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Modern Science on Uphill Trail Running

BY GAËL COUTURIER

This past June, professor Guillaume Millet gathered some of his most trusted international colleagues and held an online trail running webinar divided in two parts: uphill trail running and downhill trail running. Kilian Jornet, a soon-to-be four-time UTMB champion and course record holder (19:49:30), was a silent listener on one of these talks, underlying, if necessary, the modernity of the researchers on the first subject: uphill trail running. What we learned is outlined in our questions below with professor Millet.

URM: Last August during UTMB, Kilian Jornet gave his blood at aid stations for scientific research. Not only are his running abilities exceptional, but his mind works in beautiful ways. Let's remember that in 2008, at age 21 during his first UTMB attempt, he not only won but also outsmarted everyone, including the race organizers, by carrying some of his compulsory gear in children's sizes.

GUILLAUME MILLET: He's a surprising character for sure. Most middle-of-the-pack athletes and all elite athletes would refuse to do what Kilian did last August because they would worry it would impact their timing negatively. Kilian is in total control and keeps his cool no matter what. Mathieu Blanchard summarized it well in a podcast right after UTMB: "Kilian is serene. Kilian is smart." We can try to analyze the why and the how of Kilian's wins this year but for having organized scientific testing during UTMB myself, what he did by accepting to test himself along the way is admirable.

URM: Rodger Kram, PhD, from UC Boulder, starts the webinar by reminding us of the



importance of walking during an uphill trail running event. It reminded me of Frenchman Ludovic Pommeret, winner of TDS last August, and of UTMB

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in 2016. He's a ski mountaineering expert, and said at the finish line of the 2022 Western States Endurance Run, where he finished sixth, "This is a race where you run all the time. I prefer to be able to walk sometimes."

GUILLAUME MILLET: Trail runners love to run, even uphill. It's more often than not a mistake. When it's steep, in an ultra where the pace is

slower, walking will help save energy for later. You can walk as fast as someone who runs. It is crucial to learn to walk in training for those races. Walking allows you to use your legs differently, which helps in energy savings. Elite runners don't like to walk and think walking reveals weakness.

URM: Many middle or back-of-the-pack runners have a hard time accepting walking. I've seen it many times in Chamonix.

GUILLAUME MILLET: The further you are from an elite level, the dumber it is not to learn to walk on steep hills. American males have not won UTMB because they barely ever walk with or without poles when they race. Jim Walmsley is the faster trail runner out there. He can win UTMB if he continues to learn to walk with poles. Last August, he walked in Alpage de Bovine, around km 132 (mile 82). Unfortunately, it was not a choice of his. Jim is

an ultrarunner, and guys like Jornet, D'Haene or Pommeret are more like "ultra-mountaineers." Pacing yourself in a race is not just about being innovative or strategic. It is also related to your physiology. Jim Walmsley must go out faster than anyone because he's very comfortable at those higher speeds. For him to be among the race's leaders right away makes sense. But what does not make sense is to think he can outsmart Kilian in the middle of the night and leave him behind.

URM: Let's focus on another exceptional character of the ultra-trail scene: Courtney Dauwalter. She's so good that she regularly beats men and finishes in the very top part of the overall rankings. French researcher Frederic Sabater Pastor discusses the importance of muscle mass in trail running, something men are naturally more inclined to have than women. So how can we

explain Courtney's repetitive success?

GUILLAUME MILLET: A lot of muscle in your legs means you can't go fast on roads or short trail races where weight slows you down. In mountain ultra-trails, where you sometimes walk and generally run slower, more leg muscles are much less disadvantageous and will help you stand the brutal repetitiveness of alpine descents for much longer. A thinner runner like Walmsley can win UTMB one day, absolutely. On the other hand, a heavier, more powerful runner like Frenchman Julien Chorier, winner of Hardrock (in) 2011, would never have performed as well on a 100k World Record. We know Courtney came from a mountain background and attended college on a cross-country skiing scholarship. In that sense, she's more Jornet or

D'Haene's type than Walmsley. She also knows how to use her arms and her poles. I've heard that within Salomon teams, some say she's the female version of D'Haene. Both are incredibly enduring. But what sets François (D'Haene) apart from the rest of the men's field is that he does not mind the elements, no matter how hard they become. It seems that Courtney has a similar personality. Her overall win at Tahoe 200 in 2018 sort of proves that.

URM: Which brings me to what Jason Koop says in your talk about Kilian Jornet, reminding us he's the only one to ever win this trinity: Western States, Hardrock and UTMB.

GUILLAUME MILLET: Kilian's VO₂max is exceptional, which is why he can win it all. He's also technically the best in the world on mountain descents.

URM: Kilian used his poles during this year's UTMB, by the way, as well as at Hardrock, but he's not always used them in the past. In his interview, Italian commentator Nicola Giovannelli states that poles are always a good idea on a steep uphill, even if they come at an energetic cost for the upper body. Is that correct?

GUILLAUME MILLET: One vital concept to understand is "energetic cost." It is your cost in total energy to cover a given distance. In the past, we considered poles an extra energy cost. Even with that additional energetic cost, poles were not a wrong choice because they were helping your overall performance. Trekking poles have always helped reduce leg fatigue by preserving your leg muscles, but we just thought they invariably came at the cost of your overall energy. Because

of Giovannelli's new research, we now know that when used on hard uphill (13-15% inclines), trekking poles save leg muscles and preserve your entire energetic cost. This means that when used correctly, trekking poles are a double win.

URM: This is something Walmsley needs to work on.

GUILLAUME MILLET: Most definitely, yes. ▲

GAËL COUTURIER is a French journalist living in San Clemente, Southern California. He finished UTMB four times and CCC one time, and has been following the world's most famous ultra-trail race on the ground almost every year since it started in 2003.

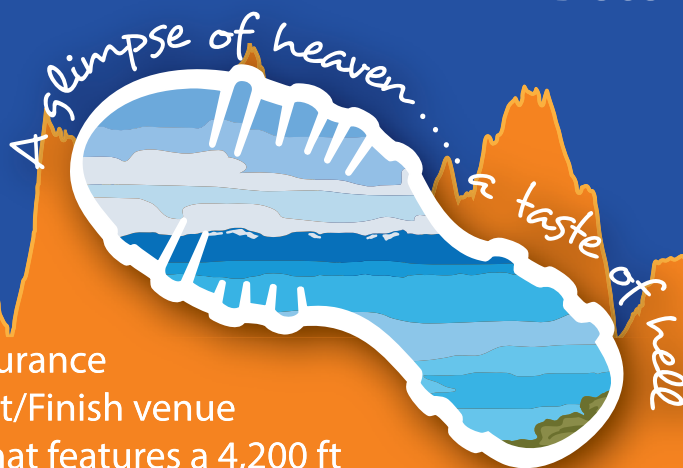
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