

ASPMA RECERTIFICATION QUESTIONS
Additional Questions for 2018 recertification available only on ASPMA website

NERVE AND MUSCLE PHYSIOLOGY

There are two types of peripheral nerves (nerves in the extremities): motor nerves and sensory nerves. Motor nerves (efferent) carry impulses away from the brain, and sensory nerves (afferent) carry impulses towards the brain. Efferent, or motor, nerve fibers cause movement by stimulating muscles; afferent nerve fibers pick up sensations and relay these messages back to the brain.

Motor nerves leave the anterior portion of the spinal cord and terminate in a part of muscle called the neuromuscular junction or endplate. Muscles contract when a signal from the brain's cortex goes down the cord, through the motor nerve, to the muscle. The signal, an electrical impulse, is dependent on calcium, sodium, potassium, and acetylcholine. Conduction is a phenomenon that occurs when sodium outside the nerve enters, and potassium exits, causing an electrical charge along the nerve. A transmission is an event occurring when a signal (impulse) is carried between two nerves. This impulse crosses over a chemical called Acetylcholine.

Local anesthetics, such as Lidocaine and Bupivacaine, prevent sodium and potassium exchange, thereby stopping conduction or passage of the nerve impulse back to the brain.

REFLEXES

The podiatrist tests reflexes to examine nerve function. Reflexes may be increased or decreased in diseases of the brain, spinal cord, or nerves. An abnormal reflex may result from many etiologies including nutritional deficiencies, diabetes, syphilis, tumors, injuries, nerve impingement, and vascular disease. Reflex is defined as an involuntary action, resulting when an afferent nerve carries a stimulus to a nerve center, and the corresponding response has reflected a muscle or gland.

Sensory nerves pick up sensations and return them to the brain via the posterior spinal cord. There are five different senses of the foot, each one having its specific nerve endings. Collectively, these nerve endings are called receptors.

SENSES

It is possible, because of different receptors, to have one sense and not another. This is commonly seen in diabetes, where vibratory sense is diminished although the sense of touch is present.

The various senses and receptors are:

- *Touch.* Interpreted by several different receptors
- *Temperature.* A deep sensation transmitted by Pacinian receptors.
- *Pain.* Detected by free nerve endings.
- *Vibration.* Transmitted by Pacinian receptors.
- *Pressure.* A deep sensation transmitted by Pacinian receptors.

QUESTIONS:

1. Sensory nerves pick up sensations and return them to the brain via the _____?
2. There are (how many) different senses of the foot, each one having its own specific nerve endings.
3. _____ is detected by free nerve endings.
4. What are the two types of peripheral nerves?
5. A podiatrist tests reflexes to examine _____?
6. Is it possible to have one sense but not another?
7. Muscle contracts when an electrical impulse signal from the brain's cortex goes down the cord, through the motor nerve, to the muscle. The signal is dependent on what?
8. How do local anesthetics stop the passage of the nerve impulse back to the brain?
9. According to the information in the article, what sense is commonly seen diminished in diabetic patients?
10. An abnormal reflex may result from many etiologies; please name one:
11. Reflex is defined as an _____.
12. Efferent, or motor, nerve fibers cause movement by _____.
13. Collectively, these nerve endings are called _____.
14. True or False: Reflexes may be increased or decreased in diseases of the brain, spinal cord, or nerves.
15. Sensory, or afferent, nerve fibers pick up sensations and relay these messages back to _____.