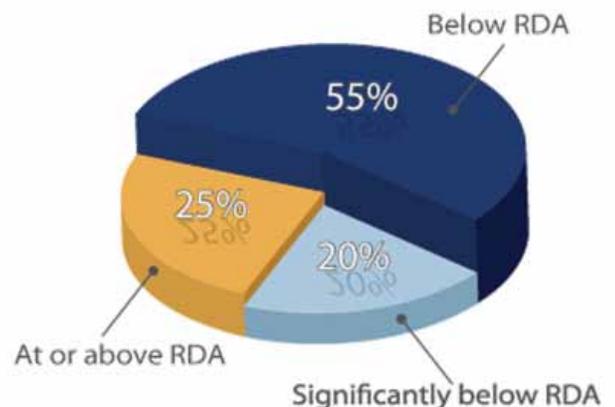


The Magnificence of Magnesium: A Mineral Must for Maintaining a Healthy Body

Magnesium is one of the most important nutrients needed by the human body. It is critical for the optimal performance of over 300 essential biochemical reactions. Primarily, magnesium is calming and soothing on muscles and the nervous system as well as a powerful anti-inflammatory, but the broad range of which it affects our health is both magnificent and awesome. Would you be interested to know that there are many symptoms of magnesium deficiency and several health conditions that can occur or be accentuated by an inadequate amount of magnesium in the body? If so, read on as we highlight and explore causes of magnesium deficiency, as well as some of the most significant benefits of maintaining optimal magnesium levels to ensure that your body and all of its vital processes can operate as efficiently and effectively as possible.

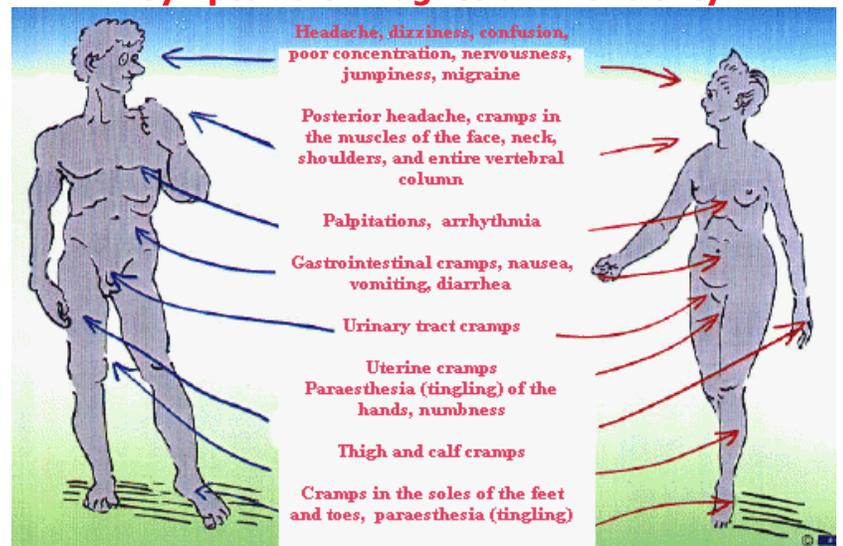
Interestingly, up to 80% of Americans are believed to be magnesium deficient, although this phenomenon is wholly underreported. The reason for this misunderstanding is that when a magnesium deficiency is suspected, the standard test used by the medical community is to measure magnesium serum levels in the blood. In reality, only about 1% of this mineral is found in the blood, with approximately 66% found in the bones, and the remaining 33% in muscle. While the body works hard to maintain an adequate blood serum level of magnesium, a more appropriate method of how to assess true magnesium levels in the body is to measure its content in the red blood cells. It is for this reason that many individuals who are determined to have sufficient magnesium blood serum levels are actually magnesium deficient.

U.S. Intake of Magnesium
Percent of U.S. population meeting Recommended Daily Allowance (RDA)



Why are most Americans deficient in magnesium? The simple answer to this question is a universal phenomenon that we have explored in previous newsletters, which is responsible for many of the health related deficiencies and ailments that have reached epidemic proportions in the United States, that being the typical American diet. Magnesium is the most deficient element in the modern American diet. If you recall, the American diet consists of approximately 62% processed foods. To put this in perspective, we Americans eat around 31% more packaged/processed food than we do fresh foods like fruits and vegetables. The result is a "double whammy" in that our diets are lacking in essential minerals like magnesium and rich in synthetic additives and preservatives.

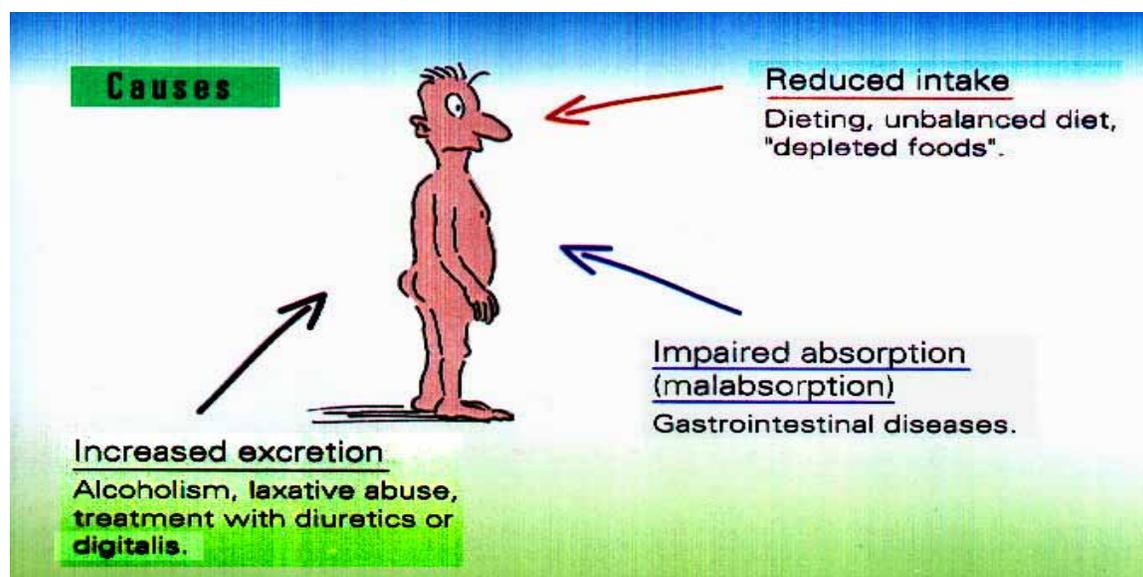
Symptoms Of Magnesium Deficiency



The process by which these foods are assimilated and metabolized actually strips the body of these essential vitamins and minerals at an expedited rate, increasing the likelihood of deficiency. In addition to diet, magnesium can be depleted in the body by diet related factors like excessive urination, dehydration, poor absorption through the gastrointestinal system and the resulting loss excreted in stool, and the overall daily intake of magnesium being chronically low.

In addition to diet, the many functions of magnesium in the human body can be hindered by factors like the aluminum content in food and drink containers, baking powder and antiperspirant deodorants. Also, a major food staple of the American diet is white flour. Aside from suppressing the immune system and causing gastrointestinal inflammation, white flour is processed such that all but about 15% of the natural magnesium content is removed. Other factors that can cause or contribute to a magnesium deficiency include mental and physical stress, coffee, sugar, high sodium, alcohol, soda, tobacco, high perspiration, prescription drugs of all types, low thyroid, chronic pain, diuretics, and a high carbohydrate and high calcium diet. The more of these factors that are dominant in your daily life, the higher the need will be for you to take in more magnesium or risk developing a deficiency.

Essential for the proper functioning of every organ in our body, magnesium is actually the fourth most abundant mineral in the human body behind calcium, phosphorous and potassium that is important to maintain good health. Approximately twenty-five grams are present in the body of a healthy adult. The most highly absorbed types in supplement form are magnesium citrate and amino acid chelate.



A magnesium deficiency can cause many problems such as trouble sleeping, digestive upset, high blood pressure, and brain and memory issues just to name a few. With magnesium being responsible for the successful operation of so many chemical reactions in the body, a deficiency can cause many of these functions to be less optimal and produce certain symptoms as a result. The following are a list of the most common symptoms and conditions associated with magnesium deficiency, and it is important to note that these symptoms are often confused with other disorders, and by the time you experience these symptoms you have likely been deficient in magnesium for some time.

Cardiovascular Symptoms: High blood pressure, irregular heartbeat, fatty yellow arterial plaque.

Emotional Symptoms: Irritability, depression, anxiety, restlessness and or hyperactivity, and mood swings.

Musculoskeletal Symptoms: Chronic fatigue, muscle fatigue and weakness, muscle spasms, and osteoporosis.

Neurological Symptoms: Migraine headaches, sensitivity to excessive noise and pain sensitivity.

Another interesting phenomenon is the magnesium to calcium ratio. The daily intake ratio between magnesium and calcium is especially significant when dealing with the cause and prevention of many health disorders including cardiovascular disease, heart disease and blood pressure. The absorption and metabolism of magnesium depends on calcium intake, and conversely, the absorption and metabolism of calcium depends on magnesium intake. In short, the balance between these two minerals is very important.

Traditionally, it is suggested that a 2 parts calcium 1 part magnesium ratio be implemented for a healthy calcium absorption and metabolism, but in light of the more recent evidence revealing the vital importance of magnesium, many clinical nutritionists feel that the ratio should be revised to equal parts of each. The reasoning behind this assertion is that if calcium intake is high, then magnesium intake must be taken in equal proportions, otherwise the excess calcium can become a pollutant in the body. Magnesium regulates the entrance and absorption of calcium in the cells. Without the presence of adequate magnesium, calcium is underutilized, which results in calcium deposits in the joints, aggravating arthritic symptoms, promoting kidney and gallstones, and in some extreme conditions calcification of the brain tissues and eventually death. While calcium and magnesium may be most beneficial when taken in equal amounts, calcium is dependent on magnesium for it to be properly assimilated, but magnesium taken on its own without any calcium can help the body to feel more energetic, stronger and more relaxed and with less inflammation.

As we have stated, while there are over 300 functions that depend on adequate magnesium concentration in the body, the following are some of the most beneficial reasons why you should make sure that you get sufficient magnesium through your diet and supplementation.



In support of the last two newsletters, **better sleep and reduced insomnia** can be achieved with magnesium supplementation if taken as part of the bedtime preparation ritual. Magnesium is considered to be the “anti-stress” mineral, and among its many important properties, magnesium has a calming effect on the muscles and the nervous system. Magnesium can also improve sleep by decreasing the release of the stress hormone cortisol, which is released due to lack of sleep and a known factor for producing insomnia. Also, while stress causes inflammation and depletes magnesium, magnesium can relieve stress and reduce inflammation. Additionally, when your magnesium levels are low, the electrical activity in your brain becomes altered; your nervous system becomes imbalanced, and you become considerably more agitated, your muscles tighten, and you experience more frequent awakenings. So, if you are experiencing sleep problems or any of the above mentioned symptoms, try supplementing with magnesium and you may find that you get considerable relief.

Magnesium can help to **improve brain function** and **lessen symptoms of depression**. Supplementing with magnesium has been clinically shown to increase brain function by improving brain electrical activity and promoting better learning ability, sharper memory and improved focus. For these reasons, magnesium is often used to help individuals with ADD/ADHD, hyperactivity, and more recently it has been shown to be beneficial in children with autism. Also, magnesium plays a major role in the production and release of neurotransmitters like serotonin, which overwhelmingly supports feelings of happiness and well being, and which has been shown to be present in low levels in individuals experiencing symptoms of depression and who experience chronic disrupted sleep patterns.

Magnesium can help to **decrease inflammation** and **improve heart health**. Inflammation is not only an obstacle to recovery from improper gastrointestinal health, and physical and emotional stress, it is also a major contributor of inflammation related disorders such as heart disease, hypertension, arthritis, diabetes, and Alzheimer’s. It has been clinically shown that inadequate levels of magnesium can lead to inflammation in the body, affecting blood vessels and cardiovascular and intestinal tissues. Cardiovascular tissue inflammation can lead to heart disease, stroke, and Alzheimer’s because it increases oxidative stress, while gastrointestinal tissue inflammation can cause digestive disorders, a suppressed immune system, and lead to a number of autoimmune diseases as well. Magnesium deficiency also decreases lipid metabolism and increases blood pressure, making the blood thicker and more sticky, negatively impacting the health of the arteries and ultimately leading to atherosclerosis, a process by which plaque builds up in your veins and arteries, making it more difficult for your vasculature to carry oxygen to your heart, brain, and all the cells in your body, eventually leading to atrophy and death.

Magnesium can help to **build stronger bones** and **prevent osteoporosis**. While calcium is often praised for building stronger bones, it does nothing but build up in the blood and tissues of the body unless you have adequate levels of magnesium and vitamin D3. Magnesium is essential for the enzymatic conversion of vitamin D3 into its active form to help with calcium absorption and the proper remodeling of bones. Bone remodeling is the process by which bone is broken down and regenerated, with osteoporosis being the result of the rate at which bone is broken down surpassing the rate at which bone is rebuilt. Also, magnesium leads to the release of the hormone calcitonin, which plays a major role in the healthy metabolism of calcium and phosphorus. Produced in the thyroid gland, calcitonin helps to inhibit the natural breakdown of bone, and controls the amount of calcium in the bloodstream.

Magnesium can help to **increase insulin sensitivity** and **prevent obesity** and the development of **diabetes**. Low levels of magnesium can decrease your insulin sensitivity, and make it more difficult to regulate your blood sugar and loose excess fat. Associated with increased stress on the body, low magnesium increases the release of the stress hormones norepinephrine and cortisol. Magnesium is essential for the proper detoxification of cortisol, which helps the body to return to a more relaxed state. With increased blood sugar and decreased insulin sensitivity, magnesium is depleted even more quickly, amplifying the deficiency and leading to, or accentuating, all of the conditions described above that adequate magnesium supplementation serves to manage and prevent.

Also, a low magnesium level in pregnant women is another epigenetic deficiency that can cause the development of diabetes and metabolic syndrome in the child after birth. Metabolic syndrome is an inflammatory condition that encompasses a group of risk factors that can increase your likelihood of developing heart disease, and other life threatening conditions such as diabetes, stroke and Alzheimer's. If you recall, epigenetic manipulation of DNA synthesis is a topic that we explored in the October 2011 newsletter, [DNA Synthesis and the Role that Epigenetic Manipulation Plays in the Healthy Development of our Children from the Womb to the Tomb](#), a copy of which we will be glad to provide to you at your request.

Low magnesium, calcium, and vitamin D3 levels are common in pregnant women, as the fetus places additional demand on the mother to provide these nutrients for its development, leaving the mother with a deficiency unless supplementation is implemented. These deficiencies can cause complications for the mother and infant, so consult with your pharmacist or physician to ensure that your vitamin and mineral intake is sufficient to accommodate you and your baby's needs. Often prenatal vitamins provide only minimal concentrations of these nutrients, and so additional supplementation is necessary.



Are you beginning to see the bigger picture, that magnesium deficiency is related to all of these inflammatory conditions? Are you starting to understand that these health problems are often looked at as independent of one another but are actually intimately interrelated? The fact is that our diet and lifestyle choices are increasingly affecting our ability to lead healthy and productive lives as our disabilities continue to grow across our entire population. The food that we eat and the air that we breath, what we put into our body or do not put into our body, are all significant factors to our society's many growing deficiencies. Is it not of particular interest to know that many of these conditions could be prevented altogether if we were made aware of these simple truths early on in our development, that deficiencies can be easy to prevent? But, instead of seeking out the root cause, our modern society simply aims to treat the symptoms and there by manage our disease states without ever truly freeing ourselves of them. Our goal in providing you with this information month after month is to help you achieve your healthy independence, so that you can pass this knowledge on to your friends and loved ones, so that little by little, the generations that come after us will be empowered to reverse the epidemic of degenerative health peril that we now increasingly find ourselves in.

Founded as a traditional apothecary style pharmacy in 1932, Neels Pharmacy is an established compounding and prescription pharmacy in its fourth generation of family leadership. Today, Neels Pharmacy has evolved into the pharmacy of the future and provides regular and innovative custom compounded prescription medications for humans and animals, as well as the latest and most effective over-the-counter products, including: clinical nutrition, homeopathy (for humans and animals), herbal remedies, therapeutic teas, aromatherapy and essential oils , skin care and high quality personal grooming products.

As a full service pharmacy, Neels Pharmacy offers a variety of services including individualized human and veterinary compounding, and personalized clinical nutrition consultations that are conducted by our in-house clinical nutritionist/pharmacist, Patty Frieda. Additional services include **free local delivery** of prescription medications and over the counter products, as well as mail, UPS, and express overnight delivery.

Neels Pharmacy accepts most insurance cards, including Missouri Medicaid, Missouri Senior Rx, and more. We want to assure you that your prescription co-pay at Neels Pharmacy will be the same as you pay at any pharmacy location in the area.

Our goal is to help you and your family achieve optimal health, wellness and vitality and provide a relaxing and peaceful atmosphere in which you will receive the highest level of customer service from our knowledgeable staff and pharmacists. With each visit to Neels Pharmacy you can depend on a one-on-one pharmacist consultation with every prescription, including drug/vitamin/herb interactions and drug/nutrient depletions. From our family to your family, we respectfully invite you to come experience the Neels Pharmacy difference, and approach your health concerns with confidence.

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