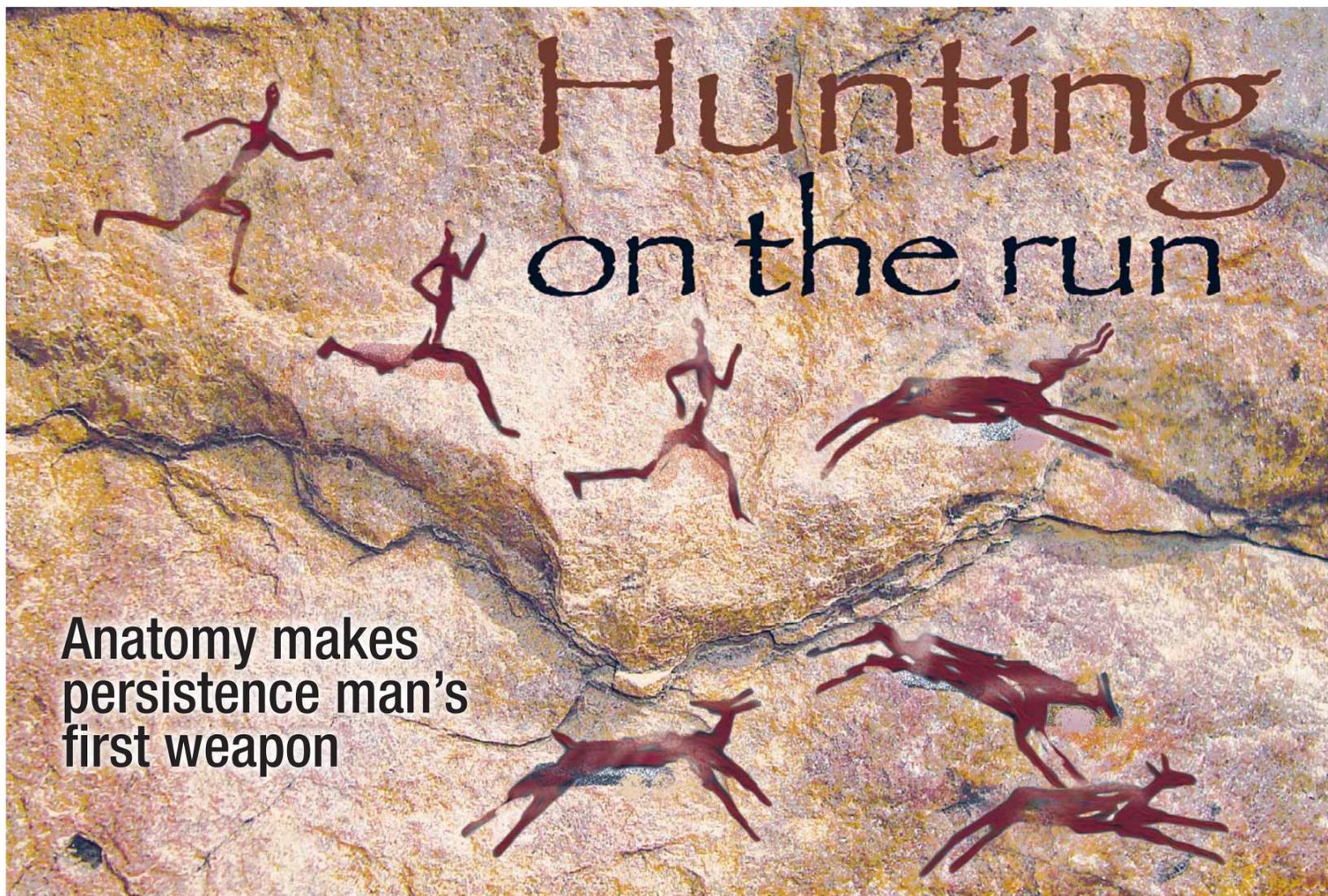


THE OUTDOORS PAGE



Anatomy makes persistence man's first weapon

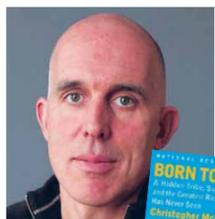
By MATT MARKEY and JEFF BASTING

Long before there were high-powered rifles and precision scopes, man was hunting. Long before he fashioned arrow heads from pieces of bone or antler, or shaped them from chunks of flint, man was hunting.

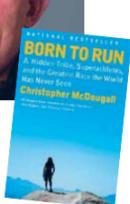
For ancient man, hunting meant survival. And for our ancestors, the early Homo sapiens, hunting was likely first done on the run. They literally ran down wild game, pursuing it on foot until the animal would collapse from exhaustion.

Anthropologists refer to this technique as "persistence hunting" since when properly employed, man — a surprisingly efficient running machine anatomically — can prevail when the hunt becomes strictly a battle of endurance.

In his book *Born to Run*, author Christopher McDougall does an extensive examination of this critical chapter in our history. Mr. McDougall recounts how modern anthropologists and ethnographers had heard stories of African hunters who chased antelope long distances across the savannah until the animals collapsed in submission, and of the mythical Tarahumara Indians of Mexico's Copper Canyons who would run after a deer "until its hooves fell off."



Author Chris McDougall



The study of persistence hunting and its place in the chronicles of man was prompted in part by a mystery that left the scientific community a bit baffled. The prevailing theory holds that at some point in his development, man started walking upright, on two legs. Before he had primitive weapons at his disposal, early man had to acquire his source of high protein — meat — to account for his large brain, Harvard evolutionary biologist Dan Lieberman surmised.

"The bow and arrow is 20,000 years old. The spearhead is 200,000 years old. But Homo erectus is around two million years old," Mr. Lieberman stated. "That means for most of our existence — for nearly two million years — hominids were getting meat with their bare hands."

Certain studies of early man examined the premise that he could hunt on the run, focusing on man's top speed, and not his inherent advantage in endurance, so the persistence hunting notion was sometimes scoffed at.

"That's the benefit of being a naked, sweating animal," said biologist David Carrier. "As long as we keep sweating, we can keep going."

And the animals that persistence hunters chased could not cool down that way — they needed to stop, find shade, and pant. Man had the advantage of cooling as he would sweat, and he could replenish his lost fluids during the chase by carrying water with him.

In the examination of the running man theory of early hunters, there had to be some explanation for the disappearance of Neanderthals, who are believed to have been the hunters of great beasts such as mastodons in the heavy forests. Some theories have named the Neanderthals as our ancestors, but Mr. McDougall points out that they were actually a parallel species of a subspecies that were competing with Homo sapiens for survival.

Neanderthals had the advantage when the earth was colder and more heavily forested. They were skilled at making weapons. They were compact and muscular, ideal for the close-contact combat their hunting required, but they were lousy runners.

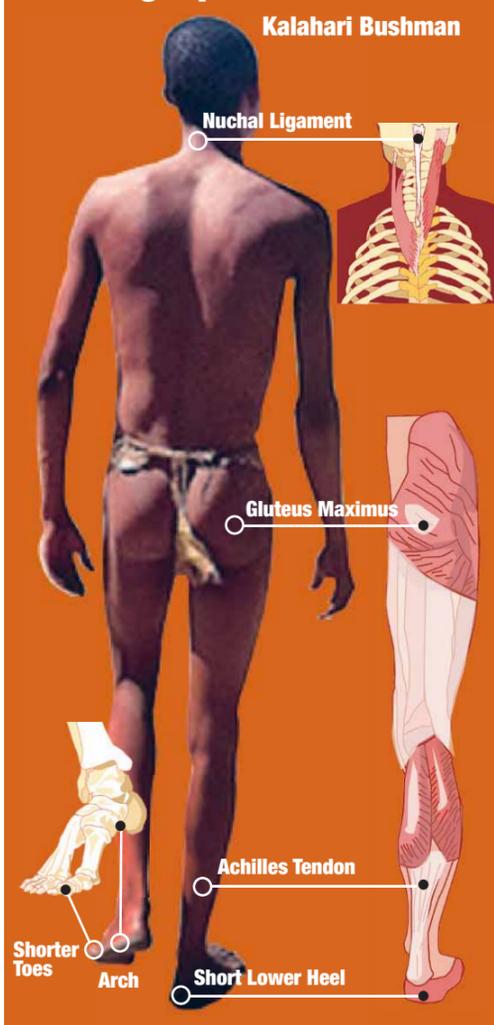
Mr. McDougall said that within 10,000 years of the arrival of Homo sapiens in what is now Europe, Neanderthals disappeared, likely the result of a changing climate that saw the forests shrinking and being replaced by dry, vast grasslands. As the herds of antelope rapidly expanded in this type of habitat, the larger beasts hunted by Neanderthals dwindled in number and moved deeper into the remaining forest.

Out on the open plains, the muscular Neanderthals were no match for the longer and leaner running men. The same holds true today, as the San people of the Kalahari, believed to be the last culture on the planet that still employs this ancient hunting technique, are lean and thin — ideal running machines.

In the heat of the day, when temperatures rise above 90 degrees, additional weight makes a significant difference in the body's ability to cool. A 160-pound man would lose three minutes per mile against a 100-pound runner. Over a two-hour chase, that translates into the bigger, stronger Neanderthal being 10 miles behind the leaner Homo sapiens, represented today by the San.

While the Neanderthal's inability to run might have contributed to his extinction, the persistence hunter survives, able to harvest game to feed his family and his tribe, much the way his ancestors likely did a million years ago.

Creating a persistence hunter



The key physiological differences between man and the chimpanzee (that we share 95% of our DNA with) have enabled Homo sapiens to hunt on the run and survive on the savannah.

■ **NUCHAL LIGAMENT:** This tendon in the back of the neck helps stabilize the head while running.

■ **GLUTEUS MAXIMUS:** Homo sapiens have large buttocks that stabilize the body, keeping them from falling forward while running. The arms act as rudders, similar to an animal's tail.

■ **THE ACHILLES TENDON:** The short, lower heel stretches the Achilles tendon taut, increasing the spring-like action and reducing energy consumption while running.

■ **THE ARCH:** This allows the foot to absorb and reduce the shock of impact on the joints while in motion.

■ **SHORT, STRAIGHT TOES:** Aid in long-distance running, focusing the strike on the ball of the foot, instead of the heel.

■ **PERSPIRATION:** Man is able to perspire and sweating is an efficient cooling system, allowing him to run in intense heat and not die of hyperthermia.



The Kalahari Bushmen view their prey as sacred and at the end of the chase give thanks for the life taken, as shown in this still shot from the BBC documentary *Life of Mammals*.



The Kalahari Desert is a semi-arid savannah of some 350,000 square miles located in southern Africa.

Persistence hunting sequence



■ A group of hunters locate a herd of animals on the savannah. An antelope is singled out and isolated, often a bull with heavy horns that will burden it with extra weight during the lengthy chase.

■ The hunters must push the animal in the heat, not allowing it to rest for any length of time. A team approach is often employed to keep the animal away from the rest of the herd.

■ Tracking allows the hunters to maintain contact with the isolated animal. Physiologically, Homo sapiens are built to run long distances, animals are not. Man can cool through perspiration and hydrate on the run by carrying water.

■ Animals must stop and pant to rest and cool down. Persistence hunters keep their prey running in the sun until it collapses from heat exhaustion, often after the pursuit covers around 25 miles, about the distance of today's marathon.

■ The hunt generally requires 2-7 hours of persistence running.

■ Ideally, temperatures should be above 90 degrees.

■ The hunt ends quietly, when the animal can no longer flee.