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FITNESS MAGAZINE

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Linsey Corbin: The Human Engine

Photo by Tom Robertson

Measuring the performance of an Ironman champion has more in common with measuring automotive performance than a triathlete might think

By Chris Wright

Epicenter. Around here, it's a word that typically conjures up earthquakes. Southern California, however, is a focal point of many things other than tectonic shifts. Two of them, triathlon and cars, are as unrelated as two fields of human endeavor could possibly be – or are they?

Readers of this magazine likely need little explanation of the extent to which SoCal has embraced, and indeed perhaps come more than any other geographic region to embody, the slippery concept of the triathlon lifestyle. And when it comes to cars, so vital is the southern part of the state to the global automotive industry that all its significant players have major facilities here, from design studios to testing facilities to North American head offices. Simply put, L.A. is a car town – and a triathlon town, too.

So? Well, there exist quite remarkable congruencies between the process of

measuring and improving human athletic performance on the one hand, and the process of measuring and improving automotive performance on the other. And, a disproportionate number of car-loving Angelenos seem to have bicycles as a second vice. The kind of person who likes German cars will likely enjoy Swiss bikes, such as those made by BMC. Ferrari owners seem to incline more toward Pinarello, and for those patriotic souls who would only own American, the likes of Scott, Trek and Cannondale do a fine job. The larger point: whatever the marque, both groups have in common a love of performance, precision and swathes of aerodynamically optimized carbon fiber.

For the triathlon side of the equation, consider Linsey Corbin. The winner of Ironman Coeur d'Alene in Idaho last year in a new course record, she represents the leanest, highest-performing manifestation of the human form about as well as anyone on the planet. Born and bred

in the United States, Corbin has won at both the Ironman distance (2.4 mile swim, 112 mile bike, 26.2 mile run) and the booming popular half-distance ('70.3', in triathlonspeak, for the total number of miles covered) and was, in fifth place, the first American finisher at the Ironman World Championships in Hawaii in 2008.

So, not just glamorous – Linsey Corbin is the real deal. And when she was in town to race the Ironman 70.3 in Oceanside, we couldn't resist pairing her up with something similarly special: a BMW Z4 S-Drive 35is, at the time of the shoot the only one of its kind on the West Coast and loaned to us for a few days courtesy of BMW North America. With a twin-turbo 3.0 liter engine, the sexy ragtop produces a glorious 335 horses from Hades itself, almost double the output of the average car sold in America. And for those who know enough about cars to realize that (most of the time) torque matters much more

than horsepower, this power plant generates a truly extraordinary 370 pound-feet, good for grin-inducing throttle response at almost any speed. Power to weight ratio? Excellent.

By comparison, Linsey Corbin has a 4.5 liter 'engine' or absolute V02. Which is to say, at maximal short-term workloads, her system is capable of extracting about four and half liters of oxygen from the air – just nicely 50 percent higher than an average healthy woman. More revealing, however, is the *relative* V02, expressed in milliliters of oxygen per kilogram of bodyweight per minute. For the lean and muscular Corbin whose race weight is in the 120s, that works out to a number in the mid 70s, and that is the territory of champions. Power to weight ratio? Excellent.

The highest relative V02 ever measured in any woman was American marathoner Joan Benoit Samuelson at 79. The highest ever measured in anyone, period, was 93 (a Scandinavian cross-country skier) and the highest among well-known modern athletes was 85 in both Lance Armstrong and Kenyan runner John Ngugi. The James Dean of American running, Steve Prefontaine, was not far behind at 84. As a leading coach once put it, to be an Olympic champion, you have to pick your parents very carefully: while actual champions are determined by the structure of their training and the intelligence and courage with which they race, the pool from which champions are drawn is genetically determined.

So, Linsey Corbin comes from the deep end of the gene pool; no surprise there. But, what's less obvious (and in truth, much more interesting) is the intangible and human element of the machine. Those with the physical wherewithal to compete at the sharp end of the endurance field are typically no more immune than the rest of us to the things that can derail a great career. Other pro triathletes we've interviewed in this magazine have been disarmingly open about the eating disorders, psychological insecurities and career-juggling problems they've faced in getting to the top of the sport. Be reassured, dear reader: it is not just you who struggles to find the time in a frantic routine to train properly, rest properly, eat properly – and still earn a living and have a life with friends, spouses, and children who, shockingly, choose to eat, sleep and breathe something other than triathlon.

Corbin grew up in Bend, Oregon with dreams of winning Olympic gold as a ski racer. Despite significant downhill racing success, her obvious physical capacity for endurance sport and her resolute tenacity precipitated a move into cross country and track through high school and her early college career. Then, as she puts it, "When I decided I no longer enjoyed running in circles, I hung up my track cleats and transferred to the University of Montana to study nutrition and exercise physiology."

Missoula was good to her; it was there that Corbin met her husband Chris, whom she describes as her "rock." But, it was also there that she found the sport of triathlon. "It is in this complex sport that balances mental fortitude with peak physical fitness that I began to really dream," she recalls. Dreams soon became reality: a regimen of hard work layered on top of great talent and a running background ensured that she won the first two races she entered, and set a course record in her first race after turning professional. When Corbin finished fifth at the 2008 Ironman World Championships in Hawaii just her second race in Kona as a pro, the entire sport took notice.

But, it is white-hot at the front of the professional field. The other pros are fast too, and in her determination to

ascend to the sport's pinnacle, Corbin trained longer and harder and faster...and stayed about the same. Demonstrating how tenacity is not always an unvarnished virtue, she responded by dialing up the work even further. Corbin is not afraid of crushing volumes of training delivered at withering intensity. However, the human body – even the elite athlete's human body – has a finite capacity. Rather than improving, the results stayed the same...and then began to decline, if ever so slightly. While most people on the planet would be celebrating after an 11th place finish in Hawaii, that result in 2009 left her frustrated and led her, via Chris Lieto over breakfast the morning after his epic second place in the same race, to Purplepatch Fitness and Coach Matt Dixon.

Dixon's prognosis? Corbin was very fit, but also very tired. The cumulative load of ever-increasing volumes and intensities of training had left her metabolically distressed and at risk of injury. The prescription was anathema to this believer in hard work: for a while at least, she needed less work, not more,



with dramatically greater focus on recovery and nutrition, including a return to eating red meat after not doing so for 20 years. While that sounds easy, for professional triathletes for whom the feeling of exhaustion is often the only validation they receive that they're working hard enough, it can be stunningly difficult to back off.

Corbin is a private person, not one to wear her heart on her bike jersey...but it's clear that Dixon's advice was, at least initially, not easy to follow. 2010 thus became a crucial year for her, a crossroads where she had to choose: try a dramatically new direction, or stick with the familiar? While she has not said so to me, the sense I have is that Corbin struggled mightily with this decision, and then with implementing it. But, she had the instinct and the intelligence to recognize the inherent value in Dixon's approach, and they began working together some 18 months ago. After a bumpy start where Corbin felt vulnerable and under-prepared because of the lower volumes and fundamentally different ethos, the results began to come. And after not much more than six months, a breakthrough: Linsey Corbin became an Ironman champion, winning the 2010 Coeur d'Alene event in a new course record. This was a sublimely executed performance: As I was finishing my first



Photo by Tom Robertson

loop of the run course in that race at 9-minute pace, Corbin came steaming by me on her second loop, calmly knocking off 7-minute miles on the way to an emphatic victory.

Was it patience and race-craft? Was it the reworked training and recovery? Was it the self-assurance that comes from striking off in a new direction and making it work? Probably all of those things...but if you ask husband Chris, he'll tell you with a straight face that what made the difference was that grass-fed Montana beef. Whatever the cause, no disputing the result: Corbin had arrived.

Since her early days in the sport, Corbin has always attracted a devoted following of vociferous fans. It's illuminating to consider why: the results in big races are there, and the dazzling smile and the cowboy hat (her signature flourish, handed to her in the last few hundred yards of each race) don't hurt either. But, there's something else at work here, too. "My vision," she says, "is to transcend the boundaries of my sport and represent the importance of a sound mind, body, and diet in achieving dreams." People see her as something special, and have projected that in the nicknames they give her – like The Corbinator. It's not just the legions of her adoring fans on Facebook who see her that way; even such iconic figures as Chris Lieto describe her as "inspiring." Hardly surprising, then that Corbin is the most visible element of sponsor Saucony's *Find Your Strong* campaign; her lifesize image was perhaps the most noticeable of all the personalities featured at this year's Boston Marathon.

The sense I have is that Linsey Corbin didn't set out to inspire people. But, inspire them she does, and she has grown impressively into that role, as appealing a role model and spokesperson for American triathlon as you are ever likely to find. In the days before a big race, she'll post something along the lines of "Kick the tires and light the fires!" and her fired-up fan base roars its electronic approval. But, she is also gracious and self-deprecating – a very far cry from the self-aggrandizing, ego-drenched personalities one sees in so much of contemporary sport – even, sad to say, sometimes in triathlon. Indeed, if anything, Corbin seems quieter and more modest in person than the routin', tootin' Montana cowgirl image on social media might suggest.

And of course, the high wattage smile is matched by the high wattage on the bike. In truth, that much vaunted V02 number is just a snapshot, and of far more importance than maximal capacity is what proportion of that performance can be sustained over time. While Corbin and other professional triathletes keep their precise output numbers (measured via advanced power meters built into the hub of the bike's rear wheel) close to their chests, it's safe to say that an elite female triathlete will have to generate close to 200 watts more or less continuously for the 112 miles of the bike leg to be competitive. Those hub-mounted meters have made that power delivery much easier to calibrate than before; heart rate (the most accurate prior indicator of work rate) can be affected by many variables.

Interestingly, far from the old 220 minus-your-age formula for calculating maximum heart rate, we have learned that heart rates are typically inversely related to heart size. Corbin cruises on the bike at an astonishing 180 beats per minute, significantly higher than some who aren't quite so fast, but that reflects a relatively small heart capacity—and it's the total volume of blood moved that is ultimately the limiter, so those with genetically larger hearts will have lower heart rates at the same work rate but much the same perceived exertion.

The systems of such elites need not only to be able to perform at astonishing levels of output; they also need to be able to take in energy efficiently, and here again, the worlds of automobiles and triathlon have unexpected similarities. Fueling windows and strategies are as pivotal in this sport as they are in car racing, as they have a massive influence not only on simply feeding the machine, but also keeping it happy: unlike cars, human engines have emotions, and glycogen depletion can combine with cumulative fatigue to create a downward spiral at the precise dark moments when races are won and lost.

And finally, there is the matter of control. The fantastically complex electronic control units that reside at the heart of modern automobiles, with their multiple processors and electronic governor, have an analog in the human body. The cutting edge of human endurance-performance analysis today rests on something called the central governor model: the concept that, ultimately, performance levels are limited by the brain, which will, when it perceives that the body is at risk of damage, eventually limit muscle recruitment to ensure an adequate supply of oxygenated blood to the heart, and to ensure that the body remains within tolerable temperatures.

As anyone who has struggled through the final miles of a



Photo by Tom Robertson

tough marathon can confirm, the system doesn't shut you down entirely --- but it slows you down significantly, just like the 'limp home mode' built into contemporary cars. Fascinatingly, both limiters are engaged for the same reason: the innards of the engine got too hot, and continuing at the previous pace could cause long-term harm.

After more than a century of development, there is still much that science and engineering have to learn about the internal-combustion engines we all love so much – and dramatically more that we still have to learn about the human engine. Like so many enthusiasts in the automotive realm, we continue to explore new ways of defeating the built-in performance limiters – and of emulating the elites who, like Linsey Corbin, represent the ideal human machine. <<

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