



Hydration

“Exercise is thirsty work!”

The Complete Guide to Sports Nutrition, 6th ed. (2009)

by Anita Bean

and

*British Nutrition Foundation’s “Healthy Hydration”
(2010)*



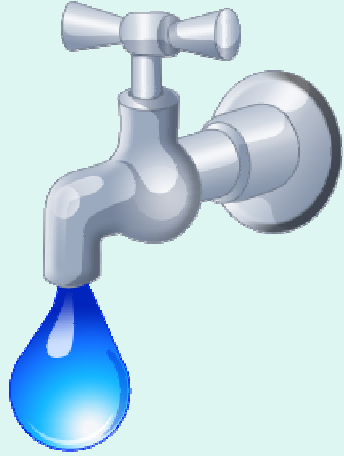
Today's just a taster!

- to help you to begin to understand your own fluid balance
- to rein in a few myths and misconceptions
- to give you some take-home pointers
- then hand over to the experts!



General guidance:

- water is our most important nutrient
- on average, adults should take in 6-8 glasses of fluid daily
- the thirst reflex, when triggered, is usually a good indicator of body's fluid needs
- our bodies are at least 50% water!
 - see handout: “Healthy Hydration”
 - <http://www.nutrition.org.uk/>



Fluid losses...

...depend on:

- intensity of exercise
- duration of exercise
- ambient temperature and humidity
- individual body chemistry (gender differences)



Muscle versus Fat:

- all tissues of the body, even bone, contain fluid (intracellular and extracellular)
- muscle tissue is 70-80% water
- fat tissue is only 20% water
 - higher % body fat = lower % body water
 - average adult male: 50 litres body water
 - average adult female: 30 litres body water



Why sweat?

- Exercise produces heat and makes you feel warmer
- Sweat is produced to cool the body keeping body temperature within safe limits (37-38°C)
- Individual variation in sweat loss for same exercise level (eg: women “glow”)



Dangers of dehydration:

- decreased blood volume
- increased body temperature
- extra strain on heart, lungs and circulation
- declining performance
- fatigue and eventually “heat stroke”
 - the more dehydrated you are, the *less* able you are to sweat



Am I dehydrated?

- Mild dehydration is common amongst athletes and non-athletes
- Prevention is better than cure
- Dehydration is cumulative so failing to rehydrate between exercise sessions can result in:
 - sluggishness, general fatigue, loss of appetite, feeling excessively hot, lightheadedness and nausea



If your pee is...

- a dilute, pale straw colour, you're likely to be well hydrated
- monitoring urine output and colour is a surprisingly accurate way of assessing hydration status
- urine described as “very pale yellow” or “pale yellow” indicates you are within 1% of optimum hydration



When, what and how much?

- Exercise lasting:
 - up to 30 mins
 - low-moderate intensity, up to 1 hr
 - high intensity, up to 1 hr
 - high intensity, more than 1hr
- Drink:
 - nothing, water
 - water
 - hypotonic or isotonic sports drink
 - hypotonic or isotonic sports drink or glucose polymer drink



When, what and how much?

- **Before exercise:**
- Remember prevention is better than cure
so:
- start your exercise well hydrated
- stop drinking about an hour before exercise
- check your weight before exercise (and again after) to define your personal fluid losses for different exercise activities



When, what and how much?

- **During exercise:**
- fluid loss is unavoidable
- a small net fluid loss (<2% loss body wt) unlikely to affect performance
- drink according to thirst to avoid “water intoxication”
- If >4hrs exercising in warm weather, drink no more than 800ml per hour and sip a sports drink rather than just water



When, what and how much?

- **After exercise:**
- don't forget to rehydrate
- take in 1.2-1.5x amount of fluid lost during exercise
 - eg: if you've lost 1kg after 1 hour's exercise, drink 1.2 to 1.5 litres of fluid gradually
- sports drinks, possibly skimmed milk



DIY sports drinks:

- **hypotonic** (usually $<4\text{g CHO}/100\text{ml}$)
 - 20-40g sugar, 1 litre warm water, $\frac{1}{4}$ tsp salt (optional), sugar-free squash for flavouring
 - 100ml fruit squash, 900ml water, $\frac{1}{4}$ tsp salt (optional)
 - 250ml fruit juice, 750ml water, $\frac{1}{4}$ tsp salt (optional)



DIY sports drinks:

- **isotonic** (usually 4-8g CHO/100ml)
 - 40-80g sugar, 1 litre warm water, $\frac{1}{4}$ tsp salt (optional), sugar-free squash for flavouring
 - 200ml fruit squash, 800ml water, $\frac{1}{4}$ tsp salt (optional)
 - 500ml fruit juice, 500ml water, $\frac{1}{4}$ tsp salt (optional)



Caffeine and rehydration:

- it is a myth that you should completely avoid rehydrating with caffeinated drinks like tea, coffee or cola
- in large doses, however, (>600mg caffeine) can cause net fluid loss
- coffee, tea and cola beverages can be part of rehydration regimen (eg: up to 5 cups/day)



Caffeine content:

- **Food item:**
 - ground coffee
 - instant coffee
 - decaf coffee
 - tea
 - energy/sports drinks
 - cola
 - energy gel
 - chocolate
- **caffeine content**
 - 80-90mg/cup
 - 60mg/cup
 - 3mg/cup
 - 40mg/cup
 - up to 100mg/can
 - 40mg/can
 - 40mg/sachet
 - 40mg/54g bar



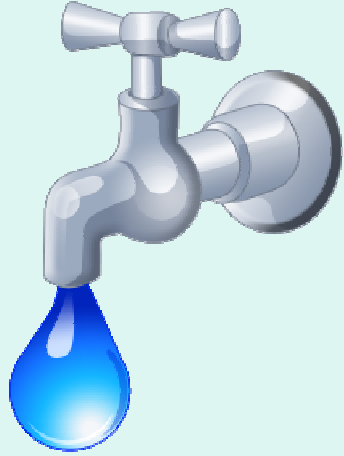
What about alcohol?

- may appear to make you more alert and confident BUT (even in small amounts):
- reduces coordination, reaction time, balance and judgement
- reduces strength, power, speed and endurance
- reduces efficiency of body temp regulation
- reduces blood sugar levels
- can induce net fluid losses (dehydration)



Rehydrating or dehydrating?

- **it depends on the drink!**
- low to medium strength beers (relatively low %abv) are not dehydrating but...can lead to gains in body fat
- drinks with more than 10%abv cause net fluid loss
 - 1x250ml wine, net loss 100mls fluid
 - 1 double of spirits, net loss 150mls fluid



Sensible drinking:

- begin rehydration with a non-alcoholic drink
- intersperse alcohol with water, diluted fruit juice, etc
- favour long drinks eg: wine spritzers, plenty of low calorie mixers with spirits
- for optimal performance, avoid alcohol



More info available from:

- Linia Patel's specialist sports nutrition session on 13th June 2010 at IBM club house, Hursley.
- Anita Bean's publications
- *Case Notes* programme (originally broadcast on Tuesday 18th May 2010, 9pm) on BBC Radio 4
 - available to listen again on BBC i-player