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Linda Robertson XML

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Posted on Thu, Jul. 21, 2005

IN MY OPINION

Inside is the heart of a champion - literally

LINDA ROBERTSON
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REVEL, France -- With 1,866 miles down and 336 to go in the Tour de France, Lance Armstrong says he is riding so smoothly it feels like there is no chain on his bike.

He maintained his comfortable 2-minute 46-second lead after the Tour's longest stage Wednesday, 148 miles past endless fields of sunflowers that matched the yellow of his jersey.

Is he wearing a yellow "S" underneath it? As a physiological specimen, Armstrong does have genetic traits that make him seem like Superman.

His oversized heart can pump nine gallons of blood per minute compared to five for the average person. His lungs can absorb twice as much oxygen. His muscles produce half as much lactic acid and expel it faster, which enables him to ride harder up the steep sides of the Alps and Pyrenees and recover quickly.

But it is not accurate to call him a freak of nature. As he pedals toward an unprecedented seventh victory in a row, it's not fair to attribute his success solely to his marvel of a body. Physical gifts separate elite athletes from mediocre ones, but they don't guarantee championships. Those gifts can be nurtured or squandered.

WHAT STUDIES SHOW

Physiologist Edward Coyle runs the Human Performance Lab at the University of Texas in Austin where Armstrong lives. He studied Armstrong for eight years, drawing blood after pushing him to exhaustion on the stationary bike, measuring his oxygen capacity, calculating his percentage of slow-twitch muscles.

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Armstrong, 33, first visited Coyle's lab when he was 20 because he wanted to improve. Coyle discovered the 5-foot-10 Armstrong had a heart proportional to the size of a 6-6 man. He found that Armstrong's numbers put him in the 98th percentile of human beings. If Armstrong did not train at all, he would still be 100 percent better than an extremely fit normal person.

"He wasn't born with genes as exceptional as those of Shaquille O'Neal, although he did have a genetic head start on some physical factors," Coyle said.

HELPING HIMSELF

But Coyle noted that Armstrong's muscular efficiency wasn't very good. Armstrong set out to maximize his strength. He leaves no goal unturned. Through intense training, he did what he planned.

His heart grew to the size of one in a seven-foot man. He lost 15.2 pounds and extracted more energy from his muscles to improve his power-to-weight ratio by a remarkable 18 percent.

"There are about 1,000 people in the U.S. between the ages of 15 and 20 with the same physiological potential as Lance, but none of them will achieve what he has without the training and the daring of Lance," Coyle said.

Hard work and hard luck transformed Armstrong. The only dip in Coyle's research occurred in 1997, when Armstrong was recovering from testicular cancer. Armstrong became leaner after his battle, making him a better climber in the mountains. But it was not because the disease stripped away muscle mass.

"After chemotherapy, his body composition was the same: There was no permanent damage," Coyle said. "It was the grueling experience of the treatment that convinced him how resilient his body was. He lost weight and he got the confidence that he could race better at a lower weight."

Armstrong learned that being hungry was OK. During the season he weighs 12-15 pounds less than during the offseason. His rival, Jan Ullrich, succumbs to his "appetite problem." Weight is as critical for cyclists as it is for jockeys. Only the toughest make the sacrifices.

MENTAL APPROACH

"Jan has that exploding body like Eddy Merckx -- as soon as they stop training they pump up like a car tire," commentator and former cyclist Phil Liggett said. "Jan is a rider of pure talent. But Lance leaves him behind in the mental application 10 times over."

Ullrich has many of the same super traits as Armstrong and his oxygen capacity is higher, yet he has finished second to Armstrong three times. Coyle once tested an Armstrong teammate with a physical profile equal to Armstrong's. He also tested a cyclist and triathlete with numbers higher than Armstrong's. But neither made a name for himself.

They wanted to win but didn't need to win the way Armstrong does. Coyle can't measure willpower.

Armstrong trains 365 days per year, 450 miles per week and his six- and seven-hour training rides add up to more time on the bike than any of his challengers. He rides the Tour stages in the spring to familiarize his mind and body with every tricky turn and every 20-minute ascent. He once rode the Galibier in a snow storm.

Freak of nature? Armstrong is a freak of commitment.

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