

GENETICS OF A TRIATHLETE

Is a great triathlete born or made? What about a great runner, for that matter? For the most part, the answer is born, not made. When I say great, I mean the pros or the elites, the guys and gals making the big bucks and winning the big races. This is important for all triathletes and runners to realize, so we don't waste our time trying to correct something we can't correct, or get hurt in the process. Accepting your genetics is by no means negative or limiting. It is quite the opposite. It is taking control of all the things you can to be the best you can be.

GENETIC FACTORS OF AN ELITE TRIATHLETE:

- Born with a predominance of slow twitch muscle fibers
- Predisposed to being extra lean (born with fewer fat cells)
- Predisposed to having a low body weight (height and muscle mass)
- Smaller bone structure (ectomorph)
- High Vo2 max

SLOW TWITCH VERSUS FAST TWITCH:

We are all born with a percentage of slow twitch and fast twitch muscle fibers. None of us are 100% one type, but some elite marathoners have shown ratios of 90% slow twitch and 10 % fast twitch. In sampling, your average person is born with 50% slow and 50% fast. Slow twitchers are your marathoners, Tour de France cyclists, and open water swim adventurers to name a few. Slow twitch fibers (Type I) have a high capillary supply, a large content of fat, myoglobin, and oxidative enzymes, and these metabolic characteristic give them a capacity for sustained fatigue-resistant activity. Fast twitch fibers (Type IIA and IIB) have only limited fat stores, less myoglobin, and smaller number of mitochondria, and these fibers are fitted for brief bursts of anaerobic activity (speed/power). Fast twitchers are your speed and power athletes like track athletes and football players. The Type IIA mentioned above is unique. Type IIA properties can not be changed, but they can be trained to act more like slow twitch fibers. This explains why it is possible for "fast twitchers" to become pretty good endurance athletes (but never great). The bad news is that it does not work the other way---slow twitchers can never gain a great deal of strength, pure speed or power. This is why you'll see more body builders at a 5K and not so many marathoners at a bench press contest. The moral of this story is—do the best you can, but remember that the winning times you read about in Triathlete magazine have more to do with the fiber type the racers are born with and less to do with the workouts chosen.

LOW BODY WEIGHT:

Plain and simple, the elite triathletes are going to carry less body mass. The less mass they have to carry, the faster they will go over the long haul. Genetics comes into play with body fat percentage, size and weight. Genetically, we are born with a set number of fat cells. These cells do not change in number (except in women when they become pregnant), but they change in size. Everybody can gain and lose weight (fat cells enlarge and shrink), but the extent of this loss and gain may be out of our hands. People who are genetically lean have a fewer set amount of fat cells.

Size also comes into play. This is separate from leanness. Elite triathletes will have a lower body weight, which in part is determined by height, bone density, and muscle mass. As you may guess, you can't do too much with height. The typical build of an elite triathlete will be one of an ectomorph (thin), and this corresponds to lower bone density (compared to the mesomorph and endomorph). Why is this important? Less bone weight means more speed for running long distance and less that will sink in the water. You can somewhat alter your bone density, which is important to do as we age, but it will not change your shape. And finally, lower muscle mass results in lower body mass. As stated above, elite triathletes have predominately slow twitch muscle fibers. It is the fast twitch muscle fibers that will noticeably hypertrophy (grow). Slow twitch fibers do not. So all of these things mean that the elite triathlete genetically has a lower body weight. I saw a great illustration of this in a sprint triathlon in Clermont last year. I was going along on the bike and I went to pass an extremely tall guy. He looked like Jeff Turner to me (former Orlando Magic player and now their radio broadcaster—stood out to me since I'm a big basketball fan). I said to him, "You look like Jeff Turner". He said, "I am". Jeff is 6'9" and probably weighs 230 to 240. Can you imagine what power output he had to put out to power up those hills in Clermont? He was doing quite well, but needless to say, at that size he won't be challenging the elites. Turner is an elite athlete of his own, being able to play professional basketball, which matches his genetics.

VO2 MAX:

And finally, a trait that elite triathletes are born with is an extremely high Vo2 max. This is the gold standard of measuring aerobic output. Vo2 is the measurement of oxygen going to the working muscles. It's highly genetic. In fact, it's only 5% trainable. So if you have a Vo2 of 50 (average for a triathlete), you could raise it to 52.5. Huge improvements, huh? Nope. It always amazes me how many coaches preach Vo2 max sets, and how much is written about it in magazines, when most of us Exercise Physiologists realize there are much more efficient roads to improvement, such as raising your anaerobic threshold. A quick, back road way of raising your Vo2 is to lose weight, because it is measured by liters of oxygen to kilogram of body weight.

To conclude, triathletes (the elites or pros) are born with a predominance of slow twitch muscle fibers. They are classic ectomorphs, which make them lean and of low weight, and they are born with a cranking Vo2 max. So what do you do if you're not? Accept this. Don't get hurt in training just because this may not be you're calling. We all can get better. But when you read of some Ironman winner's workout in Triathlete magazine, don't get lulled into thinking that it was the workouts that led to the Hawaii wins. He/she simply had the right parents, and the training made them the best they could be. The same is true with some of your local heroes. Don't always follow what they do just because they're the best in town. They would show this kind of success on most any training plan. I came over from a body building background. Anything I tried in the gym worked for me because, fortunately for me, that is where my genetics lay. Genetically, I have mostly fast twitch muscle fibers, which leads to greater muscle mass. So with this, I could never have the times of the elites in triathlons or running races. But I have gotten more fit and I have improved every year. This is really all that matters to me. Control what you can in training and living and forget about the rest.

TAKE CONTROL OF WHAT YOU CAN:

- RAISE YOUR ANAEROBIC THRESHOLD BY DOING INTERVALS AT OR SLIGHTLY ABOVE A.T. WITH LITTLE RECOVERY.
- GET AS LEAN AS YOU CAN FOR YOUR GENETICS, BY EATING A SENSIBLE PRODUCTIVE DIET.
- GET STRONGER BY FOLLOWING A PROPER WEIGHT TRAINING ROUTINE.
- HAVE FUN AND REALIZE YOU'RE MORE FIT BY DOING ALL OF THE ABOVE.