Fast Twitch and Slow Twitch

Cat Soleus:
Mostly slow twitch

Cat Gastrocnemius:
Mostly fast twitch


Fast Twitch and Slow Twitch
(same data as previous page, plotted on same scale)

Soleus motor unit

Gastrocnemius motor unit

Fast twitch motor units generate more force, and reach maximum force more quickly, than slow twitch motor units.

Fast twitch motor units relax more quickly than slow twitch motor units.
Elite Track Athletes Vs. Ordinary People

Sprinters: mostly fast twitch

Distance runners: mostly slow twitch

Everyone else: no clear preponderance

Note: muscle fibers in humans are more heterogeneous than muscle fibers in cats.

Costill et al. J. Appl. Physiol., 1976 (40) 149-154
Power Lifters Vs. Ordinary People

Power Lifters generate more force:

Power Lifters generate more power:

Power Lifters and ordinary people have the same fraction of “slow twitch” (=Type 1) fibers (almost 50%):

Conclusion

Since successful sprinters have a preponderance of fast twitch fibers, while successful power lifters do not, conclude that fast twitch fibers are an advantage for high angular velocity activities—those in which contraction must very rapidly be followed by relaxation. The specific advantage of fast-twitch over slow-twitch fibers is that fast-twitch fibers relax more quickly.
Postscript

Whatever fiber type you have: Warm up!

CONTRACTION TIMES AND FIBRE TYPES

Fig. 11. Spectra of contraction times at low (above) and at normal temperature (below) (2 subjects). n denotes the number of bundles. Note that the relative standard deviation was halved in the spectrum at low temperature.