

AUTONOMIC NERVOUS SYSTEM—SYMPATHETIC DIVISION

The **autonomic nervous system (ANS)** regulates automatic functions of the human body. Changes in heart rate, pupil dilation, digestive functions, and blood flow to the kidney are all controlled by the ANS. There is some possibility of conscious regulation of parts of the ANS, but, for the most part, it functions without conscious control. There are two divisions of the autonomic nervous system. The resting state of the body is controlled by the **parasympathetic division**. Digestion, kidney filtration, erection of the clitoris, erection of the penis, and pupil constriction are some of the functions of the parasympathetic division. This division is also known as the **craniosacral division** because the nerves exit the central nervous system (CNS) in these locations. The cranial segments go to the eye, salivary glands, heart, lung, digestive system, and kidneys. The sacral segments go to the lower digestive tract, bladder, and reproductive organs.

The **sympathetic division** controls the “fight or flight” response of the body, shutting down the digestive functions, inhibiting erections, shunting blood away from the kidneys, and dilating the pupils. The sympathetic division increases heart rate, dilates capillaries in the lungs, brain and muscle tissue, and stimulates the adrenal glands. This division is also known as the **thoracolumbar division** because the nerves exit the CNS in the thoracic and lumbar regions of the spinal cord. There are ganglia associated with the sympathetic division and these are located on either side of the ventral portion of the vertebral column. They are called the **sympathetic chain ganglia** and the neurons from the thoracolumbar division synapse with nerve cells in these ganglia.

