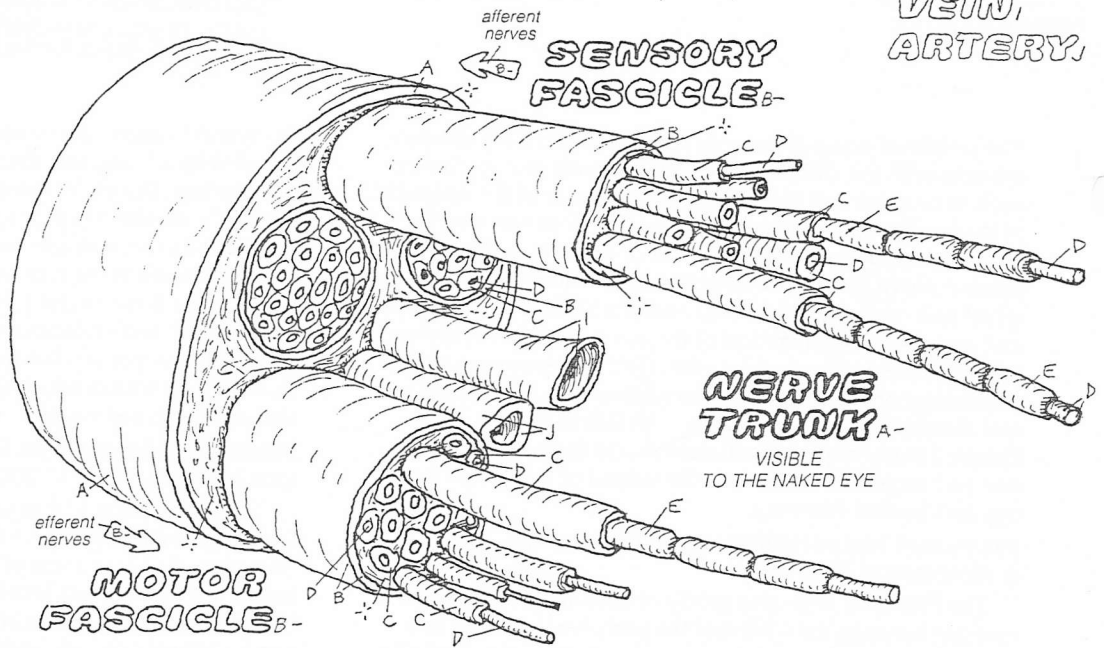
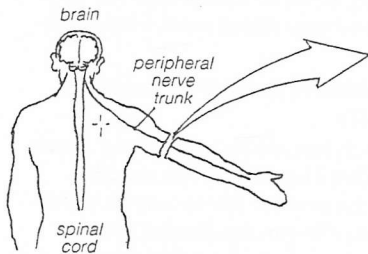


STRUCTURE OF A PERIPHERAL NERVE (PN):-

Peripheral nerves (PN) are visible cords of nerve tissue containing thousands of nerve fibers (NF) that form fascicles. PN act as communication cables of wires, carrying signals between the central nervous system and peripheral sensors and effectors. PN can be part of spinal, cranial or autonomic groups. Large mixed PN trunks contain sensory (afferent), motor (efferent) and autonomic (usually efferent) nerve fibers (NF). Individual fascicles are usually functionally distinct, containing either sensory or motor NF.



VEIN,
ARTERY

COATS OF A PERIPHERAL NERVE:-

- EPINEURIUM_A
- PN TRUNK_{A-}
- PERINEURIUM_B
- FASCICLE_{B-}
- ENDONEURIUM_C
- NERVE FIBER_{C-}
- MYELIN SHEATH_E

Peripheral nerves (PN) are covered by several coats of connective tissue that help protect them from pressure and shearing mechanical forces. Epineurium is the thick outer coat of the main nerve trunk. Perineurium is a coat of medium thickness that covers the individual fascicles inside the nerve trunk. Endoneurium is a thin, loose and diffuse coat, filling the space between individual nerve fibers. All three coats are loosely connected together. The large-sized nerve fibers are also covered by a fatty coat (myelin sheath) that helps provide partial electrical insulation which increases the conduction velocity.

CONDUCTION VELOCITY OF FIBER TYPES:-

TYPES OF NERVE FIBERS:-

LARGEST (FASTEST)_F

- A α TYPE_F (diameter up to 20 μ m; velocity up to 120 m/sec)
- A β TYPE_{F'} (10 μ m average; up to 70 m/sec)
- A γ TYPE_{F''} (5 μ m average; up to 30 m/sec)
- A δ TYPE_{F'''} (2-4 μ m; up to 20 m/sec)

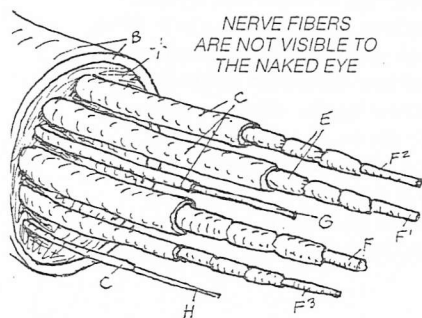
MEDIUM SIZE_G

- TYPE B_G (1-3 μ m; up to 10 m/sec)

SMALLEST (SLOWEST)_H

- TYPE C_H (< 1 μ m; 0.5-2 m/sec)

The diameter of nerve fibers (NF) in a mixed, large nerve trunk occur in large sizes (type A- with subtypes A α > A β > A γ > A δ), intermediate sizes (type B), and small (type C) sizes. Large NF (motor fibers to fast muscles, optic fibers) are generally myelinated and fastest in conduction velocity. Type C fibers (pain, autonomic) are the smallest and slowest. If a large mixed PN is stimulated at one point with a strong stimulus (high intensity), a compound action potential (CAP) is obtained at a distant recording site. The CAP's highest peak (peak A in drawing) occurs very rapidly, corresponding to the action potential (AP) of the largest NF. Peaks A α -A δ , B and C, occur at increasingly later times, correspond to the respective smaller sized fibers which have correspondingly higher thresholds and lower speeds. If stimulus intensity is weak, only the A- α peak of the low threshold, large fibers is seen (graph on left).



COMPOUND ACTION POTENTIAL OF A PN:-

