

# Hydration: Key to Anti-Aging and Peak Whole Body Performance

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From the moment you were born until the day that you die the battle begins to remain sufficiently hydrated to sustain your optimal vitality, wellness and good health.

When you were born your water content was about 78%. As a healthy adult you should be comprised of about 70% water content within your lean muscle mass (excluding body fat, bones and vital organs which do not contain much water). In measuring lean body mass hydration, researchers have noted a range from below 20% hydration to the optimal lean mass levels of 70% to 74%.

There is no single more important factor to determine health and vitality than hydration, except for the proper intake of oxygen. Indeed we all have subconsciously made the observation that we come more dehydrated and wrinkled as we age, this phenomenal can be termed at “the grape to raisin / or plum to prune aging process.” While the aging process is multifaceted, proper hydration is certainly the most important single factor.

The signs of overt dehydration are clear, yet it is the subclinical symptoms that warrant daily attention such as fatigue and lack of vitality, headache, an inability to concentrate, joint pain due to insufficient cushioning at the joint space, muscle pain and discomfort, skin conditions, constipation and the list goes on. Remember you need food to sustain your life, yet one can literally go weeks without food but can only last a few days without water. This emphasizes the relative importance of caloric intake vs. hydration. Indeed death from dehydration occurs well before starvation when life support is withheld.

As dehydration increases, signs and symptoms develop. These include: thirst, restless or irritable behavior, decreased skin resilience, dry mucous membranes, sunken eyes and absence of tears when crying vigorously.

Symptoms of early or mild dehydration include (one or more of the following):

- fatigue and lack of energy and vitality
- diminished mental clarity and concentration
- overall muscle weakness
- headaches (includes muscle tension and sinus pain)
- flushed face
- dry, warm skin
- reduced urine flow, often a dark yellow
- dizziness made worse when you are standing
- cramping in the arms and legs
- crying with few or no tears
- being sleepy and / or irritable
- increased illness susceptibility due to dry mucus membranes

Whether you have allowed your body to become mildly dehydrated or more severely water depleted, a serious consequence is that your blood viscosity (thickness) becomes increased and serves as an independent risk factor for cerebral or myocardial infarction.<sup>i</sup> Drinking water during the night protects against increase in blood viscosity and helps prevent heart attacks that occur most often in the morning following an extended period without hydration.

As part of the dehydration process the blood becomes thicker and leads to a higher concentration of potentially toxic substances within the bloodstream and overall less efficiency of blood flow. Recent data from a study conducted by Stanford University School of Medicine suggest that as many as 50% of older adults may have hypertonic plasma (hyperconcentrated), an indicator of cell dehydration that predicts a range of adverse outcomes.<sup>ii</sup> Thus this study confirmed the higher amount of dissolved substances within the blood stream. Hypertonicity was positively associated with older age, Hispanic and African-American race, impaired glucose tolerance, diabetes, and blood thickness, and inversely associated with bioelectrical impedance analysis parameters.

## Healthcare Mandate

The importance of hydration in healthcare is gaining increased emphasis and recommendations for better training in the detection, prevention and management of fluid and electrolyte imbalance is now encouraged to reduce common and serious morbidity associated with this problem to which the elderly are especially prone.<sup>iii</sup>

## Physical Performance

The trillions of cells in your body demand sufficient nutrients, oxygen and waste removal to function optimally. Your muscles are the highest source of hydration reserve within your body. Thus when dehydration is allowed to occur within your body, the endurance and performance of your muscles will become diminished. Thus the seriously minded athlete will ensure that hydration is part of their pre-workout and post-workout routines and will also incorporate hydration into their entire daily routine. All too often we forget that water and the accompanying balance of minerals and nutrients are a fundamental commodity even more important than calories when it comes to all term physical performance and health.

## Mental Performance

Mental performance is now confirmed as hydration dependent. Researchers have documented that dehydration is a reliable predictor of impaired cognitive status.<sup>iv</sup>

Objective data, using brain function tests document the deterioration of mental performance in mildly dehydrated younger adults. The level of dehydration experienced by an individual provides a reliable predictor of increasing frailty, deteriorating mental performance and poor quality of life.

## Mobility and Bone Health

Even the bones in our bodies need to be properly hydrated. Evidence is growing that due to the aging process the thinning of the bone, and loss of bone mineral density increases and thus demands sufficient nutritional supply and hydration of the intervertebral disc.<sup>v</sup> In order to lessen the probability of spinal disc problems and maintain spinal mobility there must be sufficient hydration disc to provide adequate shock absorbing capacity.

## Hydration – It's Much More than Just Water

When it comes to hydrating and re-hydrated the human body it takes a lot more than just 64 ounces (8 glasses) of water consumption to replenish and retain optimal cellular fluid levels. It is essential to provide a balance of minerals offered in a synergistic blend along with co-factors such as **Taurine, B Vitamins** and target specific nutrients such as **Alpha Lipoic Acid, Acetyl-L-Carnitine** and other energy supportive nutraceuticals to achieve optimal whole body energy and hydration goals.

## Magnesium

Magnesium is the second most plentiful positively charged mineral within the body, following calcium, and is involved with more than 300 enzyme systems. The availability of magnesium for proper muscle and overall energy within all the cells of the body is critical. The body has created a reserve system of magnesium to help maintain stable levels with a full third of skeletal magnesium being on the surface of the bone and acts as a reservoir to maintain the extra-cellular magnesium concentration.<sup>vi vii</sup>

## Potassium

The potassium mineral plays a role in many body functions including acid-base balance, electrodynamic characteristics of the cell, isotonicity, and various enzymatic reactions.<sup>viii</sup> It is essential in physiological processes including nerve impulse transmission; cardiac, smooth, and skeletal muscle contraction; gastric secretion; renal function; tissue synthesis; and carbohydrate synthesis. Inadequate dietary intake of potassium might play a role in the development of hypertension, stroke, and cardiovascular disease. It is likely that potassium works together with other nutrients to produce beneficial physiological effects.<sup>ix</sup>

## Sodium

Clinically it is often the patient that has low sodium levels, that hasn't re-hydrated after warm weather, a work out or is just plain low in sodium that are the patients complaining most of feeling weak, tired and overall washout. The single most important thing to remember about sodium is to keep it balanced with the other electrolyte minerals such as potassium. Our bodies are seeking balance and by maintaining balance the body stays in harmony. The standard western diet typically contains sufficient sodium with the exception of serious athletes.

## Calcium, Lean Body Mass and Hydration

In order for the muscles of our body to contract such as our heart and skeletal muscles sufficient calcium needs to be readily available to literally keep our body in motion. Hence a physically active individual needs adequate calcium in balance with magnesium for health muscles and bones.

Consuming sufficient calcium in ones diet is critical for optimal musculoskeletal health. Beyond dairy, I frequently encourage patients to increase their consumption of such fruits and vegetables as oranges, apricots, raisins, dates, prunes, dried figs, broccoli, okra, sweet potatoes and most dark green leafy vegetables such as kale, collard greens, dandelion greens and bok choy.

Additional benefits of calcium as seen in the scientific and medical literature can include helping maintain and regain a healthier lean body weight. Preliminary evidence with both adults and children with low calcium intake have shown a higher body mass index (BMI), compared to people with high calcium intake.<sup>x xi xii</sup> Indeed increasing calcium intake was correlated with weight reduction in people on a calorie restricted diet.<sup>xiii xiv</sup>

For those seeking to help ensure stronger bones, healthier muscle performance and supporting overall health calcium is a key cornerstone in building a strong wellness foundation.

## Summary

Unfortunately due to the average modern diet, individuals are frequently deficient in numerous critical nutrients, so that strategic supplementation to support neuromuscular health and proper body hydration is essential as a cornerstone to any healthcare pursuit.

Clinically in my practice I incorporate VITAL XP to provide therapeutic dosing of essential nutrients to help provide optimal mental and physical performance, including maintaining healthy hydration levels, which is fundamental to personal health, anti-aging and performance objectives.

These statements have not been evaluated by the Food and Drug Administration.

This product is not intended to diagnose, treat, cure or prevent any disease. For medical advice, please consult a healthcare professional.

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- <sup>ii</sup> [J Am Diet Assoc](#). 2005 Aug;105(8):1231-9.
- <sup>iii</sup> [Curr Opin Clin Nutr Metab Care](#). 2004 Jan;7(1):27-33.
- <sup>iv</sup> [Eur J Clin Nutr](#). 2003 Dec;57 Suppl 2:S24-9.
- <sup>v</sup> [Eur Spine J](#). 2003 Oct;12 Suppl 2:S97-S103. Epub 2003 Sep 9.
- <sup>vi</sup> Stendig-Lindberg G, Koeller W, Bauer A, Rob PM. Experimentally induced prolonged magnesium deficiency causes osteoporosis in the rat. [Eur J Intern Med](#) 2004;15:97-107.
- <sup>vii</sup> Rude RK. Magnesium deficiency: a cause of heterogeneous disease in humans. [J Bone Miner Res](#) 1998;13:749-58.
- <sup>viii</sup> McKevooy GK, ed. AHFS Drug Information. Bethesda, MD: American Society of Health-System Pharmacists, 1998.
- <sup>ix</sup> McCarron DA, Reusser ME. Are low intakes of calcium and potassium important causes of cardiovascular disease? [Am J Hypertens](#) 2001;14:206S-12S.
- <sup>x</sup> Heaney RP, Davies KM, Barger-Lux MJ. Calcium and weight: clinical studies. [J Am Coll Nutr](#) 2002;21:152S-5S.
- <sup>xi</sup> Buchowski MS, Semanya J, Johnson AO. Dietary calcium intake in lactose maldigesting intolerant and tolerant African-American women. [J Am Coll Nutr](#) 2002;21:47-54.
- <sup>xii</sup> Tanasescu M, Ferris AM, Himmelgreen DA, et al. Biobehavioral factors are associated with obesity in Puerto Rican children. [J Nutr](#) 2000;130:1734-42.
- <sup>xiii</sup> Zemel MB, Thompson W, Milstead A, et al. Calcium and dairy acceleration of weight and fat loss during energy restriction in obese adults. [Obes Res](#) 2004;12:582-90.
- <sup>xiv</sup> Lin YC, Lyle RM, McCabe LD, et al. Dairy calcium is related to changes in body composition during a two-year exercise intervention in young women. [J Am Coll Nutr](#) 2000;19:754-60.