Electrical power and safety
Notes from Joe Wolfe, UNSW

2 cables from substation/transformer carry 240 V ac gives same power as 240 V DC.

Earthing
'live' at 240 V with respect to earth
'near' is return to earth near building (eg via water pipes)

Metal case connected to earth via low R pathway

Domestic circuit

Note that switches are in the active line. Note that master switches should be off before changing fuses.
Earth connected to the earth—e.g. via water pipes.

Electrocution often occurs via the floor/chair etc.(wet floors, baths dangerous)

Earthed case provides low R return path and blows fuse, or preferably an earth leakage detector. (ELD turns off very quickly and reduces danger.)

Clinical precautions
Dry skin is not a very good conductor, but people with electrodes attached to them, or metal catheters in their veins, or salty gels or bathing solution:
have a low R pathway to their tissue and so are vulnerable. Even static electric charges might be dangerous to them.