

# HYDRATE BEFORE, DURING AND AFTER PHYSICAL ACTIVITY



Major League Soccer's Los Angeles Galaxy and U.S Men's National Team superstar **Landon Donovan** knows firsthand the importance of hydration and the critical role it plays in ensuring optimal performance on the playing field.

"If you're dehydrated, it affects how you feel and how you play. Hydration is an element of the game you can control and it's just something simple you can do that **makes a huge difference**," Landon said.

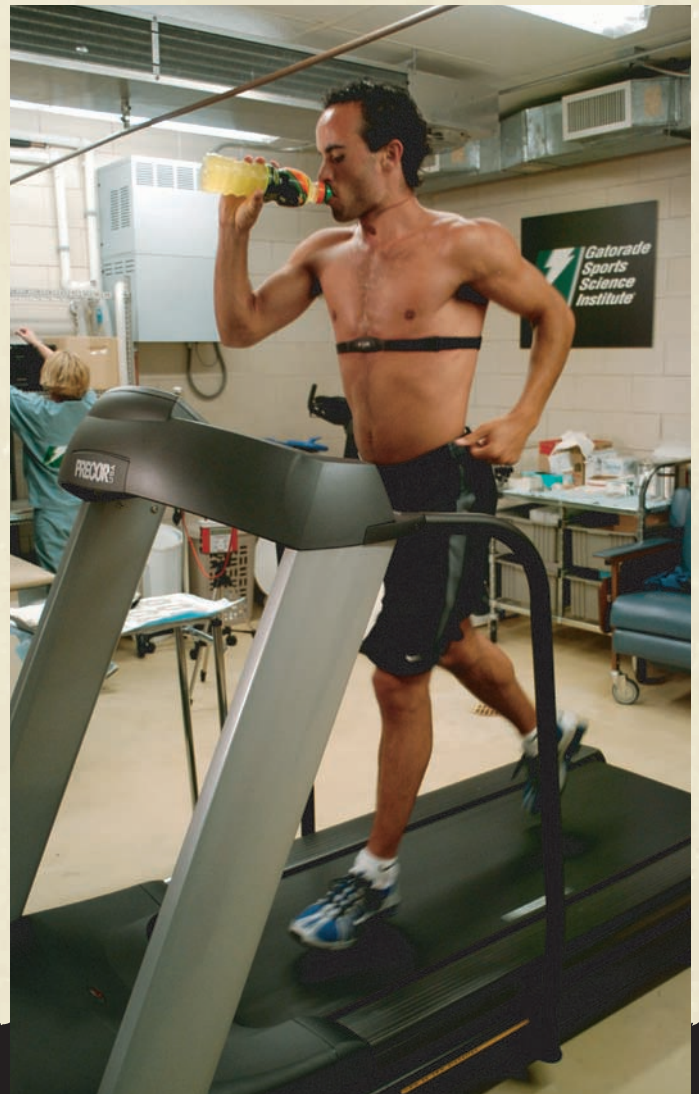
## LANDON'S VISIT TO GSSI

With the potential dangers of dehydration in mind, as well as the opportunity to gain every possible competitive edge, Landon visited the Gatorade Sports Science Institute (GSSI) in Chicago. GSSI has tested hundreds of elite professional and amateur athletes from all over the world to help them understand their individual hydration needs so they can feel and perform at their best.

While learning ways for improving his personal hydration status, Landon also gained further insight about the positive effects of hydration versus the negative effects of dehydration and how they influence his performance.

"Hydration is important because when you're hydrated, playing is much easier and you don't worry about anything but the game," Landon said. "But when you're dehydrated, you can feel sick, you can cramp, get dizzy, and it can even become more severe than that. In the worst cases, dehydration not only can affect your performance, but also can lead to dangerous heat illnesses if you let it go too far."

In the lab, Landon performed exercises that simulated the real-world conditions of moderate-intensity, continuous exercise in the heat in order for the scientists to examine different aspects of his sweat. The test simulated Landon's physical responses to efforts that would be put forth during a game under 85-degree conditions.





## LANDON'S HYDRATION PLAN

"I learned that I sweat an average amount; however, I have an above-average sweat sodium concentration, which means I am a "salty sweater." I also learned that while I do drink enough before a workout, I don't drink enough during and afterward to hydrate myself. So, making subtle changes, like eating a saltier diet during heavy training, replacing more of my sweat losses, and making sure to hydrate fully after activity and before my next match can really help my performance," he said.

A key ingredient to Landon's hydration plan is the consumption of Gatorade. At GSSI, Landon learned about the importance of using sports drinks to replace electrolytes, like sodium and potassium, in addition to providing carbohydrate energy to fuel muscles — which water alone does not have. He also learned about how the flavor and sodium in sports drinks help an athlete to drink enough to achieve more complete hydration.

## THE IMPORTANCE OF HYDRATION FOR ALL ATHLETES

Staying hydrated is important for athletes of all ages, not just superstar athletes like Landon. Research shows that sweat losses during a soccer match can be as great as 3 quarts or more when temperature and/or humidity are especially high! In addition, a recent study shows that more than two-thirds of young athletes show up for practice already significantly dehydrated<sup>2</sup>. This puts them at increased risk for more serious heat illnesses such as heat exhaustion and heat stroke.

Hydration can also have a tremendous impact on performance, especially late in the game — when 30 percent of total goals are typically scored<sup>3</sup>. Impaired performance, especially during the second half of a soccer match, is primarily related to fatigue, which is associated with dehydration. Sweat loss equivalent to as little as 2 percent of body weight can impair performance<sup>4</sup>. However, such problems are avoidable, so long as athletes remember to stay hydrated before, during and after physical activity.

"I think dehydration is easily preventable, if you're smart about it," Landon said. "A good hydration plan can be the difference between having enough energy to score that winning goal in the 90th minute or lying on your back and watching the other team run victory laps around the field. So, it's crucial."

## Drink to Replace Fluid Losses

When you're engaged in activity that produces continuous sweating, it's important to have a regimen to replace fluid losses and ensure optimal hydration.

The best way to do this is to understand how much fluid you're losing through sweat and then drink to match these fluid losses (try not to underdrink or overdrink, as overdrinking can be dangerous, even fatal). An easy way to do this is to weigh yourself before and after practices or games. You can use the following equation:

$$\begin{aligned} &\text{Weight lost during exercise (in ounces)} \\ &+ \\ &\text{Fluid consumed during exercise (in ounces)} \\ &= \\ &\text{The amount you SHOULD be drinking} \end{aligned}$$

*NOTE: 16 ounces of fluid equals 1 pound of fluid loss. The above equation does not account for any urine loss.*



If you are unable to weigh yourself before and after exercise, the following is a general rule of thumb:

WHEN	Body weight = less than 90 lbs.	Body weight = more than 90 lbs.
1 hour before activity <sup>5</sup>	3 – 6 oz. of fluid	6 – 12 oz. of fluid
During activity, every 20 minutes <sup>6</sup>	3 – 5 oz. of fluid	6 – 9 oz. of fluid
After activity, to replace fluids lost through sweat <sup>5</sup>	Up to 8 oz. of fluid per ½ lb. lost	Up to 12 oz. of fluid per ½ lb. lost

*Easy tip: Learn to drink for individual needs. One or two gulps typically equal an ounce of fluid.*

1 Aragon-Vargas, et al. Thermoregulation and Fluid Balance During Professional Soccer Competition in the Heat. 168 Board #75 9:30 - 11:00 AM. *Medicine and Science in Sports and Exercise*, 2005, 37 (5sup).

2 Walker, SM, Casa, DJ, et al. Children participating in summer soccer camps are chronically dehydrated. *Medicine and Science in Sports and Exercise*, 2004, 36 (5sup).

3 *The Performance Zone* (Basic Health, 2004).

4 *Perspectives in Exercise Science and Sports Medicine*, Vol 3, 1990, p. 15.

5 Adapted from the 2000 National Athletic Trainers' Association Position Statement: *Fluid Replacement for Athletes*, *J Athletic Training* 35(2): 212-224, 2000.

6 Adapted from the American Academy of Pediatrics Position Statement, *Pediatrics* 106: 158-159, 2000.