

What does it take to run a 2-hour marathon? (It's in the genes, and East Africans have them)

Elite runners need a specific combination of physiological abilities to have any chance of running a sub-two-hour marathon, [new research shows](#).

The study is based on detailed testing of athletes who took part in Nike's Breaking2 project – an ambitious bid to break the two-hour barrier.

[Professor Andrew Jones](#), of the University of Exeter, said the findings reveal that elite marathon runners must have a “perfect balance” of VO2 max (rate of oxygen uptake), efficiency of movement and a high “lactate turn point” (above which the body experiences more fatigue).

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[The] lactate turn point is the percentage of VO2 max a runner can sustain before anaerobic respiration begins.

“If and when this happens, carbohydrates in the muscles are used at a high rate, depleting glycogen stores,” Professor Jones explained.

“At this point – which many marathon runners may know as ‘the wall’ – the body has to switch to burning fat, which is less efficient and ultimately means the runner slows down.

“The runners we studied – 15 of the 16 from East Africa – seem to know intuitively how to run just below their ‘critical speed’, close to the ‘lactate turn point’ but never exceeding it.

“This is especially challenging because – even for elite runners – the turn point drops slightly over the course of a marathon.”

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