



PHYSIOLOGY

Explosive power

The 'explosive power' which enables a sprinter to run 100 metres in less than 10 seconds comes from a form of fuel which is stored in the fibres of the leg muscles. This fuel – ATP (adenosine triphosphate) – enables the muscle fibres to contract and relax very rapidly

Muscles:

There are more than 600 muscles in the body containing over 250,000 muscle fibres. These are known as type 1 – slow twitch fibres and type 2 – fast twitch fibres

Slow twitch fibres:

Convert oxygen into energy and enable athletes to combine speed, stamina and strength. In middle and long distance events 80-90% of the athlete's energy is generated by these fibres. This is the aerobic system

Fast twitch fibres:

Provide immediate energy over short periods. These fibres do not use oxygen and rely totally on energy produced from ATP. This is the anaerobic system, used by sprinters

Fast fibres contain ATP

Group of muscle fibres

Leg muscle

Instant energy:

The sprinter's explosive power is generated by the fast twitch muscle fibres which have the highest contraction rates. This enables the runner to accelerate to 35kmh in 6 seconds. Each kilogram of leg muscle contains sufficient ATP to sustain a sprinter for 0.5 seconds

Dependence on the anaerobic system

