



**WHAT TIME CAN YOU RUN? Text by Guy Leech with Rod Cedaro (M. App. Sc.) Consultant
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You've never run further than 10km and you're wondering what you could run for a half marathon or even a marathon. "Guessimations" abound, the fact of the matter is that until you get out there and actually run one of these events you'll never truly know. There are however a number of factors that come into play which can give you a reasonable estimation. In fact, with athletes I coach that (a) can't afford to visit the human performance lab I run or (b) wish to use some field testing from which to establish their run training loads I find the following principals most useful.

There are basically three measurable (in the lab) variables that combine to determine your distance running potential:

1. Maximal oxygen consumption or $VO_2\text{max}$.
2. Your lactate, ventilator threshold, AT2, OBLA or anaerobic threshold (all of which measure pretty much the same point - where your body changes from predominately aerobic to anaerobic metabolism).
3. Mechanical efficiency - how economically you move when you run. In fact some studies suggest that a well-trained athlete racing over 5km is pretty much running at his or her $VO_2\text{max}$ during such an event. Such an effort consequently beyond the anaerobic threshold. Events beyond 5km are run at less than $VO_2\text{max}$, to offset lactate accumulation and the resultant fatigue.

Events shorter than 5km are run beyond $VO_2\text{max}$ and require development of lactate tolerance and other physiological adaptations - all of which come down to (a) training and (b) genetic predisposition (i.e. Muscle fibre types and the like).

The however remains - "By how much do you (i) run beyond your $VO_2\text{max}$ for events shorter than 5km or (ii) below your $VO_2\text{max}$ for events less than 5km. It all comes down to "pacing" and this is the main thrust of this article.

Obviously there are a host of considerations when considering this question (e.g. Training status, efficiency, etc.), however for the purpose of this article lets assume that the athlete is well trained and runs efficiently. So can we get an idea of the relative pace for shorter or longer distances by using prior performances?

I think so.

In the Table below I've provided an overview of percentages of VO₂max and 5km times relative to other commonly run events. By backing off or cranking it up, this'll give you an idea of what sort of

intensity our well trained runner (hopefully you) should be able to hold fresh - not running off the bike, that's a whole different kettle of fish. I've based these predictions on world record info from elite runners and therefore it is independen t of the athlete's sex.	% of 5k speed	% of VO ₂ max
DISTANCE		
1500m	110	110*
3000m	103	103*
5000m	100	100
1/2 marathon	90	90
Marathon	85	85

(* i.e. Running speed greater than VO₂max)

Basically, we know that in highly trained, motivated athletes can sustain their VO₂max for about 15-20 minutes. Interestingly elite marathoners can run pretty much at their anaerobic threshold intensity for the duration of the race (i.e. About 85% of VO₂max) - again "training status" is the key to this.

While we non-elite athletes don't have the aerobic engines (VO₂max) of the elites we can achieve similar relative anaerobic thresholds. Therefore these percentages can be used to reasonably predict peak performance in shorter or longer distances based on your 5k time, if you are sufficiently trained.

So, what are you capable of running for your various events?

Check out the table below. Simply look up your current 5km time and then look down that column to the corresponding distance on the left of the table that you're thinking about having a crack at. Your current 5km time	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00
Predicted time for 1500m	4:05	4:22	4:38	4:54	5:11	5:27	5:44	6:00
Predicted time for 3000m	8:44	9:18	9:54	10:29	11:05	11:39	12:14	12:48
Predicted time for 10000m	31:35	33:40	35:48	37:53	40:03	42:06	44:12	46:19
Predicted time for ½ marathon	1:06:59	1:14:59	1:19:43	1:24:22	1:29:12	1:33:45	1:38:27	1:43:09
Predicted time for full marathon	2:28:50	2:38:48	2:48:45	2:58:41	3:08:53	3:18:35	3:28:30	3:38:25

Obviously you can't run at your optimal pace over all distances at any one time given time, so where the emphasis of the training is placed (i.e. Speed versus endurance), as well as mechanical efficiency and genetic predisposition, will determine where or not you can extrapolate forwards or backwards from the above table.

Either way it'll give you a reasonable "guessimation" of your running potential