Valid measurements of maximum force and power can only be made when excitability has been determined and fibers have been excited maximally. The Rheobase ($R_{50}$, V/mm) is the minimum stimulus pulse amplitude required to elicit an isometric twitch at half the maximum value ($P_{1/2}$) and Chronaxie ($C_{50}$, ms) is the pulse duration that elicits $P_{1/2}$, when pulse amplitude is $2R_{50}$. Our hypothesis was that excitability would be lower for engineered muscle constructs, denervated muscles and muscles of neonates than for stimulated-denervated muscles or control muscles in young, adult, or old rodents. The $R_{50}$ and $C_{50}$ were: (1) engineered muscle constructs, $0.85 \pm 0.06$ & $0.39 \pm 0.03$; and (2) control (EDL) muscles of neonatal (14 days of age), $0.45 \pm 0.03$ & $0.86 \pm 0.03$; young (1 to 5 months of age) and adult (8 to 14 months of age), $0.32 \pm 0.02$ & $0.04 \pm 0.00$; and old (28 months of age) $0.56 \pm 0.11$ & $0.40 \pm 0.03$ rodents; and (3) EDL muscles of rats denervated for 4 to 7 months without $2.60 \pm 0.30$ & $0.70 \pm 0.15$, or with electrical stimulation, $0.47 \pm 0.08$ & $0.04 \pm 0.00$; respectively. Excitability is decreased dramatically in engineered muscle constructs and denervated muscles and slightly in muscles of neonatal and old mice and rats. Support: AG10821 & AG06157.