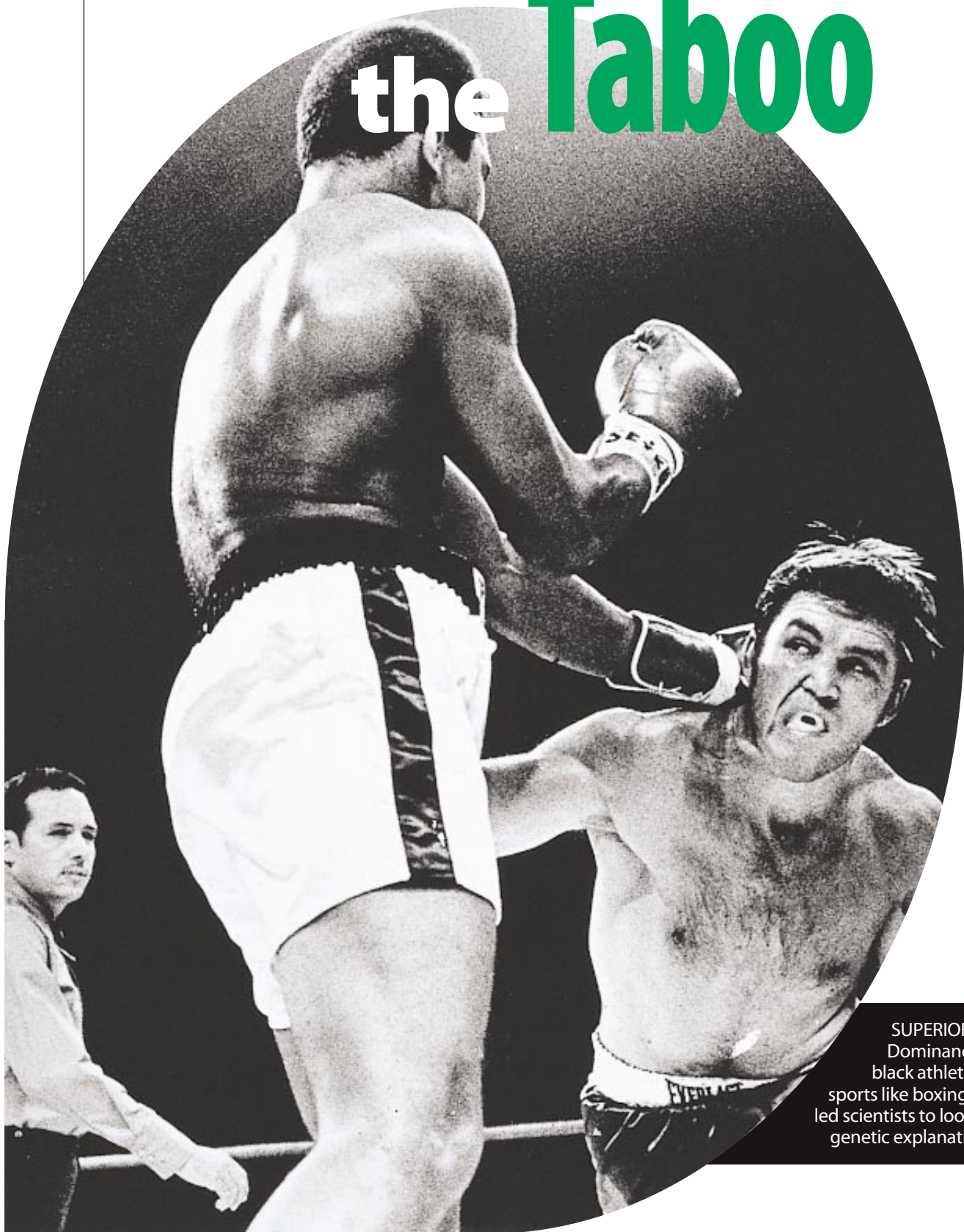


Deconstructing the Taboo



SUPERIORITY:
Dominance of
black athletes in
sports like boxing has
led scientists to look for
genetic explanations.

The intertwining of genetic, environmental and cultural influences makes it impossible to fathom why blacks dominate certain sports

by Gary Taubes

Last September a 20-year-old Kenyan runner named Noah Ngeny ran the fastest 1,000 meters in history, breaking a world record that had been set by British runner Sebastian Coe in 1981. Ngeny was a latecomer to the sport of competitive running. He had been a volleyball player until 1996, when he switched sports, he said, because “in Kenya, it’s the runners who become national heroes.” Ngeny had first tried to break Coe’s record last July, in Nice in southern France, but fell short by less than half a second. The press reports of his September race suggest that he had carefully planned his second attempt. He chose a track in Rieti, Italy, in the mountains north of Rome that was considered to have the ideal combination of track surface, altitude and climate for record-breaking performances. Seven world records had been set there. Three days before the meet Ngeny persuaded the organizers to schedule a 1,000-meter race, which they had not originally planned on doing. The weather would be perfect—a beautiful, sunny afternoon. The end result of these preparations was the breaking of the oldest outstanding individual record in the books. It had also been the last record in competitive running—from 100 meters up to the marathon—not held by a runner from Africa or of African descent.

The domination of sports by black athletes has become one of the most remarkable phenomena of modern athletics. Blacks make up only 12 percent of the world’s population, but take the top 100 times in almost any event in competitive running and you’ll find that 70 percent are held by black athletes. In sprinting, the numbers are even more overpowering. In the 100-meter dash, the only runners ever to break the 10-second barrier have been black, and they have done so more than 200 times. And this predominance extends far beyond running. African-Americans constitute 13 percent of the U.S. population but 80 percent of the players in the National Basketball Association and 70 percent of those in the Women’s National Basketball Association. Sixty-five percent of the players in the National Football League are black, and in those positions requiring speed and agility more than size, weight and strength, the appearance of a first-rate white play-

er is inevitably hailed by fans and the sporting press as noteworthy. As *Sports Illustrated* put it in 1997, “The best athletes on the planet are black. Stop the conversation right there and few will argue the point.”

It seems natural to proceed to the obvious next question, which is “Why?” But that’s where the contention comes in, not to mention a century of acrimony and racism—from the riots that followed Jack Johnson’s 1910 whupping of the Great White Hope, Jim Jeffries, for the heavyweight championship to the heated controversy surrounding a recent book, *Taboo: Why Black Athletes Dominate Sports and Why We’re Afraid to Talk about It*, by Jon Entine. A former television journalist who co-wrote a notable 1989 TV documentary on the subject with Tom Brokaw, Entine concludes that although nature and nurture are inseparable, the “scientific evidence for black athletic superiority is overwhelming and in accord with what we see on the playing field.... Cultural explanations do not, cannot, account for the magnitude of this phenomenon.”

MOST LIKELY TO SUCCEED

Whereas much of the science is hopelessly speculative, Entine’s conclusions, echoing those of many researchers in the field, are based on a relatively simple line of thought: different athletic and sporting events require different body types and biomechanics. Long-distance runners benefit from being physically slight but having proportionally long, slender legs. Sprinters benefit from a preponderance of what are called fast-twitch muscle fibers. Height is an advantage in basketball and rowing. And even though culture, environment, diet, psychology, training, coaching and probably dozens of other factors all play necessary roles in the development of elite athletes, genes seem to endow some populations with a greater proportion of individuals who have the body type and biomechanics most likely to succeed—East Africans and particularly Kenyans in long-distance running; blacks of West African descent (including most African-Americans) in sprinting and in sports that require bursts of speed in running and jumping, such as basketball and football.

This may sound like common sense, but the scien-

tific support for these conclusions is extraordinarily complicated, and the history so haunts the science that even to discuss it, as the subtitle of Entine's book suggests, is to tread treacherous ground. Over the years, the argument that blacks have an inherent capacity for athletic performance has frequently been accompanied by the suggestion that there is some inverse relation between brawn and brains. It is "the elephant in the living room," Entine writes. "A country nurtured on the myth that all people are created equal is understandably uncomfortable talking about innate differences, particularly when it comes to race. So when blacks are referred to as physically superior or natural athletes, hackles are raised. What's the *real* and *underlying* agenda?"

Historically, that agenda has often been racism as much as simple curiosity, scientific or otherwise. Nevertheless, the question "Why?" is hard to ignore, and it falls to science to offer a potential answer. The great tennis player Arthur Ashe, Jr., spent years of his life chronicling black athletic achievement in *A Hard Road to Glory*. When he was done, he was still unable to explain away the remarkable record of black athletes without evoking some inherent physical advantage. "I want to hear from the scientists," he said in Entine's 1989 documentary. "Until I see some numbers [to the contrary], I have to believe that we blacks have something that gives us an edge.... Damn it. My heart says no, but my head says yes."

Those scientists, meanwhile, are often accused of racism for studying racial differences, even though they argue that this angle is inevitable when it comes to comprehending elite athletic performance. "If you want to understand what makes for excellence in different sporting activities, you have to study whoever is best at it," says Tim Noakes, a professor of exercise and sports science at the University of Cape Town in South Africa and the author of *Lore of Running*. "If you want to study the best runners, you can't study white Africans. You have to study black Africans. You can't ignore it."

The scientific issue and the accompanying disputation are further compounded by a host of other

factors. What constitutes race, for instance, which is a fuzzy concept at best? Biologists will tell you that there is considerably more genetic variation among individuals of the same "race" than there is among the "races" themselves and that although skin color may seem to divide up the world into one set of "races," blood groups would divide it up entirely differently, and various genetic factors would split it in an infinite variety of other ways. And even the question of skin color can be deceptive or even meaningless: as University of California at Berkeley sociologist Harry Edwards writes, "The African American population arose from an admixture of European, American, Aboriginal and African stock. The issue emerges: how black does one have to be to make any sense of these things they are testing and talking about?"

Another complication, at least in the public presentations of the argument, is the twisted polemics about nature or nurture, or genes versus environment, rather than some hopelessly interconnected chicken-and-egg fusion of the two. "Saying it's all genes or all environment is a false dichotomy," says Michael H. Crawford, a University of Kansas biological anthropologist and geneticist. "For complex traits, whether you're talking stature or body mass or musculature or whatever, it's always the interaction of the genes with the environment, not one or the other."

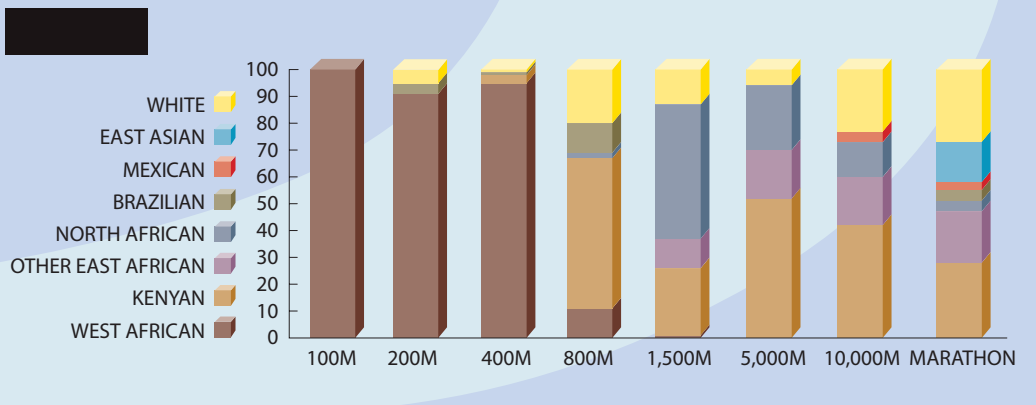
WHAT ABOUT JEWISH COMEDY GENES?

The data required to decipher these interactions and to identify genetic elements that might endow certain populations with inherent advantages, then, can be considered either compelling, still ambiguous or beyond the realm of science to provide, depending on one's point of view. Entine and a fair share of researchers in this field believe that the empirical data are so powerful that it is sophistry to think that the genes shared by entire populations don't play a role, albeit one of many, in determining athletic excellence. Jonathan Marks, a biological anthropologist at Berkeley, argues precisely the opposite. "If anthropology has shown anything in this century, it's

that a consistent observed group difference (from professional overrepresentation to skull shape) is not valid evidence of an innate basis for the difference. And the achievements of the few most extreme individuals are simply not a valid description of the population from which they are drawn," writes Marks in an uncomplimentary review of *Taboo* in the journal *Human Biology*. "Black dominance of basketball is thus no more an argument for sports genes

RACE IN THE RUNNING: Competitors of African ancestry (mostly black) hold the majority of leading times for the top running events, although only one of every eight people in the world is black.

FASTEST: TOP 100 MEN'S TIMES BY RACE OR REGION





RECORD BREAKER: Kenyan Noah Ngeny heads the line in a race in 1998. The following year, in Rieti, Italy, he broke the last world record in running held by a person not of African descent.

than it is for Jewish comedy genes, or Irish policeman genes.”

The question, as Marks sees it, isn't whether blacks have “sports genes or not” but whether the question can be answered with any degree of scientific rigor: “In other words, what would it take to establish that black athletes are really better endowed than white athletes from the zygote? And the answer may be hard to swallow: Well-controlled experiments and data that begin by acknowledging the complexities of life histories, the poverty of rigorous data on the subject, the ease with which cultural stereotypes can be made to look like natural differences, and the difficulty in generalizing about the properties of populations from a comparison of the performances of their most outstanding members.”

The process of scientific inquiry is about setting forth hypotheses to explain the available data and then rigorously testing those hypotheses to see if they hold up. The data here are the dominating athletic performances of African runners or those of African descent. The hypothesis is that these athletes have some innate biological advantages that arise genetically and bestow different advantages for different populations. But this hypothesis, Marks says, is virtually untestable.

The number of variables that go into creating great athletes is enormous, and making sense of those

variables is beyond the scope of science. Blacks are overrepresented in professional basketball, but so, for instance, are people from the nations of the former Yugoslavia.

Once a sport involves access to courts, playing fields, other top-notch players and a culture that encourages the endeavor, the data get intractably complicated. Are blacks underrepresented in competitive swimming, for instance, because they are, on average, less buoyant, as some data suggest, or because they have less access, on average, to swimming pools and swimming programs and so lack a culture of competitive success that would allow them to do well in the sport? And if it's the former, what about black underrepresentation in ice hockey? “Why does one kid become a boxer and another a doctor?” Marks asks. “That's a question for astrologers, not for scientists. Expectations, early tracking, ethnic or familial tradition, self-image, and of course opportunity are all forces that work with the genetic endowment. Unless those variables are controlled [for], one simply cannot make a reasonable scientific case for the latter's being the determining variable.”

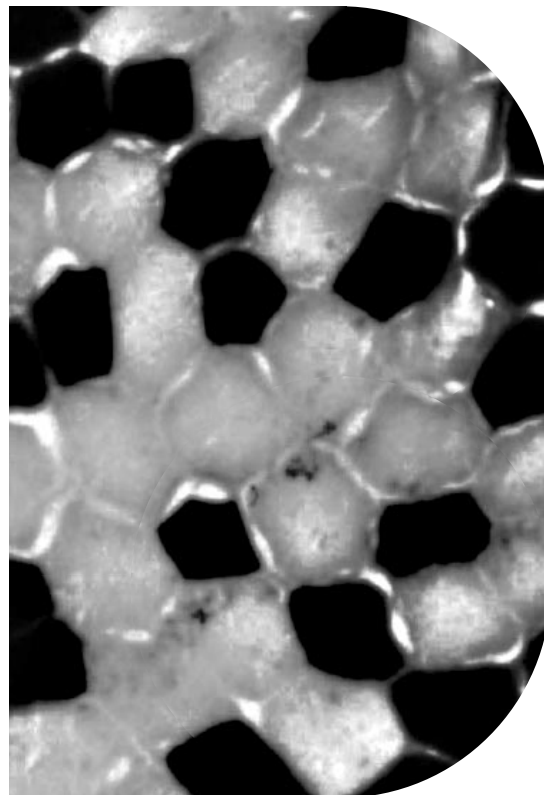
Researchers in this field tend to concentrate on running because the cultural and environmental variables are minimized. After all, anyone can compete as a runner, even without access to modern



HIGH-FIBER ATHLETES: South African researcher Tim Noakes found that elite black long-distance runners from his country, such as Willie Mtolo (above), had muscles with 40 to 50 percent fast-twitch fibers (white areas in micrograph at right), about the same as expected for runners of the mile, a middle-distance event.

coaching and training techniques or, for that matter, running shoes, as the great barefooted Ethiopian marathoner Abebe Bikila demonstrated in the 1960 Olympics. But even in running, the catch in accumulating rigorous scientific data is some catch: studying the biomechanical or physiological differences between populations—say, whites of European descent and blacks of East African descent—tells you nothing about the differences that contribute to great athletic performances, and studying the elite athletes tells you only about what elite athletes have that others don't. And if the elite athletes are almost all black, it tells you only about the nature of elite black athletes.

Tim Noakes learned this lesson firsthand. In South Africa whites dominated long-distance running for decades because only whites were allowed to compete. "Black athletes were first allowed to run in races with whites in 1976," he says. "By 1982 or 1983 it was very clear that black runners were beginning to dominate all events beyond five kilometers. In the half-marathon already 44 out of the top 50 runners were black." When Noakes began his studies of elite distance runners, he recruited the 10 top runners in South Africa, all of whom were black. "We couldn't find any white runners who could



match them. So we took a group of white runners who were better at the mile to see if we could get some indication of black-white differences."

Noakes and his collaborators did find such differences, but the implication is anything but clear: the black runners were smaller on average—30-plus pounds lighter—than the white runners, and they had a different composition of muscle fibers. These fall into two categories: white, or fast-twitch, fibers, which are for speed and power; and red, or slow-twitch, fibers, which are for endurance. Sprinters are expected to have predominantly fast-twitch fibers, and marathoners predominantly slow-twitch. In the white runners, Noakes and company found precisely the ratio of fast- to slow-twitch fibers they'd expect in milers, in accord with previous studies of North American and European runners. In the black long-distance runners, they expected to find 80 percent slow-twitch fibers but found only 50 to 60 percent, about the same as in middle-distance runners. Is that why the black runners were so successful? Maybe. Maybe not. The data reveal nothing about cause and effect.

They also found that the black and white runners were equal in their ability to transport oxygen from lungs to the blood—a measurement known as $VO_2\text{max}$ —but the black runners were able to run at a higher percentage of their maximum for considerably longer periods. That assuredly helps in long-distance running, but it could be the result of training rather than genes. All these results were interesting, but they said nothing definitive about black-white differences, only about the differences between marathoners (or half-marathoners) and milers.

MIKE SEGAR Reuters/ArchivePhotos (left); COURTESY OF TIM NOAKES (right)

“Is it a racial difference?” Noakes asks. “We don’t know. And we can’t really say, because you can never find anyone to match up to these black runners. They’re tiny, and if you look at Caucasian runners, you don’t find runners that small and fast. So that very difference prevents you from measuring it and saying it’s due to a racial difference.”

DIFFERING BODY TYPES

Researchers have consistently found that blacks and whites of different populations have, on average, slightly different musculature and skeletal proportions, but whether that translates to the differences in athletic performance is equally impossible to say. “There are proportional differences,” says Michigan State University anthropologist Robert M. Malina. “Blacks have longer leg length, and the pelvis of blacks is a little bit more slender. If you look at the extremities, the differences are more apparent distally than proximally, which means blacks have a proportionally longer foot and lower leg than thigh. In the upper extremities, it means a proportionally longer hand and forearm than upper arm, compared with European and American whites. Blacks tend to have proportionally more musculature in their thighs. Black skeletons also tend to have a higher mineral content than whites; they are more dense.”

The same variations have shown up in measurements of Olympic athletes, which suggests that such biomechanical features may explain the performance difference. Entine points out that since the 1928 Olympics there have been dozens of studies of Olympic athletes demonstrating that certain body types do better at certain events. “Only later did people looking at the data say [that] this falls in population patterns,” he says. “This correlates with what we do know about general physiologic differences between population groups.” J. E. Lindsay Carter, a professor of exercise and nutritional sciences at San Diego State University, did a series of anthropometric measurements on athletes in the 1972 and 1976 Olympics, and he concluded that the data are compelling, albeit not unequivocal. “From a biomechanical perspective, the answer is yes, race and ethnicity do matter,” Carter tells Entine. “All of the large-scale studies show it; the data goes back more than 100 years.” But then he adds that these are only tendencies: “There are far too many variables to make blanket statements. An average advantage, yes, but that says nothing about any individual competitor.”

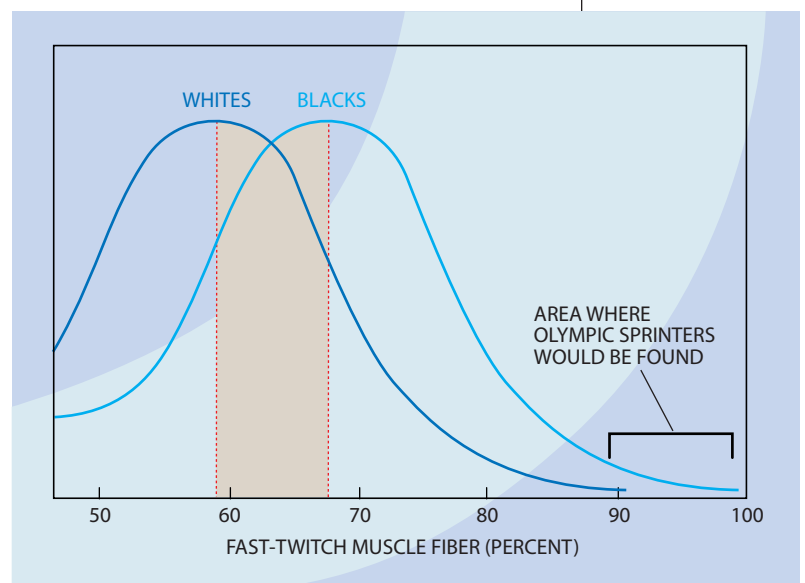
Claude Bouchard, director of the Pennington Biomedical Research Center in Baton Rouge, began studying the issue in 1980 at Laval University in Quebec when he realized that the ability to respond positively to exercise differed dramatically among individuals. Using sets of twins, he demonstrated that this “trainability” factor has a strong genetic component. But when he compared the trainability of sedentary blacks who had emigrated from West Africa with that of sedentary white Canadians, he found no appreciable differences. He did find that

the blacks, on average, seemed to have slightly more fast-twitch muscle fibers than the whites did and “a bit more” of a key enzyme needed to generate energy from glucose. This might conceivably translate to an inherent advantage in sprinting, but those individuals with the higher levels were not the individuals who performed best in the trainability tests. “Do these biological characteristics make a big difference in performance at the elite level?” Bouchard asks. “We don’t know.”

On some level the challenge becomes one of statistics. Elite athletes are not like everyone else. And the very best are unique; they are the outliers on the distribution of humanity. “World-class sport is about extremes of performance,” notes Stephen Seiler, an exercise physiologist at the Agder University College Institute of Health and Sport in Norway. “If there’s just a small difference among populations, that might have an impact at the small percentage of the population that reaches these extreme values.” Once again, however, this is a compelling hypothesis to explain the data, but it is only a hypothesis.

Geneticists and physical anthropologists have found that the DNA of black Africans has more genetic variation than that of other races. “African populations contain within them a tremendous amount of genetic variation,” says Yale University geneticist Kenneth K. Kidd. “We’ve found that a single African population has as much, if not more, variation than all the rest of the world put together.” This evidence suggests that such enormous genetic diversity results in a wider range of variation in inherent abilities among those of African descent in practically any situation that responds to a genetic component. “It’s perfectly possible that for almost any trait you look at,” Kidd points out, “you may find individuals at the extremes more common in Africa than elsewhere in the world—maybe not a lot more common, but somewhat. And whatever it takes to be an Olympic-class or professional athlete, you have got to start with some genetics. It’s

FOR WHOM THE BELL CURVES: West African blacks, on average, had 67.5 percent fast-twitch muscle fiber (for sprinting), compared with 59 percent for French Canadian whites, suggesting that there should be more West Africans on the end of the curve at which it would be most likely to find Olympic sprinters.



LAURIE GRACE: SOURCE: "Skeletal Muscle Characteristics in Sedentary Black and Caucasian Males," by P. F. M. Ama et al., in *Journal of Applied Physiology*, 1986.

entirely possible that some groups have more individuals who have the physical type to excel, but it's never all individuals in the group. And then it's what those individuals choose to do with it." Still, Kidd adds, "it's not a matter of fact, by any means, but a possible extrapolation from what we know about the basic genetics."

AN INTRICATE TAPESTRY

One thing everyone in this field seems to agree on is that the nature-nurture/genes-or-environment split is mere casuistry. "The argument 'genes or environment' can never be phrased as a dichotomy," Kidd asserts, "because everybody is a product of both." Our physical and mental attributes are shaped by both genes and our environment, and athletic excellence arises from an extraordinarily intricate tapestry of both factors.

Take the Kenyans, for example. Bengt Saltin, director of the Copenhagen Muscle Research Center, has compared Kenyan runners with African-American sprinters and Caucasian runners. He found that the Kenyan long-distance runners seem to burn oxygen more efficiently and have more of a key enzyme that would allow them to burn fat as fuel more efficiently, an advantage that would come into play over longer distances. They also have what he calls a better running economy, which means that they need to expend less energy to run at any given speed than white distance runners do. This was "a striking finding," comments Saltin, who believes the explanation may be a basic biomechanical one. The Kenyan runners had longer and slimmer legs than the whites, who "had thicker legs and poor running

economy," Saltin says. "And so the simple possibility could well be that just moving those legs back and forth is easier for the Kenyans. And that body shape, of course, is genetic."

But there may be more than that. You then also have to consider the environmental and cultural influences that might contribute to athletic excellence. John Manners, a former Peace Corps worker in Kenya and author of two books on Kenyan running, has spent much of his life studying just those potential factors—particularly among the Kalenjin tribe, which alone has garnered some 40 percent of the greatest international honors in men's distance running, including Olympic medals and record times. The Kalenjin live at altitudes above 2,000 feet, which, Manners writes, has "been shown to help create the high aerobic capacity that is vital to distance-running success." And they live in an ideal climate for running year-round, with "comfortably warm days, cool nights, low humidity." They are poor enough, with a per capita gross domestic product of about \$1,500 a year, that life as a professional runner offers many incentives to train intensively for years—"even the meager winnings brought in by most professional or semiprofessional runners look pretty lavish," Manners says—but not so poor that they are malnourished or that the country lacks the resources to provide schools and a "fairly solid athletic infrastructure." And because the Kenyans began running competitively and with success in the 1960s, there is also a culture that encourages those who want to give it a try. Kenyan runners, as Ngeny observed, are national heroes.

All of that could be said, however, for peoples who

KALENJIN: This Kenyan tribe, which has garnered 40 percent of international honors in men's distance running, provides an ideal example of why it is impossible to determine whether dominance in a sport stems from genes or environment.



HEINZ KLUETMEIER Sports Illustrated



can't compete athletically with the Kalenjin, and so Manners went looking for traits unique to the population. "An obvious thought is that the Kalenjin might be endowed with some sort of collective genetic gift," he explains. "This is touchy stuff, of course, and there is nothing like replicable scientific data to support the idea." But there is some prima facie evidence supporting it: "The Kalenjin marry mainly among themselves; they have lived for centuries at altitudes of 2,000 meters or more; and, at least by tradition, they spend their days chasing up and down hills after livestock."

But, as Manners points out, there are still dozens of populations, if not more, around the world that are relatively poor, live at high altitudes and run all day long. What makes the Kalenjin so special? One possibility, he suggests, is that the tribe has a history of cattle rustling as a way of life, often trekking more than 100 miles to capture livestock. Manners speculates that young men better suited to this endeavor would prosper, and because cattle was a measure of wealth in Kalenjin society, the more a young man collected, the more wives he could buy and the more children he could 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."

Finally, Manners credits the tribe's "austere warrior culture" that prizes more than anything an ability to withstand pain and deal stoically with intense pressure, which, after all, are two key aspects of long-distance running—including a series of "escalating physical ordeals" imposed on growing

children that culminate with a circumcision rite that is "the central event in the life of every Kalenjin youth, anticipated for years with dread, and suffered with unblinking stoicism under the eyes of watchful elders, who are ready to brand a boy a coward for life if he so much as winces." As Manners concludes, any boy who can endure that kind of ordeal in his adolescence is unlikely to flinch under what he calls the "comparatively benign tensions" and the aches and fatigues of a tough race, even if that race is an Olympic final or in the pursuit of a world record. Perhaps with all these elements working in their favor, biomechanical and physiological factors come into play as well, but, as Manners acknowledges, one has to remain skeptical. The data might strongly imply, as the movie title puts it, that white men can't jump, but the history of science also makes it clear that strongly suggestive data can simply be misleading data.

GARY TAUBES is a California-based science writer.

FURTHER INFORMATION

IS IT IN THE GENES? S. L. Price in *Sports Illustrated*, Vol. 87, pages 52–55; Dec. 8, 1997.

TABOO: WHY BLACK ATHLETES DOMINATE SPORTS AND WHY WE'RE AFRAID TO TALK ABOUT IT. Jon Entine. PublicAffairs (Perseus Books Group), 2000.

JUMPING TO CONCLUSIONS: A leap by dancer Mikhail Baryshnikov posed against a dunk by Michael Jordan muddies the cliché that white men can't jump.