

HYDRATE CORRECTLY

A guide on how to hydrate correctly
during jungle expeditions



Hydrate Correctly

Foreword

In the rainforest the water isn't the problem, hence the name, the problem is to keep hydrated. So this is- if not the first it is definitely one of the first books on how to keep hydrated in the jungle. As an Advanced Sports and Exercise Nutritional Advisor I have studied these matters, about how to hydrate before, during and after a training routine or a competition. But keeping hydrated in the jungle isn't like that. It's easier and yet a bit more complex. Because we have no ambulance standing ready, we cannot buy sport's drinks and we will keep going no matter what for many days in the humid and hot weather. If we didn't bring it, we don't have it, we cannot just go to a shop and buy whatever we want. For example when we do our Extreme Philippine Jungle Expedition we will be away for 21 days, and during these three weeks you won't be able to get any fancy isotonic sport's drink. Now let's get going and see how we can deal with this problem.

Johan Bergman



What's the Problem?



The problem is that if you're not acclimatized and do not hydrate adequately you will be more prone to heat illness. So you have to make sure you're well acclimatized and hydrate correctly.

Humidness

For most people the humidness is the worst thing ever. Do you know why? Have you ever experienced 40°C/104°F in a dry environment? It's ok and bearable. But if I give you 30°C/86°F with 100% humid it's almost unbearable. Why is that? Well this is why; When you are sweating in e.g. 40°C/104°F in a dry environment, the sweat will evaporate through osmosis into the dry air, because the dry air wants to be humid. But when you are sweating in e.g. 30°C/86°F with 100% humid, the air is already saturated with moisture. Everything you sweat will remain on your body, and there will be no osmosis. It's not going to be easier with this knowledge, but now you know why.

Why do we sweat?

When your muscles start exercising, they produce extra heat. In fact, about 75% of the energy you put into exercise is converted into heat, and is then lost. This is why exercise makes you feel warmer. If your temperature rises too high, normal body functions are upset and eventually heat stroke can result. The main method of heat dispersal during exercise is sweating. Water from your body is carried to your skin via your blood capillaries and as it evaporates you lose heat.

The harder and longer you exercise, and the hotter and more humid the environment, the more fluid you will lose.



During an hour of vigorous exercise, an average person could expect to lose around 1 liter/quart of fluid – and even more in hot conditions.

During more strenuous exercise in warm or humid conditions, you could be losing as much as 2 liters/quart an hour!

Every 1 kg/2lb decrease in weight represents a loss of approximately 1 liter/quart of fluid!

Does dehydration affect performance?

Yes! An excessive loss of fluid (dehydration) impairs performance and has an adverse effect on health.

As blood volume decreases and body temperature rises, it places extra strain on the heart, lungs and circulatory system, which means the heart has to work harder to pump blood around your body. The strain on your body's systems means that exercise becomes much harder and your performance drops.

Fluid loss as % of body weight	Effects of dehydration
1% loss	Generates thirst sensation
2-3% loss	Impaired performance and increased
4% loss	20–30% decrease in endurance per formance Symptoms: fatigue, nausea, vomiting and diarrhea
5-6% loss	Heat cramps, chills, nausea, clammy skin, rapid pulse. Dehydration from this point onwards can be fatal - children and older people are more at risk
6-10% loss	Reduced sweat and urine production, weakness, headaches, dizziness, confusion, dry mouth
Over 10% loss	Can be life threatening heat stroke, hallucinations, unsteady walk, no urine or sweat produced

The simplest way to tell if you are dehydrated is to note color and quantity of urine.

From a practical point of view, you should be producing a dilute, pale-colored urine. Concentrated, dark-colored urine of a small volume indicates you are dehydrated and is a signal that you should drink more before and during exercise!

It's wise to monitor the urine output and color because this is a surprisingly accurate way of assessing hydration status.

Urine described as 'very pale yellow' or 'pale yellow' indicates you are within 1% of optimal hydration!

Since we advise everyone to arrive 4-7 days before, to acclimatize, there is time for you to estimate your sweat loss. I hope you understand that you will be doing this in the country where it's hot and humid, for us in Manila. This is how you do:

- Find a weight scale at your hotel or a gym. Find out your weight just before you're going on a run
- Go for a 30min to 60min slow run
- Bring 1 liter/quart of water to drink
- Weigh yourself again

It's wise to monitor the urine output and colour because this is a surprisingly accurate way of assessing hydration status.



E.g. if you have lost 1kg/2lb and you drank 1 liter/quart, that means that you should have brought 2 liter/quart for this run to stay hydrated.

Now you know about how much water you have to drink to stay hydrated.

The best strategy is to work out how much fluid you lose through sweating by weighing yourself before and after a workout, then aim to drink sufficient to ensure a weight loss of no more than about 2%.

But when you're out in the jungle this is the best and simplest way:

The amount and color of your urine is an accurate way of determine your hydration status



The Jungle Trek



Before you start

It is very important to start hydrate in the morning. How much is very personal. But as a rule of thumb don't gulp it down, drink it throughout the hour. In the morning I would suggest 1 liter/quart of purified water along with one package of ORS, Oral Rehydration Salt.

ORS provides you with ideal amounts of lost electrolytes.

The American College of Sports Medicine (ACSM) recommends drinking 5 to 7 ml of fluid per kg of body weight slowly between 4 and 2 hours before exercise to promote hydration and allow enough time for excretion of excess water.

That's equivalent to 350– 490 ml for a 70 kg person.

I think this is a bit on the low side for us

ORS, Oral Rehydration Salt, provides you with ideal amounts of lost electrolytes.

During the trek

Significant fluid losses will result in a drop in performance for most (non-elite) athletes, so experts advise limiting dehydration to less than 2% of your body weight.

For example, this would mean 1kg/2lb for a 50kg/110lb person, 1,5kg/3lb for a 75kg/165lb person, and 2kg/4,5lb for a 100kg/220lb person.

Studies have shown that you can maintain optimal performance if you replace at least 80% of your sweat loss during exercise.

During hot and humid conditions you may be losing more than 1 liter/quart of sweat per hour. Therefore, you should increase your drink volume (although still be guided by your thirst), if possible, and use a more dilute drink: around 20g/0,7oz–40g/1,4oz of carbohydrate per liter/quart.

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Simple Sports Drink (hypotonic)

- 1. 1 liter/quart purified water**
- 2. 1-3 tbsp of sugar**
- 3. 1 pinch of salt**



So we suggest that you experiment with this formula. Try to drink the sports drink with every or every other liter/quart water you drink. Test to use one tbsp sugar and the next one you drink with two tbsp sugar. Try and test to see what works for you.

It's now during the trekking you should experiment with how much water you should drink throughout the day, depending on how much you sweat. But try not drink 8 ml of fluid per kg of body weight slowly in 1 hour to promote hydration. That's equivalent to 560 ml for a 70 kg person, and through monitoring your urine you'll know if you should increase the amount of fluid.

The amount and color of your urine is an accurate way of determine your hydration status

After the trek

Both water and sodium need to be replaced to restore normal fluid balance after exercise. This can be achieved by water (or non-sports drinks) plus accompanying food if there is no urgency for recovery.

Ideally you should drink approximately 1.2– 1.5 times the weight of fluid lost during exercise. 1 liter/quart of sweat is roughly equivalent to a 1kg/2lb body weight loss.

Example:

Weight loss during exercise: 1 kg/2lb

Rehydration needed: between 1.2 and 1.5 liters/quarts (i.e. 1 x 1.2 and 1 x 1.5)

The simplest way to work out how much your client needs to drink is to weigh themselves before and after training.

It's not advisable not to drink the whole amount straightaway, as a rapid increase in blood volume promotes urination.

Consume as much as you feel comfortable with, then drink the remainder in divided doses until you are fully hydrated.

Are sports drinks better for recovery?

Sports drinks may be better than water at speeding recovery after exercise, particularly when fluid losses are high (e.g. a loss of more than 5% bo-

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dy mass) or for those athletes who train or compete twice a day.

The downside with drinking water is that it causes a drop in blood osmolality (i.e. it dilutes sodium in the blood), reducing your thirst and increasing urine output, and so you may stop drinking before you are rehydrated!

What's the best post-exercise drink?

Sodium plays an important role in driving the thirst mechanism.

A low sodium concentration in the blood signals to the brain a low thirst sensation.

Sports drinks, on the other hand, increase the urge to drink and decrease urine production.

I would suggest you keep on drinking the sports drink until you are hydrated. If it has been a very hard day don't forget to take an ORS. Now you know how to determine your hydration status.

The amount and color of your urine is an accurate way of determine your hydration status

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