



# Iowa City West Trojan Wrestling



## Hydration Basics

**Todd McKinley MD**

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One, and probably the biggest, misconception of weight reduction for wrestling is the use of dehydration for weight control. There are some realities that need to be addressed. First of all, dehydration is by far the quickest way to lose a lot of weight in a hurry. However, it does not reflect any change in your body fat or true weight lost. Secondly, prolonged chronic dehydration PREVENTS weight control. Read on. To understand this, you need to understand some of the basics of human physiology.

In an athletic young male, 60% to 65% of your body weight is water. Two-thirds of the water in your body is inside all of your cells and the remainder is in your blood system or stuck between the cells. When you are fully hydrated, the water you drink goes from your stomach into your blood system and then circulates all around your body. It will exchange itself with the water inside of the cells to keep all the water up to date around your whole body. ANY extra water you drink will get eliminated by urination. If you continue to drink, your kidneys realize you are completely hydrated and they get rid of the extra fluid. You get up and urinate a lot. It's not like you just keep getting heavier and heavier. So if you think about this, if you remain fully hydrated your body is completely perfect at getting rid of the extra water. This is the level of hydration your body wants.

So what happens when you dehydrate? Say you stop drinking because you have to lose weight. What happens? You get thirsty. Thirst is the second most potent and basic drive your body has to survive. (Can you think of the MOST potent? It is your desire to breathe. See how long you can hold your breath). What makes you get thirsty? Doctors know this is from the sodium concentration in your blood going up. As you lose water and the amount of water in your blood goes down, the concentration of sodium goes up. Now, remember that we are all constantly losing water every second of every day. Every breath you exhale you lose water. Every second of every day, you are losing water through your skin (this is what controls your "drift" at night when you are closely monitoring your weight, your drift is simply what water you lose through breathing and unnoticed sweating). Eventually you lose enough water where your blood gets a little more concentrated. When concentrated blood flows through a little region in your brain, it sets off a trigger that makes you feel thirsty. The trigger in your brain is smaller than a kernel of corn, but it shoots like a bazooka. You all know this from the last time you lay in bed at night thirsty.

Your body hates being thirsty, so the next thing that happens is your body fights back. Most people go and get a good drink and the problem is solved. Your gut can put 2.5 pounds of water back into your blood in an hour and probably more if you are really dehydrated. However, if you continue not to drink, the brain will override everything and get the water it needs on its own. How does it do this? Remember, 2/3rds of the water in your body is in your cells. Your brain will begin to rob the cells of their water to keep the blood concentration normal. Which cells have the most abundant and ready source of water? Your muscle cells. Once muscle cells start giving up water, they get weaker.

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Several scientific studies have looked at people who are chronically dehydrated. To summarize these studies, when dehydrated, ultimate muscle power decreased 22% and muscle endurance decreased 10%. Other studies have shown that people who have lost the same amount of weight as dehydrated people but remained completely hydrated (the lost the fat) had a 1% decrease in power and endurance in their large muscle groups. That is the main reason why a dehydrated person is weak is that their muscle cells are not running on all of their cylinders.

Now, guess which cells have no water: fat cells. So the brain really doesn't care about fat cells when you are dehydrated. So if you stay constantly dehydrated, your brain will bypass fat cells as a fuel source because they cannot provide any water. The brain will say, "Well I am hungry but I am really thirsty. I can get energy and water from the muscle cells so I am going to burn the muscle cells instead of fat cells, so I can get both. I am not going to burn fat cells because even though they will give me the best energy, I can't get any water." The point here is that **CONSTANT DEHYDRATION PREVENTS FAT BURNING AND PROMOTES MUSCLE WEAKNESS.**

Now, the above topics apply to chronic (meaning fairly constant and ongoing) dehydration. Terminal dehydration is a whole different story. Terminal Dehydration is a rapid and time-limited loss of body water that is restored after you weigh in. The adjustments made by your brain (as described above) where it starts to burn muscle cells and quits burning fat are not going to happen immediately. The time where they start happening is debated but terminal dehydration that lasts less than 15-18 hours and certainly less than 12 hours is not going to affect your performance whatsoever. The same studies on people who have lost weight through terminal dehydration followed by rehydration have shown that nearly all of the power and endurance return after refueling. Therefore, if you adopt your weigh in strategies around what is known scientifically, you will optimize your performance.

You can safely terminally dehydrate 5-7 pounds if necessary for a weigh-in. This is only true if you are completely hydrated when you start your terminal dehydration. If you are completely hydrated, you can easily drop 5-7 pounds of water in a standard, night-before competition practice. If you are preparing for a morning weigh in, instead of complete post-practice fluid replacement, you only take back in 2-3 pounds of fluid. Now you have lost 3-4 pounds and your drift over night will likely take care of the rest. Say you need to make 140 at an 8 AM weigh-in. This would mean you come to practice around 146. After practice and partial rehydration, you are around 143. Now the fact that you have stayed fully hydrated until the day before the weigh in; you should predictably drift 2-3 pounds over night. Assuming practice ends at 6pm, you are partially dehydrated for only 14 hours (for an 8 am weigh in). Give yourself an extra 30 minutes in the morning in case you are still a little over. If your normal hydrated weight is 146-148, you will be back to this in a little over 2 hours after the weigh in. You are **BACK TO NORMAL** and your muscle cells are at full strength. This strategy wins championship matches.

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Now apply the same concepts to an afternoon dual meet weigh in. Why go to bed thirsty? Practice ends at 6 pm and the weigh in is not until 6 pm the next day. Again, I will use 140 as the example. Come into practice the night before at 146 and lose 5 pounds of fluid in practice. Now, in this instance drink back up to 146 and have a small meal. So now let's say you are 147-148 after rehydration and a little meal. Again, you are fully hydrated. Go to bed with a smile on your face and you are going to wake up around 144-145. You will drift to 2 more pounds during the day. So now you are going to have to take off approximately 3 pounds of fluid. You decide when you are going to take off the 3 pounds. You are in control. Get on your sweats, get on a bike, do whatever. You know you can get rid of the water in less than an hour. The trick here is to go hard for roughly 5 minutes to break a sweat then go at a very modest pace. This is best done as your morning workout. If you are going by 630, you will be done by 715. If you are 142 or under, you will likely be fine. Now you are going to be dehydrated less than 12 hours before you weigh in.

Some argue that "I don't want to work out on the day of a meet". This idea is ill-advised and actually works against you. Think back to some of the best wrestling you have ever done. Think back to daily practices when you routinely workout in the morning, were well hydrated and fueled, and wrestled in the afternoon. Did the AM workout hurt your performance? No, it helped your performance. If you adopt the 2 workouts/day regimen, your body performs better WITH the AM workout. Secondly, if you tell yourself "I don't want to do that because I don't feel like getting up and working out on the day of a meet. I would rather put up with the thirst overnight" then you will be dehydrated for more than 24 hours and we have already discussed what happens then. Also you will sleep very poorly. The loss of performance due to prolonged hydration will far outweigh any loss of performance that results from a modest morning workout.

The most successful wrestlers are consistently the most disciplined. For this hydration strategy to work, you must achieve your ideal body fat and weight and maintain it through disciplined choices throughout the entire season. Large gains and losses promote mediocrity. I know what some of you are thinking: "I know a kid who doesn't do any of this and still is the state champ". Yes, there are differences in levels of god-given ability that allow some to win matches in spite of their discipline and training techniques. However, those of you who stick with this sport will continue to rise into new and more competitive arenas. Every step up, the competition rises exponentially. Every step up, the whole training package becomes more important. Proper fueling and hydration play a huge role in your eventual success. Fueling and hydration are more controlled by habits than any other facet of your wrestling.

In summary, chronic dehydration prevents fat burning and weakens muscle. In contrast, terminal dehydration with proper rehydration maintains muscle strength and endurance. Water loss to make weight should be exercised only within 15 hours from a weigh in. Adopting these strategies will MINIMIZE the time you spend this season thirsty and win championship matches. Thirst is the enemy.

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