

THE SUB2HR PROJECT WAS LAUNCHED RECENTLY AT NORTHUMBRIA UNIVERSITY AND DAVID LOWES WAS THERE TO LISTEN TO THE VIEWS OF THE STAR-STUDED CAST

WILL IT, won't it, and if so, when? The debate rages over the prospect of the sub-two-hour marathon. The simple answer is that it will be achieved, but when, how soon and by what type of athlete is a far less certain prediction.

However, at the International Sport and Exercise Nutrition Conference in Newcastle, the topic was given priority with a stellar line-up including Professor Ron Maughan, Professor Andy Jones, Professor Yannis Pitsiladis, Jos Hermens and arguably the world's best-ever endurance runner, Haile Gebrselassie. The world record has been revised seven times this century and five times over the last 10 years – more than at any time since the 1960s when it was improved upon eight times. In terms of ownership of the best-ever times, the Australian runner Derek Clayton held it for 14 years (1967-1981) while Kitei Son, the 1936 Olympic champion, for 12 years (1935-1947).

### Sub-2 hours at a glance

A decent club runner may be able to churn out 20x400m reps in 68.5sec, but will almost certainly need around 60-70 seconds recovery between each effort to achieve those times. Imagine having to do another 85 reps without a recovery factored in to achieve a sub-two-hour marathon!

More startling though, is the fact that it equates to around 28:26 for 10km and this has to be done four times with another 2.2km still remaining. In 2014 only two British athletes (Mo Farah and Andy Vernon) ran faster than that pace for one single 10,000m on the track.

# Two be or not ...



Dennis Kimetto: the world's fastest is closing in on the two-hour barrier

The all-time half-marathon best of 58:23 by Zersenay Tadese highlights again what huge improvements have to be made to approach and exceed the magical two-hour barrier for 26 miles 385 yards. It may take someone with a capability of around 56 minutes if current stats are taken into account. The conundrum is further complicated by the fact that an athlete of the calibre of Tadese, who has excellent track credentials and is a former world cross country champion, has a relatively poor marathon best of 2:10:41.

Consider four of the top five marathoners in history and their half-marathon bests: Kimetto (59:14), Kipsang (58:59), Makau (58:32) and Gebrselassie (58:55). When you multiply their half-marathon PBs by two you have a four to five-minute difference to their marathon times.

Kimetto (3:43) has the least differential, while Makau has marginally the highest (5:06). Interestingly, Gebrselassie (5:04) has by far the fastest 10,000m clocking (26:22.75) and his range of events far exceeds all of the other athletes with world-class times from 1500m right up to the marathon and including indoors plus cross country.

While many consider the first marathon under two hours is some time away, the Sub2hr Project team believe they can achieve this within five years with a dedicated scientific approach. The project is the first dedicated international research initiative that is made up of multi-disciplinary scientists, elite

athletes and strategic industry partners. Pitsiladis, who leads the project, was the founding member of the International Centre for East African Running Science set up around a decade ago to investigate the determinants of the phenomenal success of athletes from that region.

### World record evolution last 60 years

2:02:57	Dennis Kimetto (KEN)	September 28, 2014
2:03:23	Wilson Kipsang (KEN)	September 29, 2013
2:03:38	Patrick Makau (KEN)	September 25, 2011
2:03:59	Haile Gebrselassie (ETH)	September 28, 2008
2:04:26	Haile Gebrselassie (ETH)	September 30, 2007
2:04:55	Paul Tergat (KEN)	September 28, 2003
2:05:38	Khalid Khannouchi (USA)	April 14, 2002
2:05:42	Khalid Khannouchi (MAR)	October 24, 1999
2:06:05	Ronaldo da Costa (BRA)	September 20, 1998
2:06:50	Belayneh Dinsamo (ETH)	April 17, 1988
2:07:12	Carlos Lopes (POR)	April 20, 1985
2:08:05	Steve Jones (GBR)	October 21, 1984
2:08:18	Robert De Castella (AUS)	December 6, 1981
2:08:35	Derek Clayton (AUS)	May 30, 1969
2:09:37	Derek Clayton (AUS)	December 3, 1967
2:12:00	Morio Shigematsu (JPN)	June 12, 1965
2:12:13	Abebe Bikila (ETH)	October 21, 1964
2:13:55	Basil Heatley (GBR)	June 13, 1964
2:14:28	Leonard Edelen (USA)	June 15, 1963
2:15:16	Toru Terasawa (JPN)	February 17, 1963
2:15:17	Abebe Bikila (ETH)	September 10, 1960
2:15:17	Sergei Popov (SOV)	August 24, 1958
2:18:05	Paavo Kotila (FIN)	August 12, 1956
2:17:40	Jim Peters (GBR)	June 26, 1954

The conference, which saw attendees from all over the globe, began with Maughan saying: "It will be done, there is no doubt. There are limits of course, but it is now a similar situation to when the first four-minute mile was being talked about. When someone does run under two hours, it will be a fantastic achievement. Around 80% of people think it can be done. Many think around the year 2035 is a fair assumption."

Jones emphasised the determinants of endurance performance by saying: "Our two-hour marathoner will have a high VO2max and lactate threshold and be very economical."

Interestingly, he thought that the necessary training wouldn't be that different from that performed by today's best and a simple staple session may include 5x3min of hard running. A sample week would include the traditional Sunday run of 18-22 miles with sessions of 8x1200m, 10x800m and 20x400m being prime examples. The total mileage may add up to 125 miles a week, but importantly, steady state would be at around 4:40-5:00min per mile and tempo pace would be at 4:30-4:40 per mile.

He emphasised: "Improved economy may take 10-15 years of high level and consistent high-volume running."

## Determinants

Based on what is currently known, whoever eventually breaks the two-hour barrier, will have a favourable



Ron Maughan: no doubts about sub-2hr

genetic profile (which is yet to be determined), an outstanding running economy along with a small body size that has had a chronic exposure to high altitude and significant physical activity early in life. The current trends indicate that it will be an East African that will first break the magical figures.

## Intelligent training

It is thought that more detailed information will be needed on the relationship between maximal aerobic capacity and running economy and the influence of body size, anthropometry and running form on thermoregulation, economy and fuel use. The methods involved will link the very latest genetic technologies to training aids such as accelerometry, GPS and heart rate monitoring.

## Project aims

The project has three main phases:

1. Development phase (first 12 months) – involves setting up a global consortium, advertising the ambitious objectives and securing sponsorship.
2. Implementation phase (year 2-5) – aimed at establishing the project and achieving an objective of 1:59:59.
3. Legacy phase – serve as a model for future success.

## Practical thoughts

The final session was a more relaxed question-and-answer

forum that included the great Gebrselassie and his manager Hermens. The Ethiopian thought that sub-two hours was maybe 20-25 years away and that presently only the Berlin course could produce such a time.

He said: "It is flat with a smooth and responsive road surface and protected by tall buildings, the temperature is usually good too – technology has helped with much better running shoes too."

Maughan added: "Around 10C is the perfect running temperature for a marathon, although 4-5C may be even better."

Hermens said of the East African running culture: "They don't think too much – they don't like too much in their heads. However, you won't find a McDonald's in Addis Ababa – they eat very well and injera in particular (a flat bread made from teff flour), fills you up and you're still full over four hours later!"

Gebrselassie continued: "In Ethiopia the coach has to be a tough one to get the best out of his athletes – we never ask, we just do what he says. Even if we have a tight muscle, we must finish the session!"

On the best age for a marathoner, he added: "About 24 to 25 years is good – many people leave it far too late. Altitude is a must though – it isn't possible to run to the highest levels without training consistently in the thin air."

The diminutive former world record-holder, who ran 2:03:59 in



Haile Gebrselassie: coaches have to be tough and their athletes open-minded

2008 over the Berlin course, said he ran around 200km a week, but didn't train properly for it with his business commitments preventing some important work. Nevertheless, his morning runs were his serious workouts, while the afternoon sessions included some gym work, cycling and some light weights. In terms of race preparation, he said: "I always like to know who I'm running against and what their strengths and weaknesses are."

On a less serious note, Gebrselassie responded to why he smiles so much before and during a race? Gebrselassie, always ready to joke, said: "Why be so sad? It's not the end of the world. It's what we train for. It's only a race – no matter what the distance."

In conclusion to a fascinating and intriguing conference, the panel of speakers gave some very interesting and non-scientific advice as to how the two-hour barrier may be broken sooner rather than later – put \$5m up as a carrot to dangle before the athletes' eyes and you may just see something special.

Maughan went further and suggested: "Offer that sum of money to each of the top five athletes to pace and draft each other throughout the race in the hope that just one athlete will achieve the fantastic target!"

Science, physiology, psychology, technology – will money be the deciding factor? Watch this space – it may be sooner than you think!



Andy Jones: excellent economy needed



Yannis Pitsiladis: leader of the project