
ANATOMIC VARIANTS

RECOGNITION OF ANATOMIC VARIANTS is very important when performing nerve conduction studies. The anatomic variants discussed here are simply normal variations in the distribution of a peripheral nerve. Clinically, they have no significance unless associated with peripheral nerve pathology; however, not recognizing such normal variants could produce incorrect and sometimes detrimental interpretation of nerve conduction study results.

ACCESSORY PERONEAL NERVE (10, 43).

The common peroneal nerve usually separates from the sciatic nerve just above the popliteal fossa. The common peroneal then divides into two branches, the superficial branch and the deep branch, near the head of the fibula. The superficial branch travels down the lateral aspect of the leg innervating the peroneus longus and peroneus brevis muscles and the deep branch travels down the anterior aspect of the leg innervating the tibialis anterior and the extensor digitorum brevis muscles. In about 25 percent of the population, the EDB muscle will receive part or all of its innervations from a branch of the peroneal nerve that follows the superficial course (Fig. 5-1). It is not exactly known whether these fibers are part of the superficial peroneal nerve or part of the deep peroneal following a superficial course, but the latter is most frequently thought to be true. In either case, nerve conduction study results obtained from routine stimulation can be spurious. Figure 5-2a demonstrates normal responses obtained while recording from the extensor digitorum brevis on a person without an accessory peroneal nerve. Notice that the amplitude when stimulating distally at the ankle is slightly higher than the amplitude when stimulating proximally at the knee. On a person with accessory peroneal nerve innervation of the extensor digitorum brevis, the amplitude when stimulating the deep peroneal distally at the ankle will be less than the amplitude obtained with proximal stimulation of the common peroneal nerve at the knee. This is because the common peroneal includes both the superficial

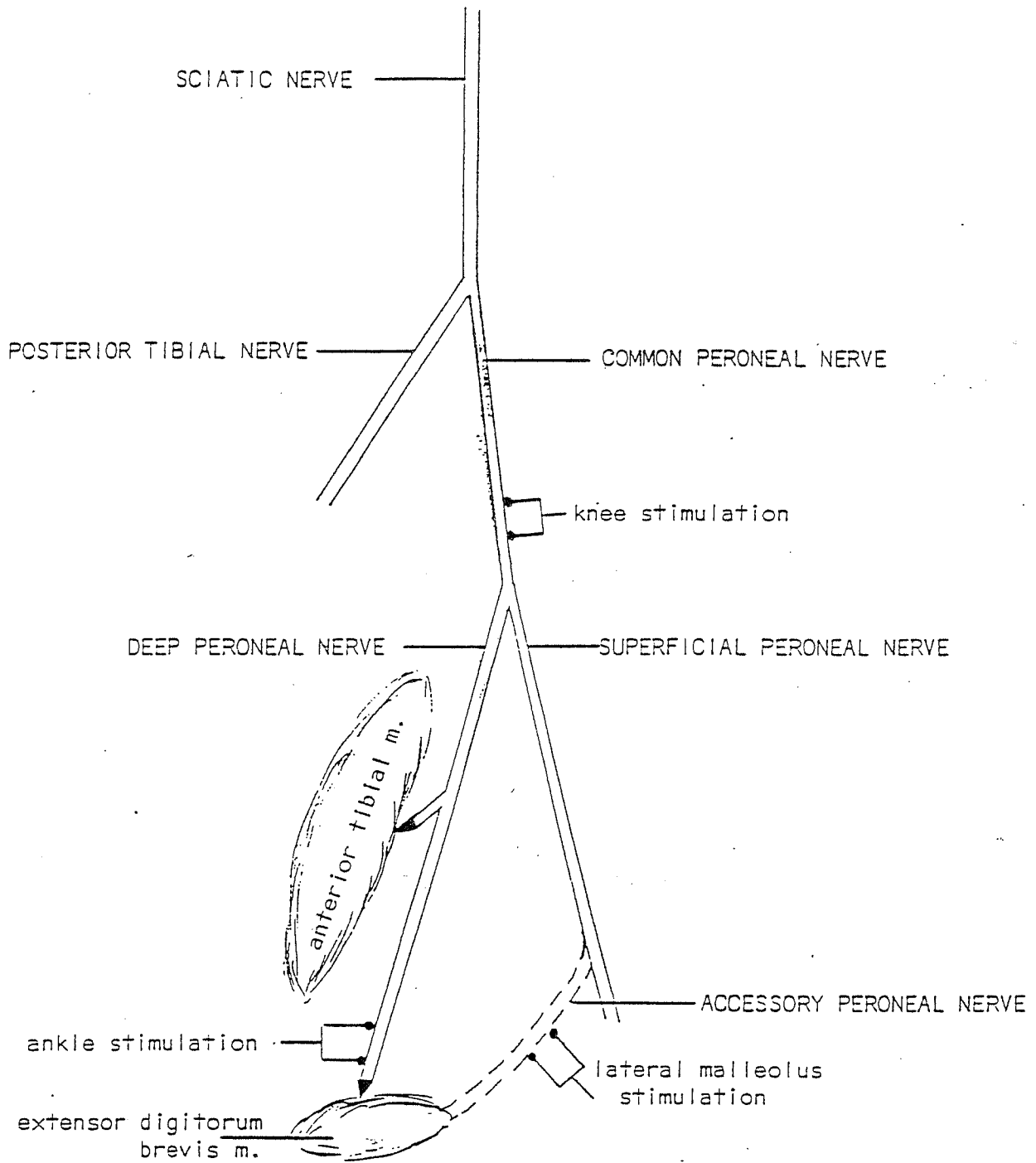
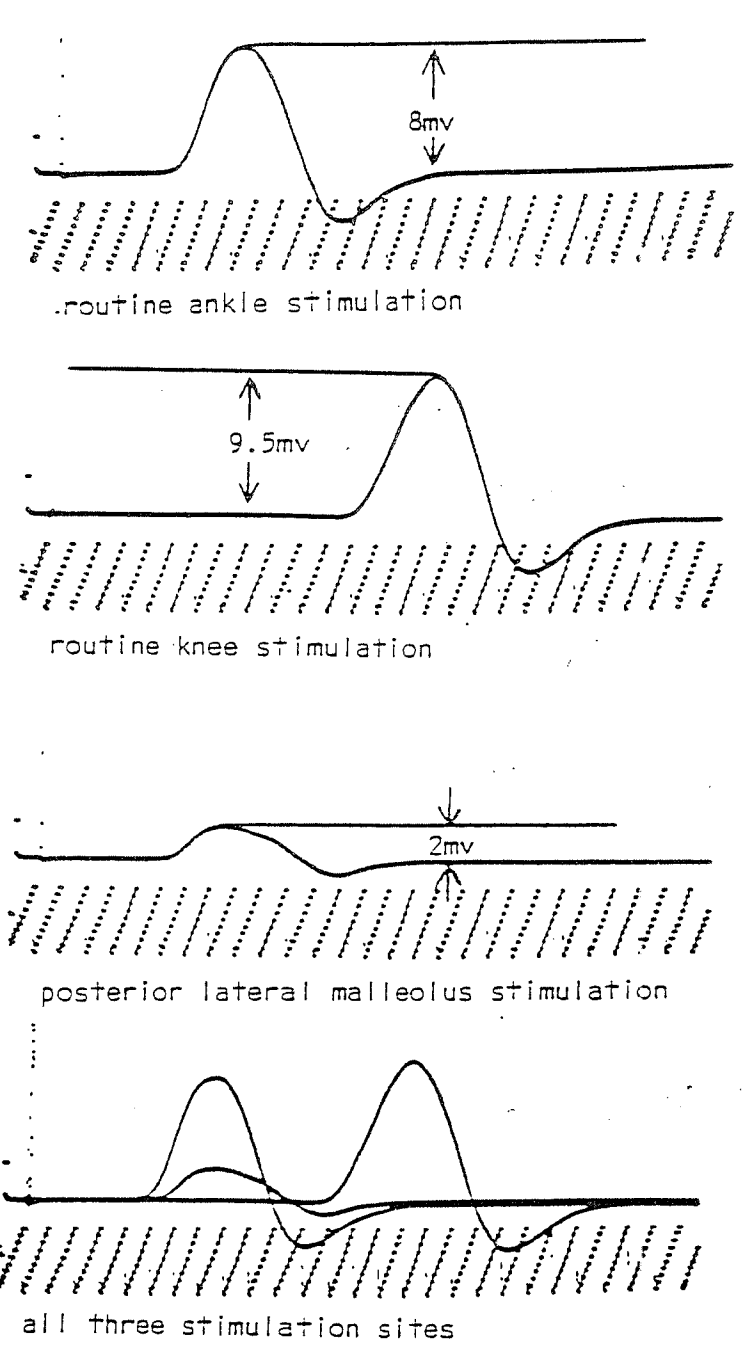
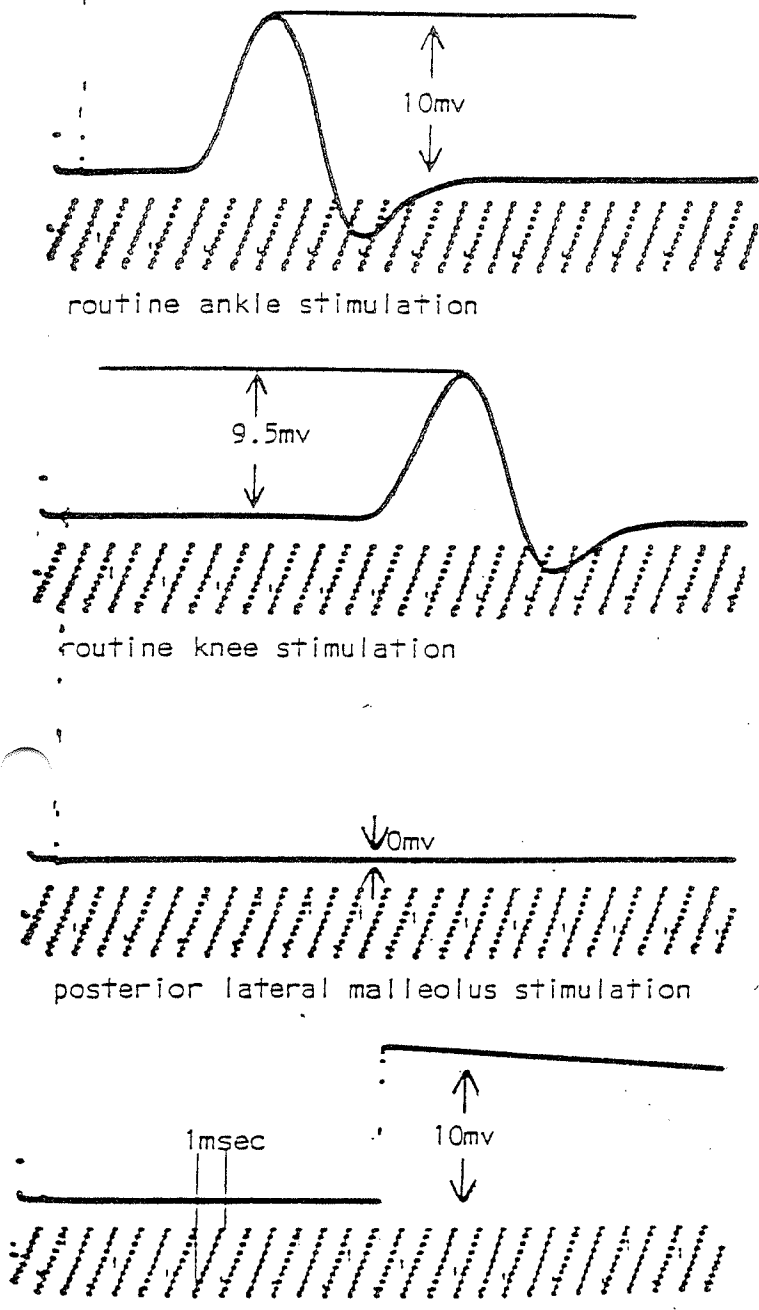


Figure 5-1

a. WITHOUT ACCESSORY PERONEAL NERVE

b. WITH ACCESSORY PERONEAL NERVE



8.0mv routine ankle stimulation
 +2.0mv posterior lateral malleolus stimulation
 10.0mv actual peroneal ankle stimulation

0mv peroneal ankle amplitude } normal
 .5mv peroneal knee amplitude } amplitude
 variation

Figure 5-2