Can White Men Jump?

Ethnicity, Genes, Culture, and Success

Clusters of ethnic and geographical athletic success prompt suspicions of hidden genetic advantages. The real advantages are far more nuanced—and less hidden.

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At the 2008 Summer Olympics in Beijing, the world watched in astonishment as the tiny island of Jamaica captured six gold medals in track and field and eleven overall. Usain Bolt won (and set world records in) both the men's 100-meter and the men's 200-meter races. Jamaican women took the top three spots in the 100-meter and won the 200-meter as well. "They brought their A game. I don't know where we left ours," lamented American relay runner Lauryn Williams.

A poor, underdeveloped nation of 2.8 million people—one-hundredth the size of the United States—had somehow managed to produce the fastest humans alive.

How?

Within hours, geneticists and science journalists rushed in with reports of a "secret weapon": biologically, it turned out that almost all Jamaicans are flush with alpha-actinin-3, a protein that drives forceful, speedy muscle contractions. The powerful protein is produced by a special gene variant called *ACTN3,* at least one copy of which can be found in 98 percent of Jamaicans—far higher than in many other ethnic populations.

An impressive fact, but no one stopped to do the math. Eighty percent of Americans also have at least one copy of *ACTN3*—that amounts to 240 million people. Eighty-two percent of Europeans have it as well—that tacks on another 597 million potential sprinters. "There's simply no clear relationship between the frequency of this variant in a population and its capacity to produce sprinting superstars," concluded geneticist Daniel MacArthur.

What, then, is the Jamaicans' secret sauce?

This is the same question people asked about champion long-distance runners from Finland in the 1920s and about great Jewish basketball players from the ghettos of Philadelphia and New York in the 1930s. Today, we wonder how tiny South Korea turns out as many great female golfers as the United States—and how the Dominican Republic has become a factory for male baseball players.

The list goes on and on. It turns out that sports excellence commonly emerges in geographic clusters—so commonly, in fact, that a small academic discipline called "sports geography" has developed over the years to help understand it. What they've discovered is that there's never a single cause for a sports cluster. Rather, the success comes from many contributions of climate, media, demographics, nutrition, politics, training, spirituality, education, economics, and folklore. In short, athletic clusters are not genetic, but systemic.

Unsatisfied with this multifaceted explanation, some sports geographers have also transformed themselves into sports geneticists. In his book *Taboo: Why Black Athletes Dominate Sports and Why We're Afraid to Talk About It,* journalist Jon Entine insists that today's phenomenal black athletes—Jamaican sprinters, Kenyan marathoners, African American basketball players, etc.—are propelled by "high performance genes" inherited from their West and East African ancestors. Caucasians and Asians don't do as well, he says, because they don't share these advantages. "White athletes appear to have a physique between central West Africans and East Africans," Entine writes. "They have more endurance but less explosive running and jumping ability than West Africans; they tend to be quicker than East Africans but have less endurance."

In the finer print, Entine acknowledges that these are all grosser-than-gross generalizations. He understands that there are extraordinary Asian and Caucasian athletes in basketball, running, swimming, jumping, and cycling. (In fact, blacks do not even dominate the latter three of these sports as of 2008.) In his own book, Entine quotes geneticist Claude Bouchard: "They key point is that these biological characteristics *are not unique* to either West or East African blacks. These characteristics are seen in all populations, including whites." (Italics mine.) (Entine also acknowledges that we haven't in fact found the actual genes he's alluding to. "These genes will likely be identified early in the [twenty-first century]," he predicts.)

Actual proof for his argument is startlingly thin. But Entine's message of superior genes seems irresistible to a world steeped in gene-giftedness—and where other influences and dynamics are nearly invisible.

Take the running Kenyans. Relatively new to international competition, Kenyans have in recent years become overwhelmingly dominant in middle- and long-distance races. "It's pointless for me to run on the pro circuit," complained American 10,000-meter champion Mike Mykytok to *The New York Times* in 1998. "With all the Kenyans, I could set a personal best time, still only place 12th and win $200."

Ninety percent of the top-performing Kenyans come from the Kalenjin tribe in the Great Rift Valley region of western Kenya, where they have a centuries-old tradition of long-distance running. Where did this tradition come from? Kenyan-born journalist John Manners suggests it came from cattle raiding. Further, he proposes how a few basic economic incentives became a powerful evolutionary force. "The better a young man was at raiding [cattle]—in large part a function of his speed and endurance—the more cattle he accumulated," Manners says. "And since cattle were what a prospective husband needed to pay for a bride, the more a young man had, the more wives he could buy, and the more children he was likely to father. It is not hard to imagine that such a reproductive advantage might cause a significant shift in a group's genetic makeup over the course of a few centuries."

Whatever the precise origin, it is true that the Kalenjin have long had a fierce dedication to running. But it wasn't until the 1968 Olympics that they became internationally renowned for their prowess, thanks to the extraordinary runner Kipchoge Keino.

The son of a farmer and ambitious long-distance runner, Keino caught the running bug early in life. He wasn't the most precocious or "natural" athlete among his peers, but running was simply woven into the fabric of his life: along with his schoolmates, Keino ran many miles per day as a part of his routine. "I used to run from the farm to school and back," he recalled. "We didn't have a water tap in the house, so you run to the river, take your shower, run home, change, [run] to school . . . Everything is running." Slowly, Keino emerged as a serious competitor. He built himself a running track on the farm where his family worked and by his late teens was showing signs of international-level performance. After some success in the early 1960s, he competed admirably in the 1964 Olympics and became the leader of the Kenyan running team for the 1968 games in Mexico City. It was Kenya's fourth Olympics.

In Mexico City, things did not begin well for Keino. After nearly collapsing in pain during his first race, the 10,000 meters, he was diagnosed with gallstones and ordered by doctors not to continue. At the last minute, though, he stubbornly decided to race the 1,500 meters and hopped in a cab to Mexico City's Aztec Stadium. Caught in terrible traffic, Keino did the only thing he could do, the thing he'd been training his whole life for: he jumped out of the cab and ran the last mile to the event, arriving on the track only moments before the start of the race, winded and very sick. Still, when the gun sounded, Keino was off, and his performance that day shattered the world record and left his rival, American Jim Ryun, in the dust.

The dramatic victory made Keino one of the most celebrated men in all Africa and helped catalyze a new interest in world-class competition. Athletic halls and other venues all over Kenya were named after him. World-class coaches like Fred Hardy and Colm O'Connell were recruited to nurture other Kenyan aspirants. In the decades that followed, the long-standing but profit-less Kalenjin running tradition became a well-oiled economic-athletic engine. Sports geographers point to many crucial ingredients in Kenya's competitive surge but no single overriding factor. High-altitude training and mild year-round climate are critical, but equally important is a deeply ingrained culture of asceticism—the postponement of gratification—and an overriding preference for individual over team sports. (Soccer, the overwhelming Kenyan favorite, is all but ignored among the Kalenjin; running is all.) In testing, psychologists discovered a particularly strong cultural "achievement orientation," defined as the inclination to seek new challenges, attain competence, and strive to outdo others. And then there was the built-in necessity as virtue: as Keino mentioned, Kalenjin kids tend to run long distances as a practical matter, an average of eight to twelve kilometers per day from age seven.

Joke among elite athletes: How can the rest of the world defuse Kenyan running superiority? Answer: Buy them school buses.

With the prospect of international prize money, running in Kenya has also become a rare economic opportunity to catapult oneself into Western-level education and wealth. Five thousand dollars in prize money is a very nice perk for an American; for a Kenyan, it is instant life-changing wealth. Over time, a strong culture of success has also bred even more success. The high-performance benchmark has stoked higher and higher levels of achievement—a positive feedback loop analogous to technological innovation in Silicon Valley, combat skills among Navy SEALs, and talents in other highly successful microcultures. In any competitive arena, the single best way to inspire better performance is to be surrounded by the fiercest possible competitors and a culture of extreme excellence. Success begets success.

There is also an apparent sacrificial quality particular to Kenyan training, wherein coaches can afford to push their athletes to extreme limits in a way that coaches in other parts of the world cannot. *Sports Illustrated*'s Alexander Wolff writes that with a million Kenyan schoolboys running so enthusiastically, "coaches in Kenya can train their athletes to the outer limits of endurance—up to 150 miles a week—without worrying that their pool of talent will be meaningfully depleted. Even if four out of every five runners break down, the fifth will convert that training into performance."

And what of genetics? Are Kenyans the possessors of rare endurance genes, as some insist? No one can yet know for sure, but the new understanding of GxE[1] and some emergent truths in genetic testing strongly suggest otherwise, in two important ways:

1. Despite Appearances to the Contrary, Racial and Ethnic Groups Are *Not* Genetically Discrete

Skin color is a great deceiver; actual genetic differences between ethnic and geographic groups are very, very limited. All human beings are descended from the same African ancestors, and it is well established among geneticists that there is roughly ten times more genetic variation within large populations than there is between populations. "While ancestry is a useful way to classify species (because species are isolated gene pools, most of the time)," explains University of Queensland philosopher of biology John Wilkins, "it is rarely a good way to classify populations within species . . . [and definitely not] in humans. We move about too much."

By no stretch of the imagination, then, does any ethnicity or region have an exclusive lock on a particular body type or secret high-performance gene. Body shapes, muscle fiber types, etc., are actually quite varied and scattered, and true athletic potential is widespread and plentiful.

2. Genes Don't Directly Cause Traits; They Only Influence the System

Consistent with other lessons of GxE, the surprising finding of the $3 billion Human Genome Project is that only in rare instances do specific gene variants directly cause specific traits or diseases. Far more commonly, they merely increase or decrease the likelihood of those traits/diseases. In the words of King's College developmental psychopathologist Michael Rutter, genes are "probabilistic rather than deterministic."

As the search for athletic genes continues, therefore, the overwhelming evidence suggests that researchers will instead locate genes prone to certain types of interactions: gene variant A in combination with gene variant B, provoked into expression by X amount of training + Y altitude + Z will to win + a hundred other life variables (coaching, injury rate, etc.), will produce some specific result R. What this means, of course, is that we need to dispense rhetorically with the thick firewall between biology (nature) and training (nurture). The reality of GxE assures that each person's genes interact with his climate, altitude, culture, meals, language, customs, and spirituality—everything—to produce unique life trajectories. Genes play a critical role, but as dynamic instruments, not a fixed blueprint. A seven- or fourteen- or twenty-eight-year-old outfitted with a certain height, shape, muscle-fiber proportion, and so on is not that way merely because of genetic instruction.

As for John Manners's depiction of cattle-raiding Kenyans becoming genetically selected to be better and better runners over the generations, it's an entertaining theory that fits well with the popular gene-centric view of natural selection. But developmental biologists would point out that you could take exactly the same story line and flip the conclusion on its head: the fastest man earns the most wives and has the most kids—but rather than passing on quickness genes, he passes on crucial external ingredients, such as the knowledge and means to attain maximal nutrition, inspiring stories, the most propitious attitude and habits, access to the best trainers, the most leisure time to pursue training, and so on. This nongenetic aspect of inheritance is often overlooked by genetic determinists: culture, knowledge, attitudes, and environments are also passed on in many different ways.

The case for the hidden performance gene is even further diminished in the matter of Jamaican sprinters, who turn out to be a quite heterogeneous genetic group—nothing like the genetic "island" that some might imagine. On average, Jamaican genetic heritage is about the same as African American heritage, with roughly the same mix of West African, European, and native American ancestry. That's on average; individually, the percentage of West African origin varies widely, from 46.8 to 97.0 percent. Jamaicans are therefore *less* genetically African and *more* European and native American than their neighboring Barbadians and Virgin Islanders. "Jamaica . . . may represent a 'crossroads' within the Caribbean," conclude the authors of one DNA study. Jamaica was used as a "transit point by colonists between Central and South America and Europe [which] may have served to make Jamaica more cosmopolitan and thus provided more opportunities for [genetic] admixture to occur. *The large variance in both the global and individual admixture estimates in Jamaica attests to the cosmopolitan nature of the island.*"

In other words, Jamaica would be one of the very last places in the region expected to excel, according to a gene-gift paradigm.

Meanwhile, specific cultural explanations abound for the island's sprinting success—and for its recent competitive surge. In Jamaica, track events are beloved. The annual high school Boys' and Girls' Athletic Championships is as important to Jamaicans as the Super Bowl is to Americans. "Think Notre Dame football," write *Sports Illustrated*'s Tim Layden and David Epstein. "Names like Donald Quarrie and Merlene Ottey are holy on the island. In the United States, track and field is a marginal, niche sport that pops its head out of the sand every four years and occasionally produces a superstar. In Jamaica . . . it's a major sport. When *Sports Illustrated* [recently] visited the island . . . dozens of small children showed up for a Saturday morning youth track practice. That was impressive. That they were all wearing spikes was stunning."

With that level of intensity baked right into the culture, it's no surprise that Jamaicans have for many decades produced a wealth of aggressive, ambitious young sprinters. Their problem, though, was that for a long time they didn't have adequate college-level training resources for these promising teenagers. Routinely, the very best athletes would leave the country for Britain (Linford Christie) or Canada (Ben Johnson) and often never return.

Then, in the 1970s, former champion sprinter Dennis Johnson did come back to Jamaica to create a college athletic program based on what he'd experienced in the United States.

That program, now at the University of Technology in Kingston, became the new core of Jamaican elite training. After a critical number of ramp-up years, the medals started to pour in. It was the final piece in the systemic machinery driven by national pride and an ingrained sprinting culture.

Psychology was obviously a critical part of the mix. "We genuinely believe that we'll conquer," says Jamaican coach Fitz Coleman. "It's a mindset. We're small and we're poor, but we believe in ourselves." On its own, it might seem laughable that self-confidence can turn a tiny island into a breeding ground for champion sprinters. But taken in context of the developmental dynamic, psychology and motivation become vital. Science has demonstrated unequivocally that a person's mindset has the power to dramatically affect both short-term capabilities and the long-term dynamic of achievement. In Jamaica, sprinting is a part of the national identity. Kids who sprint well are admired and praised; their heroes are sprinters; sprinting well provides economic benefits and ego gratification and is even considered a form of public service.

All things considered, it seems obvious that the mind is the most athletic part of any Jamaican athlete's body.

The notion that the mind is of such paramount importance to athletic success is something that we all have to accept and embrace if we're going to advance the culture of success in human society. Within mere weeks of British runner Roger Bannister becoming the first human being to crack the four-minute mile, several other runners also broke through. Bannister himself later remarked that while biology sets ultimate limits to performance, it is the mind that plainly determines how close individuals come to those absolute limits.

And we keep coming closer and closer to them. "The past century has witnessed a progressive, indeed remorseless improvement in human athletic performance," writes South African sports scientist Timothy David Noakes. The record speed for the mile, for example, was cut from 4:36 in 1865 to 3:43 in 1999. The one-hour cycling distance record increased from 26 kilometers in 1876 to 49 kilometers in 2005. The 200-meter freestyle swimming record decreased from 2:31 in 1908 to 1:43 in 2007. Technology and aerodynamics are a part of the story, but the rest of it has to do with training intensity, training methods, and sheer competitiveness and desire. It used to be that 67 kilometers per week was considered an aggressive level of training. Today's serious Kenyan runners, Noakes points out, will cover 230 kilometers per week (at 6,000 feet in altitude).

These are not superhumans with rare super-genes. They are participants in a culture of the extreme, willing to devote more, to ache more, and to risk more in order to do better. Most of us will understandably want nothing to do with that culture of the extreme. But that is our choice.

Note

1. Genetics times Environment, meaning that an individual's observable characteristics are the result of the dynamic interaction between one's genes and the environment in which one develops.

Critical Thinking

1. What is "sports geography"? What has been discovered about "sports clusters"?
2. What have been the claims of "sports geneticists" such as Jon Entine? How does the author counter this point of view?
3. What are the motives for running among the Kalenjin tribe of Kenya?
4. How was running woven into the fabric of Kipchoge Keino's life?
5. What have been the "crucial ingredients in Kenya's competitive surge"?
6. What has been the "feedback loop" in this "culture of success"?
7. What is the "sacrificial quality particular to Kenyan training"?
8. In what two important ways does our understanding of GxE (meaning that genes interact with the environment rather than simply genes plus environment accounting for traits) strongly suggest that genes alone are not responsible for Kenyan running endurance?
9. How does the author respond to the claim that the cattle-raiding Kenyans are becoming genetically selected for better running?
10. Explain how and why there is not likely to be a "hidden performance gene" for running among Jamaicans as opposed to other ethnic groups?
11. Why would Jamaica be one of the very last places in the region expected to excel, according to a gene-gift paradigm?
12. What specific cultural explanations abound for the island's sprinting success? What was once the "problem" in this respect? How was this problem solved?
13. Why is psychology "a critical part of the mix"? How does breaking the four-minute mile illustrate this point? What is meant by the "culture of the extreme"?