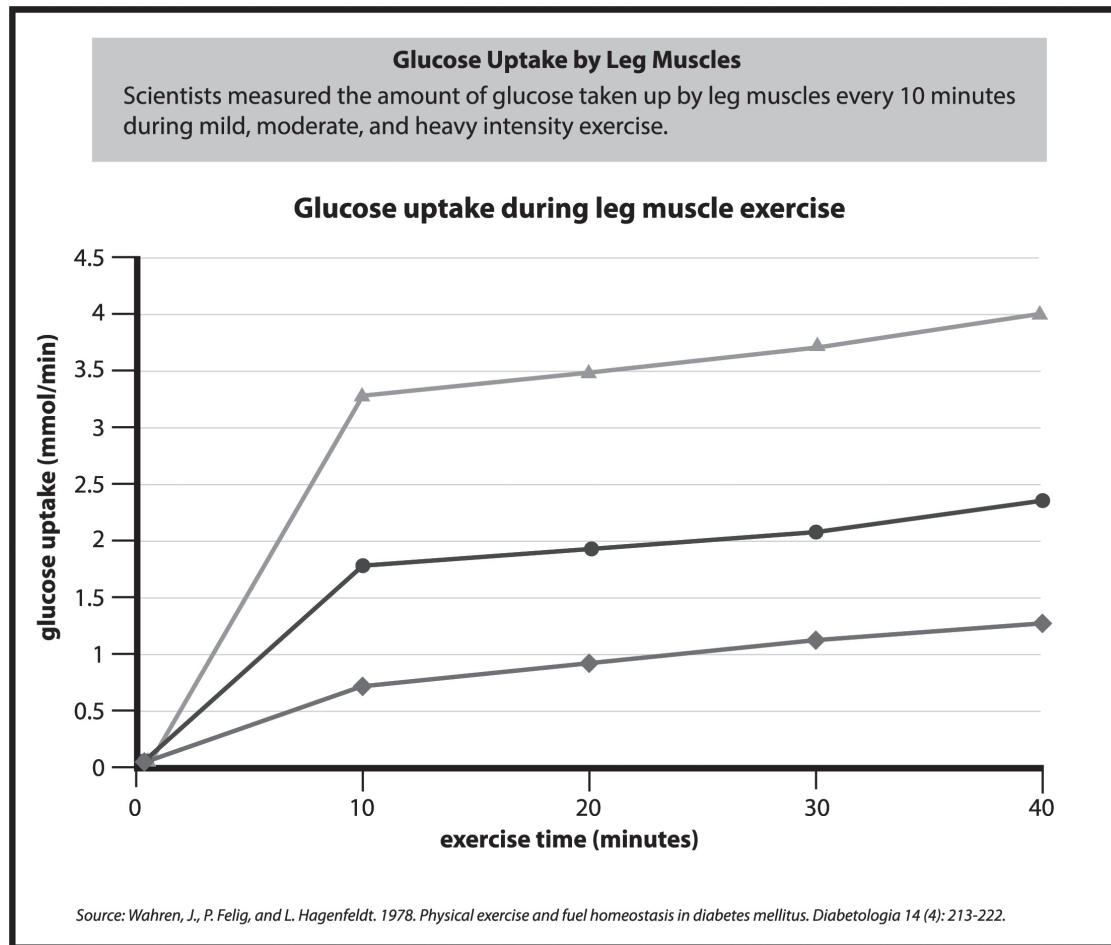


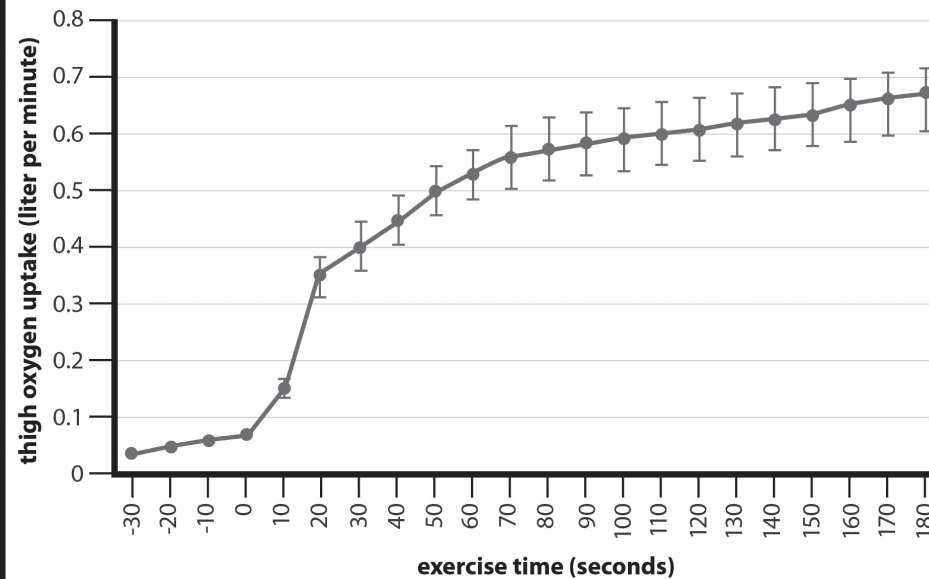
# Molecules and Muscles



**Effects of Exercise on Oxygen Uptake**

Scientists recruited five healthy men who ranged in age from 22 to 25 years. The men were asked to perform a single-legged knee extension exercise for 180 seconds. Scientists sampled blood every 10 seconds from a vessel carrying blood to the muscle and from another vessel carrying blood away from the muscle and measured the amount of oxygen contained in each sample. The amount of oxygen consumed was calculated by subtracting the amount of oxygen in the blood leaving the muscle from the amount of oxygen in the blood entering the muscle. They repeated the study three times and averaged the measurements for each time point.

**Average rate of oxygen consumption by the quadriceps (thigh) muscle before and during exercise**



Source: Krstrup, P., J. Gonzollez-Alonso, B. Quistorff, and J. Bangsbo. 2001. Muscle heat production and anaerobic energy turnover during repeated intense dynamic exercise in humans. *Journal of Physiology* 536 (3): 947–956.