

Effect of Wind Speed

Wind Speed (negative values denote tailwinds)	VO2 Demand
-20 mph (-8.9408 m/s)	-9.6%
-15 mph (-6.7056 m/s)	-8.7%
-10 mph (-4.4704 m/s)	-6.8%
-5 mph (-2.2352 m/s)	-3.9%
0 mph (0 m/s)	0.0%
5 mph (2.2352 m/s)	+4.9%
10 mph (4.4704 m/s)	+10.8%
15 mph (6.7056 m/s)	+17.7%
20 mph (8.9408 m/s)	+25.6%

Calculations are based on data from Daniels' Running Formula by Jack Daniels PhD.

Temperature Affects upon Performance Chart

One challenge for runners is figuring how to adjust training and racing speeds relative to outdoor weather conditions. A common question arises: "How much time should I add or subtract from my normal pace as temperature changes?"

In the chart below you will find performance changes for an example runner who normally covers 5:00 per mile or 3:06.4 per kilometer when temperature is ideal. * The formula below doesn't factor humidity or wind, so keep that in mind.

Heat Index	Total Performance Change	Sample Adjustments to Pace	
		Per Mile	Per K
120F	+16.33%	5:49	3:36.9
110 F	+12.00%	5:36	3:28.8
100 F	+8.33%	5:25	3:22.0
90 F	+5.33%	5:16	3:16.4
80 F	+3.00%	5:09	3:12.0
70 F	+1.66%	5:05	3:09.5
60 F	+.33%	5:01	3:07.0
50 F	0%	5:00	3:06.4
40 F	+.33%	5:01	3:07.0
30 F	+1.66%	5:05	3:09.5
20F	+3.00%	5:09	3:12:0
10F	+5.33%	5:16	3:16.4
0F	+8.33%	5:25	3:22.0