

## Hydration and the Body

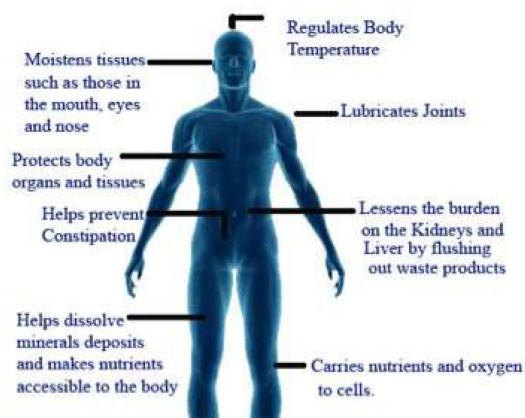
Hydrated cells are critical to get the most out of daily training and facilitate recovery. The effects of significant dehydration can take hours and even days to recover from. Athletes should develop strategies to monitor and adapt an individual hydration plan according to changes in:

- ▶ Intensity of training
- ▶ Duration of training
- ▶ Frequency of training
- ▶ Fitness level
- ▶ Environmental conditions (e.g. heat, altitude, plane travel, surgery, illness, hard training)

**Performance can be negatively impacted by as little as 2 to 3% body weight loss from sweat (e.g. 3-4 lb. for 150 lb. athlete)**

## Signs and Symptoms of Dehydration

- ▶ Lack of concentration
- ▶ Early fatigue in training session
- ▶ High perceived exertion in training
- ▶ Trouble tolerating heat
- ▶ Delayed recovery
- ▶ Muscle cramps
- ▶ Headaches
- ▶ Nausea and vomiting
- ▶ Heart rate elevated above normal response



## Importance of Hydration on Performance

- ▶ Enhances the body's ability to regulate temperature and cool efficiently while avoiding unnecessary elevation in heart rate
- ▶ Improves ability to recover quickly from training and competition
- ▶ Minimizes muscle cramps
- ▶ Enhances mental function, decision making, concentration, and motor control
- ▶ Supports effective immune defenses

### Three Indicators of Dehydration

You are likely dehydrated if *two or more* of these markers are outside the normal range:

1. Color of morning urine (dark in color)
2. Waking body weight (lower than usual)
3. Thirst (greater than usual)

***It can take up to 24 hours for the body to regain fluid balance after dehydration***

## How Much Fluid is Enough?

Fluid needs are very individual. These are general guidelines and a starting point.

When	How much
Before training	2-3 hours before: > 16 oz. 15 minutes before: 8 oz.
During training	Enough to limit dehydration to <2% body weight loss
After training	16-24 oz. for every pound lost

## Drink Up! Fluid needs are higher during:


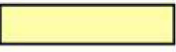



Heat                      Hard Training

Humidity                  Altitude

**Note:** If you are a salty sweater, eat salty foods like pretzels and soup after training to help replace sodium losses.

## Monitoring Daily Hydration Status

Use the urine color chart and aim for a morning urine color of 2 - 3 (pale yellow, lemonade color). Dehydration is indicated by a urine color of  $\geq 4$ .

	USG Value	Indication
	1 < 1.009	Well-hydrated
	2 1.009 - 1.020	Hydrated
	3 1.021 - 1.025	Minimal dehydration
	4 1.026 - 1.030	Significant dehydration
	5 $\geq 1.031$	Severe dehydration

The color of urine is associated with urine specific gravity (USG). USG measures the concentration of particles in the urine with > 1.020 indicating dehydration. USG should be assessed at the first morning urine void.

## % Body Weight Loss Calculation

% body weight loss = (wt before - wt after) / wt before

**Ex:** If weight before is 150 lb and weight after is 146 lb..

$$(150 - 146) / 150 = 2.6\% \text{ loss}$$

Goal is to drink more during exercise to minimize weight loss.

## Water vs. Sport Drinks

The best fluid to consume is *water*, which should be consumed throughout the day, during training, and at meal times.

If training is > 60-90 minutes, a sports drink may help replenish fluids and electrolytes lost in sweat and provide a quick energy source to sustain performance during intense and longer duration training sessions.

## Simple ways to increase fluid intake

- ▶ Carry a water bottle at all times to increase water consumption throughout the day
- ▶ Aim to drink at least 2 cups of water at all meals
- ▶ Fruit and veggies have high water contents
  - ▶ Snack on oranges, berries, melons, pineapple
  - ▶ Top a rice bowl with eggplant, bell peppers, zucchini, shredded carrots
- ▶ Make a fruit smoothie for breakfast or a snack
- ▶ Drink 8 oz. of water, milk, 100% fruit juice, herbal tea or coconut water with breakfast
- ▶ Begin lunch or dinner with veggie soup
- ▶ Drink a glass of milk after training or before bed
- ▶ Brew a cup of herbal tea in the evening

## Athlete Recommendations: