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The Gravity of Weight

A Glass Half Full or Half Empty: How Much Water to Drink?

Water pollution and debunking the rule of eight.

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Do you think of this glass as half-full?

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Devastation from the recent earthquake and tsumani in Japan has brought subsequent threat of contamination from a potential nuclear meltdown, but more immediately, there have been reports of severe food and water shortages. Depending on our nutritional and body fat status, for example, we can survive without food for weeks or even months as long as we have water. According to researchers, though, we can live only 6 to 14 days, depending on the rate of water loss, without any water. Our bodies are, after all, about 50 to 70% water; even the brain, according to physiologist Heinz Valtin, is 75% water. We have water within and outside our cells, including in our blood, which is 85% water. When body fluids fall below an optimal level, we enter a toxic dehydrated state: there develops an imbalance of the vital electrolytes sodium and potassium and a disturbance in brain function. Dizziness, mood changes, lethargy, brain swelling, delirium, coma, and even death can result. As a result, our body has an exquisitely precise homeostatic system for water regulation that involves the kidneys and specific hormones of the endocrine system

primarily, though the small intestine is the primary site of water absorption in our body.

So how much water do we need to drink daily for optimal health? Conventional wisdom is we require eight 8-ounce glasses of water daily, particularly since we lose water when we breathe, sweat, or excrete. Valtin takes issue with this common admonition. Writing some years ago in the *American Journal of Physiology*, he attempted to trace its origin by conducting a comprehensive search of the literature. In fact, he could not find any scientific validation or convincing evidence for this well-known recommendation given to healthy adults! And he even went so far as to suggest that too much daily liquid may be dangerous for some people and may lead to hyponatremia (low sodium levels) or even unnecessary exposure to pollutants. And he noted that all liquid consumption should count in our daily tally, whether water, juice, coffee, soda, and even beer in moderation, though we know that many liquids such as sweetened sodas can add many additional calories daily. The point is water is essential for life but our water requirements vary with climate (including temperature and humidity), gender, diet, exercise, age, health, etc. In general an average healthy adult requires about one and one-half quarts daily to replace normal losses. According to researchers Jequier and Constant, in a recent article in the *European Journal of Clinical Nutrition*, our level of thirst can usually determine our intake of water and it may vary substantially from person to person. This mechanism, though, may not be accurate in the elderly or in infants, who are particularly sensitive to the effects of dehyration. Furthermore, infants have immature kidneys that cannot concentrate urine well, a high metabolic rate, and a limited ability to indicate thirst. Certain disease states, such as those causing fever or diarrhea, may increase our usual daily needs.

Other researchers have suggested that many things may influence the effect of water on us: even the speed with which we drink may determine how much we retain. For example, drinking a large amount in a few minutes is excreted rapidly whereas the same amount over several hours is largely retained. And some have suggested that water in food makes us feel more satiated, though it is not clear how long that effect lasts or how much liquid is required.

What about the use of bottled water? There have developed fairly common sightings, at least in New York City, of people who cling to huge bottles of water, not unlike the security blankets of infants, as if they were crossing the Sahara alone and far from mother rather than the city streets. Bottled water, incidentally, is not necessarily safer than most city tap water. It may also carry its share of industrial waste, sewage, bacteria, and

Or half-empty? How much water should we be drinking in a day?

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chemical contaminants. In fact it was reported that at least one company carried the label, PWS, for "public water source!" And writer Ian Williams, in an article, aptly titled, "Message in a Bottle," questioned whether water from melted glaciers is really so healthy, particularly when this water may have been "lying around from the last Ice Age" with such pollutants as lead, dioxin, and even "polar bear poop and...the occasional dead Inuit or Viking." The other problem with bottled water is the havoc all these plastic bottles are causing on our environment. For those ecologically-minded, I would strongly recommend the recent extraordinary book, *Moby Duck*, by Donovan Holm, which vividly describes the "toxic goulash" created by plastic debris, among other pollutants, floating in our oceans. Holm's own search for the almost 30,000 bath toys that fell overboard in a 1992 transit from Asia led to his "archeology of the ordinary" and a voyage of profound awakening to the problems of environmental pollution for both himself and for the reader. Hohn found that one beachcombing couple scavenging for debris had retrieved seventy-five different brands (many from other countries) of polyethylene water bottles!

Our beaches and oceans are littered with plastic bottles that do not disintegrate easily, if at all

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A not-uncommon sight!

Instead of those plastic bottles that can pollute the environment for hundreds of years, people may want to consider getting a water filter for their own tap water. And remember, though water is essential to our existence, there is no science to the rule of eight!

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About the Author

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In Print: *The Gravity of Weight: A Clinical Guide to Weight Loss and Maintenance*

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