

Calculating Sweat Rate

Sweat rate is KEY to understanding your body and how much fluid you require. Once you know your fluid loss, over DIFFERENT temperatures, then you know how much you need to drink per hour to stay hydrated. Different temperature on race day, and different humidity levels will affect your numbers so you need to baseline test multiple times and record the number so you have an average. We did this on the 'run', since it would be the easiest way to make the calculations and we basically run three times a week, so you'll get three baseline readings quickly. Try to do it on one hour or two hour runs.

It's a basic formula that's very simple, and you can just create an Excel spreadsheet and plug in the numbers to get an average. You want to test yourself over hot, humid, cool, cloudy and sunny conditions so you begin to see a pattern or average.

Here's how to calculate it:

The goal is to see exactly how much dehydration you incur during your workout and in turn, determine your hourly fluid replacement (how much you need to drink). When you are done with this homework, you will have a hydration target that you can use in both training and racing.

1. Empty your bladder and record your weight (nude or swim suit)
2. Pre-exercise weight = _____ lbs.(A)
3. Do your usual workout, and drink like you normally would.
4. Record the approximate volume of fluid consumed during exercise.
How much you drank = _____ fluid ounces (E)
5. Towel dry, empty your bladder and then record your weight (nude or swim suit).
Post-exercise weight = _____ lbs.(B)
6. Subtract your post-exercise weight from your pre-exercise weight to get the number of pounds you lost during exercise.
Weight lost = _____ lbs.(A) - _____ lbs.(B) = _____ lbs.(C)
7. To find out how many fluid ounces of water you have lost,
multiply pounds x 16 _____ lbs(C) x 16 = _____ fluid ounces of water you lost during exercise (D)
8. To determine hourly fluid replacement needs, add number of fluid ounces you lost during exercise (D) to the number of fluid ounces you consumed during exercise (E) and divide by total number of hours spent training.
(_____ fluid ounces (D) + _____ fluid ounces (E)) ÷ _____ hours = _____ fluid ounces needed each hour

Conditions that will increase sweat rate include heat, humidity, and elevated heart rate (high intensity training). Athletes should measure sweat rate across several workouts to determine their fluid replacement needs in various environmental conditions.

On race day, based on the forecast, the athlete then can go back to their log and know exactly what fluid they need to plan on ingesting to prevent performance declines associated with dehydration. Deaths have occurred when the air temperature was less than 75 degrees F (24 degrees C) but the relative humidity was above 95%. Humidity levels over 75% will contribute to an increased risk of heat injury.

*Note that a factor of 1.2-1.6 can be multiplied to hourly replacement needs when heat &

humidity (>75%) are extreme.

This is a key component to any athlete's performance. Just as an example, here's a sample of how our numbers look:

| Kev | | Kat | |
|-------------------------------------------------------------------------------------|---------------------|----------------------------|-------------------|
| May 31/11 - 2h 7-9PM, sunny evening RUN @ 25C with HUMIDEX 28C | | | |
| pre-workout | 170.6 | pre-workout | 128.6 |
| post-workout | 166.4 | post-workout | 124.6 |
| difference | 4.2 lbs | difference | 4 lbs |
| fluid loss (x16) | 67.2 oz | fluid loss (x16) | 64 oz |
| fluid intake | 10 oz | fluid intake | 8 oz |
| total required | 77.2 oz | total required | 72 oz |
| divided by duration (2hrs) | 38.6 oz/hour | divided by duration (2hrs) | 36 oz/hour |
| 1142 ml/hour | | 1065 ml/hour | |

| Kev | | Kat | |
|-------------------------------------------------------------------------------------|---------------------|---------------------------|-------------------|
| June 2/11 - 1h 7-8PM, cloudy cool evening RUN @ 13C NO HUMIDEX | | | |
| pre-workout | 168.2 | pre-workout | 127.2 |
| post-workout | 167 | post-workout | 126.2 |
| difference | 1.2 lbs | difference | 1 lbs |
| fluid loss (x16) | 19.2 oz | fluid loss (x16) | 16 oz |
| fluid intake | 0 oz | fluid intake | 0 oz |
| total required | 19.2 oz | total required | 16 oz |
| divided by duration (1hr) | 19.2 oz/hour | divided by duration (1hr) | 16 oz/hour |
| 567.8 ml/hour | | 473.2 ml/hour | |

| Kev | | Kat | |
|------------------------------------------------------------------------------------------|----------------------|------------------------------|----------------------|
| June 7/11 - 1h30 7:30-9PM, sunny evening RUN @ 29C with HUMIDEX 31C | | | |
| pre-workout | 169.6 | pre-workout | 128 |
| post-workout | 167 | post-workout | 126.4 |
| difference | 2.6 lbs | difference | 1.6 lbs |
| fluid loss (x16) | 41.6 oz | fluid loss (x16) | 25.6 oz |
| fluid intake | 17 oz | fluid intake | 10 oz |
| total required | 58.6 oz | total required | 35.6 oz |
| divided by duration (1.5hrs) | 39.07 oz/hour | divided by duration (1.5hrs) | 23.73 oz/hour |
| 1155 ml/hour | | 701.9 ml/hour | |

Kevin
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