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The hope is this organization will become a staple of the Brody student body, exemplifying the unique collaborative community that Brody offers. If this is a mission that aligns with your goals and you have the desire to help those that will come behind you, as well as a goal to leave your mark on Brody as a whole, we invite you to join the team!

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Coursepack Practice Questions

**Gluteal Region and Posterior Thigh**

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**Quiz Level**

1. Which of the following muscles is innervated by the medial plantar nerve?

A) Abductor digiti minimi

B) Second plantar interosseous

C) Flexor digitorum brevis

D) Second lumbrical

E) Quadratus plantae

2. Which of the following is a muscle of the third layer of the foot?

A) Flexor digitorum longus

B) Flexor digitorum brevis

C) Adductor hallucis

D) First lumbrical

E) Plantar interossei

3. A patient has loss of sensation to the dorsum of her left foot. On assessment, the patient has lost all cutaneous innervation to the dorsum of the foot except for in-between the first two toes. What nerve is transmitting the information from this region she can still feel.

A) Sural nerve

B) Deep fibular nerve

C) Superficial fibular nerve

D) Saphenous nerve

E) Medial plantar nerve

4. Which of the following passes posterior to the lateral malleolus?

A) Great saphenous vein

B) Dorsalis pedis artery

C) Posterior tibial artery

D) Small saphenous vein

E) Fibular vein

5. Which of the following muscles assists the flexor digitorum longus in its action, arising from the calcaneus?

A) Flexor digitorum brevis

B) Flexor hallucis brevis

C) Quadratus plantae

D) Adductor hallucis

E) Lumbricals

**Test Level**

6. A 25-year-old male patient presents to the emergency department with a complaint of foot pain following a traumatic injury. The patient reports that he accidentally dropped a heavy object onto his foot while working. On examination, there is visible swelling, tenderness, and ecchymosis over the dorsum of the foot. The patient is unable to actively dorsiflex his foot and exhibits weakness in toe extension. Sensation is intact in the affected foot. Which nerve is most likely affected by this traumatic injury?

A) Saphenous nerve

B) Tibial nerve

C) Deep fibular (peroneal) nerve

D) Superficial fibular (peroneal) nerve

E) Sural nerve

7. A 30-year-old male presents to the emergency department with severe pain in his right foot. He reports that he accidentally stepped on a rusty nail while walking barefoot in his backyard. On examination, there is a visible puncture wound on the medial aspect of his right foot, which is red, swollen, and tender to touch. The patient is unable to flex his big toe and experiences numbness on the medial side of the sole. He also has difficulty maintaining the arch of his foot when walking. Based on this presentation, which nerve is most likely affected by the injury?

A) Deep fibular (peroneal) nerve

B) Tibial nerve

C) Medial plantar nerve

D) Lateral plantar nerve

E) Sural nerve

8. A 25-year-old construction worker presents to the emergency department with a deep laceration on the dorsal aspect of his foot after an accident at the construction site. The wound is actively bleeding, and pressure does not seem to control the hemorrhage effectively. The patient's bleeding is likely originating from which vessel?

A) Dorsalis pedis artery

B) Anterior tibial artery

C) Posterior tibial artery

D) Fibular artery

E) Popliteal artery

9. A 40-year-old male patient presents to the clinic with complaints of numbness and loss of sensation in the medial aspect of his left foot. He reports that he recently underwent a surgical procedure for varicose veins in his lower limb. During the procedure, he recalls feeling a sharp pain in the medial leg, followed by persistent numbness and tingling in the same area. On examination, the patient exhibits sensory loss to light touch and pinprick sensation over the medial foot and lower medial leg. Motor function and reflexes in the lower limb are unaffected. The loss of sensation in the medial foot is suggestive of involvement of which nerve?

A) Tibial nerve

B) Common fibular nerve

C) Deep fibular nerve

D) Superficial fibular nerve

E) Saphenous nerve

10. A 32-year-old woman presents to the emergency room with a deep bite wound on her left foot sustained from a dog bite. She complains of significant pain and numbness along the lateral aspect of her foot. On examination, there is a visible laceration in the area of the wound. Neurological examination reveals loss of sensation to the lateral plantar foot, including the fourth and fifth digits, along with decreased abduction and flexion of the 5th digit. Which nerve is most likely affected in this patient?

A) Saphenous nerve

B) Deep fibular nerve

C) Tibial nerve

D) Superficial fibular nerve

E) Lateral plantar nerve

**Answers**

1. **The correct answer is C) Flexor digitorum brevis.**

The medial plantar nerve is a branch of the tibial nerve, which arises from the lumbosacral plexus. It provides motor innervation to several muscles of the foot, including the abductor hallucis, flexor digitorum brevis, and the first lumbrical. It also provides sensory innervation to the skin on the medial aspect of the sole of the foot. The flexor digitorum brevis is a muscle located in the sole of the foot that helps to flex the toes. Let's discuss why the other options are incorrect: **Abductor digiti minimi:** The abductor digiti minimi is innervated by the lateral plantar nerve, not the medial plantar nerve. The lateral plantar nerve is another branch of the tibial nerve that supplies muscles on the lateral aspect of the foot. **Second plantar interosseous:** The second plantar interosseous muscle is innervated by the lateral plantar nerve, not the medial plantar nerve. **Second lumbrical:** The second lumbrical muscle is innervated by the lateral plantar nerve.**Quadratus plantae:** The quadratus plantae muscle is innervated by the lateral plantar nerve, not the medial plantar nerve.

2. **The correct answer is C) Adductor Hallucis**

The adductor hallucis muscle is a muscle of the third layer of the foot. It is responsible for adduction of the great toe and plays a role in maintaining the arches of the foot. Let's briefly go over the other options and why they are not muscles of the third layer: **Flexor digitorum longus**: The flexor digitorum longus muscle is located in the posterior compartment of the leg and primarily functions to flex the toes. **Flexor digitorum brevis**: The flexor digitorum brevis muscle is a muscle of the first layer of the foot. It helps flex the toes and supports the arches of the foot. First lumbrical: The lumbrical muscles are found in the foot and contribute to flexion of the toes. However, they belong to the second layer of the foot muscles. Plantar interossei:. The plantar interossei muscle belongs to the fourth layer of the foot. It functions to adduct the toes and assist in maintaining the foot's arches along with aDdcuction the third, fourth, and fifth toes.

3. **The correct answer is B) Deep fibular nerve.**

The deep fibular nerve is a branch of the common fibular (peroneal) nerve, which is a branch of the sciatic nerve. The deep fibular nerve provides sensory innervation to the skin between the first and second toes on the dorsum of the foot. It also innervates the muscles in the anterior compartment of the leg that are responsible for dorsiflexion of the foot and extension of the toes.

Let's briefly review the other options and why they are not the correct answer: **Sural nerve**: The sural nerve is a sensory nerve that provides innervation to the lateral aspect of the foot and the posterior calf region. **Superficial fibular nerve**: The superficial fibular nerve provides sensory innervation to the lateral aspect of the leg and the dorsal aspect of the foot, this is the nerve that is likely injured. **Saphenous nerve**: The saphenous nerve is a branch of the femoral nerve and primarily provides sensory innervation to the medial aspect of the leg and foot. **Medial planta**r nerve: The medial plantar nerve is a branch of the tibial nerve and provides sensory innervation to the medial sole and plantar surface of the foot along with its motor innervation.

**4. The correct answer is D) Small saphenous vein**

The small saphenous vein is a vein that arises from the popliteal vein and passes posteriorly to the lateral malleolus, which is the bony prominence on the outer side of the ankle. It provides the lateral contribution of the dorsal venous arch. Let's review the other options and why they are not the correct answer: **Great saphenous vein**: The great saphenous vein is a superficial vein that is located on the medial side of the leg. It does not pass posterior to the lateral malleolus. **Dorsalis pedis artery**: The dorsalis pedis artery is a branch of the anterior tibial artery and is located on the dorsum (top) of the foot. It does not pass posterior to the lateral malleolus. **Posterior tibial artery**: The posterior tibial artery is a major branch of the popliteal artery and travels behind the medial malleolus (inner side of the ankle), not posterior to the lateral malleolus. **Fibular vein**: The fibular vein, also known as the peroneal vein, runs alongside the fibula bone but does not pass posterior to the lateral malleolus.

**5. The correct answer is C) Quadratus Plantae**

The Quadratus plantae is a muscle located in the sole of the foot. It arises from the calcaneus (heel bone) and inserts onto the flexor digitorum longus tendon. It assists the flexor digitorum longus in its action by providing additional stability and control during toe flexion.The incorrect answers are: **Flexor digitorum brevis**: The flexor digitorum brevis is a muscle located in the sole of the foot, but it does not directly assist the flexor digitorum longus in its action as it flexes the PIP not the DIP. **Flexor hallucis brevis:** The flexor hallucis brevis is also a muscle located in the sole of the foot, but it is primarily responsible for flexing the big toe, not assisting the flexor digitorum longus. **Adductor hallucis:** The adductor hallucis is a muscle in the foot that is involved in adduction of the big toe. It does not directly assist the flexor digitorum longus from the calcaneus. **Lumbricals**: The lumbrical muscles are small muscles located in the foot. They arise from the tendons of the flexor digitorum longus and function to flex the metatarsophalangeal joints and extend the interphalangeal joints of the toes. They do not directly assist the flexor digitorum longus from the calcaneus.

6. **The Correct answer is C) Deep fibular (peroneal) nerve**

The deep fibular nerve is a branch of the common fibular nerve that innervates the anterior compartment of the leg, including the muscles responsible for dorsiflexion of the foot and extension of the toes. Muscles involved include Tibialis anterior, Extensor digitorum longus and brevis, extensor hallucis longus and brevis, fibularis tertius. Damage to the deep fibular nerve can result in weakness or paralysis of these muscles, leading to difficulty in dorsiflexion and toe extension. Therefore, this nerve is the most likely one affected in this traumatic injury. The other answers are incorrect because… **Saphenous nerve**: The saphenous nerve is a branch of the femoral nerve that provides sensory innervation to the medial aspect of the lower leg and foot. It does not supply the dorsum of the foot, which is affected in this case. **Tibial nerve**: The tibial nerve is a major branch of the sciatic nerve that provides motor innervation to the posterior compartment of the leg and intrinsic muscles of the foot. However, it does not supply the dorsum of the foot, which is affected in this case. **Superficial fibular (peroneal) nerve:** The superficial fibular nerve is another branch of the common fibular nerve that innervates the lateral compartment of the leg. It provides sensory innervation to the dorsum of the foot and motor innervation to the muscles involved in foot eversion (fibularis brevis and longus). Since the patient in this case presents with weakness in dorsiflexion and toe extension rather than foot eversion, damage to the superficial fibular nerve is less likely. **Sural nerve**: The sural nerve is also a branch of the sciatic nerve and provides sensory innervation to the posterior compartment of the leg and lateral foot. It does not supply the dorsum of the foot, which is affected in this case.

7. **The correct answer is C) Medial plantar nerve**

The medial plantar nerve is a branch of the tibial nerve that supplies the intrinsic muscles of the medial aspect of the sole. Damage to the medial plantar nerve can result in weakness or paralysis of these muscles, leading to difficulty in flexing the big toe, loss of the medial arch support, and numbness in the respective area (due to loss of innervation to the **Flexor digitorum brevis, Abductor hallucis, Flexor Hallucis brevis, and first lumbrical**). Given the presentation of difficulty flexing the big toe, loss of arch support, and numbness on the medial side of the sole, the most likely nerve affected by the injury is the medial plantar nerve. **Deep fibular (peroneal) nerve:** The deep fibular nerve primarily innervates the muscles of the anterior compartment of the leg, which are responsible for dorsiflexion and toe extension.  **Tibial nerve:** The tibial nerve is a major branch of the sciatic nerve that provides innervation to the posterior compartment of the leg, including the muscles involved in plantarflexion and toe flexion. However, it is a less specific indication in this case as tibial nerve damage would include loss of innervation to structures innervated by the lateral plantar nerve as well. **Lateral plantar nerve**: The lateral plantar nerve, also a branch of the tibial nerve, supplies the intrinsic muscles of the lateral aspect of the sole. **Sural nerve**: The sural nerve is a sensory nerve formed by the union of the medial sural cutaneous nerve and the sural communicating branch of the lateral sural nerve. It provides sensory innervation to the lateral aspect of the leg and foot.

**8. The correct answer is A) Dorsalis pedis**

The dorsalis pedis artery is the continuation of the anterior tibial artery on the dorsum of the foot. It sends the deep plantar artery between the heads of the first dorsal interosseous muscle to participate in the formation in the deep plantar arch. It passes ANTERIOR to both the medial and lateral malleolus. **Anterior tibial artery**: The anterior tibial artery is a major branch of the popliteal artery that travels through the anterior compartment of the leg. It gives rise to the dorsalis pedis artery on the dorsum of the foot. Although injury to the anterior tibial artery can cause bleeding, it is not the most likely vessel affected in this case. **Posterior tibial artery**: The posterior tibial artery is another major branch of the popliteal artery that descends through the posterior compartment of the leg. It supplies the posterior and medial aspects of the lower leg and foot. **Fibular artery:** The fibular artery, also known as the peroneal artery, is a branch of the posterior tibial artery that supplies the lateral compartment of the leg. **Popliteal artery**: The popliteal artery is a major artery located behind the knee. It gives rise to several branches, including the anterior and posterior tibial arteries.

**9. The correct answer is E) Sapheonous nerve**

The saphenous nerve is a branch of the femoral nerve that provides sensory innervation to the medial aspect of the leg and foot. It courses along the medial leg and passes anterior to the medial malleolus, where it becomes superficial and supplies the skin of the medial foot. Injury or trauma to the saphenous nerve can result in sensory deficits in this distribution. In this case, based on the patient's presentation of numbness and loss of sensation in the medial foot following varicose vein surgery, the most likely nerve affected is the saphenous nerve (option E). The saphenous nerve runs close to the surgical site and can be susceptible to injury during the procedure, leading to sensory deficits in its distribution. **Tibial nerve**: The tibial nerve is a branch of the sciatic nerve that supplies the posterior compartment of the leg and foot. It is not responsible for the innervation of the medial foot, so it is an incorrect choice in this case. **Common fibular nerve:** The common fibular nerve is also a branch of the sciatic nerve, but it supplies the lateral and anterior compartments of the leg and foot. It does not innervate the medial foot. **Deep fibular nerve**: The deep fibular nerve is a branch of the common fibular nerve that innervates the muscles of the anterior compartment of the leg and the skin between the first and second toes. **Superficial fibular nerve**: The superficial fibular nerve is another branch of the common fibular nerve, responsible for sensory innervation to the lateral aspect of the leg and dorsum of the foot.

**10. The correct answer is E) Lateral plantar nerve**

In this patient with a dog bite injury to the foot, the most likely affected nerve is the lateral plantar nerve. The lateral plantar nerve is a branch of the tibial nerve and provides sensory innervation to the lateral aspect of the plantar foot, including the fourth and fifth digits. It also supplies the majority of muscles in the foot (*Quadatus plantae, Abductor digiti minimi, Lumbricals 2-4, Flexor digiti minimi, Adductor hallucis, Interossei*). **Saphenous nerve**, is responsible for providing sensation to the medial aspect of the foot and is not typically affected in lateral foot injuries.The **deep fibular nerve**, primarily innervates the muscles of the anterior compartment of the leg and is not directly involved in providing sensation to the lateral foot.The **tibial nerve**, gives rise to the lateral plantar nerve and is the main nerve responsible for providing sensory and motor innervation to the posterior compartment of the leg and the sole of the foot. Damage to the tibial nerve could affect the lateral plantar nerve and result in loss of sensation to the lateral foot, but would also affect the medial aspect via the medial plantar nerve branch.**The superficial fibular** nerve, innervates the muscles of the lateral compartment of the leg and provides sensory innervation to the dorsal aspect of the foot. It is not directly associated with the sensation of the lateral foot.