

Many club swim athletes are not properly hydrated going into practice. In fact, a recent study suggests that **89% of high school athletes went into practice under-hydrated**. If you've read *It's All About Hydration*, you're off to a great start. You also know the detriment of NOT drinking enough fluids, both to health and performance. In this article we will get into some of the finer details when it comes to dialing in your hydration.

What can I do practically to stay hydrated? Bring a refillable water bottle with you wherever you go! Choose one in your favorite color that is easy to pack (20-32 oz bottles are typically a good size). Consume 8-16 oz 30 minutes before each training session, and 16-24 oz after for every pound lost (more on this in a minute). During practice, make it a point to take sips throughout. The *Galpin Equation* can be helpful for those who like to get technical – take your body weight divided by 30. This is how much fluid to consume every 15 minutes during practice. Consume hydrating foods and carbohydrates that help you retain fluid throughout the day. Things like juices, milk, fizzy water, and electrolytes all count toward your hydration goal!

Do I need electrolytes? Water alone will not keep you hydrated; electrolytes ensure fluid balance in the body. The most important

electrolytes for the swim athlete to replenish are sodium and chloride (aka salt). The amount of salt lost is highly individual! Common sweat sodium concentrations range from 500-1000 mg/L. Potassium is important as well, as it works with sodium and chloride to pull water into cells. There are other elements lost in smaller amounts (such as magnesium and calcium). All of these electrolytes can be obtained through food. However, electrolyte drinks provide a convenient way for the busy athlete to make sure they are replenishing what is lost through sweat. For examples of excellent electrolyte food sources to add into your fueling plan, see *Micronutrients for Performance*.

How do I find my sweat rate? It can be hard to tell how much you are sweating in the pool. With a simple equation, you can find out your own sweat rate! An athlete's sweat rate is highly individual and is affected by training status, water/facility temperature, clothing, phase of the menstrual cycle for females, and genetics.

**$((\text{Weight before activity} - \text{weight after activity}) \times 16) +$
ounces consumed during training = Sweat Loss**

Sweat Rate/hour = Sweat Loss (ounces) / # of hours of activity

Other tips:

You will want to factor in fluids consumed during exercise and urine output (use the estimate of 0.3L per bathroom visit) for the most accurate results. It is also helpful to test your sweat rate during a training session that is 1-2 hours in length. Be sure that your weight before activity is taken suited up, and your weight after is taken completely dried off.

For every pound lost, it is recommended to replenish with 16-24 oz of fluids after the activity has ended.

So, what does a day of hydrating look like for a 120 lb female athlete with a sweat rate of 0.5 lbs/hr? Let's say she has two practices that day, both of which are 2 hours.

This athlete will use $120/2$ (bodyweight divided by 2) as her baseline, or 60 oz. She will rehydrate with 16-24 oz after each practice (she loses about 1 lb per 2-hour practice).

Her total daily intake to maintain hydration status would be:

$$60 + 16 + 16 = 92 \text{ oz}$$

$$60 + 24 + 24 = 108 \text{ oz}$$

This athlete should shoot for 92-108 oz of fluids on her double days.

*Note: during the luteal phase of the menstrual cycle, resting metabolic rate and core body temp rise (see *Females: Nutrition to Power Through Your Cycle*). It would be a good idea for her to test her sweat rate during this phase of the cycle as well for even more accurate results!

Concluding Thoughts

No sweat rate calculation is 100% accurate. However, it will give you a better understanding of how much to replenish after training and throughout the day. Both under and over-hydration pose serious risks, so it is helpful to know your individual sweat rate so that you have a more precise range to shoot for!

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