



ACROSS THE DIVIDE  
ADVENTURE RACING

# NAMIBIA ULTRA MARATHON

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## REDUCING THE RISK OF MEDICAL PROBLEMS FROM ENDURANCE RACING

### PART 1: OVER- HYDRATION

These fact sheets aim to provide education on the potential medical problems which can result from an endurance race - even amongst experienced athletes - in the hope of promoting good preparation and planning amongst those competing. It is meant as a guide, and is applicable to the Namibia Ultra-marathon. The advice written is taken from various published sources – predominantly medical journals. If anyone would like a copy of the journal for further reading then please let me know. Any questions drop me an email. This fact sheet focuses on hydration, in particular over-hydration.

### HYDRATION

Advice regarding hydration in the past has varied substantially. When ultra events or endurance events first began individuals were encouraged to drink as much as possible resulting in some catastrophic outcomes. The advice given now emphasises adequate hydration but NOT excess hydration as this can result in electrolyte imbalances difficult to treat in the field. In endurance events, those athletes that tend to be hospitalised are those that over-hydrate during the race.

Having researched a range of literature, fluid intake should be in the range of **400 – 800 mls/hr** (International Marathon Medical Directors Association, 2006). Now, this is only a guide, and is dependent on body weight, temperature and duration of the event. The IMMMDA suggest at a slower race pace (> 10 min / mile and greater than 5hrs exercise) that the rate of drinking should be slower. However, with this in mind it is also important to be wary of the signs of not drinking enough – thirst, dark urine, weight loss. The IMMMDA provide some guidelines for those that are interested, in determining a personal fluid intake range by using a fluid calculator. This can provide an estimate of body fluid losses as a generalised strategy for fluid replacement. However, climate will significantly affect your sweat rate so this is only a guide.

*Fluid calculator: to calculate sweat rate, runners/ walkers should follow these steps:IMMDA website*

1. Weigh nude before the run.
2. Run/walk at race pace for one hour. (One hour is recommended to get a reliable representation of sweat rate expected in an endurance event.)
3. Track fluid intake during the run or walk; measure in ounces.
4. Record nude weight after the run/walk. Subtract from starting weight. Convert the difference in body weight to ounces.
5. To determine hourly sweat rate, add to this value the volume of fluid consumed (in Step 3).
6. To determine how much to drink every 15 minutes, divide the hourly sweat rate by 4. This becomes the guideline for fluid intake every 15 min of a run.
7. Note the environmental conditions on this day and repeat the measurements on another day when the environmental conditions are different. This will give you an idea of how different conditions affect your sweat rate.

Another good article and guideline is on the following webpage:

<http://latinut.net/documentos/deporte/nutrientes/USATFSelfTestingHydration.pdf>

Factors influencing fluid requirement are body weight (more sweating), climate (hotter = more sweating) and intensity or duration of exertion. These are important to keep in mind when considering fluid intake over an hour.

## **OVERHYDRATION**

Of the two possible hydration problems endured in an ultra event, this proves to be the most difficult to treat and the most life-threatening. Drinking too much water (>1200mls/hr) over an endurance event causes a dilution of the salt in our bodies and can result in EXERCISE INDUCED HYPONATRAEMIA (EAH). Hyponatraemia means low salt. By diluting the salt concentration in the body, the water exchange across cells in the body – in particular the brain – is affected and results in cells swelling and cells not functioning correctly. Low salt concentration also affects enzyme systems in the body which in turn affect water levels in the body.

## **RISK FACTORS FOR THE DEVELOPMENT OF EAH**

1. Exercise duration > 4 hrs or slow running
2. Female
3. Low body weight
4. Excessive drinking
5. Pre-exercise over-hydration
6. Non steroidal anti-inflammatory drugs (ibuprofen)
7. Extreme hot or cold environments

## **SYMPTOMS OF OVER-HYDRATION**

Symptoms can mirror heat related illnesses such as heat stroke which are prevalent in such climates as Namibia. Symptoms of EAH include:

1. Weakness
2. Dizziness
3. Confusion
4. Nausea / Vomiting
5. Headache
6. Seizures
7. Altered mental status
8. Weight gain

## **WEIGHT MEASUREMENT**

A small amount of weight loss is acceptable in ultra-events (2-4%). Such a weight loss makes water overload unlikely. Aim to finish the race either at the same weight as you started to slightly less. We hope to provide scales at every other checkpoint to allow monitoring of this.

## **REDUCING THE RISK OF OVER-HYDRATION**

Electrolyte drinks may reduce the speed of onset of EAH but won't necessarily prevent it (have a look at the contents of the drink – many don't contain salt). The easiest way to reduce the risk of over-hydration is to take an active involvement in monitoring how much fluid you are consuming per hour (by drinking from marked water bottles), eating regularly and consuming relatively salty snacks every so often – again, it is easy to over do this both with salty snacks and electrolyte drinks. You need to be aware of how many mmols or grams of salt you are taking in per hour to ensure an appropriate balance. There is very little evidence to support the suggestion that ingestion of salt prevents or decreases the risk of EAH. Currently, the American College of Sports Medicine recommends an intake of **0.5 – 0.7g salt / L** of water as the appropriate level of salt intake to replace the sodium that is lost in sweat during endurance events (EAH, Clinical Journal American society of Nephrology, 2007).

*This fact sheet is aimed at making runners aware of potential complications which are hopefully avoidable if appropriate planning and preparation prior to the race is undertaken. If there are any questions about over-hydration or EAH or you would like any details of web pages / references then please email me at amyhughes@doctors.org.uk*

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