**SWEAT HYDRATION TRIVIA**

How does a person/athlete sweat?

* 1.5-5 million sweat glands
* Eccrine/Apocrine (in hair) eccrine responsible for cooling, up to 700 pieces per cm2 of skin, animals have few eccrine Glands
* Cause: Increase in core body temperature. An area of the brain (hypothalamus) setsAcetylcholine free > cascade reaction > hypothalamic sweating
* 75% of the energy dissipates in body heat!
* Stress sweating> cortical sweating
* Sharpness: medullary sweating

In general:

* The body consists of about 70% water, 1/3 of which is outside the cells, including in the blood (about 5 liters)
* the main electrolyte is sodium and the main part of the body's reserves is in the blood
* the amount of extracellular fluid is directly linked to the amount of salt
* ideal concentration of salt for optimal function is 135-145mmol/l
* more salt = more liquid / less salt = less liquid
* Salt important function. in food absorption in the stomach, maintaining cognitive function, Stimulation transmission/muscle contraction
* Blood volume decreases when sweating, blood becomes more viscous, pressure in the system increases,
* Oxygen supply worse due to reduced blood flow> decrease in performance
* Sweat flow rate test
* Salt concentration is very strongly genetically determined
* normal fluid loss in everyday life is approx. 1.5l
* The average sweat rate during exercise in adults is 1.2l/hour, can be up to 3.5l/hour under extreme conditions and effort increases>> an extreme amount accumulates in the Ironman!!!
* Sodium loss of 200-2000mg per liter of sweat, also explains why no general strategy makes sense
* Most sports drinks have 200-550 mg/liter of salt, but the average athlete sweats 950 mg/liter
* Salt is crucial for removing absorbed water from the gastrointestinal tract into the bloodstream and thus maintaining blood plasma volume
* Only water without salt causes hyponatremia recreation

Recovery

* Homeostasis is the aim, including fluid balance
* In everyday life we lose water through urine and exhalation. The loss of fluid/increase in salt concentration is compensated for by the kidneys returning more water into the bloodstream and the person having to pee less and/or the feeling of thirst increasing, this process takes place permanently
* If you become dehydrated, you should consume 1.5 times the amount of fluid lost

Dehydtration (= the process of water loss, NOT the condition!!!!)

* Term is used inflationarily and is often used as an excuse for poor performance - Euhydration = optimal fluid balance, depends on body composition,
* The amount of fluid in the body is never static, the flow from the stomach into the intestine into the blood and back, into the bladder, kidneys or between the extracellular space (ECR) and intracellular space (ICR) is constantly present. Any body fluid measurements are therefore always worth taking as a snapshot and are actually meaningless. Without training, diarrhea or blood loss, the body regulates the water level by +/-0.5% in everyday life through thirst and urination
* Hypohydration= 1% loss! Small fluid losses are compensated for through everyday drinking and eating habits; 4% loss takes just 24 hours to complete
* Recovery >> important for multi-day events or in phases with high training volume

Measure drinking status

* correct measurement almost impossible
* Measuring body weight:
* Urine status > Cave, more peeing automatically means electrolyte loss
* if urine is dark and little> more likely to be dehydrated, if clear and increased urge to urinate> more likely too much
* Thirst> “when the feeling arises, it's too late” is outdated, because if you euhydrate before you start, you are 2% completely without loss of performance
	+ overdose of salt is not possible with even 1500mg

Cramps

* Dehydration/electrolyte theory:
* incorrect muscle contractions

Neuromusc. Theory: Generalized, through overload and carb depletion. The limiting factor in Ironman is the muscles of a specific training!

Hyponatremia (Overdrinking)

* Urination is reduced under strain and excess fluid cannot be peed out. This leads to too much fluid in the ICR, the cells swell in the brain. Headache, dizziness, coma or death
* Problem brain > festering skull, no space

Preload

* Many people are afraid of dehydration before a race, but we are not camels and cannot store fluids indefinitely
* Don't necessary drink more in the last few days before the workout, but rather increase your sodium intake. Sodium increases fluid absorption in the bloodstream
* Sodium makes you thirsty > automatically drink a slightly larger amount
* Supplement or add more salt to food
* Most sports drinks 400-500mg/l, but you need more (around 1500mg/l) to get more water entering the bloodstream