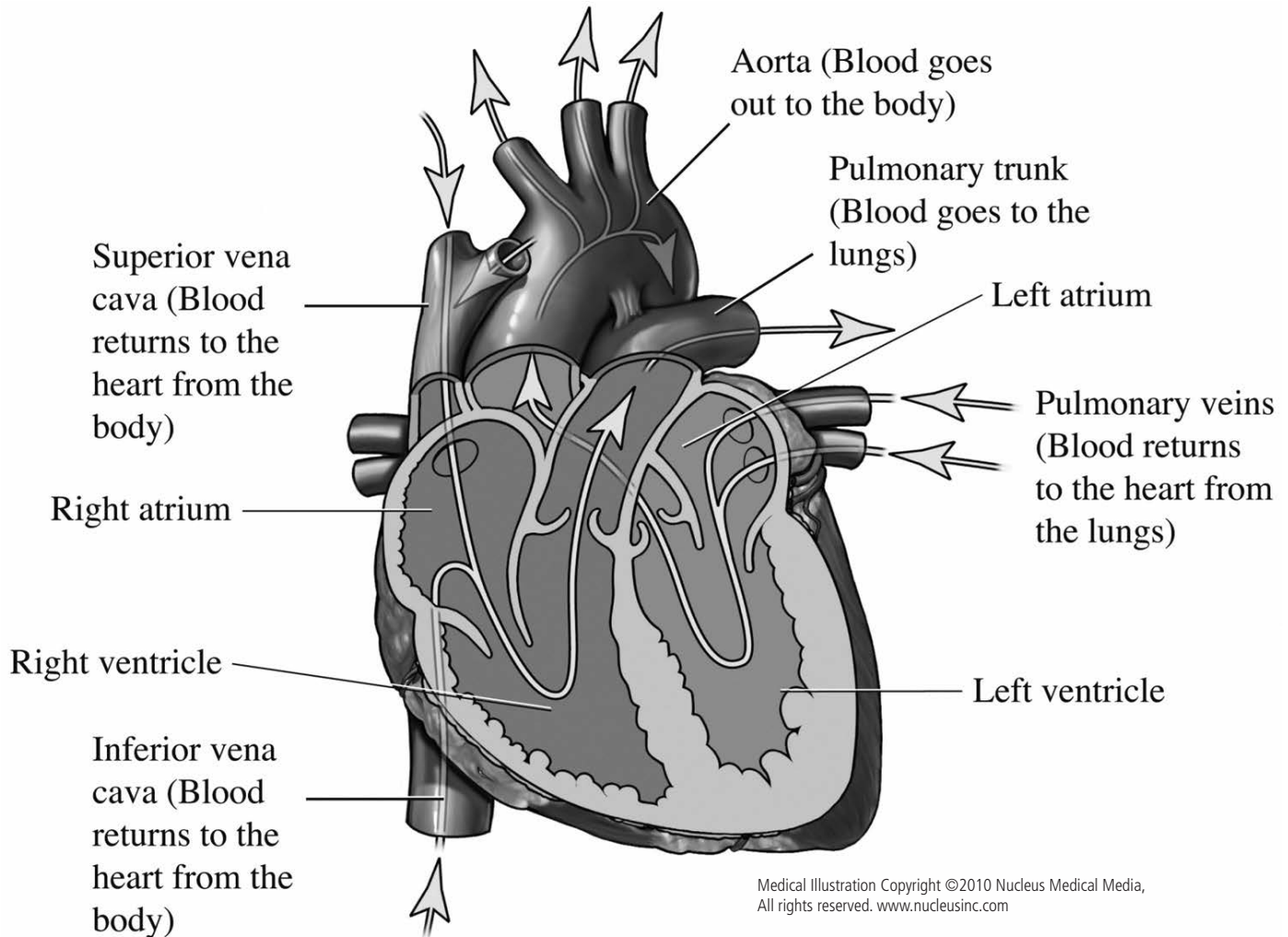
Perhaps the most important systems that allows for proper functioning of the body is the nervous system. This system is responsible for controlling all of the complex processes of the body. It controls both internal function and interprets external stimuli. Without this system, all the other organ systems would function independently and not be able to work together to meet the body's needs.

The nervous system is divided into three functional and structural categories. They are the central nervous system, the peripheral nervous system, and the autonomic nervous system.

- The **central nervous system** (CNS) consists of the brain and spinal cord. This system is the major communication network in the body. It helps in coordination of body movement, body orientation, detection of pain or abnormal function, interpretation of stimulus, control of motor responses, and maintaining a balanced environment, among others. The body's ability to maintain stability within itself is called **homeostasis**. Homeostasis coordinates responses of the body systems to environmental stressors. The CNS has four basic functions, orientation, coordination, assimilation, and programming, which are constantly monitored to ensure the proper interpretation and response to both internal and external stimuli.
- The **peripheral nervous system** (PNS) includes all the nerves that send signals to and from the brain and the spinal cord. The PNS contain all the intricate nerves and tissues that allow us to smell, touch, taste, interpret pain, see, and hear.
- The **autonomic nervous system** is responsible for maintaining involuntary functions such as breathing and a heartbeat. It shares responsibilities with the central nervous system.

Cardiovascular System

The cardiovascular system is made up of the heart, arteries, capillaries, and veins. It is responsible for the pumping of blood throughout the body, absorbing oxygen into the blood, and the exchange of blood and nutrients to and from the various parts of the body. The descriptions on page 123 of the textbook explain the role of the different parts of the system in carrying out these tasks. The picture below shows how blood is transported and receives oxygen in the heart.



The Lymphatic System

The lymphatic system is a system of vessels that assist the veins in the recovery of fluid from body tissues and returning them to the heart. Lymph nodes are located throughout the body and aid in excreting foreign materials. Occasionally lymph nodes will become enlarged or swollen, usually this is a sign the body is fighting off an infection. The areas where people most often feel these swollen nodes are in the neck, under the chin, armpits, and groin.

The Respiratory System

The respiratory system is the primary system responsible for the movement of air in and out of the body through the airways, lungs, and respiratory muscles. When we inhale, or breathe in, our lungs transfer oxygen into the blood. When we exhale, or breathe out, we are getting rid of carbon dioxide.

The Digestive System

The digestive system is responsible for the breakdown, digestion, and assimilation of food, and the excretion of the matter that remains after digestion and absorption. The alimentary tract is the passageway for food and includes the teeth, tongue, pharynx, esophagus, small intestines, large intestines, rectum, and anus. The accessory organs of the digestive system release different hormones and chemicals that prepare food for absorption and use. Accessory organs include salivary glands, pancreas, liver, and gallbladder.

Other Body Systems

There are several other organ systems that keep our body functioning to maintain a healthy environment. They ensure protection from the outside world, regulation of hormones, removal of waste, fighting of infections, and reproduction, among other things. Some of these systems are the endocrine, integumentary, urinary, immune, and reproductive systems.

- The **endocrine system** secretes hormones, or chemical agents, into the body to help maintain balanced metabolic functions of the body systems.
- The **integumentary system**, or skin, helps keep the body protected, regulates temperature, and is important in sensory perception.
- The **urinary system** produces, stores, and eliminates urine. This system, which includes the kidneys and bladder, is vital in the removal of waste and toxins from the body.
- The **immune**, or lymphoid system, is important in the body's ability to defend itself from harmful bacteria and the removal of abnormal or damaged cells.
- The **reproductive system** is responsible for the secretion of sex hormones, transportation of sperm and egg, and a safe environment for the growth of a fetus.