

# In the summertime... it's Tour time

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In last months, there is going back to a recurrent topic in sports performance focused on endurance sports, like road cycling. As we have seen in the last grand tours, the winner manages to defeat his rivals by smaller and smaller margins.

Each season, cyclists prepare for many kilometres, looking to improve aerodynamic aspects, efficiency, competition strategies, body composition, among many others. However, during the next three weeks, many of them will put all eggs into one basket called The Tour of France. During 21 stages the cyclists will be subjected to short and long routes, with a changing weather where it could rain, be windy, or even snow or going through a suffocating heat with temperatures around 40°C.

It is increasing the need to achieve new strategies that could add the desired marginal gains and increase performance: altitude training camps, the use of wind tunnels and velodromes, training in similar conditions of heat and humidity in sophisticated laboratories, and so on. It is typical to see every year the big stars of cycling and their teams during training camps looking for similar conditions of major competitions. For example, cyclists like Chris Froome or Alberto Contador spent several weeks on the Island of Tenerife in Spain.

Nowadays, with the use of power meters, not only in professional cycling but also in amateur cycling, cyclists try to improve their W/kg to climb as fast as they can, especially in the key moments of a stage. In this search of generating greater power with the lower weight, mainly in climbers (sprinters will continue to produce brutal numbers after long stages), surely, we will talk again about functional dehydration.

The heat during July in France and the advantage of weighing 2 kg less in a key ascend or stage will break out intense discussions among cycling fans and professionals of high performance in cycling as already happened in late 2016.

Voluntary dehydration has always been considered a two-edged sword or a risky strategy for the negative effect of hyperthermia that can cause (Maughan et al, 2004). If this hyperthermia is not well tolerated, aerobic performance will be negatively affected (Sawka et al, 2011; Trangmar & Gonzalez-Alonso, 2017).

If we keep in mind what a dehydration is (losses of  $\geq 2\%$  of body weight and  $\approx 3\%$  of total body water) (Sawka et al, 2007; Sawka et al, 2015), Goulet (2011) reviewed that dehydration up to 4% did not affect performance in a time-trial (TT) of  $\approx 86$  min (intensity and duration of TT had more impact than dehydration,

even delaying fluid intake to thirst increased performance). Furthermore, to drink *ad libitum* do not have a positive effect in 40 km TT (Berkulo et al, 2015).

Some studies in marathoners reported a greater dehydration in those who spent less time in covering the distance drinking *ad libitum* (Cheuvront et al, 2007). Furthermore, having a proper fluid intake during the day will maintain the normal hydration values with no negative effects on performance (Fudge et al, 2008). Also, it is thought that training in the heat could produce thermoregulatory adaptations (Fleming & James, 2014).

However, Jeukendrup (2017) reports that the work of Fleming & James is the only one of its kind and caution must be applied with these messages. Especially when it comes from top cyclists with an incredible worldwide impact since it can be misinterpreted by cycling fans, amateur cyclists, and other athletes.

So, on the hot July afternoons, when you saw the dehydrated cyclists with their heart rate on the rise as an effect of the effort (and also for cardiovascular drift), think that as Mora-Rodriguez (2014) analysed, muscular water has not decreased during the intense exercise. Nevertheless, this decrease will take part in the later hours to restore the plasma volume and the cardiovascular stability.

Take a seat, have a cold drink and enjoy the biggest cycling show of the year!

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