

ENDURANCE JOURNEY

Daily Hydration Guidelines*

Option #1:

- Bodyweight (in kg) x 0.033 = amount you consume in litres of water PER DAY. For example, 68kg (150lb) person would consume ~2.25 liters per day.

Option #2:

- Water - First 10 hours of the day average ~240 ml per hour
- Then 120-150 ml per hour for the remainder of the day
- Reason - higher hydration demand earlier in the day

[*Check out this Huberman Lab Podcast for more info](#)

Question for you to consider - With the above guidelines what changes would you make if any to your current daily water intake?

Electrolytes During Activity

- Aide in managing your fluid balance, muscle contraction, heart function, blood pressure, brain function, and energy production
- Look for white bands on a hat or headband when you are sweating (salt). If you see them increase sodium intake.
- Fatigue, muscle cramps, loss of appetite, dizziness, muscle tremors, muscle weakness, nausea may indicate you need to increase your intake of electrolytes
- High blood pressure, disrupted heart rhythm, vomiting, diarrhea may indicate your electrolyte levels are too high

Suggested Electrolytes Dosages for Athletic Performance

HYDRATION GUIDELINES

For Training/Racing



BEFORE/AFTER*



~500ml -750ml water

+



~500 to 1000 mg
sodium

DURING*

(PER HOUR)



~500-1000ml water (cycling)
~250-500ml (running)

+



~300-1000mg sodium

+



~100-200mg
potassium chloride/citrate

+



~30 to 60 mg
magnesium malate

Minimum - Consume 1ml of water+electrolytes per pound of
body weight every 15 mins during training/racing

*The suggested water and sodium quantities can up to 2x
depending on the heat/humidity, intensity, body mass, and
sweat rate of the individual. Adjust for your needs.

Training Hydration Guidelines Chart by Body Weight (lbs) - [Source: Galpin Equation](#)

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Weight In Pounds	ml of Electrolyte Drink Every 15 Min
100	90
125	125
150	150
175	172
200	198
225	222
250	245
275	272
300	295
325	320

Adjust intake as the conditions require (i.e., temperature/ heat/ humidity/intensity of effort)

Homemade hydration:

Ingredients (mix into 700ml - 1L of water):

- 1/2 tsp Salt (1000 mg sodium)
- 1 tsp Potassium Chloride/Citrate Powder (~200 mg potassium)
- 1/4 tsp Magnesium Malate Powder (~60 mg magnesium)

OR try [Element Electrolyte mix here](#)

Question for you to consider - With the above guidelines what changes would you make if any to your current water and electrolyte intake during training?

Determining fluid/sweat loss during exercise:

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Steps:

- Before exercise, void all urine
- Weigh in wearing little to no clothing (to obtain accurate reading)
- During exercise monitor quantity of fluid consumed (intake fluid only during session)
- After exercise, towel off and step onto scale again (wear exactly what you wore during pre exercise weigh in)

Here is a sample protocol (from [Asker Jeukendrup](#)):

1. Go for a pee and then record your body weight, ideally with no clothes on (**that's A**).
2. Perform your session (or event) and record exactly how much you drank. This is easy if you drink from a single bottle or two; simply weigh your bottles before you ride (**that's X**) and after (**that's Y**) and record the difference (**that's Z**). 1 gram = 1 millilitre.*

*Make sure all units are in kg or liters

3. After exercise, towel yourself dry and then record your weight (**that's B**). Again no clothes on is best, as your clothes will hold some sweat.

4. Now subtract your post-exercise weight (**B**) from your pre-exercise weight (**A**) to get the weight you lost during the session.

Weight lost (**C**) = **A-B**

5. Also subtract the weight of the bottle(s) before (**X**) and after (**Y**) to obtain the amount you consumed (**Z**).

Volume consumed (**Z**) = **X-Y**

6. You can now calculate your sweat rate...(**C+Z**) / time.

Note: It's best to try not to pee during these sessions, as this can skew the results. However if you do have to go, it's not a bad estimate to assume a fluid loss of ~0.3l (300ml) per bathroom stop. You then just need to subtract 300ml (0.3kg) from your estimated sweat rate at the end.

Rehydration Recommendations based on fluid loss measurement:

Consume

- 1L per kg of body weight lost during exercise (500-750ml per pound).
- Focus on your recovery hydration first before drinking alcohol.

Female Hydration Considerations ([see this article for more details](#)):

- Overall effect of the menstrual cycle on sodium and fluid balance is minimal in the follicular phase.
- During the luteal phase of cycle higher progesterone inhibits sodium reabsorption which increases sodium excretion in the urine.
- Lower total body sodium leads to reduction in blood volume which may cause elevated heart rate and increased core body temperature
 - cool towel around neck prior to session
 - high sodium electrolyte supplement - e.g., 1000mg Na - taken prior to training may help
 - helpful for menopause too ([see this article for more details](#))
- [Here is a great article on electrolyte and hydration recommendations for pregnancy + breastfeeding.](#)

KEY POINT: Best to document your response to your hydration plan frequently during training sessions (begin 3-4 months out from key events).

MANAGING HYDRATION CHALLENGES

If abdominal cramping, stomach upset,
diarrhea, GI distress



POSSIBLE SOLUTION

- Decrease or stop carbohydrate intake, swish and spit, decrease intensity until it subsides
- Smaller sips and bites - chew solids completely before swallowing and take with water can help absorption (every 5-15 minutes)

If Bloating, Stomach Sloshing,
Extremity Swelling



POSSIBLE SOLUTION

- Decrease or stop carbohydrate intake, swish and spit, decrease intensity until it subsides
- Check electrolyte vs water intake up until that point. Add electrolytes if not meeting target or decrease fluid intake if not absorbing.
- Small sips

Weakness, Fatigue, Overheating



POSSIBLE SOLUTION

- Heat and humidity increase hydration needs (less required in cooler temperatures)
- Increase fluid, calorie, and electrolyte intake (e.g., 500ml water +300-600mg sodium, 30-60grams of carbs in 5 min increments)

Customize Your Hydration Plan Through Documentation

Key Areas To Document (best to document by hour):

- What did I consume during the session and at which time intervals?
- How much fluid (ml or litres)?
- How many calories (fluid and solid calories)?
- How much electrolytes (Sodium, Magnesium, Potassium)?
- What did you take in (which products)?
- Temperature, wind, humidity conditions during the ride.
- Intensity of the session (e.g., smart watch data)
- How did you feel during the session (good areas and rough patches)?




Additional Information for further insight:

- Pre and post session body weight to measure fluid loss?
- Any cramping, GI distress, nausea, pain, dizziness, chills, etc.?
- Female - What day in your cycle was this session completed?
- Want to use what the race course will provide for hydration? Practice with it in training several times prior to the race!

Sample Hydration/Nutrition Document Checklist Spreadsheet ([click here to view and copy](#))

Pros and cons of various hydration systems

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Type	Pro	Con	Example
Water Bottle	<ul style="list-style-type: none"> • Easy to store multiple on a bike frame • Can manage intake easily • Easy to clean, inexpensive 	<ul style="list-style-type: none"> • Need practice to retrieve on bike • Can run out of fluid as bottles are small volume • Not comfortable to carry in hand • Need carrying belt or vest • Can change arm swing 	
Hydropack	<ul style="list-style-type: none"> • Hands free, easy to sip anytime while running (more challenging on the bike) • Can hold higher volumes of liquid 	<ul style="list-style-type: none"> • Can be hot and more clean up time • Bouncing, chafing • Difficult to tell how much fluid is being consumed • Bulky - effect aerodynamics on the bike 	
Handheld Flask	<ul style="list-style-type: none"> • Can fit into jersey pocket to hold gels • Light, fits to palm, 6, 8, 12 oz • Often options to carry other items like gel packs, gummies, etc. 	<ul style="list-style-type: none"> • Can change arm swing 	
Running Belts	<ul style="list-style-type: none"> • Extra storage • Bottle or flask option • Can carry own energy supply solid or liquid • Since many large races are banning hydration packs, these are a great option. 	<ul style="list-style-type: none"> • Can change arm swing • Unequal weight distribution of items can impact gait • Bouncing, chafing 	