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Speed is Relative (Human and Animal Running Speeds): Are You a Cheetah, a Chicken, or a Snail?

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By Chad E. Buckley
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If you've ever run with other people, you've no doubt quickly observed that some individuals run much faster than you, and others run much slower. You may be one who routinely wins all your local 5K's and considers yourself an elite athlete. Or you may feel that you are the slowest thing on two legs. For a dose of either a little humility or some encouragement, it is very helpful to remember that speed is relative. Humans sometimes have a tendency to forget that there are other members of the animal kingdom out there, some of which could easily make us eat their dust. Yet even the slowest among us could easily triumph over many other animal species.

While it's quite simple to time a human running in races of varying lengths, recording the top speed at which an animal can run is a very difficult proposition since most do not obligingly run neat courses around a track or a measured course. Some of the numbers below, taken from a variety of sources, are undoubtedly very rough estimates, but they do at least provide some basis for comparison with humans.

Species	**Distance Over Which Speed Was Measured**	**Top Speed (mph)**	**Estimated Time to Run One Mile (minutes:seconds)**
Cheetah	1/8 mile	64	0:56
Quarter Horse	1/4 mile	48	1:15
Gray Wolf	4 miles	35-40	1:30 - 1:43
Greyhound	1/4 mile	39	1:32
Rabbit (Domestic)	1/4 mile	35	1:43
Grizzly Bear	1/4 mile	30	2:00
Human	15 yards	28	2:08
Human (world record)	100 meters	23.1	2:36
Black Mamba Snake	Various short distances	20	3:00
Human (world record)	1 mile	16.1	3:43 (actual)
Squirrel	1/4 mile	12	5:00
Chicken	1/4 mile	9	6:40
Common Viper	Various short distances	6	10:00
Tiger Beetle	Various short distances	5.6	10:43

Spider	Various short distances	1.17	51:17
Giant Tortoise	Various short distances	0.17	352:56 (5.88 hours)
Three-Toed Sloth	Various short distances	0.15	400:00 (6.67 hours)
Garden Snail	Various short distances	0.03	2000:00 (33.3 hours)

The speeds reported above are top speeds over fairly short distances, so extrapolating these numbers out to mile times would undoubtedly overestimate an animal's ability to maintain that speed over the entire distance. Just as you (or Usain Bolt) can run 100 meters at a much faster pace than a mile, so these other species' paces would naturally decrease as well over longer distances. Cheetahs are well known to be sprinters rather than distance runners. For a realistic example, consider the Kentucky Derby horse race which covers a distance of 1.25 miles. The record for the Derby was set when Secretariat won in 1:59:24 minutes in 1973 with an average speed of 37.7 mph. This translates to 1:35:31 minutes for one mile, which is a bit slower than the estimate of 1:15 minutes in the chart if a quarter horse could maintain a speed of 48 mph over an entire mile. (Of course, one must also remember that the Derby winner accomplishes this with a 115-lb jockey on his back!) If a human could maintain their top speed of 28 mph (measured over a 15 yard distance) over the course of an entire mile, they could run that distance in 2:37 and easily blow away the current world record of 3:43:13! Looking at the slower members of the animal kingdom, their mile times would undoubtedly also be slower than the estimates in the table. They are certainly not adapted to maintain such a pace over that kind of distance. It is also very questionable whether some species like the giant tortoise or especially the snail (with no legs!) could even be considered to "run" in the literal sense of the word.

It is quite apparent that humans are not the fastest runners on earth. Are humans, therefore, totally worthless as runners compared to other top species? We humans might not provide much competition for elite species in sprints or middle distance races. At distances of a mile or less, there are plenty of other species which could outsprint the fastest human. Humans, however, do actually excel at distance running. Over longer distances, we would be formidable opponents for champion runners like the gray wolf, camel, or horse.

The gray wolf is widely considered to be one of the top distance runners of the animal kingdom. Wolves can tirelessly trot or lope for long distances at an average speed of around 5 mph. At this pace, a wolf would average about 12 minutes per mile, which is considerably slower than elite human marathoners or ultramarathoners. Wolf packs can cover as much as 45 miles in a single day, and there are stories of wolves traveling 120 miles in a 24-hour period when

hunted. The human ultramarathon record is 188.6 miles covered in a 24 hour period, and that is without someone on a snowmobile with a rifle chasing them! At a top speed of around 40 mph over a shorter distance, however, a wolf could easily win the local 5K race averaging 1:30 minute miles, and we human runners would do well to worry about the wolf nipping at our heels!

Camels are also known to cover extremely long distances with ease. The camel's top speed over shorter distances is reputed to be 40 mph, and they can average 25 mph for one hour and 12 mph for up to 18 hours. A camel could therefore cover about 216 miles in those 18 hours, easily eclipsing the human ultramarathon record of 188.6 miles covered in an even longer 24 hour period.

Could a human beat a horse in a marathon? In the annual Man vs. Horse Marathon 22-mile race in Wales, organized in 1980 to answer that very question, horses and human runners have traded the winner's spot back and forth over the past several years in head-to-head competition. In 2008, a horse won in 2:18:13, about 30 seconds faster than the fastest human. In 2004, a human runner edged the top horse for the title in 2:05:19. In a much longer race, the equine winner of the 2008 President's Cup endurance ride in the United Arab Emirates finished the 160 kilometer (99.4 mile) course in 6:52 hours, easily beating some of the top human times in 100 mile runs which averaged 14:30 hours. This would translate to 1:49 hours for a marathon for the horse and also surpass the human marathon record of 2:04 hours. In the Vermont 100, which allows both equine and human participants, the record is 12 hours for riders and 14 hours for runners over the 100 mile course. Horse aficionados are quick to point out, however, that pushing a horse to run long distances at high speed can endanger the life of the horse. Human runners could therefore likely win a long distance race with a wolf and could possibly mount a serious challenge against a camel or horse (unless the camel or horse happened to be an elite runner for their species).

Why do humans excel at long distance running? Several researchers have speculated that human anatomy is specifically adapted for endurance running. Features of the human body adapted for running include large gluteus maximus muscles to stabilize the torso and prevent falling forward, springy Achilles tendons, and the nuchal ligament in the neck which holds the head still while running. We are also better at running long distances during the heat of the day than other species. Our numerous sweat glands and furless bodies are much more efficient at dissipating the heat generated by running than the panting using by most other mammal species. These researchers theorize that endurance running once helped humans chase down prey until it tired in hot temperatures.

So what does this all mean for those of us who run? If you consider yourself an elite runner, you might want to rethink how you stack up against the competition. Sorry to disappoint you, but in shorter races, none of you even remotely compare with cheetahs. You could probably pass a squirrel and easily outrun a chicken, but a chicken is not exactly considered stiff competition, is it? You could also

likely outrun a venomous black mamba, which would be an excellent idea! The next time you win a race or win your age division, watch out for that big head. It's just a good thing there were no horses or wolves entered as your opponents!

For you runners who think you are slow, take a look at those mile finish times for the tortoise, sloth, and especially the garden snail. Now your 12-13 minutes per mile pace doesn't look so bad, does it? Most of you could run a full marathon in the time it takes a giant tortoise to cover only one mile. So don't despair! No matter what your pace, you are a speedster compared to many other species. None of us are snails! And be glad you can outrun those spiders! While that cheetah or rabbit might look impressive at the start of a 5K, they would probably have to rest after a short distance, while you kept on running and would win the classic tortoise/hare race.

Once you find a reasonable animal comparison for your pace, does that mean you are stuck there forever? Not necessarily so. Humans certainly can increase their running speed with good training. Try incorporating some speedwork, tempo runs, hills, or endurance runs into your training, and you can possibly catch up with and outpace those chickens!

For more information see:

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