

Medical Factors

From the medical point of view, a XC camp differs from your regular weekend flying in that you will be more stressed and in the sun for many hours a day over more days in a row.

Three major issues facing pilots at a longer event are: (a) *protection from the sun*, (b) lack of *physical conditioning* and (c) *dehydration*. Out West, oxygen is an issue, but we will not cover hypoxia here.

Suffering from dehydration or becoming tired will make the event much less fun.

Of the three, dehydration is the most insidious and easily treated: we will cover this in more depth

Medical Factors – Sunscreen

Unlike your normal work or flying, at an event – you may be spending up to 8 hours a day in the sun, from ~ 10 AM to 6 PM.

Very Important not to get sunburned – use long sleeved shirts with a SPF, good hats and a good sunblock. Use the sunblock early. ‘Nuff said.....



Medical Factors – Conditioning



A real 1-26 pilot after a retrieve

It is a good idea to get some exercise every day –
Try walking up and down the runway early each morning – you will feel better
'Nuff said.....

Galetto Story

These thoughts were written by Giorgio Galetto - a World champion soaring pilot with over 6200 hours of soaring experience - after he crashed in trees on a competition flight in June of 2012 at Vinton, France. Originally posted at - <http://www.postfrontal.com/forum> in Italian in August of 2012. It was translated by Google from the Italian.

Summarizing the links in the chain that led me to the incident:

No physical activity during the winter or spring. It 's the first year that I have not skied, I did not go in the pool and I did not go by bicycle.

Poor physical fitness. I've only ever worked and given the general work did not have much enthusiasm for doing other things.

In the three weeks before the race I've been busy all day, including Saturdays and Sundays.

During the early days of the race I did not sleep well.

I was too tired. When you are tired or you do not want to fly should not take off.

Other considerations:

In all these years of flying, I have always tried to avoid doing serious driving errors. For several years I have been aware of being exposed more and more trivial incident, what happens to overconfidence, so every time I got on board the glider I said to myself "on guard" be careful.

I have always been convinced that some accidents, even fatal, friends have been caused by such trivialities. In the more than 100 races in which I participated, not all flight days I was 100% of the psychophysical condition, conscious of why I always proper conduct of flight.

Medical Factors – Dehydration

Sports nutritionists have spent a long time studying dehydration in athletes. Understanding of the problem has advanced considerably since some landmark studies performed over the period 1980-2000 with marathoners. The degree of dehydration can be monitored in the initial stages by the color of your urine and is easily quantitated as a loss of weight (1 pint = 1 lb). *As we will see, most of the weight lost through sweating is water.*

Symptoms are usually described in terms of the percent of body weight lost. Loss of about 2% of your body weight is considered dehydrated

<u>% Body Wt Lost</u>	<u>Weight Equivalent</u>	<u>Symptoms</u>
2-4%	3.6 -7.2 lbs/180 lb	Thirst, flushing, muscle weakness, fatigue, dark urine
4-6%	7.2-10.8 lbs/180 lb	Decreased sweating, weakness, increase core temperature, cramps.
> 6%	>10.8 lbs/180 lb	Confusion, severe cramps, heat exhaustion, loss of consciousness

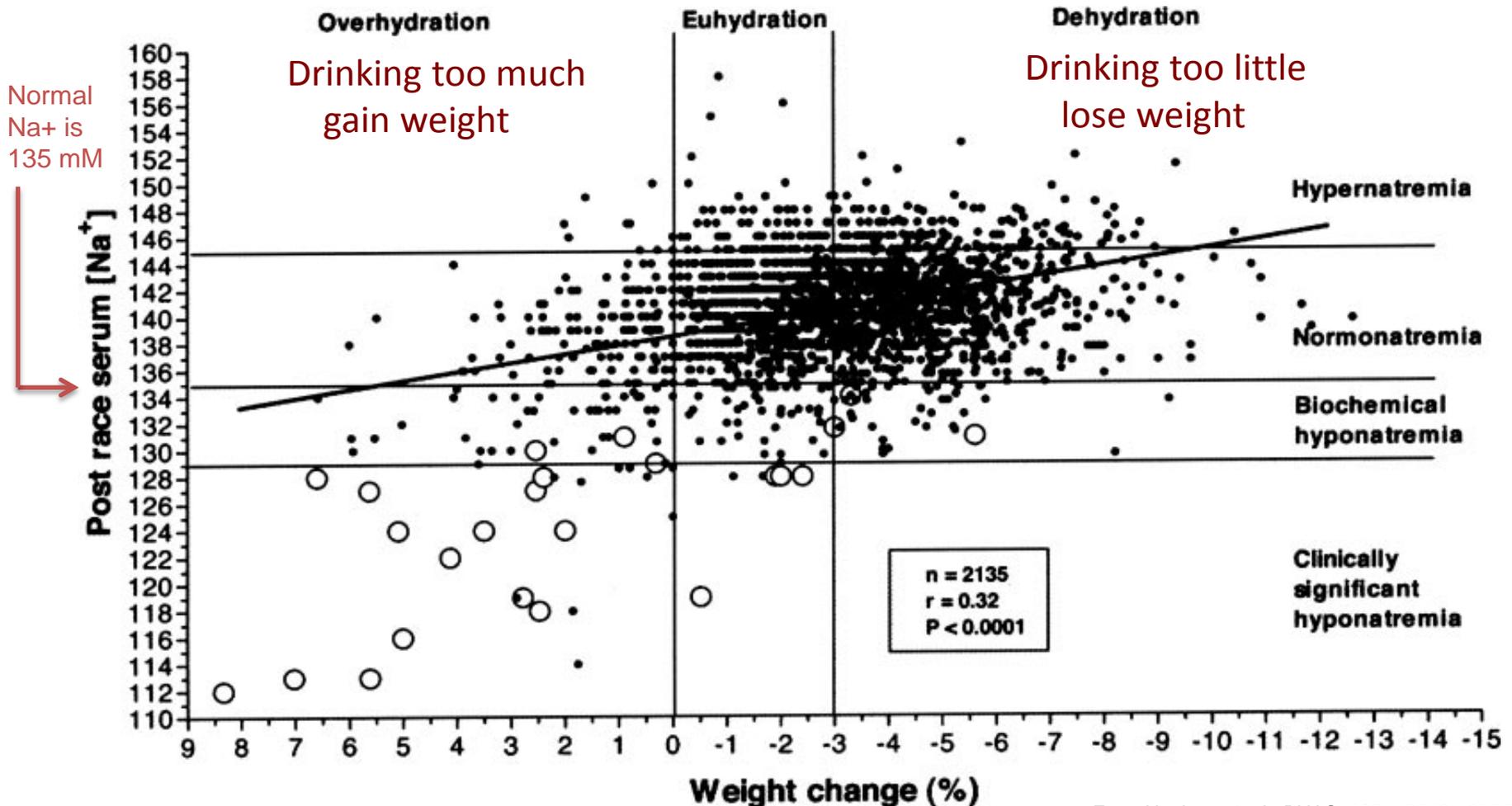
The basic strategy to prevent dehydration is to replace the fluid lost though sweating more or less as it happens. *Note* - someone with a symptom of thirst is already dehydrated in the 2-4% range

For many reasons, it is difficult to replace the fluid lost during a day in the sun by drinking a great deal of fluid in the evening. Also, coffee, beer and caffeine containing soft drinks are diuretics which inhibit rehydration.

Thus, in the setting of a long event, dehydration can become cumulative.

Fluid and Na⁺ Status of Marathon Runners

OK. So you need to drink during a long day in the sun. Question is – how much ?? Interestingly, studies with marathoners show that many athletes drink *too much* or *too little* during a ~ 4 hour race. A simple measure of your hydration status is the loss or gain of weight.



Dehydration – Achieving The Right Fluid Intake

Everyone has a different physiology. Also, your rate of sweating and the ion content of your sweat depends on your fitness. Thus, it is best to establish a hydration balance sheet for *yourself*

- A fairly accurate basis can be your change in body weight. (record your pre- and post soaring weight and the amount of fluid you drink. 1 pint = 1 pound)
- Determine your loss of water over the course of a day's flying in terms of pounds. Plan on drinking about 1.5 times the amount you lose. (Example – lose 4 lbs, drink ~ 6 pints)
- Plan to replace the fluid you lose at a rate of about 3-6 ounces / 15 minutes or ~ 24 ounces / hour (1 pint is 16 fluid ounces – thus ~ 1.5 pints / hour)
- Goal: no weight loss (or less than 1% weight loss)
- Also monitor urine color. It should remain the same color (light yellow) all day long. **It is considered bad form to do this at the launch point.**

Rehydration – OK, What is the “Right” Fluid ??

Basically – there are two choices – water or sports drinks like Gatorade.



Both will work, but there are differences

Na⁺ / K⁺ in Sweat and in Sports Drinks

Serum	[Na ⁺ / K ⁺ / Cl ⁻]	Sweat [Na ⁺ / K ⁺ / Cl ⁻]*	% of [Serum]	Gatorade	% of [Sweat]
Na ⁺	136-140 mM	35 – 80 mM	25-58%	20 mM	25-57%
K ⁺	3.5-5.0 mM	2.7 – 6 mM	64-100%	3.2 mM	53-100%
Cl ⁻	98-106 mM	31 – 70 mM	29-67%	23 mM	32-74%
Mg	1 mM	trace	-	-	-
Ca ²⁺	2.5 mM	trace	-	-	-
				Sugars	5-14 gm

Thus, Gatorade provides only a fraction of the Na⁺ and Cl⁻ lost in sweat. But the author's other work shows:

- The addition of 40 or 50 mM sodium chloride (NaCl) to a rehydration beverage reduces subsequent urine output, thereby providing more effective rehydration than a sodium-free drink.
- There was no additive effect of including both sodium and potassium in the drink (but K⁺ does no harm)
- Water works well if consumed with food, which provides the needed electrolytes
- Gatorade may be helpful for those who have high Na⁺ in their sweat (“salty sweaters”)

Summary - Preventing Dehydration is Easy

- Drink some water in the morning while getting ready to fly
- Drink enough water during flying to replace about 1.5 times the amount lost during the flight. Base your water intake on the weight you lose (1 lb lost = ~ 1 pint of water or 473 ml).
- Drink at intervals during the flight
- To help rehydrate at the end of the day, drink water and maybe a bit of Gatorade
- If needed, drink some water or Gatorade during the night. It takes some time for water to get from the gut to the tissues. This strategy will help you begin the next day properly hydrated

END
