



1: [J Appl Physiol.](#) 1984 Jan;56(1):35-8.

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Muscle capillary supply and fiber type characteristics in weight and power lifters.

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Muscle tissue samples were obtained from vastus lateralis muscle of elite weight/power lifters (WL/PL, n = 8), endurance athletes (EA, n = 8), and nonathletes (NA, n = 8). Histochemical stainings for myofibrillar ATPase, NADH-tetrazolium reductase, and amylase-periodic acid-Schiff, respectively, were undertaken to assess relative distribution of fast-twitch (FT) and slow-twitch (ST) muscle fiber types, fiber size, and capillary supply [capillaries per fiber (cap X fib-1) and capillaries per mm² (cap X mm-2)]. Fiber type distribution in WL/PL, EA, and NA averaged 59 +/- 6 (SD), 40 +/- 11, and 61 +/- 10% FT. Values for mean fiber area and FT/ST area were significantly greater in WL/PL compared with values obtained in EA and NA. Similar values for cap X fib-1 were observed WL/PL (2.06 +/- 0.74) and NA (2.16 +/- 0.34). EA exhibited greater cap X fib-1 (3.11 +/- 0.73) than WL/PL (NS) and NA (P less than 0.01). However, cap X mm-2 in WL/PL (199 +/- 29) was lower than in EA (401 +/- 61, P less than 0.001) and NA (306 +/- 29, P less than 0.01). It is suggested that heavy resistance training in contrast to endurance training does not result in increased capillary density. Instead, as a consequence of fiber hypertrophy induced by muscle overloading, capillary density is decreased.