

Muscle Fibres

1. Type 1 (slow twitch) they are 10 times slower than a fast twitch muscle fibre at reaching peak force and are slightly smaller than fast twitch muscle fibres due to less myosin. However they are very energy efficient using aerobic pathways to gain energy. They would be used in a marathon run.
2. Type 2 a (FOG) they are faster than type 1 fibres at reaching peak force and are slightly bigger although they fatigue a lot easier as they gain energy from anaerobic pathways. They would be used in a 400m sprint or perhaps a 1 mile run.
3. Type 2 b (FTG) they are even faster at reaching peak contraction force than the FOG fibres however they are even less energy efficient and would be used in a 100m sprint or perhaps a 50m swim.

TABLE 9.2 Structural and Functional Characteristics of the Three Types of Skeletal Muscle Fibers

	SLOW OXIDATIVE FIBERS	FAST OXIDATIVE FIBERS	FAST GLYCOLYTIC FIBERS
METABOLIC CHARACTERISTICS			
Speed of contraction	Slow	Fast	Fast
Myosin ATPase activity	Slow	Fast	Fast
Primary pathway for ATP synthesis	Aerobic	Aerobic (some anaerobic glycolysis)	Anaerobic glycolysis
Myoglobin content	High	High	Low
Glycogen stores	Low	Intermediate	High
Recruitment order	First	Second	Third
Rate of fatigue	Slow (fatigue-resistant)	Intermediate (moderately fatigue-resistant)	Fast (fatigable)
ACTIVITIES BEST SUITED FOR			
	Endurance-type activities—e.g., running a marathon; maintaining posture (antigravity muscles)	Sprinting, walking	Short-term intense or powerful movements, e.g., hitting a baseball
STRUCTURAL CHARACTERISTICS			
Color	Red	Red to pink	White (pale)
Fiber diameter	Small	Intermediate	Large
Mitochondria	Many	Many	Few
Capillaries	Many	Many	Few

The slow to fast twitch muscle fibre ration is roughly 1:1 however if an individual where to carry out heavy weight training the Type 2b fibres would convert into the Type 2a fibres after a period of time. After the weight training has finished the more type 2a fibres would be converted back to type 2b fibres than were originally present. Research know shows that this ratio of fast to slow muscle twitch fibres can know change as a result to training for example sprinter have a higher percentage of type 2 fibres than marathon runners and vice versa.