

HOW TO CHANGE YOUR LIFE WITH MAGNESIUM
By Carolyn Dean MD ND



Meet The Doctor of the Future

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HOW TO CHANGE YOUR LIFE WITH MAGNESIUM

Magnesium is a necessary cofactor for over 325 enzymes that perform vital metabolic functions in the body. It took me a whole book, *The Magnesium Miracle*, to describe the intricacies of magnesium physiology. And after reading that book you'll agree that miracle is the most suitable word to describe a mineral that prevents and treats diabetes, high blood pressure, high cholesterol, migraines, heart disease, osteoporosis, anxiety, insomnia, and a dozen other serious health conditions. I've just listed many chronic conditions that people are suffering today, yet has your doctor ever told you to take magnesium? Probably not. That's because magnesium is not regarded as a first-line therapeutic agent in medical school, hospitals, or doctor's offices. It's not a patentable drug. And for all these reasons, mainstream medicine remains blind to the extent of magnesium deficiency that is reported to be present in 70-80 percent of the population.

In this book, I'll give you an overview of magnesium and how to use it, some magnesium miracles stories and answer many of the questions that my clients and readers have had over the years. Let's get started.

Magnesium Begins with Children

Magnesium was not a topic in my 2 hours of nutrition classes during my four years in medical school and it never came up in my clinical work in the hospital. Except once. In my third year, I was observing in obstetrics and a young woman was about to deliver twins. But her blood pressure was rising, she was bloated with fluid retention, and she was convulsing with fluid building up in her brain. I wondered what they could give her to stop the seizures, bring down her blood pressure, and get rid of the edema – and not harm the baby.

Before I knew it, the attending physician ordered an IV bag of magnesium to drip into her veins and shortly her blood pressure came down, she stopped having seizures and started eliminating fluid. It was a monumental experience for me knowing that the mother and baby were safe and it was due to magnesium. Since I was already studying nutrition on my own I also began wondering why magnesium wasn't the first line of therapy for fluid retention, high blood pressure and seizures for everyone.

Magnesium is a vital component of a healthy pregnancy and delivery. Having enough magnesium during pregnancy can improve the health of our children from day one. But the need for it begins before birth. Magnesium can prevent premature contractions, eclampsia and greatly reduce the risk of a child suffering cerebral palsy and sudden infant death syndrome (SIDS). Magnesium in effective dosages should be a required supplement for pregnant women.

There are magnesium deficiency symptoms in pregnancy and childbirth that are thought to be normal. Constipation, leg cramps, backaches, fluid retention, irritability, and insomnia to name a few. It's not normal to have these symptoms; instead it means that these women are not taking enough magnesium.

Magnesium can even help women with fertility problems because it relieves fallopian tube spasm that can prevent egg implantation!

So, the requirement for magnesium begins from day one of conception and continues through life. Let's explore the reasons we aren't getting enough of this important mineral and what we can do about it.

Excess Calcium Depletes Magnesium

A picture is worth a thousand words. Take a look at the following video explaining the crucial balance of magnesium and calcium. It's on The Nutritional Magnesium Association website (where I am the medical director). The video is called *Balancing Calcium and Magnesium: A Look Inside the Cell*. Click the following link:

<http://www.nutritionalmagnesium.org/videos/calcium-magnesium-balance.mov>

We're living in a calcified world and I'll tell you why. Magnesium controls electrical cell-to-cell communication allowing the correct amount of calcium to enter a cell to create cell contraction. This may be one of the hardest tasks set for magnesium because the level of calcium outside our cells can be tens of thousands of times the safe level allowed inside the cell. Magnesium's job is made even more difficult because so many people are taking extra calcium in supplement form and don't realize they need equal amounts of magnesium in the body.

See more about calcium and magnesium dosage in the section **Types and Dosage of Magnesium and Calcium**.

Magnesium Deficiency Conditions

In *The Magnesium Miracle*, I listed almost two-dozen conditions that are scientifically proven to be associated with magnesium deficiency. These conditions affect both sexes but women seem to suffer more from magnesium deficiency than men.

When I wrote *The Magnesium Miracle*, Drs. Burton and Bella Altura, two world-renowned magnesium researchers who forwarded my book went over this list and approved it. Together they have produced over 1,000 research papers on magnesium. The Alturas are scientists who had never written a forward for a popular press book. However, when I approached them, they said that in spite of their enormous body of research, the message about rampant magnesium deficiency in the population was never translated into clinical application and they wanted the message to get out. They especially wanted to alert women to the dangers of magnesium deficiency that can begin in the womb.

Magnesium and Muscles

Magnesium relaxes muscle cells and calcium contracts them. Magnesium allows a small amount of calcium into a cell and then forces it out. It's a simple dynamic that occurs every millisecond of every minute in our bodies. And it's via the muscles that most people learn about magnesium.

You have muscle spasms, muscle twitching, painful charley horses that turn your

calf muscles into rocks when you stretch, muscle aches and pains. You learn to live with them. Then you read about magnesium or hear about it from a friend or a chiropractor and use Epsom salts in a bath or take a magnesium pill and your muscles sigh in relief.

Magnesium is to plant chlorophyll as iron is to human hemoglobin. In our body, chlorophyll with its gift of magnesium supplies the means to create life-giving energy in our cells. On a practical level this means that magnesium provides oxygen to our muscles. Also, our cells utilize energy packets called ATP (adenosine triphosphate) with the help of magnesium. Animal studies proved that decreased exercise capacity could be an early sign of magnesium deficiency. When given magnesium, their endurance was restored. Most human studies confirm that any form of exercise depletes magnesium. We sweat it out and stress it out and need extra magnesium to neutralize lactic acid.

In fact, it is the most important nutrient for athletes to enhance performance, prevent lactic acid build up, and shorten recovery time. Overworked muscles produce free radicals, however, magnesium aids in the production of glutathione, the body's super antioxidant. If muscles are deficient in magnesium, they become irritated and on edge developing tics, twitches, and outright spasms. If you are feeling generally irritated and on edge, magnesium deficiency may be the cause. When you have sufficient magnesium, your muscles are relaxed and your whole body becomes calm.

Many of my clients are former athletes who have sweated out and not fully replaced their magnesium stores in years. Even though they are strong competitors and stars in their field, they become anxious and suffer panic attacks as their bodies develop a level of tension and irritability that they can't decipher. Taking their symptoms to a doctor, they are usually given a prescription of Xanax for anxiety, Prozac or Wellbutrin for, and an antipsychotic. Or in some cases they are given all three.

Musicians are often as active as athletes in their work. Muscle cramps, anxiety, insomnia, focal dystonia, fatigue, migraines, and stress can plague even the most accomplished musician. And the treatment is magnesium.

In my experience fibrositis, fibromyalgia, chronic neck and back pain may be caused by magnesium deficiency and can be relieved with magnesium supplements to a great extent.

Magnesium and Heart Disease

Magnesium deficiency is very common in people with heart disease. In hospitals where doctors understand the importance of magnesium, it is administered for acute myocardial infarction and cardiac arrhythmia. Like any other muscle, the heart requires magnesium. Magnesium is also used to treat angina, or chest pain.

I think the epidemic of heart disease in women may have its origins in the excessive intake of medically prescribed calcium. When heart muscle cells have too much calcium inside, they can go into a life-threatening spasm that we call heart attack. When they have enough magnesium, the heart muscle cells relax. The

prescription medication to prevent calcium build up is called a calcium channel blocker. Nature's calcium channel blocker is magnesium; it's the guardian angel of the heart. The most commonly used drugs in high blood pressure are diuretics. The irony of using diuretics is that they deplete the body of magnesium.

In June 2008, Tim Russert, a well-known and respected journalist died suddenly and unexpectedly of a heart attack. I wrote a version of the following article shortly after his death. I think it's an important overview of the current position of modern medicine on heart disease and its inability to make headway in treating this condition. Millions of people around the world are in the same position as Russert – high cholesterol, high blood pressure and on several medications to avoid having a heart attack. Many of you will see yourself in this picture and now you know what steps you can take to prevent yourself from becoming a statistic.

Why Didn't Tim Russert Take Magnesium?

"The death of Tim Russert struck a deep cord in the *hearts* of millions of Americans who await the seemingly inevitable visit to a cardiac ward.

Let's look at the facts of Russert's death. He was known to have high blood pressure, high cholesterol and asymptomatic coronary artery disease, which means he had calcium/cholesterol plaque building up inside the arteries of his heart but no chest pain. He was on drugs for hypertension, which have a known side effect of draining the body of magnesium. He was also on statin drugs for high LDL and triglycerides, and low HDL.

On medication, his good cholesterol (HDL) rose from the 20's to 37, which, according to his doctors was an "acceptable lipid profile." Russert also had minimally elevated blood sugar but did not have diabetes (yet) and wasn't on drugs for diabetes (yet). Apparently, Russert's stress test in late April 2008 was normal so his heart was thought to be in good shape. Two months later, he was dead.

The first question is why did Russert die if he was in the capable hands of medical experts and on FDA-approved drugs for his condition? And why, with all their expertise and all their medical education, did his doctors neglect what the heart and body really need—proper diet, supplements, and exercise.

Modern medicine thinks it's smarter than the human brain and body. It theorizes that the heart muscle is getting too much calcium and gives it a calcium channel blocker, when what it needs is magnesium. Modern medicine thinks the body had too much fluid, so it prescribes a diuretic to lower blood pressure but ends up flushing out magnesium and potassium causing a vicious cycle of mineral loss. It thinks cholesterol is the bad guy and the cause of all our ills (which it is not) and gives drugs that knock out the body's ability to make cholesterol while causing numerous side effects.

In my 200 hours of biochemistry in medical school I learned, and every other doctor who stayed awake in class learned, that every one of the thousands of metabolic functions in the body absolutely requires one or more vitamins and minerals in order to proceed to the next biochemical reaction. It's very simple and very basic and very much forgotten by most

doctors. Instead of learning about the body's needs, we were taught to diagnose disease and treat disease symptoms with drugs or surgery. That's our mandate and in the past 100 years, no other system of health care has been powerful enough to suggest any other approach to disease.

However, everyone wants good health. Health is not just the absence of disease. But health involves the intake of natural vitamins and minerals that are, for the most part, absent from the soil. If they're not in the soil then they are absent from our food and especially absent if we eat fast foods and drink artificially sweetened beverages. Besides giving us the necessary building blocks for a healthy body, these nutrients, especially magnesium, can protect us from high blood pressure, high cholesterol, and high blood sugar. Why wait until you are symptomatic to take a drug when you can prevent the condition in the first place?

Magnesium is a natural statin

Magnesium acts by the same mechanisms as statin drugs to lower cholesterol.¹ Every metabolic activity in the body depends on enzymes. Making cholesterol, for example, requires a specific enzyme called HMG-CoA reductase. Magnesium slows down this enzymatic reaction when it is present in sufficient quantities. HMG-CoA reductase is the same enzyme that statin drugs target and inhibit. The mechanisms are nearly the same; however, magnesium is the natural way that the body has evolved to control cholesterol when it reaches a certain level, whereas statin drugs are used to destroy the whole process. This means that if sufficient magnesium is present in the body, cholesterol will be limited to its necessary functions—the production of hormones and the maintenance of cell membranes— and will not be produced in excess.

It's only in our present-day circumstances of magnesium-deficient soil, little magnesium in processed foods, and excessive intake of calcium and calcium-rich foods without supplementation of magnesium that cholesterol has become elevated in the population.

Magnesium is also responsible for several other lipid-altering functions that are not even shared by statin drugs. Magnesium is necessary for the activity of an enzyme that lowers LDL, the "bad" cholesterol; it also lowers triglycerides and raises the "good" cholesterol, HDL. Another magnesium-dependent enzyme converts omega-3 and omega-6 essential fatty acids into prostaglandins, which are required for heart and overall health.

At least eighteen human studies have verified that magnesium supplements can have an extremely beneficial effect on lipids. In these studies, total cholesterol levels were reduced by 6 to 23 percent; LDL (bad) cholesterol were lowered by 10 to 18 percent; triglycerides fell by 10 to 42 percent; and HDL (good) cholesterol rose by 4 to 11 percent. Furthermore, the studies showed that low magnesium levels are associated with higher

¹ Rosanoff A, Seelig MS, "Comparison of mechanism and functional effects of magnesium and statin pharmaceuticals." J Am Coll Nutr, vol. 23, no. 5, pp. 501S–505S, 2004.

levels of “bad” cholesterol and high magnesium levels indicate an increase in “good” cholesterol.

Do statins prolong life?

The *New York Times* in January of 2008 asked the question on everyone’s lips “Do statins prolong life?”² The answer for most people with heart disease is – No, they do not.

Dr. Mark H. Ebell, a professor at the University of Georgia, deputy editor of the *Journal American Family Physician* says, “Patients at low risk benefit very little if at all. We end up overtreating a lot of patients.”

Doctors are still trying to decide why that is the case. They prescribe statins because they lower cholesterol and some want these drugs to be used as a preventive measure for the whole population. One thing they tend to ignore is that the accumulated side effects are worse than the ‘cure.’ They are too busy treating the cholesterol and not the patient. It’s like the old medical joke – The surgery was a success but the patient died.

The Times reported that a 2006 report in *The Archives of Internal Medicine* was an analysis of seven trials of statin use in nearly 43,000 patients, mostly middle-aged men without obvious heart disease. In that analysis, statins did not lower mortality. The same results were found in a misnamed study called Prosper, published in *The Lancet* in 2002, which studied statin use in people 70 and older. A third 2004 review in the *Journal of the American Medical Association* looked at 13 studies of nearly 20,000 women, both healthy and with established heart disease and found no benefit. Yes, the cholesterol may go down but that doesn’t guarantee longevity.

The other measure of success with a drug is if it improves a person’s quality of life. Statin critics say there is no evidence that statin users have a better quality of life. In fact the quality of life may be worsened by statins because most doctors continue to ignore or don’t recognize the side effects of statins and treat them with other drugs. Muscle pain is treated with anti-inflammatories, impotence with Viagra, and mood symptoms with antidepressants. All these drugs have their own side effects.

The decline of coenzyme q10

A major cause for concern about the use of cholesterol lowering drugs; antihypertensives such as beta blockers and hydrochlorothiazide diuretics; and diabetes drugs is that they all inhibit the production of coenzyme Q-10 (CoQ-10). Let me explain with the help of Wikipedia why all these drugs cause heart disease.

CoQ-10 is a vitamin-like substance that is present in most human cells, inside mitochondria, the energy factory of the cells. Mitochondria are where the body’s energy is produced. In human cells, food is converted into body energy in the mitochondria with the aid of CoQ-10 and magnesium. Ninety-five percent of all the human body’s energy requirements (ATP) are converted with the aid of CoQ-10. Therefore, those organs with the highest

² Parker-Pope Tara. “Great Drug, but Does It Prolong Life?” *New York Times*. January 29, 2008.

energy requirements – such as the heart, the lungs, and the liver – have the highest CoQ-10 concentrations. And that's why drug destruction of CoQ-10 leads to muscle weakness and wasting, which means failure of the heart muscles.

There is an epidemic of heart failure and nobody seems to know why. But if they looked at statin use and its destruction of CoQ-10, the answer would be obvious. The drugs that are being taken to supposedly prevent heart disease are actually causing heart disease.

Since many heart patients and diabetics are taking all three classes of drugs – statins, antihypertensives, and oral diabetic drugs they are all potentially low in CoQ-10. More and more of these drugs are being prescribed because drug companies are advising doctors to put patients on all these drugs “preventively”, with no studies to prove this assertion. The end result will be a higher incidence of heart disease, hypertension, high cholesterol, diabetes and drug side effects in people on this experimental triple therapy.

Not in accord with our bodies

A diabetes trial called ACCORD was halted because people on intensive triple drug treatment were dying.³ The trial was designed to test the effects of intensive blood glucose control, intensive control of blood lipids, and intensive control of blood pressure. Intensive in this trial meant high dose medications. Not exercise, not diet, not supplements, just medications.

After four years, 257 participants in the intensive treatment group had died, compared with 203 in the standard treatment group. The study was halted because the treatment was killing people.

Here's a very common story I hear from my clients (let's say it's Jack). Jack is 60, he goes to his doctor for his annual check up and his blood pressure is a little high (probably from stress and low magnesium levels) and he is immediately put on a diuretic drug. When he comes back the next time, his pressure is higher. The doctor doesn't know why, but it's because Jack's magnesium is driven even lower by the diuretic. His doctor just thinks he's caught Jack's blood pressure early and has to get more aggressive. The doctor puts Jack on a second antihypertensive drug. A month later, seemingly out of the blue, but because of lower levels of magnesium, his cholesterol levels are elevated and the doctor puts Jack on a statin drug.

Another month passes and his blood sugar level is starting to climb. Without anybody even questioning why, Jack's doctor puts him on a diabetic drug. One of the agreed upon signs of diabetes is low magnesium. But that's not even considered. By now, Jack is on 4 drugs to treat an underlying magnesium deficiency, all of which are causing severe magnesium deficient. Jack is also scared to death that he has heart disease and is afraid to come off their drugs.

³ Major diabetes trial halted after deaths: 257 patients died after intense therapy to lower blood sugar, NIH reports. Associated Press. Feb. 6, 2008.

In this whole 6-month scenario, magnesium levels are never tested. But even if some bright young resident runs a magnesium test, it will be the wrong one because only 1 percent of the body's magnesium is in the blood. Magnesium in the blood is crucial and the amount is guarded by powerful feedback mechanisms so it will usually look normal unless the levels in the tissues are dangerously low. Because magnesium levels always seem to be normal it's not even a routine test in most hospitals. A more accurate test is RBS magnesium, which measures 40 percent of the body's magnesium. The best test is still only available as a research tool, an ionic magnesium test.

Magnesium, a natural calcium channel blocker

Calcium enters the cells of the heart by way of calcium channels that are jealously guarded by magnesium. Magnesium in the cells is kept at a concentration 10,000 times greater than that of calcium. It only allows only a certain amount of calcium to enter cells to create necessary electrical transmissions, and then immediately ejects the calcium once the work is done. Why? If calcium accumulates in the cell, it causes hyperexcitability and calcification and disrupts cell function leading to angina, high blood pressure, and arrhythmia, asthma, or headaches and even heart attacks. Magnesium is nature's calcium channel blocker.^{4,5,6}

Let's do the obvious

Intensive drug therapy, which, if you haven't yet gotten the message, is not working. It didn't work for Tim Russert and it may not work for you. Wouldn't it make sense to have a study that compares people on drugs with people on a proper diet, supplements (like coenzyme Q10, magnesium, fish oils), and exercise? However, most clinical trials are funded by drug companies and simply compare people on different drugs. So, it's up to you to take care of your own health by studying the natural treatments of heart disease, starting with magnesium!"

Magnesium for Anxiety and Panic Attacks

Magnesium deficiency can produce manifestations of anxiety that include anger, anorexia, apathy, apprehension, confusion, eye twitches, fatigue, insomnia, muscle weakness, nervousness, poor concentration, poor memory, racing heart, and trembling. I've seen formerly accomplished and competent people melt into puddles of tears when they develop anxiety and panic attacks.

One of the main triggers creating panic attacks is low blood sugar. Here's how it happens. You're late for work and you grab a coffee and donut. Your blood sugar and adrenaline soar and propel you into your day. But on the drive to work your blood sugar crashes. When that happens your adrenal glands are triggered to

⁴ Levine BS, Coburn JW, "Magnesium, the mimic/antagonist of calcium." *N Engl J Med*, vol. 310, pp. 1253-1255, 1984.

⁵ Iseri LT, French JH, "Magnesium: nature's physiologic calcium blocker." *Am Heart J*, vol. 108, pp. 188-193, 1984.

⁶ Seelig MS, "Cardiovascular reactions to stress intensified by magnesium deficit in consequences of magnesium deficiency on the enhancement of stress reactions; preventive and therapeutic implications: a review." *J Am Coll Nutr*, vol. 13, no. 5, pp. 429-446, 1994.

release adrenaline to break down sugar stored in your liver to keep your brain from starving and sending you falling to the floor in a faint. However, the adrenaline surge makes your heart race and your palms sweat in a fight or flight response. Sitting at the wheel of your car you can't run off the feeling so your mind starts racing instead spinning into a cycle of worry and panic. If you're crossing a bridge at the same time, you can even develop a phobia of bridges and high places. A trip to the doctor, who probably won't ask you what you had for breakfast, will net you a prescription for Xanax and a diagnosis of panic disorder. Your life will never be the same because you feel your mind has betrayed you and you can't trust yourself anymore.

If your doctor asks you if you've felt down lately, have trouble sleeping and feel you are under too much stress, you may be offered an antidepressant like Prozac. See the section **Magnesium and Depression** for more information on serotonin and Prozac.

Magnesium for Asthma

Both histamine production and bronchial spasms increase with magnesium deficiency. Magnesium helps reduce histamine levels. And it relaxes the smooth muscles lining the bronchial tract. Breathlessness, wheezing, sweating are stressful activities; asthma, itself, is a major stress and all that adds up to more magnesium being lost and increased symptoms.

We've probably all had the experience of laughing ourselves to the point of wheezing. Wheezing is a mechanical function of the bronchial tubes going into spasm. A lack of magnesium can make muscles cramp and go into spasm. We can't see it happening directly but we feel it when our bronchial tubes react. If you inhale a substance to which you are allergic, your nose tries to sneeze it out and your lungs try to cough it out. If you are magnesium deficient your bronchial tubes start spasming after a certain amount of coughing and gasping for air.

The mechanical aspect of asthma can be treated with magnesium. It's that simple. It's not going to stop you being allergic but your lungs will be stronger and not go into spasm so easily. You'll be able to take those deep breaths that you need to expel the allergic substance without your lungs cramping and shutting off your air.

Magnesium for Blood Clots

Magnesium has an important role to play in preventing blood clots and keeping the blood thin—without any side effects. In *The Magnesium Miracle* I talk about the importance of balancing calcium and magnesium in the body. There's a simple experiment you can do to show this. Stir a half-teaspoon of calcium powder in a glass of water. You'll see that it won't fully dissolve. Then add a half-teaspoon of magnesium powder and miraculously the magnesium dissolves immediately and makes the calcium flakes disappear.

Well, the same thing happens in your blood stream. Calcium doesn't dissolve in the blood and it's a well know fact that it promotes blood clotting. However, magnesium dissolves calcium along with the unnecessary blood clots that calcium produces.

Of course blood clotting is a necessary function when you get injured or to heal from surgery and calcium initiating clotting is only one of the factors involved. So, if you are on magnesium it will never mean that you won't clot anymore. However, having enough magnesium will prevent abnormal clotting.

Plavix works on another aspect of blood clotting. It inhibits platelet aggregation. What you aren't told is that platelets are activated by calcium. This drug stops platelets from functioning when the simplest thing to do would be to cut back on calcium supplements and balance extra calcium with magnesium.

Plavix, which was only approved by the FDA in 1997 for minimal use in unstable angina and people who had heart attacks had its indications expanded very broadly only a few years ago in 2002. It's now on the long list of drugs that anyone with any sort of heart problem is prescribed. Patients are being told that it will prevent stroke and heart attack.

However, the "post marketing surveillance" has finally caught up with it. The side effects, which number over eighty, and the drug interactions, are adding up. The FDA in November 2009 warned that many drugs interfere with the action of Plavix. These drugs, so far, include Nexium, Prilosec, Tagamet, Prozac, Sarafem, Symbyax, Luvox, Ticlid, Diflucan, Nizoral, VFEND, Intelence and Felbatol.

It's the perfect time for the FDA to announce that taking magnesium could probably do as good a job as Plavix without the side effects. But that's a dreamscape scenario and will never happen. Modern medicine is wedded to the standard practice of medicine: drugs and surgery. And unfortunately for unsuspecting millions of patients, supplementing with magnesium has no part in that production.

Magnesium and Bowel Disease

Magnesium deficiency and calcium excess cause the muscles of the intestines to contract and not relax. Contracting and relaxing of the intestines is the way that food moves through from mouth to anus. If the intestines are stuck in the contracting phase, the bowels slow down and cause constipation. The symptoms of constipation include malabsorption of nutrients, abdominal pain and toxicity symptoms like headache, foginess, dizziness, fatigue and depression.

However, it's not all about constipation. Painful bowel spasms common in IBS diarrhea and colitis can also mean a magnesium deficiency. But the type of magnesium used for those symptoms must be non-laxative transdermal magnesium or angstrom magnesium. See the section **Types and Dosage of Magnesium and Calcium**.

Magnesium for Cystitis

Bladder spasms are made worse by magnesium deficiency and can make a bladder infection feel like a medical emergency. The lining of the bladder has smooth muscles similarly affected by magnesium as any other muscle. Lack of magnesium doesn't cause a bladder infection but if these muscles are cramping it can actually make you think you have a bladder infection and you may not.

Magnesium for Depression

Prozac is a serotonin reuptake inhibitor. A fancy way of saying, it stops the breakdown of serotonin, the brain chemical that enhances mood. However, taking Prozac can actually give you levels of serotonin that are too high, which is not beneficial. The good news is that serotonin depends on magnesium for its production and function. So, if you have enough magnesium, chances are you have enough serotonin.

A magnesium-deficient brain is also more susceptible to allergens, chemicals, and other foreign substances that may cause symptoms similar to mental illness.

Magnesium for Detoxification

Magnesium is crucial for the removal of toxic substances, heavy metals such as aluminum and lead, and excess minerals like calcium from the body. Detoxification doesn't mean a visit to the Betty Ford Clinic; it's a necessary body activity. The liver has several detoxification pathways and they depend on magnesium for their proper function.

Magnesium for Diabetes

Magnesium deficiency is a risk factor for diabetes. Magnesium enhances insulin secretion. Without magnesium, insulin is not able to transfer glucose into cells. In diabetes, glucose and insulin build up in the blood, causing various types of tissue damage. Magnesium also facilitates sugar metabolism helping simple and complex carbohydrates to break down.

Medically, magnesium deficiency is a sign of diabetes but most doctors are not aware of this association. However, many of my clients report that when they start taking magnesium their blood sugar levels stabilize with no other intervention.

Magnesium for Fatigue

Fatigue is one of the most common complaints that people have. We all seem to want more energy. If you go to your doctor and say "I'm tired, what's wrong with me?" Your doctor may check your blood and tell you you're fine but maybe you're depressed and offer you an antidepressant. However, if you take magnesium, you may find that it's not depression at all but lack of ATP!

An early symptom of magnesium deficiency is fatigue. Magnesium-deficient patients commonly experience fatigue because dozens of enzyme systems are under functioning. The most important one is the ATP system. ATP stands for adenosine triphosphate the basic energy molecule in our body. Magnesium attaches to ATP stabilizing it and making it available for use. If you don't have enough magnesium, then ATP is not properly produced.

Magnesium for Hypertension

All our blood vessels are lined with smooth muscle. When magnesium is in short supply the blood vessels can go into spasm. The decreased diameter of the blood vessel caused by this constriction and spasm can automatically cause the most common type of high blood pressure. The only way to relax that spasm is with

magnesium. Taking diuretics to lower the amount of fluid in the blood stream doesn't address the real underlying cause of the problem. Cholesterol build up in the arteries of the body can also decrease their volume and caused increased blood pressure. And, wouldn't you know it, but magnesium helps lower cholesterol as well! See "**Magnesium and Cholesterol**".

Magnesium for Insomnia

There are many causes of insomnia, several of which can be triggered by low magnesium levels. Low magnesium creates muscle tension and cramping. Going to bed with tight muscles is more conducive to a restless night than a deep sleep. Also, stress and anxiety can cause the adrenal glands to misfire and be trigger-happy. You know you're in that category when you jump at loud noises and your heart starts racing. If that's the case, an exciting dream can speed up your heart and wake you up. And, even worse, without enough magnesium your sleep-regulating melatonin production is disturbed and it's difficult to get to sleep or stay asleep.

Magnesium for Migraine

In medical school I learned that migraines are incurable and can only be symptomatically treated with strong pain medications. We were also told that migraine patients walked a fine line between becoming addicted to their pain meds and having some control over their pain. In my medical practice I remember patients telling me that if they could catch their migraine soon enough with enough drugs, they might be able to stop the pain. However, they said they felt zonked out for a day or two after because of the drug side effects.

Even with all our medical advances we still don't know what causes migraines. They are thought to be due to an imbalance in brain chemicals that can lead to inflammation. This low-grade inflammation can cause brain blood vessels to swell and irritate nearby nerves and cause pain. However, what the researchers are not considering is that magnesium deficiency will make the smooth muscles of blood vessels more irritable and susceptible to inflammation. The same thing happens with nerves. In magnesium deficiency nerve cells become more irritated. It all makes sense if you consider magnesium deficiency as an underlying trigger to migraines. And as you read in the magnesium miracle stories below, magnesium can help you get rid of migraine headaches forever.

Serotonin production is magnesium-dependent and deficiency of serotonin can result in migraine headaches and depression. But it's a toss up whether the serotonin reuptake inhibitors like Prozac actually cause headaches or cure them.

The list of triggers for migraine read like my list of 100 magnesium deficiency factors.

- Alcohol
- Aspartame (NutraSweet® and Equal®)
- Caffeine
- Food Additives (*nitrates*, MSG (monosodium glutamate), tyramine, (found in aged cheeses, soy products, sausages, smoked fish, and Chianti wine)
- Hormonal changes

- Skipping meals
- Sleep imbalance (too much or too little)
- Strong sensory stimulation (bright lights, loud noises, strong odors)
- Stress and anxiety
- Weather changes

Magnesium for Nerve problems

Magnesium alleviates peripheral nerve disturbances throughout the body, such as headaches, muscle contractions, gastrointestinal spasms, and calf, foot, and toe cramps. It is also used in treating central nervous system symptoms of vertigo and confusion. Diabetic neuropathy is a very painful aspect of diabetes. Research shows that magnesium can relieve some of the symptoms of this condition.

Magnesium for Obstetrics and Gynecology

Magnesium helps prevent premenstrual syndrome and dysmenorrhea (cramping pain during menses), is important in the treatment of infertility, and alleviates premature contractions, preeclampsia, and eclampsia in pregnancy. Intravenous magnesium is given in obstetrical wards for pregnancy-induced hypertension and to lessen the risk of cerebral palsy and sudden infant death syndrome (SIDS). Magnesium should be a required supplement for pregnant women.

Magnesium for Our Bones

Use of calcium with vitamin D to enhance calcium absorption without a balancing amount of magnesium causes further magnesium deficiency, which triggers a cascade of events leading to bone loss. Yet, every woman past 45 is told that in order to prevent osteoporosis she should take massive amounts of calcium and not offered magnesium. If calcium is the solution, why do we still have an epidemic of osteoporosis?

Magnesium deficiency causes an unhealthy balance of phosphorus and calcium in saliva, which damages teeth.

Signs and Symptoms of Magnesium Deficiency

The most frequent questions I'm asked about magnesium are "How do I know I need more magnesium?" and "Should I take magnesium supplements?"

I have come to the conclusion that everyone could benefit from extra supplementation. The following 100 factors in 68 categories can help you recognize a possible magnesium deficiency. If you have any additions to this list, please let me know. For example, a client recently told me that her chronic hiccoughs went away when she started supplementing with magnesium. There's no way of knowing how many factors correlate with any one person's magnesium deficiency, but if you find yourself ticking off more than a dozen, you may want see how many of your symptoms improve when you take magnesium supplements.

100 Factors that Indicate Magnesium Deficiency (*The Magnesium Miracle* (2007)
pg 17-20)

- | | | |
|--|--|---|
| 1. Alcohol intake—
more than seven
drinks per week | 20. Fibromyalgia | cramps |
| 2. Anger | 21. Food intake
imbalances | 40. Migraines |
| 3. Angina | a. Limited in green
leafy vegetables, seeds,
and fresh fruit | 41. Mineral
supplements |
| 4. Anxiety | b. High protein | a. Take calcium
without magnesium |
| 5. Apathy | 22. Food cravings | b. Take zinc without
magnesium |
| 6. Arrhythmia of the
heart | a. Carbohydrates | c. Take iron without
magnesium |
| 7. Asthma | b. Chocolate | 42. Mitral valve
prolapse |
| 8. Blood tests | c. Salt | 43. Muscle cramps or
spasms |
| a. Low calcium | d. Junk food | 44. Muscle twitching or
tics |
| b. Low potassium | 23. Gagging or choking
on food | 45. Muscle weakness |
| c. Low magnesium | 24. Hand Tremor | 46. Numbness of hands
or feet |
| 9. Bowel problems | 25. Headaches | 47. Osteoporosis |
| a. Undigested fat in
stool | 26. Heart disease | 48. Paranoia |
| b. Constipation | 27. Heart—rapid rate | 49. Parathyroid
hyperactivity |
| c. Diarrhea | 28. High blood
pressure | 50. PMS |
| d. Alternating
constipation and
diarrhea | 29. Homocysteinuria | 51. Polycystic ovarian
disease |
| e. IBS | 30. Hyperactivity | 52. Pregnancy |
| f. Crohn’s | 31. Hyperventilation | a. Currently pregnant |
| g. Colitis | 32. Infertility | b. Pregnant within one
year |
| 10. Brain trauma | 33. Insomnia | c. History of
preeclampsia or
eclampsia |
| 11. Bronchitis, chronic | 34. Irritability | d. Postpartum
depression |
| 12. Caffeine (coffee,
tea, chocolate), more
than three servings per
day | 35. Kidney stones | e. Have a child with
cerebral palsy |
| 13. Chronic fatigue
syndrome | 36. Medications | 53. Radiation therapy,
recent |
| 14. Cold extremities | a. Digitalis | 54. Raynaud’s
syndrome |
| 15. Concentration
difficulties | b. Diuretics | 55. Restlessness |
| 16. Confusion | c. Antibiotics | 56. Sexual energy |
| 17. Convulsions | d. Steroids | |
| 18. Depression | e. Oral contraceptives | |
| 19. Diabetes | f. Indomethacin | |
| a. Type I | g. Cisplatin | |
| b. Type II | h. Amphotericin B | |
| c. Gestational diabetes | i. Cholestyramine | |
| | j. Synthetic estrogens | |
| | 37. Memory
impairment | |
| | 38. Mercury amalgam
dental fillings | |
| | 39. Menstrual pain and | |

- | | | |
|-------------------------|------------------------|-------------------------|
| diminished | 62. Sugar, high intake | a. Kidney |
| 57. Shortness of breath | daily | b. Liver |
| 58. Smoking | 63. Syndrome X | 67. Water that contains |
| 59. Startled easily by | 64. Thyroid | the following |
| noise | hyperactivity | a. Fluoride |
| 60. Stressful life or | 65. Tingling of hands | b. Chlorine |
| circumstances | or feet | c. Calcium |
| 61. Stroke | 66. Transplants | 68. Wheezing |

Where Has All the Magnesium Gone?

Even though magnesium is the most important mineral in our body, farming practices have depleted the soil of magnesium, making our food and our bodies magnesium-deficient. One hundred years ago you could obtain 500mg of magnesium in your diet per day. Now that figure has been reduced to 150mg. Most farmers do not remineralize their soil but mainly just use fertilizers that add nitrogen, phosphorous, and potassium. But the good news is that some farmers do. You can read about one such farm at www.organicconnections.com. It's called SEER Center: Scotland's Remineralized Oasis.

Medicine may have advanced technologically, yet it's not technology that we're lacking but basic nutrients and building blocks that power our bodies and give us health. We can eat foods that contain more magnesium but if it's not in the soil it's not in the food. We don't get enough magnesium from our diet most people have to rely on magnesium supplements.

Why Medicine Ignores Magnesium

When asked why doctors don't know more about magnesium and recommend it for all the conditions I talk about, the answer is simple. Doctors primarily learn how to diagnose disease and treat disease symptoms with drugs or surgery.

We don't learn about nutrients in medical school, presumably because drug companies support medical education and patented drugs, not unpatented nutrients. Vested interests have made nutrient supplementation seem unscientific and unnecessary.

Also, as I mentioned earlier, magnesium is its own worst enemy because it's found in such low concentrations in the blood that it's hard to get an accurate measurement of total body magnesium. Only 1 percent of the magnesium in the body is found in the blood. That level is rigorously maintained at the expense of magnesium stores in the muscles and tissues, therefore most magnesium blood tests will usually be normal. Therefore if you don't look at the clinical picture, dozens of conditions and symptoms related to a simple magnesium deficiency are missed.

Without a "test" to show doctors that magnesium is necessary, the whole topic is shelved, patients' symptoms are shelved, and patients suffer the consequences.

In decades past, in France, magnesium was used effectively to treat infection, polio, epilepsy, alcoholism, prostate inflammation, cancer, and arthritis. Unfortunately, much of this research has been lost or ignored. Present day use of magnesium in chronic fatigue syndrome, fibromyalgia, detoxification, and anti-aging

protocols is also being overlooked. It remains that an educated public is the best defense against magnesium deficiency.

Types and Dosage of Magnesium and Calcium

This is a rather long-winded section. But most of the questions I get from people are about what kind of magnesium and calcium to take and how much to take. So, I'm trying to address the whole topic here, although I know I will still get questions because it's such a complex topic and everyone's story is different.

The Recommended Daily Allowance (RDA) for magnesium is between 350 and 400 milligrams per day, which is just enough to ward off outright deficiency. But for optimal health and for the conditions that are triggered by magnesium deficiency is perhaps twice as much. I'll go into magnesium- and calcium-rich foods and supplement dosage details for magnesium and calcium a little later in this section.

Many people who approach me for consultations or advice have read my *Magnesium Miracle* and realize they are deficient in magnesium. Often they are already taking magnesium before we talk but want to make sure they are taking the best form. And there are many. A reader on amazon.com asked for a more in depth description of the pros & cons of the many types of magnesium on the market. I'll do my best, but everyone is different in their magnesium requirements and sometimes you have to seek advice from your naturopath or have a telephone consultation with me for fine-tuning.

I'm very much limited by the lack of research on the absorption of minerals. The absorption rates that are given for minerals usually refer to absorption into the blood stream. However, we want to know the cellular absorption because minerals like magnesium and calcium work at the cellular level.

Common types of magnesium

1. Magnesium oxide
2. Magnesium citrate
3. Magnesium chloride
4. Magnesium chelates: Amino Acid Chelate, Fumarate, Gluconate, Glycinate, L-Aspartate, Lactate, Lysinate, Malate, Orotate Dihydrate, Ornithine Ketoglutarate, Pyroglutamate, Succinate, Taurate
5. Plant-based magnesium supplements
6. Magnesium oil or gel
7. Magnesium in angstrom form

Magnesium oxide is the cheapest form of magnesium but it's only 4 percent absorbed, the rest goes right through the intestines making it a fairly powerful laxative. It is used in many bowel-cleansing products for its purging effect. Be very careful when taking magnesium oxide because it can cause diarrhea. Be wary of having more than two bowel movements a day especially if they are very loose. Magnesium flushing through the intestines can pull out beneficial nutrients and good bacteria.

Magnesium citrate powder is the most commonly used form of magnesium. Mixed with water, either warm or room temperature, it is better absorbed than in pill or capsule form. Magnesium chloride is much like magnesium citrate, but in the powder form, it has a very strong taste.

Chelated magnesium. Magnesium can be chelated with many amino acids. The most common are glycinate, taurate, malate, and dimagnesium malate. They appear to have less laxative effect than magnesium citrate or chloride. However, I learned from mineral expert Dr. Parris Kidd that only a few percentage points of absorption can be obtained from chelating a mineral. Plants naturally chelate minerals but those minerals are already angstrom-sized. That's because plant rootlets are size-dependent and only absorb angstrom-sized minerals. And most importantly, the size of the ion channels allowing minerals entrance into a cell are between 4-5 angstroms in diameter. If you take a larger sized mineral and just add an amino acid chelating agent, you haven't really enhanced its absorption at the cellular level. There is one company that has taken dimagnesium malate and put it in a sustained release formula that slows down the transit time of their product making it much less laxative and better absorbed.

Plant-based magnesium supplements are usually created by growing one-celled plant organisms in a medium of magnesium. As mentioned above, plants won't absorb minerals unless they are small enough to pass through their rootlet or cell walls. So these supplements do have an absorbable form of magnesium. The supplements are usually low potency but since they are highly absorbed the average person may only need 200mg to 400 mg per day.

However, for the magnesium deficient person, you may have to take a dozen tablets - 200 mg tablets per day.

I've personally experienced the laxative effect from plant-based magnesium supplements before getting the dosage I required to eliminate my magnesium deficiency symptoms. So, I know it's not 100 percent absorbed.

Magnesium oil is in a liquid form that can be sprayed on the body and absorbed through the skin. Those who want no laxative effect whatsoever use the oil. It's not actually oil at all. It's magnesium chloride evaporated from seawater and then it's supersaturated in distilled water.

Magnesium gel is magnesium oil mixed with substances that make the oil easier to massage into the body.

The magnesium oils that I'm familiar with contain about 3,000 mg of magnesium per teaspoon. We don't know the exact absorption of this form of magnesium but it's probably at least 10 percent.

Angstrom Magnesium. Last, definitely the most important, are the angstrom minerals. I'm convinced angstrom minerals are going to revolutionize the mineral supplement industry.

According to Joseph B. Marion; Anti-Aging Manual (1999) "Most minerals (from food) are 8-12% absorbable, chelated minerals are 40% absorbable, and liquid Angstrom minerals are 99% absorbable, being 7000 times smaller than Red blood cells, 1 Million times smaller than a colloidal mineral, smaller than ionic, with negative-charge for added absorption."

I'm not convinced that chelated minerals are that well absorbed but I appreciate his insight of over a decade ago about the importance of angstrom minerals. He also makes reference to their size in relation to colloidal minerals and ionic minerals.

I learned about angstrom immediately after the publication of the second edition of *The Magnesium Miracle* (2007). So I wasn't able to write about it in that book.

It seems that only in the past few years have physicists determined that the mineral ion channels that allows minerals to enter cells are only 4-5 angstroms in diameter. This information changed the face of cell fluid dynamics.

A friend of mine, Dr. Terry Wood, a veterinarian, was in need of something to save animals with pneumonia that would drown if you gave them IV fluids with electrolytes. When he began using angstrom minerals, he found his answer. You can follow Terry's work with angstrom minerals at www.terrywooddvm.com

Because angstrom minerals are absorbed directly into the cells, they improve cell function immediately. Otherwise water floods into cells and the large-sized minerals stay outside. All forms of edema, including brain edema are caused by fluid and electrolyte imbalance at the cellular level. Angstrom minerals are small enough to enter cells bringing the minerals where they are most needed. A body can only be as healthy as its cells.

Another important aspect about angstrom minerals is that people who suffer from IBS-diarrhea, Crohn's and colitis can use angstrom magnesium without affecting their bowels.

Magnesium dosage

The RDA for magnesium is about 400 mg of elemental magnesium. However, many people need much more than that. I'm one of them. If I don't take about 3-4 times the RDA, I get heart palpitations, leg cramps and twitchy muscles. My other challenge was that when I take the powdered or tablet form of magnesium I get a laxative effect. It got so bad that I was losing weight and nutrients. Then I discovered transdermal magnesium and found that helped. But it wasn't until I began using angstrom magnesium that I found relief from all my magnesium deficiency symptoms with no laxative effect.

When taking magnesium powders and pills, the average dosage is from 400-800 magnesium per day of the elemental form. Don't take it all at once, spreading it out and taking it with meals will slow down transit time through the intestines and enhance absorption.

The dosage of angstrom minerals is about 5-10 times less than dirt-minerals. That means a 60 mg dose of magnesium for me is about 300-600 mg of a dirt-based magnesium. I judge the amount I need by my symptoms. When I moved to Maui in June 2008, with all the walking and sweating and swimming, I began to develop leg

cramps in the cool waters. I realized I was sweating out and working off more magnesium than in New York, so I upped my intake and all my symptoms disappeared.

You can ask your doctor for an RBC magnesium blood test to see if your levels are low or low normal. It's a more accurate test than the serum magnesium test. Perhaps a little more accurate than and RBC test is the ExaTest (www.exatest.com). Naturopaths and chiropractors are more familiar with this test than medical doctors. A scraping from under the tongue is sent to a lab where it is stained with special dyes and viewed under an electron microscope. The amount of magnesium, calcium, potassium, sodium, chloride, and phosphorus is measured with this test.

The best test is the ionized magnesium test but it's only available as a research tool. Until it is available and affordable, you may have to judge how you feel to know if you need more magnesium.

That's why I created the list of 100 factors that indicate magnesium deficiency. Consult the list and see if you are experiencing any of those symptoms, take magnesium and see if your symptoms improve. You'll be doing a scientific study with yourself as the only subject. After your symptoms improve, stop magnesium and see if they come back. If they do, then you have your proof.

Magnesium-rich Foods

Seaweed, nuts, seeds, deep green leafy vegetables, whole grains, raw chocolate, are the foods that contain the most magnesium.

Magnesium Content Of Common Foods (*The Magnesium Miracle* pg 230)

Food	Magnesium (mg) per 31/2oz (100g) serving
Kelp	760
Wheat bran	490
Wheat germ	336
Almonds	270
Cashews	267
Molasses	258
Yeast, brewer's	231
Buckwheat	229
Brazil nuts	225
Dulse	220
Filberts	184
Peanuts	175
Millet	162
Wheat grain	160
Pecan	142
English walnuts	131
Rye	115

Calcium dosage

I'm not a big fan of taking too much calcium, calcium alone, or taking calcium supplements that are not fully absorbed.

Often clients and readers are taking lots of calcium and, unknown to them, it's driving up their magnesium requirements. We ingest much more calcium in our diet than we do magnesium, making magnesium 'relatively' deficient. Magnesium makes calcium work better so people do not need as much if they are just taking calcium alone.

There is a problem of sorting out mineral dosage based on elemental versus the amount sometimes listed for the magnesium compound. Let me explain. The adult RDA recommendation for calcium is 1,000 mg of the elemental form. Calcium carbonate has 40 percent elemental calcium and calcium citrate has 20 percent. Therefore in order to get 1,000 mg of elemental calcium you would have to take about 2,400 mg of calcium carbonate and 4,800 mg of calcium citrate. Based solely on numbers, calcium carbonate looks like the better choice but it's basically chalk and very difficult to digest.

There is also problem in deciding how much and what form of calcium to take because it is so badly absorbed. And unlike magnesium, it doesn't flush out of the body with a loose bowel movement. Instead it can solidify in body tissues and cause constipation.

I have great concerns about the high intake of unabsorbed calcium supplements. Most women I consult with are on maximum doses of calcium and zero magnesium. Their symptoms reflect this imbalance and they are textbook cases of magnesium deficiency. The more calcium you take without the balancing effect of magnesium the more symptoms of magnesium deficiency and calcium excess you have. Yes, I'm talking about osteoporosis that we are being told is a calcium deficiency condition. Also about heel spurs, kidney stones, gall stones, atherosclerosis, fibromyalgia and breast calcification. These are all symptoms of calcium excess that can be overcome with the right balance of magnesium.

A book written by Dr. Robert Thompson and Kathleen Barnes called *The Calcium Lie* goes beyond my list of the dangers of taking too much calcium. They make a case for calcium being involved in poor protein digestion, sodium pump failure, weight gain, thyroid and adrenal malfunction, hypothyroidism, and excess problems in pregnancy, childbirth and menopause.

What's the answer? If we could get all our calcium from plants that would solve the problem of calcium build up in the body. Plants have a unique way of only absorbing angstrom-sized minerals into their rootlets, chelating minerals with certain proteins, and making them available for direct absorption by animals. Attaching a chelating protein to a large-sized mineral doesn't enhance absorption dramatically.

For all these reasons, I recommend daily intake of smoothies made from collards, kale, Swiss chard or food-based/plant-based supplements or angstrom-sized minerals. Actually the best plan would be to incorporate all three.

Angstrom-sized minerals come in low potency liquids and are almost 100 percent absorbed at the cellular level. They are more efficiently absorbed than dirt-

sized minerals because they are able to work directly at the cell level and don't build up in the body. Therefore angstrom calcium will not build up in tissues potentially causing heel spurs, gallstones, fibromyalgia, kidney stones, and atherosclerosis. The dosage on the label of angstrom calcium will be 5-10 times lower than a dirt-based calcium.

Before I knew about angstrom minerals my recommendation for calcium and magnesium was about 500 mg of the elemental form of each. Then I discovered the huge discrepancy in the amount of calcium and magnesium in foods. There is more calcium in the soil and therefore in foods and much more magnesium than calcium is lost when you cook and process foods. I began to realize that a diligent person could get enough calcium in their diet but probably not enough magnesium. But if you can't, use plant-based calcium and/or angstrom calcium to make up the difference on a daily basis.

Calcium Rich Foods: in Milligrams (from Hormone Balance-Dean 2005)

Sea Vegetables

hijiki—3.5 oz. = 1,400
 wakame—3.5 oz. = 1,300
 kelp—3.5 oz. = 1,099
 kombu—3.5 oz. = 800
 nori—3.5 oz. = 260

Dairy

brick cheese—3.5 oz. = 682
 yogurt—3.5 oz. = 121
 milk—3.5 oz. = 119

Vegetables and Beans

dried wheat grass or barley grass—
 3.5 oz. = 514
 bok choy—1 cup = 252
 broccoli stalk—1 medium = 158
 dandelion greens—1/2 cup cooked
 =147
 blackstrap molasses—1 tbsp =140
 turnip—1 cup cooked = 126
 collards—1/2 cup cooked = 110
 kale—1/2 cup cooked =103
 dried beans, cooked (white, kidney,
 soy, etc.) — 1 cup = 95 to 110

spinach—1/2 cup cooked = 88
 broccoli—1/2 cup cooked = 72
 beet greens—1/2 cup cooked = 7

Baked Foods

corn muffin—1 medium = 96
 whole wheat bread—1 slice = 50

Seafood

sardines with bones—3.5 oz. = 443
 sardines with bones—7 = 393
 oysters—20 medium = 300
 salmon with bones—1/2 can (220 g) =
 284
 scallops—6 = 115
 clams—3/4 can = 62

Nuts and Seeds

hazelnuts—3.5 oz. =209
 almonds—1/2 cup =175
 brazil nuts—1/2 cup = 128
 sesame seeds—1/2 cup =76

Fruit

rhubarb, cooked—1/2 cup = 200

Magnesium Supplementation Contraindications

1. Kidney failure

2. Bowel obstruction

Magnesium is eliminated from the body through the bowel and bladder when there is excess. Thus the first two contraindications reflect a person's inability to eliminate magnesium. However, since low potency angstrom minerals are absorbed at the cellular level they may not have a negative effect on the kidneys or bowel. This is an important aspect of mineral supplementation that needs to be thoroughly studied.

3. Myasthenia gravis (MG)

IV magnesium could accentuate the muscle relaxation that comes with MG and collapse the respiratory muscles. However, I've gotten reports from people with MG who swear that magnesium was helpful in their recovery, especially when their MG was caused by mercury toxicity.

4. Excessively slow heart rate.

Slow heart rates can be made even slower, as magnesium relaxes the heart. Slow heart rates are often due to an electrical imbalance in the heart and require an artificial pacemaker.

MAGNESIUM MIRACLE STORIES

I know magnesium works, it works for me and it works for my readers and clients. After taking magnesium supplements, many people have contacted me describing the reversal of their PMS, painful periods, improvement in symptoms of chronic fatigue and fibromyalgia, depression, anxiety, muscle spasms, and greater enjoyment of sexual activity.

It would be nice to take the top 20 chronic diseases and give you a miracle-healing story from my files but that's not possible. You see, when people have been depleted in magnesium and begin to take it for one ailment or another they quickly find it has an impact on many other areas of their lives.

I'll begin with a few angstrom magnesium miracle stories.

Angstrom Magnesium and Dialysis

The following story that I have in my Future Health Now! Module 4 illustrates the importance of absorption versus consumption. One client (I'll call her Susan) is a dialysis patient. Her kidneys have failed completely. She requires a machine to clean her blood. She barely urinates.

Dialysis machines, however, are very poor at cleaning out excess minerals. Dialysis patients usually go on a strict diet where they limit their intake of potassium, sodium and phosphates to avoid build up in their bloodstream. No dietary restrictions, however, are given about magnesium – because there is so little available in our diet it's difficult to overdose.

(Just to clarify: If your kidneys function properly, dietary "overdosing" on magnesium is usually not a problem – you will simply urinate them out or they flow out your intestines.)

Susan started taking magnesium citrate before she consulted me. She took about 700 mg a day because she had classic magnesium deficiency symptoms. She quickly began to feel welcome relief once she went on the magnesium citrate. A week later, however, her condition worsened. She started to become very weak, nauseous, sleepless and suffered horrible headaches. She felt awful.

Her nurse ran a blood test and found that her magnesium levels were dangerously high. (Again, if your kidneys work fine, this will not happen to you. Magnesium is one of those minerals that will be released by your kidneys and your bowels when there is too much.)

But Susan wasn't really taking all that much magnesium - only 700 mg. Less than she probably needed. When she consulted me, I suspected that her body cells were not absorbing all the magnesium citrate. The rest was left circulating in the blood stream, unable to pass through her kidneys into her bladder. I immediately took her off the magnesium citrate. The symptoms all went away in a few days.

We then tried angstrom magnesium. This type of magnesium has been broken down to 5 billionth of a meter in width. Several days later she felt much better, had no more magnesium deficiency symptoms and a week later her blood work showed that her magnesium levels were fine – no excess build up.

In Susan's case, at least, the angstrom magnesium absorbed a lot better than the magnesium citrate. The evidence (albeit in this one anecdotal case) is in the blood work and in how she feels.

Angstrom Magnesium and Lung Whiteout

A manufacturer of angstrom minerals has a friend whose wife came down with H1N1. She had nighttime fever and a dry cough and within a few days in intensive care on life support. On Friday her chest x-ray showed her lungs were completely filled with fluid. It's called whiteout. The fluid was partly from the virus but mostly from the IV fluids filled with electrolyte minerals that weren't getting into the cells. This is common in human and veterinarian medicine because the size of the minerals keeps them outside the cells and a person can be cell dehydrated but have tissue edema. They didn't expect her to live. Her liver and kidney blood tests showed that they were beginning to fail.

My friend suggested that some angstrom minerals rubbed into her feet might make her more comfortable. Her husband massaged a teaspoon of angstrom electrolyte liquid into her feet every hour. The next day she seemed to be doing better and they x-rayed her lungs again. The fluid was diminished by 35 percent and her liver enzymes started stabilizing. On the second day after beginning the angstrom minerals her doctors agreed she was recovering but it would take two weeks to a month more on before she could breathe without the ventilator. However, on day five after beginning the angstrom minerals she was taken off the minerals. All her vital signs had leveled out and her lungs were clear and she was sitting up and talking to people.

My veterinarian friend, Dr. Wood tells me that he clears pig lung whiteout within hours just by using angstrom minerals. I tell this doctor that he is providing the animal research that shows the benefits of these minerals.

Loving Angstrom Minerals

"I just picked up my angstrom magnesium and calcium. I took a dose of each. A couple of hours later I seemed to feel my shoulder muscles (my stress area lately) relax and feel more energetic. I thought this was impossible wishful thinking. I phoned the company to ask and the owner laughed. He said yes because it enters the cell directly. I am going to love this. "

Effects of Angstrom Minerals

"I have been using the angstrom magnesium for only 5 days and I am so impressed with it. I could feel it acting within a couple of hours. I'm more alert, less tense in my muscles, more relaxed, sleeping better, falling asleep faster, waking up less, sleeping sounder. Magnesium taurate made a lot of improvement in my sleeping but this liquid is 10 times better. I am still taking magnesium taurate 625mg, plus 2 Tbsp day of angstrom magnesium. My Mom is 89 and she is more alert during the day and sleeping even better at night, not getting up at much at night. Dr. Dean, this is the best thing for us. Thank you soooooo much for telling us about it."

Angstrom Magnesium and Arthritis

"I am 68 year old. I was having a great deal of muscle pain and joint discomfort. I began taking pill forms of magnesium and calcium supplements. For the first month I could not handle the calcium but the magnesium helped lessen my discomfort. Then I found out about angstrom minerals. Still thinking I needed calcium I took it

and my symptoms worsened. Then I just took magnesium and it only took about two months to see a remarkable difference. I now take about 2-3 times more magnesium than calcium. I realized I had so much calcium built up in my system that when I took more calcium it made me worse. And I believe I'm getting more calcium than magnesium in my diet anyway."

Angstrom Magnesium and Migraines

"I have had bad migraines for a numbers of years and but when I began taking angstrom magnesium it can fully take them away. Other times it will reduce the migraines so I can function and make it through the day. Every day I take 75mg and some times up to 150 mg. This has become a daily routine for me. It's a lot cheaper than the medication I had been taking."

Magnesium and Jane's Top Ten Improvements to here now

One woman in her early 50's, we'll call her Jane, filled out her client symptom survey and scored 275. A healthy person would have no symptoms or maybe a score of 10. After three months on magnesium citrate Jane sent me her "top ten" improvements.

1. Less knee pain.
Our knees take the brunt of our weight. The knee is just a simple ball and socket joint that is held in place by the thigh muscles and the leg muscles. If those muscles are tight or in spasm, that alone can cause slight displacement of the knee that over time can turn into what medicine calls knee arthritis. However, instead of immediately going on pain medication or undergoing knee surgery to "clean out the joint", magnesium is the treatment of choice.
2. Carbohydrate/sugar cravings down from 90 to 5 -- on a scale of 100.
Magnesium is a necessary cofactor in the proper metabolism of carbohydrates. It also helps insulin work properly to put sugar inside cells where it belongs and not leave it in the blood stream where it can continue to cause sugar cravings.
3. Facial wrinkles and crevices diminishing.
This was a new benefit of magnesium that I hadn't heard before. Jane is a very observant lady and I'm sure others are receiving the benefit of magnesium in this way but aren't taking note. It's likely got to do with tissue integrity, hydration, and cell health, all of which are important effects of magnesium balance.
4. Dramatic reduction in "migraines"
Migraines can cause the most severe pain know to humans. They are debilitating and said to be incurable. Life long pain medications seem to be the only option that doctors can offer. However, Jane and thousands of other readers of my *Magnesium Miracle* have gotten relief from migraines and headaches but using magnesium. In the

book I talk about also using the herb feverfew and some Vitamin B 6 (25 mg twice a day) if magnesium alone doesn't give full relief.

5. Periods went from dark to bright red; from severe clots to minimal. Magnesium works in several ways in lessening the intensity of menstrual flow. It oxygenates the blood and detoxifies it changing dark toxic flow to bright red. It also thins the blood naturally breaking up clots.
6. Able to exercise intensely for the first time in years. Prior to this, Jan would be exhausted for at least three days after any exercise. See the section on magnesium and muscles to understand the effect of exercise on magnesium. In Jane's case it was probably a combination of things. She likely didn't have enough magnesium to neutralize the lactic acid she was building and instead got aches and pains. Also, one of the first symptoms of magnesium deficiency is fatigue. When you lack ATP, the energy packets that are formed with the help of magnesium, then you just don't have the oomph that you want. For some, exercise gives them energy, but they have to have enough ATP to give them that boost.
7. Sleep has improved from "minimal" to "poor and restless" all night. When your body is magnesium deficient it's as if your cells and nerves are all on edge. They are tight and contracted and ready to snap. If you lie down in that state your body can't relax, your mind can't relax and you toss and turn. Simply having your muscles relax with the proper amount of magnesium turns off that tension and allows you to slip into sleep.
8. Able to keep going to some extent past 6:30 pm at night. Without enough energy from ATP,
9. Less sound sensitivity/hypersensitivity. Studies done in the cockpit on pilots showed an increased sound sensitivity in the face of magnesium deficiency. Once on a radio talk show a woman phoned in and asked about her son who was in a rock band. I had been talking about tics and spasms being a sign of magnesium deficiency. She said that her son had developed a tic below one eye and wondered if it could be magnesium deficiency. I said it absolutely could.
10. Better able to concentrate when someone is speaking to her. Jane's concentration would be hampered especially if there was a lot of background noise. Poor concentration is not something you will find in a magnesium

deficiency list. However, it makes sense that if your body is tense and irritable and you are sound sensitive, then you can have trouble concentrating.

All in all, the list that Jane provides lends great credibility to the benefits of magnesium. Clinical medicine is based on cases like Jane's where she is a one-person experiment. Many of my clients has said that they have proven the benefits of magnesium over and over because when they run out of their supplements, their symptoms return. Someone critical of taking supplements may say that these people are "addicted" to magnesium. My response is that magnesium is a vital nutrient that we can't live without and unfortunately because of lack in our diet and our stressed-out lifestyle we do have to supplement with this mineral.

Often, it's not until you read something about your specific problem that you put two and two together. You can be told over and over again that magnesium is important to relieve muscle spasms but many people don't know that choking can be an indication of a muscle spasm in your esophagus. One of the most dramatic magnesium stories I ever heard became a popular post on my blog.

Magnesium and Alcohol

Shauna wrote about something she said was "downright weird."

"I like wine, and, gee, almost any kind of alcohol. I cook a lot.... garlic, butter, salmon, crab cakes, etc. and hard to drink a glass of water with good food. If it's Mexican food I prefer a beer.... Some nights as much as a half bottle of wine, but most of the time just a glass or two. And being the type A that I am, and with the muscle tension, I really looked forward to that 5 o'clock hour for that drink to bring me down.

I was pretty sure I wasn't an alcoholic, that it was just a bad habit.... one I needed to break. So for the past few weeks I would tell myself that was the week I would be alcohol free.... but never stuck to it. In fact, I was getting a little nervous that I could not have that drink!

Enter magnesium. After I guess about 2 weeks on magnesium I told my husband that this was the week I was going to quit. So out of the past 8 nights, I have had only a beer on Valentines when we went to a barbeque house. 7 nights alcohol free for the first time in 4 years... So good for me. but the weird thing is, I don't even want a drink, and Saturday night I made homemade pizza and thought I should open a bottle of red wine (which I really love) but I popped a non-alcoholic beer instead... not as many calories as pop, and not as bland as water. The weird thing is that I do not even want a glass of red wine. I'm beginning to think the magnesium has altered my body chemistry to the point where I don't have a taste for it. Either that or my husband had me hypnotized without my knowing it. Have you heard of this phenomenon? Thanks."

As Shauna said herself, she's a type A and was using alcohol to relax her body. When you have magnesium to do the relaxing, you don't need alcohol.

Magnesium and Anxiety

Anxiety is an enormous problem for many people. I address this condition in my *Magnesium Miracle book* and receive many emails from people who have managed to overcome their problem and get off addictive medications with the help of magnesium. Veronica wrote about her symptoms and wanted reassurance that they would be eliminated by magnesium.

“I recently purchased “The Magnesium Miracle” and must begin by telling you that this book has begun to answer some question about my health. My symptoms have included stress, anxiousness, sweating, mild depression, and spasms all over the body often during the course of the day. I was diagnosed as a child with IBS, and the associated symptoms have only increased as I passed into adulthood. I have been to several doctors who have told me that the problem is not a physical one (I have had a colonoscopy which was clear).

Nonetheless, the symptoms cause me great difficulty, making it very difficult for me to work, or to interact socially comfortably. In reading your book I have noticed that all of these symptoms are related to the lack of magnesium. Would you recommend that I begin to take 500mg daily of magnesium? Should it be in conjunction with calcium, or taken separately. I believe that my diet provides sufficient calcium. Do you think that these symptoms can be progressively helped by taking magnesium, and can I look forward to relief? Thank you for your kind attention”

Magnesium and Arrhythmia

Nancy wrote a very long story to me, some of which I’ll include here to highlight the use of magnesium in abnormal heart rhythm.

“Dr. Abram Hoffer told me about your to-be-published book last fall. I could hardly wait for your book to come out.

A year ago my cardiologist had me wear a Holter for 24 hours to determine what kinds of arrhythmia I had. I had been taking more potassium and B6, which seemed to relieve the arrhythmia. Then I began to suspect that I might be losing potassium -- that maybe I was losing it almost as fast as I was taking it. So a nutritional MD ordered a 24-hour urine test to check excreted minerals, and I was passing large amounts of magnesium, potassium and lithium. While the larger amounts of magnesium and potassium could have come from my supplements, I was not taking any form of lithium.

To look into it further I had a White Blood Cell test for magnesium and a Red Blood Cell test for potassium. I was low in magnesium, not potassium! And, as my doctor pointed out, magnesium is needed for metabolizing potassium.

The moment your book was available I picked up a copy and read it as well as an article by you in the Natural Health magazine, in which you wrote about your water fast in the morning. I began making changes -- too numerous to list here -- and with those changes I noticed a sudden increase in energy, verified by counting my RPMs on our reclining exercycle while recording my pulse and pedaling at the same resistance.

This week my cardiologist ran a treadmill test and said he could find no abnormalities in my heart rhythm! In fact, just a couple of weeks ago after I gave him copies of pages from your book focusing on arrhythmias, he ordered a copy of your book and plans to include information from it in a lecture he will be giving.”

Magnesium and Asthma

I have many stories about magnesium and asthma, I'll include three here to give you and idea of the miraculous power of this mineral.

Charles wrote about a relative who probably needs more magnesium.

“A relation of mine (lady in her 70's) suffers from asthma all her life. Had to have the ambulance on a number of occasions. Now diagnosed with COPD (chronic obstructive pulmonary disease). She had tinnitus about twice a week too. I got her to take 150mg of Magnesium Citrate every day. Her breathing has greatly improved and her tinnitus has now completely gone.

I wish she would take more Mg to try an ease her breathing even more, but as I am not a doctor, if anything happened to her I would be in a rather difficult position. Everyone must decide for themselves. I take 400Mg per day. No more laryngospasms and no more leg cramps. My wife takes 200Mg...no more cramps and no more insomnia!

And, it can be easily proven if modern food is full of vitamins/minerals as it once was... I know a number of people, including my wife and myself, who eat a well balanced diet of fruit/vegetables/fish/meat etc. If this contained all that our bodies required we would not need to take magnesium supplements to cure our spasms/tinnitus/cramps/breathing.”

Violet wrote her husband's story about his history of asthma. They mostly use magnesium oxide, which I don't generally recommend. But it obviously seems to be working for them. Some of us can't tolerate magnesium oxide, because it's only 4 percent absorbed and the other 96 percent flushes through the intestines like a laxative. I told Violet that if that's not the case and it's working for your symptoms, please continue but don't go beyond 2-3 bowel movements a day so you don't lose valuable nutrients.

“My 62 year old husband is a severe asthmatic...or rather he WAS, until he found out about magnesium. We take pure powdered magnesium oxide and sometimes magnesium chloride in water. The first tastes better.

Before that, two years ago, our medical doctor told him he was in danger of dying from 1) asthma, 2) heart attack and 3) high blood pressure. The doctor prescribed blood pressure and asthma meds.

He had leg cramps that night that woke him up. He prayed and asked the Lord why. He heard the words “low magnesium”. We studied this on the Internet, bought your book and before it arrived started taking magnesium oxide.

He also took apple cider vinegar (ACV), at least a dessert spoon full of crushed garlic with Thyme added every day, drank 10 10-ounce glasses of water a

day with ¼ tsp of sea salt with every 4 glasses. We also eat lots of cayenne pepper, a vasodilator and take homemade Haw sauce daily. Haw sauce is also a vasodilator and strengthens the heart.

In 10 days his blood pressure dropped so low he was having fainting spells. He called the doctor who shouted, "Stop taking the blood pressure meds!" Now he takes no blood pressure meds at all and is off all meds except asthma preventer, Flixotide. His health has changed so dramatically for the better the doctor has changed his attitude about natural health.

If there is an asthma attack, which is very rare these days, he can stop it within minutes by takes 2 glasses of water and a 1/4 tsp of sea salt and often with a 1/4 tsp of MgO as well as Ester C and calcium. The only time he has relapses is when he doesn't take enough magnesium in a day.

His condition may have started because we used to drink 6 to 8 mugs of coffee a day and hardly any water. Dr. Batmanghelidj - <http://www.watercure.com> - said that asthma starts as a dehydration disease, coffee is a diuretic, and taking water and sea salt corrects the condition. We add that magnesium deficiency is a major contributor to asthma.

Medical doctors err by prescribing drugs that further dehydrate the patient like the blood pressure medication! Magnesium relaxes the lungs, improves airflow and dissolves calcium laid down in the soft tissues while magnesium deficient. Calcium balances magnesium.

We have a friend who had severe gout over many years. We suggested some of the above and gave him a bottle of magnesium oxide. He called 18 hours later to say Thank You because his symptoms had disappeared completely.

Also I gave magnesium oxide to my neutered cat that suffers with Feline Urinary Syndrome (FUS), which are crystals in the urinary tract. He was cured permanently in 3 days. I keep magnesium oxide in a saltshaker now and put it over the dog and cat food. It also calms down horses, including our thoroughbreds, which are supposed to be, flighty but aren't really. It's just magnesium deficiency."

Here's another asthma story that I highlighted in one of my blog posts. It's from Bill, an asthma sufferer, in Florida. The "boys" he refers to are two new kittens he adopted recently.

"I was having so much allergy/asthma trouble I was sure I would have to give these boys back to the shelter. That was making me sad.

Since beginning the magnesium supplements I have had very little trouble. A bit sniffley some days, but no asthma troubles at all.

Among the worst things that happen when you experience allergic symptoms that develop into an asthma attack is the anticipation -- moment to moment -- of what will happen with the next breath. For me, my lungs can close up in a matter of a few breaths. Air passages shut off... Very scary stuff.

It gets to where your entire existence is all about each breath, literally. Nothing else matters then.

I am happy to say I won't have to deal with that any more and I will be able to keep these kittens! This is making me very happy! Thanks so much for the suggestion. I can't believe this is real. I need to do something to make other asthmatics aware of this. It is amazing!"

The reason magnesium helped Bill was most likely because it relaxed the lungs and the air passage. As he says, "my lungs can close up in a matter of a few breaths."

Magnesium and Back Spasms

I've received many stories about the relief that people get from taking magnesium either in Epsom salts baths or from oral magnesium. I'll highlight Sarah, who wanted to share her magnesium miracle story, which reads like another top ten.

"A year and a half ago I had a back spasm that wouldn't quit. Three chiropractic adjustments and a massage would not make it let go, so the chiropractor gave me some magnesium citrate powder to take. Fifteen minutes after taking a teaspoon of the powder, the spasm started to relax. I immediately went to the Internet to do some research on magnesium deficiency and I "bumped" into myself. All the little cramps, the eye tic, the mitral valve prolapse, the high blood pressure, the pre-eclampsia of pregnancy, and the PMS seemed to be related to one thing-a need for magnesium. Also, I realized I was over-dosing on calcium, which exacerbated the magnesium deficiency.

Supplementation has made such a difference in my life that I only wished I had known about it 25 years earlier when my child was born. Then in August your book came out and I was amazed all over again. Nobody believes that such a simple thing has such far-reaching implications. However, a friend who is a competitive long-distance runner has gotten relief from her migraine headaches after I told her about magnesium.

Thank you for your informative book. It explained so much. It was truly a miracle for me."

Magnesium and Blepharospasm

A woman dentist from Mexico actually had twenty symptoms that have improved with magnesium but the most dramatic is her "incurable" eye blinking.

"Hello Dr. Dean. I'm a Mexican dentist, 42 years old. In June 2002 I started feeling "sand" in my eyes and went to an ophthalmologist whose diagnosis was allergic dermatconjunctivitis and prescribed some ointments and drops for my eyes. They didn't work so I went to see another four ophthalmologists and they changed the diagnosis to keratitis. In the meantime I started to develop eye blinking that got worse and worse until it became a severe spasm that I couldn't open my eyes. I also started having tetany. From the first doctor until this point 2 months had passed. Needless to say that I was desperate and very depressed. I couldn't work, drive or even walk! Then I went to see a neuro-ophthalmologist who gave me the terrible diagnose of essential blepharospasm: essential, because this means that they don't know what causes it and of course there is no cure. He also told me that this was

known as Meige Syndrome and he offered me 3 options:

1. To take neurological prescriptions (sedatives for lifetime) that had to be change every 3 months because they lose their effect.
2. Botox injections, with the risk that the eyelid could drop
3. A facial nerve blockage (the motor part) in my face (it's a horrible treatment where they give you shots all around the forehead and eyelids with an alcohol derived substance, the injections goes to the depth of the bone.

He recommended that I try number 3 first, so I accepted the treatment. This was in August, 2002. Let me tell you that it was a HORRIBLE experience. My face was swollen at least 5 times the normal size and he definitively did something wrong because he left me with facial paralysis on the left side. So, my right eye couldn't close and my left eye was still closed because it didn't respond to the shots. He prescribed me cortisone and told me that we had to wait and see what happened. I was feeling miserable.

And then, the miracle happened: I needed something to be fixed in my kitchen so the person who came to do the job brought this book about magnesium (El magnesio elemento clave para la salud.....By La Justicia) and it caught my attention because I had started to take a calcium/magnesium supplement because someone told me that It was very good for stress. By this time I couldn't read because the eye drops I was using caused mydriasis (excessively dilated pupils). I asked him to lend me the book so I could make a copy to read it later.

The next day he arrived with my copy, and since I could do absolutely nothing else, I made a huge effort and started to read the book line by line. As I got further and further, I realized that almost everything that I was reading was about the health problems I've had my whole life, so I started to take magnesium.

I got magnesium chloride in drops, I started to take it in November, 2002 and began to improve week by week. Four weeks later the paralysis was gone and the blepharospasm was improving beautifully. Then I started research on the internet (that's where I knew about your book). In December I went to US and bought magnesium glycinate and started taking 600mg per day in 3 doses. And besides the blepharospasm and paralysis these are all my other symptoms that are diminishing day by day.

1. Chronic fatigue syndrome
2. PMS syndrome
3. Excessive emotional stress
4. Joint pain
5. Back and neck pain
6. Constipation
7. Anxiety

8. Nervousness
9. Arrythmia
10. Cystitis
11. Colitis
12. Bad circulation
13. Cold hand and feet
14. Feeling disoriented in space and time
15. Depression without apparent cause and unable to cope with everyday things
16. Flatulence
17. Mood swings
18. Hormonal imbalance

They are not 100 percent gone but almost!!!!!!! The "incurable blepharospasm" has almost disappeared and I feel that it will very soon be gone. I continue taking Mg glycinate 800 mg per day (400mg in the morning and 400mg before going to bed), I'm also taking flax seed oil and a multivitamin for women. So I wanted you to know my story because if someone has had the same diagnosis, I want them to know that there is hope, that IS CURABLE with the Miracle of Magnesium. Thank you very much!!!"

Magnesium and Esophageal Spasms

This was a story that I sent out in my blog with the title "A Magnesium Miracle: Man Saved from Gagging".

"The moment the waiter served the meal Jeff jumped up from the table and ran for the restaurant's emergency exit. Jeff could feel the little bit of appetizer he'd eaten backing up into his throat causing tremendous pressure. Jeff's brother, Chris, quickly followed him into the back alley. Lucy, Jeff's wife, explained to the other guests that her husband had a long-standing problem with his gastroesophageal junction (the stricture where his esophagus meets his stomach) clamping shut. "Usually he can feel it coming on and drink some water and it goes away," she explained.

Chris found his brother outside vomiting. Jeff couldn't even swallow his own saliva. "Go back in and finish your dinner," Jeff said, "I'll be okay." Chris went back inside. When Jeff didn't return, Lucy went out to the back alley. She found Jeff choking. "Do you want to go to the hospital?" she asked. "No," he gagged. Lucy gave him water. He just choked it back up. She started massaging his chest. When that didn't work she began pounding and pushing his chest against handrails. They even tried handstands. (None of these "treatments" I recommend.) Nothing helped. The stricture above his stomach wouldn't relax.

That's when Lucy she suddenly remembered: *My sister swears magnesium has helped so many times whenever there was a weird body problem.* "Magnesium

might work," Luca told her friends who had gone back to enjoying their meal while Jeff choked to death in the back alley, "too bad we don't have any." The magnesium angels, however, were with Jeff that day – one of Lucy's friends remembered she had a bunch of magnesium citrate powder packets in the trunk of her car.

Lucy grabbed the magnesium added water and made a super-concentrated serving. She went out and found Jeff gagging on his spit. "Hold this in your mouth," Luca said. "Don't worry about swallowing." Jeff sipped a mouthful holding the drink in his mouth. About a minute later his face relaxed. Spitting it out, he said, "I want to try swallowing some." "It's pretty concentrated," Lucy warned. Jeff took the glass and swallowed a gulp. In two minutes he smiled and walked back into the restaurant to finish his meal. "

When we sent out this post it was in two parts. While waiting for the second part we had a contest to see who of my blog readers knew what was happening to Jeff. Who but my blog readers would even know that he was choking due to muscle spasms around his esophagus/stomach junction? And many who wrote in and gave that answer. It turns out that any muscle or nerve problem can be caused or worsened by a magnesium deficiency.

One of the most in-depth answers was:

"Magnesium relaxes the involuntary muscles including the bowel (which is why overdosing causes diarrhea) and magnesium deficiency could block the esophagus. Holding Magnesium in the mouth will cause it to be absorbed sublingually. Magnesium Chloride would be absorbed faster, but tastes bad. Magnesium oxide will work in water and is tasteless. Further, sheep farmers give sheep magnesium blocks. Animals that are magnesium deficient become aggressive and hard to handle, just like over active kids. Kids should have magnesium, not Ritalin. Racehorses get a shaking disease if they are deficient in magnesium. The answer is to add magnesium, not meds."

On gentleman wrote about magnesium/calcium physiology: "Magnesium is a muscle relaxant and calcium is a muscle contractor, this is very important to a normal heartbeat. All heart beat irregularities start with a magnesium deficiency. Magnesium is the ion responsible for muscle relaxation. When calcium gets into empty magnesium channels you get a contract (calcium) / contract (calcium) signal instead of a contract (calcium) / relax (magnesium) signal. If there is a deficiency of magnesium any muscle could contract and magnesium will relax it as the body comes back into a balanced state. This is why Jeff's esophagus relaxed after the magnesium treatment."

Another reader said, "I would guess that Jeff was also having anxiety about the situation – the magnesium also calmed his nerves."

A reader took the opportunity to share her story about esophageal spasms.

"I am very interested in this article. I have had similar experiences (have

probably left hundreds of tables) over the years. My remedy was always to drink gallons of water to force food down. I would have loved to have known about this – instead I had some major surgery, which has caused other problems, for which I refuse to take medication. I think the magnesium probably relaxes the muscles in the throat. I discovered magnesium for my restless legs and have never had a problem with my throat or legs since. Thank you – am looking forward to your book on “magnesium” – I do think it is a miracle!”

Most fascinating about this whole story was how Jeff saw fast results simply from holding the magnesium drink in his mouth. When your body needs something, it knows how to get it. It must have absorbed through the pores of his tongue and the interior of his mouth. His bloodstream transported the desperately needed mineral straight down to his esophagus. Once absorbed into the muscle cells, the gastro-esophageal junction could relax.

Magnesium and the Elderly

*Here is a short burst of excitement from one of my blog readers.

My 89 yr old mother and I, every day, are taking 1375 mg of magnesium 650 mg Magnesium Taurate & 750 mg Angstrom magnesium. Sleep fantastic, no more cramps, good bowels, no wheezing, more relaxed +++++.

*Another reader had the following experience with her mother.

“As a retired Registered Nurse, I have always appreciated your writings. The life-saving advice regarding magnesium is priceless. My mother had suffered for years with COLD, hurting legs. I had a battle ROYAL with the nursing home physician, but FINALLY convinced her to TRY magnesium taurate. It not only stopped the leg cramping, it lessened the heart arrhythmias. I believe it lengthened her life.”

*I call this wonderful email “The Zest for Life”. This gentleman writes to me like a long-lost friend exuding confidence and energy that is palpable. He praises magnesium as a major factor in his “new way of living”.

“I loved your informative article! You are a godsend! Fortunately, I've been using magnesium for a few months, now, and I've benefited immensely.

Unexpectedly, my toxic peripheral neuropathy is almost completely gone. I no longer need to take ALA + acetyl l-carnitine at all.

My irregular heartbeat is no longer pounding like a Swiss watch.

My lower back and joint pains are gone, and I can work out in the fitness center to my heart's delight despite being 67 years old.

Even my eyesight has sharpened.

I do focus on my bone health by balancing my alkalinity levels (with diet and bicarbonate of soda) to maintain 7.5 more or less. (Checking with litmus paper).

I take calcium & other minerals in early morning, and strontium citrate

before bed. I imagine strontium and magnesium are synergistic. If I had my druthers, I'd take strontium over calcium.

I stick to what I call my caveman diet, avoiding sugar, dairy, and wheat, especially baked goods. I also avoid restaurant foods because of soy-derived chemicals among other things, and prefer a simple diet cooked from scratch.

My exercise program includes 50 miles of mountain bike riding and I've had a resting heart rate of 45 for a couple of years. Actually, my cardiologist insisted I might have some hidden heart problems, and talked me into another nuclear stress test last February.

My health was nearly flawless before the test, but it took me 8 months to recover from a return to heart rhythm irregularity, painful joints and lower back. It was so bad I quit working out at the fitness center, though my muscles were unaffected and remained strong. I couldn't have muscular strength adding stress to my painful joints.

With my rather simplified health program, I was surprised to find that my body's natural alkalinizing processes have kicked back in, and I rarely check my alkalinity levels with the litmus paper. I also have been skipping the baking soda supplementation since now I'm feeling "as fit as a fiddle"!

Despite the disconcerting nuclear stress test setback, I've come through it a better man since I found it necessary to uncover health breakthroughs in order to meet the challenge.

Now I call my approach my "new way of living" program. People are always asking me how I've done it, but when I tell them, I sense that they're predestined to remain entrenched in their old ways.

Like the old saying goes, "you can lead a horse to water, but you can't make 'em drink". Nonetheless, I still continue to champion magnesium, strontium, alkaline balance, exercise, and a simple diet prepared from scratch.
Love ya."

Magnesium and Heart Palpitations

"I have just purchased your book and cannot wait to read it. For months I had foot and toe cramps, anxiety, my body was nervous and tense (My doctor commented on how "wired" I was). I wanted to unzip my skin and jump out. I thought it was my age of 52. I then developed PVC heart palpitations and was told to live with them. Finally, I hit a wall and could not sleep! I found magnesium citrate powder and have been on it for 2 weeks. The heart palpitations went first, then the foot cramps. I still have nighttime awakenings but it is getting better. I take the magnesium 3 times a day for a total of 4 teaspoons. I just ordered the magnesium oil. I forgot to mention I was under intense stress for 3 months. I think I really depleted any magnesium I had in reserve!"

Magnesium and Kidney Stones

George emailed the following story about his painful bout with kidney stones.

"Last Fall I was passing stones almost on a daily basis. All the usual recommendations did not help. In desperation, I bought your book about

magnesium because it had some information about kidney stones. I started taking 250 mg of magnesium and 50 mg of B6 daily. The stones stopped the day after I started taking Mg and B6. The last stones I passed were on 10/31/06. Since then, no more stones have passed. I am hoping that this amazing health improvement continues. Keep up the good work.”

Kevin emailed me about his experience with kidney stones.

“About 20 years ago, I passed a kidney stone which stuck in the ureter halfway between the kidney and the bladder. The consultant recommended plenty to drink. No movement of the stone. He then suggested an operation to remove the stone. At this time, I had a book, “Let’s get Well” by the American nutritionist, Adele Davis, in which she had a chapter entitled “How to dissolve kidney stones” in which she recommended magnesium and vitamin B6.

I wrote to the consultant to see what his reaction was, which was to call the treatment positively dangerous and I should come in for an operation immediately. I ignored his advice, and started on the magnesium and B6. Three weeks later, whilst urinating, I passed a spherical kidney stone. I made an appointment to see the consultant, and presented him with the stone. There was no comment, except a “stony” silence. He was not happy.

I expect he was thinking that it was not in his interest to follow that course of treatment with his patients, as he would soon be out of a job.

Since then, I have recommended magnesium and Vitamin B6 to people who have had kidney stones, but they seem very dubious about the treatment, and only want to have orthodox medical treatments.

I notice that there is a lot more publicity now to the alternative treatment, and, hopefully, people will listen.”

Magnesium and Carpal Tunnel

At one point my publisher said to me: "I wonder if I you’re writing too many magnesium stories in your blog. After all, many readers probably found your blog through your magnesium book. They must be saturated with magnesium information. But every time we do a post about magnesium readership is up 30-50 percent."

I told him, it’s like watching ads for something you already own -- it reinforces how smart you are to have purchased that product. A short while later my publisher said in passing, "My left wrist is really hurting. Too much work on the keyboard, I guess." "Don't forget to put magnesium oil on it," I automatically replied. "It'll help stop the muscles from cramping."

"I hadn't even thought of that," he said. "I guess we still need more magnesium stories after all."

Even though you may know enough about magnesium to write your own book, are you using it for all the possibilities?

Magnesium and Chest Pain

Nell wrote about her husband's chest pain experience.

"I am writing to you today because I have just finished reading your very informative new book, "The Magnesium Miracle". One month ago, my husband was having all of the symptoms of a heart attack. He had chest pain, arm pain, jaw pain, was sweating and could hardly take a breath. He was rushed to hospital and they immediately started doing tests on him. They kept him for two days and could find nothing wrong with him other than a small lesion on one of his heart vessels after performing a catheter. But they said it was nothing to worry about. They released him while he was still having chest pain and told him to take an aspirin a day and also to continue his blood pressure medicine.

Needless to say, I was not satisfied with this whole situation (what if he had another attack?), and I started to do my own research on the Internet. I knew that magnesium was a relaxant for muscle spasms and so I started looking at the benefits of magnesium and the heart. I then came upon your book and ordered it and was so pleased with it being the wealth of information that it is.

I started my husband on a chelated calcium/magnesium supplement and within a few days, he was no longer having spasms. He also told this to his family doctor and his doctor agreed that lack of magnesium was most likely indeed the problem. Now with all of the technology and other tests that they did on my husband, why could they have not ordered a simple ion magnesium test? Why did they send him home without this simple test? I think that every doctor in America needs to read your book and become educated on the miracles of this vital mineral. It could benefit so many people!

I would also like to add that we do eat a very healthy diet with a lot of raw fruits and veggies and brown rice etc..... but I believe that we also do need to take supplements because our soils are so depleted here. Thank you for writing this book and I hope that your email box becomes flooded with other success stories! In good health."

Magnesium and Diabetes

Harriet wrote about her discovery of magnesium for her symptoms.

"Dear Dr. Dean. I have been taking calcium, magnesium and zinc in combination for years with time off for bad behavior. I rediscovered this miracle when I was diagnosed with diabetes. I'm 62 and have been diabetic for approximately 7 years. When the neuropathy hit my feet I was reading Maureen Salaman's book, *All Your Health Questions Answered* and noticed that magnesium was mentioned as beneficial in almost all of the chapters even though she does not have a chapter on neuropathy. It was quite obvious that magnesium is a mineral for all nerve related problems. While doing some research on vitamins and minerals, I came across your Magnesium Miracle and immediately bought a copy. It is fascinating. I first became interested in vitamins in the 70's when I read Linda Clark's book, *Know Your Nutrition*, so I'm not new to the subject.

The calcium, magnesium and zinc combination has greatly helped my neuropathy. And without it I wouldn't be able to sleep. Neuropathy gets so much worse when I lay down. I have been on the Neuropathy Assoc. message boards touting its benefits. I am a believer, believe me. “

Magnesium and Laryngospasms

This story follows along the lines of Jeff's esophageal spasms. Laryngospasms occur higher up in the chest.

“I have read your web site and you may find my story interesting. About 4 years ago I suffered 3 laryngospasms within about 12 months. The last two were within 6 weeks of each other. I was then referred to the hospital clinic. A doctor there said my laryngospasms could be caused by my goiter and the only advice given was to breath in slowly during an attack. Not a cure.

I quickly found on the Internet that calcium deficiency can cause muscle spasms so I asked my doctor to check my calcium level. It was OK but as a precaution I started to take calcium anyway - taking just 1/2 of the RDA (400mg).

Very, very fortunately for me, the supplement I bought, in addition to calcium and vitamin D, also contained magnesium, copper, boron and zinc too. I had no further attacks for nearly 3 years. But after about 2 ½ years I began to purchase most of my supplements in supermarkets.

This only contained calcium and vitamin D but no magnesium. Approximately four months after using mostly the supermarket supplement I had 3 very slight, short attacks within about a four-week period. Foolishly, I ignored them. Five days after that third attack I had a full frightening laryngospasm. Immediately I returned to taking my original supplement containing magnesium etc.

I have not suffered any further laryngospasms. The RDA for magnesium for the older man is about 400mg. Foods containing most magnesium are not those eaten every day, if at all by most people. (Halibut/Almonds/Soybeans/Spinach) So to absorb 400mg RDA maybe quite a task for me to achieve, being 75 years of age.

Magnesium deficiency can cause muscle spasms and cramps etc. Although I may not be deficient I believe that my voice box muscles are being kept relaxed simply by taking the 1/2 RDA and this prevents laryngospasms. Also an occasional early morning leg cramp seems to have abated since taking magnesium.

I have started to write to ENT specialists etc found on the Internet, trying to get them to consider Mg when patients present to them. So far I haven't had any replies ...except from Dr. Dean of course!

BUT, I wrote to my own doctor and he found my Mg cure, 'interesting' and would consider this when his patients present with muscle cramp problems. So I have made a tiny, tiny start to get the Mg message over.

Every time I meet someone now, I ask if they suffer from either leg/muscle cramps of any kind or tinnitus. I do get odd looks, but if they do suffer, I tell 'em what to get!"

Magnesium and Healthy Nails

Joan is taking very low dose magnesium supplementation but still finds that it's helping her in interesting ways.

"Thank you Dr Dean for all of your information. I began taking more magnesium after reading that it may help Fibromyalgia- I am not sure that I have that actually but with Type 1 Diabetes for 40 years, I do have stiffness that I thought might be remedied somewhat by it. I take 200mg of a magnesium oxide, citrate, gluconate and another 100mg with my chewable calcium. An unexpected outcome: My nails are growing like wildfire! They have been brittle for years and I am sure it is from the magnesium. I think I can safely assume that my internal organs are benefitting also. Thank you for the confirmation and for your excellent work and vigilance!"

Magnesium and Insomnia

"I have been reading from your book *The Magnesium Miracle*. For years I have been troubled with insomnia. I have absolutely no sleep in me at night and I can't sleep even during the day. I have tried lots of home remedies like melatonin, valerian, all the B vitamins, tryptophan, calming teas all to no avail. I've done exercise and read a lot about relaxing and did it all. I had been on sleeping pills to get maybe 3 to 4 hours sleep at night. But they have had side effects that made me nervous.

So I stopped the Ambien (and at one time was on Lunesta) the first of February 2009. I have been taking a multi-mineral formula with boron since the middle of February 2009. This has 1,000 mg of calcium and 500 mg of magnesium plus iron and other things. I'm already able to sleep at night. Every night is getting better. Now, about four days after I started taking 600 mg. of magnesium a day I really am enjoying 'sleep'. It is so wonderful to just fall asleep. I still wake up every two hours or so, but I can fall back to sleep again. Before magnesium, I hadn't been sleeping without the aid of Ambien. Thank you for the good news about magnesium. Wish I had read your book sooner."

Magnesium and Neck Pain

Sophie got a new lease on life when she discovers magnesium.

"I started feeling different 2 days ago when I noticed the pain in my neck was gone. This had to be a miracle. I was buying everything for neck pain and nothing was working I didn't know magnesium would help this problem but I was just trying it to help my high blood pressure. I have started using magnesium oil and ordered magnesium supplements. I got up with so much energy I thought something was wrong. I feel young again and very different, very calm nothing bothers me. I'm sleeping better. This is so amazing I'm going online and ordering my friends with high blood pressure your book.

I don't see how this is not on Oprah or mainstream TV. I feel like I have been handed a new life. I can't wait until spring with all this energy and see what I get done. And I've discovered something else that is blowing my mind. We go out to eat

every Saturday night with family. This time I noticed that all they were saying was how tired they were and I felt like a million dollars I almost felt like I was with the wrong group. I'm 61 and my husband is 65 and they are 2 and 3 years older than us.

I watched them and they walked slow and ate slow. I have also noticed I am not as hungry but the thing is in my mind I'm sitting in this restaurant and I am so happy and loving everybody and just want to talk to everyone. Other times I just want them to give me my food and leave me alone. But last night I was actually laughing with the waitress and other people at the restaurant. I feel so different. How can this be from one thing, magnesium?

My husband said give me some of that stuff you are taking he could see a difference in me. I am so happy and feel so good so I spray him with the oil when he gets out of the shower and put the gel on his feet and then give him the magnesium supplement. Thank you so much for your work and your book."

Magnesium and Orgasm

One amazing story was sent to me since the release of *The Magnesium Miracle*. A woman says it's helped her overly active gag reflex, insomnia, irritability, and chronic muscle aches, which magically disappeared. She says it's also responsible for her being able to reach orgasm! But after the fourth time she was convinced it had to be the magnesium. And this could be true because magnesium is a natural muscle relaxant!

"I discovered magnesium 2 weeks ago and there is a benefit that you may not have even discovered. I had severe TMJ (tempromandibular joint syndrome) and it seemed to spread to my whole body and I ached all over. I was miserable. I was on Paxil to keep my sanity but I wanted to lose weight and I pulled out my college nutrition textbook, Introductory Nutrition, Guthrie, Pennsylvania State, 1971. This book devoted more than 3 pages fine print to the need for magnesium. Here are some of the things Guthrie published about magnesium in 1971:

Low serum magnesium levels are associated with irritability, nervousness... - adequate magnesium may increase the stability of calcium in tooth enamel - alcohol increases the rate of magnesium excretion - the absence of magnesium deficiency symptoms in the American population, which apparently consumes too little to meet its needs, may be explained by the fact that it experiences a very slight deficit that becomes significant only when a condition of stress is superimposed. Such situations may be the increased excretion that occurs with alcohol consumption, the impaired absorption accompanying the increased use of diuretics.

I am skeptical of diet books, but I am not skeptical of university research. I immediately went to the Internet and began magnesium research. I immediately went to the health food store. They did not have Slow-Mag or the magnesium chloride (for insomnia) recommended in the internet articles, so I picked up two different magnesium supplements, one with malic acid, and one with calcium and Vitamin D. Both bottles prescribed about 6 tabs a day, but I calculated out the magnesium in each and took about 500 mg. the first few days. My muscle aches magically disappeared excepting for my sore jaw, which I suspect will take a while to heal. I feel better than ever. Not only does my body feel better, I am smiling more

and being friendlier in those grocery store situations... this in only 2 weeks. I have cut my Paxil in half, down to 5 mg a night, and now will try taking them every other night to wean myself from them and see if I see a change. If I *need* the Paxil, I will continue, but I suspect that the magnesium will do the trick.

This week in my continuing research I found your book listed in Amazon and went down to my local independent bookseller to order it. The good news for you is that it was actually on the shelf !!!! I bought the book, have underlined parts and will be loaning and recommending it to my friends. My cousin suffers fibromyalgia and panic attacks, another friend is frustrated in finding an answer to her migraines, and a male friend suffered a heart scare a couple of years ago, and I think magnesium might be beneficial to him as well. My father died at the age of 50 from a heart attack. He was a guy who loved life, but was very uptight, often barked at us for stupid reasons, used to get the same gagging reflex I had problems with, had become increasingly anxious and insecure, and used alcohol as a relaxant at the end of his day.... not an alcoholic, but definitely a regular user. Magnesium might have saved his life as well.

And now for the undocumented side effect, perhaps a surprise to even you. I am sure this has to do with the muscle relaxation, but for the first time in my life I am having orgasms every time !!!! Well -- at least 4 in a row and still counting.

Yes, this is embarrassing, but it is also amazing and I think you should know. After a week on magnesium, an "easy" orgasm.... I never know whether I am going to go "over the top" or not. 2nd time, I think, gee, this is nice. 3rd time, I think, this is *weird*. 4th time: *it's the magnesium !!!!!*

And I am on my 3rd alcohol free day, breaking a very bad habit. I feel great !!! And it all happened so quickly... still must be patient with this jaw. Spread the word, Dr. Dean... Miracle Magnesium !!!"

Magnesium and Perimenopause

Rita almost couldn't believe it. She had been suffering heart palpitations for 10 years along with hormone imbalance. She was amazed that her palpitations were gone in a few days.

"When I started reading your Future Health Now module on magnesium, I could clearly see the vicious cycle. Along with perimenopausal palpitations I started to have retinal migraines as well as eye twitching. When I read your information a light bulb went off - it's all related to a magnesium deficiency.

I see it this way. You have too little magnesium, your adrenals drop. Which triggers hormones to go out of whack - and now we're unable to handle stress - suddenly your heart starts palpitating, which only adds more stress. Now you can't sleep which all prompts magnesium to get even more depleted . . .around and around it goes. Wow.

It's fascinating. I went on the forums at Power-Surge.com and the amount of women in premenopause or in menopause having adrenal rushes, palpitations, tremors, shaking - is epidemic. To think it may be possible that this simple use of magnesium could help prevent this . . . is incredible.

And you're right, I do think the form matters. I cannot take most magnesium as it gives me diarrhea so I've avoided it. The transdermal and also glycinate in a pill form - are really doing the trick perfectly.

I'm SO relieved to see these enormous health benefits. It's really frightening to have your heart beating abnormally, which then sets off a whole chain reaction with stress, adrenals, hormones - etc, etc!

I think it "criminal" that the medical community is not informing their patients of this simple mineral supplement . . .or that they are not even up to speed on this vital information.

I just want to say to you again, Dr. Dean - thank you from the bottom of my heart. Literally! :-)"

Magnesium and Sciatica

Annie shared the following story about her experience with magnesium.

"My name is Nancy and I have had a lot of trouble with the sciatic nerve which included my foot. I felt like my foot was swollen and many times I needed to remove my shoe. I had been to a foot doctor plus have had physical therapy but nothing seemed to help. I see a chiropractor on a regular basis.

It was my Chiropractor who got me started on Calcium/Magnesium in powder form. I started taking it slowly, the amounts that were listed were 1 heaping teaspoon twice a day. But with my chiropractors advice I started with a half teaspoon and gradually added until I was taking the amount that was recommended. I couldn't believe that it had helped the pain I was having with the sciatic nerve as well as the pain in my back, arm/shoulder area.

My husband was also having a lot of pain in his arm/shoulder area from a separated shoulder he had had surgery on many years ago. I started him the powder and his pain went away. He couldn't believe how much better he felt. My husband is 67 years old and I'm 60. I recently ordered your book " The Magnesium Miracle" and have started reading it. I find it very interesting in the fact that so many problems can occur from the lack of Magnesium."

MAGNESIUM FOR THE ATHLETE

When you read about famous athletes from the past, you don't get the sense that they were following a healthy diet and lifestyle. Living large as a celebrity often means eating, drinking, and partying to excess - 'eat, drink, and be merry' seemed to be their ultimate goal. Adding to the abuse on the body, intense competition led to the use and abuse of steroid drugs. In my consulting practice I see the aftermath of years of steroid use - adrenal fatigue, obesity, diabetes and heart disease.

The age of processed food made some athletes more aware of the lack of whole foods in their diet. We're still in the middle of the whole foods movement and all manner of diets are now promoted to enhance athletic performance. The supplement industry, which is only about 30 years old, also became involved in promoting products to athletes. I don't know enough about all the ins and outs of sports supplements to say yeah or neigh but I do know about magnesium. It's *the* starting place for enhancing athletic performance.

Magnesium is a simple mineral that is often overlooked for the more sensational, sexy and expensive supplements. A chiropractor, Dr. David Pascal was interviewed in Organic Connections magazine in the Jan/Feb 2009 issue. He was a gold medalist in the 1983 World Games for the 1,500-meter run and has been in private practice since 1987. His clients include athletes at 2 Olympic Games, 3 World Championships and 25 US Championships. Dr. Pascal's Beijing athletes won 20 medals-10 gold, 5 silver, and 5 bronze.

Dr. Pascal's secret weapon is nutrition and a hefty dose of magnesium. His program is individualized, of course, but magnesium is the key nutrient that he recommends. Pascal says:

"Magnesium is actually the 'stress mineral' and is needed for about 350 different chemical processes within the body. By stress mineral I mean that a body uses a lot of magnesium to handle physical stress, chemical stress and mental stress. Of course, athletes are under a tremendous amount of physical, chemical and mental stress, and so magnesium is absolutely vital for them to perform at their best."

Muscle Cramping

What do you find if you search for information about muscle cramping? Symptoms can range from a slight twitch, a joint pulled out of place, bruising on the skin, and may require manual stretching to help release its hold. The most common cramping is found in the calf and the thigh.

Finding the cause of muscle cramping is still in the theoretical stage. Current theories include:

- *Neuromuscular control imbalance
- *New activity
- *Muscle fatigue
- *Dehydration
- *Electrolyte depletion or imbalance
- *Poor conditioning

Of course, I know that muscle cramping in athletes is mostly due to lack of magnesium and so does Dr. Pascal. As I mentioned earlier, magnesium is not recognized as an important electrolyte that needs to be replaced when there are losses due to stress, sweat, and poor diet. There is no accurate blood testing method to properly measure magnesium. It's not even recognized as a life-and-death factor in heart attacks, which are an extreme cramping of the heart muscle.

Presently, altered neuromuscular control (causing muscle fatigue and disruption of muscle coordination and control) is the prime candidate for the research funding in cramping. Dr. Martin Schweltnus, in an extensive 2009 literature review of muscle cramping, says that evidence supporting both the "electrolyte depletion" and "dehydration" hypotheses as the cause of muscle cramps is not convincing.⁷ It's not convincing because there just isn't enough research available. Unfortunately Dr. Schweltnus, who wrote *The Olympic Textbook of Medicine in Sport*, is considered a sports expert and his review will continue to prevent doctors and coaches from exploring magnesium for the prevention and treatment of muscle cramping.

In the meantime, Dr. Pascal, myself and thousands of other doctors and athletes are convinced that magnesium works.

Each day we do experiments on our own bodies and prove its effectiveness. When I moved to Maui and started walking 1.5 hrs a day along the beach and swimming for a half hour to forty-five minutes, I started to get calf cramping and heart palpitations that were previously under control with magnesium supplementation. I realized I was utilizing more magnesium with my extra activities and sweating more in the hot climate. I immediately increased my levels of magnesium and my symptoms were gone in a few days.

Medical Treatment of Cramping

If you've suffered cramping you've probably been told that

1. They go away on their own
2. Stop your activity...but it may have already thrown you to the floor
3. Gently stretch out or massage the affected muscle

But if you're an athlete who has fallen during a competition due to muscle cramping, that's not good enough. It's not good enough to be told that since we don't know the true cause of cramping we just don't know how to treat it.

Stretching and warm ups aren't going to improve your magnesium stores, only magnesium can do that. Dr. Pascal says that many of the athletes that come to him have a history of muscle cramping. For him it's the first clue that they are deficient in magnesium. And because he addresses the problem with magnesium, none of his clients suffer from cramping issues. Dr. Pascal says "When I was in Eugene, Oregon, this summer for the Olympic Trials, I treated 40 of my athletes. One of the things I really had to be concerned about was the heat and muscle cramping, and so I used magnesium preventatively. 'Take your magnesium.' That's

⁷ Schweltnus M.P. Cause of Exercise Associated Muscle Cramps (EAMC) — altered neuromuscular control, dehydration or electrolyte depletion? *British Journal of Sports Medicine* 2009; 43:401-408.

the first thing I said when I saw the athletes in the morning and the last thing I told them at the end of the day. None of my athletes had muscle cramps—before, during or after their races.” Many others did. It’s the worst thing that can happen to an athlete and can result in muscle tears that can take them out of competition for a season.

Dr. Pascal is aware that “Heat affects you because you will be sweating more. As you sweat, you’re going to be losing magnesium, which is water-soluble. In addition, you’ll be sweating out electrolytes, and, of course, water too. These losses mean that the ratio of calcium to magnesium will be changing in the body: the percentage of calcium will increase; and since calcium is a muscle contractor, the muscles cramp and that’s it.” You may sweat out a tiny bit of calcium but you sweat out much more magnesium – that’s where the problem lies.

When you consider that water losses can be 1-2 liters per hour when training intensely in the heat, you can lose enough sodium, potassium and magnesium that your clothes are encrusted with minerals. In military postings in the Middle East soldiers talk about their T-shirts drying hard as boards with all the minerals they sweat out.

Any information on sweating just seems to focus on the salt losses. But it’s not just about replacing water and sodium and sugar, which is the content of most sports drinks. You also have to look at magnesium and potassium as being necessary elements in electrolyte replacement.

Dr Pascal discusses the importance of minerals in general. He says, “...most people think that they have a problem with heat due to the high temperature or humidity. This isn’t true. Heat builds up in the cells primarily because there are not enough minerals and electrolytes to carry the heat out of the cells. If there are enough of these elements along with water, it wouldn’t matter how hot it was—the cells would never overheat and people would never get heat stroke, because the minerals would transfer the heat out of the cells.”

Specifically, Dr. Pascal uses Natural Calm Plus Calcium from Peter Gillham’s Natural Vitality. “I like to use the Calm Plus Calcium because it has 600 milligrams of magnesium and 400 milligrams of calcium in a water-soluble form. You’re getting 50 percent more magnesium, which is good because most athletes—and most people in general—tend to have a high amount of calcium in their diets and not enough magnesium. It also has other elements, such as potassium, vitamin D3, vitamin C and boron, to increase its assimilation. Best of all, Natural Vitality’s unique formulation has a high bioavailability so the body can actually use what it is taking.” My sources of magnesium are in the section **Types and Dosage of Magnesium and Calcium.**

Magnesium For The Athlete Stories

The following is an inspiring magnesium story contributed by Ben Greenfield - MS, CSCS, C-ISSN. Ben is one of the top fitness, triathlon, nutrition and metabolism experts in the nation and he's recently fallen in love with magnesium. See Ben at www.bengreenfieldfitness.com.

How Magnesium Instantly Made Me A Better Athlete – Ben Greenfield

I must admit that I was skeptical during the spring of 2009, when I first heard that more than half of American adults are deficient in magnesium, and even a greater percentage of athletes are deficient.

I was also skeptical when it was pointed out to me that a good number of cardiovascular incidents during exercise could be traced back to a magnesium deficiency, and that muscular fatigue, failure and cramping during exercise are not only related to sodium sweat loss or low calcium levels, but are just as much a function of magnesium deficiency.

After all, aside from using magnesium to produce brightly glowing flames during my undergraduate chemistry classes, my chief experience with this mineral had been glancing at the nutrition label of my vitamins and supplements, and seeing that the sparse 50-100mg I was consuming would be close to 100% of my daily needs. Therefore, I must be getting enough magnesium.

No matter that myself and the large number of endurance athletes who I coach were frequently experiencing severe post-workout soreness, problematic muscle cramping during endurance events, and increased tightness, spasms and injury by the end of a long triathlon or marathon season. Sadly, none of my sports nutrition certifications, coaching certifications or classes had placed any amount of emphasis on the fact that magnesium may be one of the contributing factors to these issues. All that was ever mentioned was sodium and water.

It wasn't until nearly a dozen of the nation's top natural physicians, sports nutrition experts, and alternative medicine practitioners, including Dr. Dean, consistently mentioned magnesium during my interviews with them on my online fitness blog and podcast that I began to pay closer attention. If this many respected medical experts were singing the praises of this miracle mineral, and warning of the deficiency dangers, then could there perhaps be an actual benefit of introducing magnesium into the nutrition protocols of myself and my athletes?

So, in the beginning of the 2009 race season, via topical application and oral supplementation, I gradually began to gradually increase my magnesium intake to 400-500mg/day, and recommended this change to each of the athletes that I coach. I began taking magnesium baths after the more difficult workouts, and especially focused on increasing magnesium consumption during my high volume and high intensity training in the hot summer months.

As the 2009 season progressed and September approached, I personally came to the realization that I had not experienced a single muscle cramp in any race during the entire summer season. In contrast, previous years had seen me nearly withdraw from competition with severe calf and thigh spasms during longer competitions in the heat. Myself and my athletes who practiced my magnesium intake recommendations began to bounce back day after day for difficult back-to-

back workouts that we never would have been able to accomplish. We were even sleeping better!

My most powerful realization of the importance of magnesium occurred at the end of the 2009 race season, when I literally laid it all out on the line in my final race, and crossed the finish line completely drained of all energy. This was the hardest I had ever worked in any competition during the entire year. My breath began to come in short spurts, and my heartbeats felt irregular. My eyesight was blurry, and I was both nauseous and dizzy. I was scared. My single goal suddenly became to find a medical tent and IV as quickly as possible.

It was at this point that I remembered that in my race bag was my bottle of topical magnesium, which I typically only had applied prior to competition. I stumbled to my bag, found the bottle, and immediately began rubbing the solution onto my chest and across all my extremities. Within just 90 seconds, I could feel my body re-stabilizing and my energy returning. Just five minutes later, I was completely restored. The following day, my soreness was minimal - a very atypical feeling after having spent nearly 5 hours of high-intensity triathlon with my heart rate near 90% of maximum values!

Given magnesium's vital role in energy production and metabolism, it only makes sense that my performance and recovery instantly soared after I began magnesium supplementation. Fortunately, I stumbled upon this magic mineral early in my athletic career, and I can now look forward to many successful years of drawing upon magnesium as one of my secret weapons. To whoever is reading this personal anecdote: I encourage you to increase your magnesium intake prior to and after athletic competition. I guarantee that it will instantly make you a more successful athlete.

No Magnesium in the NFL

Simon was a body builder before he became an NFL football player. He was sidelined because he began experiencing disabling muscle cramping. When I first began to see him as a client he had transferred his high stress athletic career to business. He probably experienced the same amount of stress in his executive position, with two teenaged sons and a hectic travel schedule. He still had frequent muscle cramping as well as high blood pressure, obesity, and headaches.

I explained the importance of magnesium in stress and intense athletic performance that involves a lot of sweating. Simon said he sweated buckets playing sports and still does. Simon understood intellectually what I was telling him but he said he had seen some of the best doctors and coaches and nobody could help him. It think he had trouble believing someone he could bench press with one arm had the answer to his life-long problem. When Simon took magnesium he become a believer. A good regimen of food-based supplements, angstrom magnesium and calcium, and an angstrom electrolyte blend got rid of his cramping, headaches and high blood pressure. Of course, he wondered what would have happened if he'd learned about magnesium when he was still playing ball.

No Magnesium and Lots of Aspartame

Marjorie was a research scientist, a former athlete, and a very sick woman. Her previous athletic activity included running marathons and training nearly every day. Almost 15 years later she came to me as a client with daily migraines, constant painful muscle cramping and chronic paresthesia (a sensation of tingling, pricking and numbness in her legs).

I explained to Marjorie about magnesium and she got the picture. But from her history I found out she was drinking quarts of aspartame-sweetened iced tea every day. Because she sweat so much she got used to drinking lots of liquids and now thought she was addicted to aspartame. I told her about the neurological damage that can result from aspartame and she stopped it immediately and began taking a homeopathic aspartame remedy.

Marjorie's doctors told her she had a rare neurological condition and would need to take strong medications to see if the symptoms could be controlled. There was no guarantee that the medications would even work so she decided to do an ExaTest to check her levels. Marjorie did have very low levels of magnesium and high levels of calcium. As soon as she began taking magnesium, her migraines improved. Next her muscle cramping stopped and more slowly, her paresthesias began to heal.

Chalk It Up To Magnesium

Sid sent me a brief history of his success with magnesium and I found it so fascinating I asked for the whole story.

Here's more info on my magnesium success story; Basically, I had insomnia for about 15 years and was painfully tired for about 350 days/year.

I remember in 1972, I was Most Valuable Player all-around gymnast and in perfect health. In 1976 I was the A+ top Organic Chemistry student out of about 300 students in my class. About that time I quit gymnastics to concentrate more on my studies.

But I started to develop insomnia and often felt very tired. In the 80's my insomnia became severe and I tried everything to sleep, but nothing fixed the problem.

I always thought my body needed that gymnastics-type workout. So, whenever I had enough energy, I would work out for hours. I tried medicine, vitamins, and improved my diet, but nothing cured the insomnia. After 6 sleep clinics, I became the so called 1% that can't be cured.

After trying almost every medication available, my favorite sleeping meds were Remeron 30mg and a very low dose of Seroquel 25mg. Actually, they work pretty good but have some minor side effects. Like Remeron makes you want to eat the bark off a tree... so you'll gain weight. However, it feels like these meds only partially fixed the problem and partially masked the problem. I just wished I was healthy like when I did gymnastics.

A couple years ago when I went for my 50-year colonoscopy, the anesthesiologist told me he had to give me more anesthetic because of the sleep

meds I was taking. He also told me he had insomnia for years and cured it with magnesium. Then I remembered years ago a chiropractor recommended a very high dose of magnesium for my insomnia, but the next day's diarrhea put an end to that suggestion. I threw that magnesium powder in the trash.

After my colonoscopy, I googled about magnesium and insomnia, and found people had success with approx 300mg 3 times/day. I tried a variety of magnesium tablets, capsules and powders. My sleeping improved with 2 days and I didn't mind suffering through a little diarrhea. Then my sleep kept improving and I just couldn't believe it! I could sleep. I had energy. I could work out like I was 18 again. I increased my workouts to include a rigorous regime of weightlifting, aerobics, karate, running and a variety of other exercises. I just wished I could find access to gymnastics equipment.

Recently, one of my friends opened up a gym for tumbling. I picked up a nice pair of wooden rings on ebay and we hung them up in his gym. Of course we needed chalk so I got online and ordered a few blocks of gymnastics chalk.

It turns out I ordered 3 pounds of premium grade, Taiwanese magnesium carbonate white chalk, which comes in soft cubes that are easily crushed to make powder. Suddenly, I knew the rest of the story....OMG.... Gymnastics chalk is magnesium and that magnesium powder in health food stores is just like gymnastics chalk.

So why was I so healthy when I was a MVP gymnast? Was it the great gymnastics workouts or was it the chalk or both? I remember inhaling that stuff for hours on end during my gymnastics workouts. My black hair, my cloths, hands, feet, eyes, everything was covered with a thin layer of powdered chalk. I ate snacks with chalk on my hands; I just got so used to the daily smell and taste of gymnastics chalk.

For about 30 years, I thought my insomnia was partially due to the lack gymnastics.

But now I know; my insomnia was due to the lack of gymnastics chalk!! I'm ready to chalk-up anytime now!!

MAGNESIUM Q & A

1. Can magnesium make low blood pressure even lower since it can relax muscles and blood vessels?

Answer: In the ten years that I've been researching and writing about magnesium, I've had two young female athletes tell me that they felt faint after beginning to take magnesium. One woman, after taking one of her first doses of magnesium, went to the gym to work out. She said she experienced light-headedness and faintness. When one of the trainer's took her blood pressure it was 90/60. Her normal blood pressure is 100/70. She was sure the low blood pressure and faintness were from the magnesium.

I'd like to hear if any other people have had this experience. As I mentioned it doesn't seem to be a common experience. Doing a Medline search for magnesium and low blood pressure brings up studies that show the benefits of magnesium in people with high blood pressure. In my experience, people with low blood pressure are sensitive to fluid intake, supplements, changes in their diet and medication. So, when beginning any new supplement, go slowly. With a supplement like magnesium that affects all the muscles in the body, it was probably not a good idea to take a dose and work out without knowing the body's reaction. However, magnesium is a necessity for athletes. The stress of athletic activity, sweating, and muscle exertion can cause magnesium depletion.

As a practical solution for people with low blood pressure, I recommend taking magnesium and calcium together or taking magnesium oil instead of an oral magnesium to minimize the immediate relaxing impact of magnesium in the blood.

2. In your book the first edition of your book, "Magnesium Miracle" you say not to take magnesium with a meal. My bottle of magnesium (as magnesium oxide) tells me to take it with a meal. What is the correct thing to do?

Answer: Magnesium oxide is only 4 percent absorbed. Therefore 96 percent of it flushed through the intestines as a laxative. The suggestion to take it with a meal will slow it down somewhat so more can be absorbed. However, I don't normally recommend magnesium oxide the amount you have to take in order to get enough magnesium absorbed to take care of symptoms will usually give you a laxative effect. That may be beneficial to someone with constipation but having 2-3 loose bowel movements a day can flush out other nutrients.

3. I have a question about magnesium oil: the only place I can spray it where it doesn't sting more than I can stand is on the soles of my feet but when I do this I break out in an itchy rash all over my upper legs and abdomen. Even when I dilute the oil several times, I get this response. It calms down after several hours but I'm wondering if I should I be concerned about this or is this "normal" for someone who is apparently very (based on what I've read in your book and in other sources) magnesium deficient?

Answer: Magnesium oil isn't oil at all. It's magnesium chloride (from sea water) supersaturated in distilled water. The concentration of this oil can be up to 3,000mg per teaspoon. That's pretty concentrated; it's like salt brine. And it can sting like a very strong salt solution. When people have this reaction they may have to use 10 parts water to one part magnesium oil to see if it's just the concentration that's the problem. Getting an itchy rash away from the soles of the feet on the thighs and abdomen is very unusual. An itchy rash implies an allergy but it can also be the detoxification heavy metals or yeast overgrowth caused by magnesium.

I don't think I've seen any allergic reactions to magnesium but the human body is so amazing...anything is possible. What most people experience with magnesium is often an immediate (within 48 hours) improvement in one or more symptoms. And other improvements often continue. However, there can be detox reactions or healing reactions that occur such as the following

1. If a person has mercury fillings, it's possible that magnesium is detoxing mercury from mouth tissues and that can show up on the skin but should be short lived (1-2 weeks). An individual can hasten the detox by doing magnesium oil or salts baths and taking oral bentonite clay to absorb toxins.

2. If a person had acne or acne rosacea for which they took medication, the skin could react with rashes and itching as the skin is going through detox.

3. In a more general sense, magnesium can start revving up the body's "motors" in all the 325 enzyme systems for which magnesium is the ignition key. When that happens things can look very rosy for a short time...then the body can slump because it actually wants more and more magnesium.

4. If you take more magnesium but get loose stool from it, you can be losing as much as you take. At that point you cut back on oral magnesium and add magnesium oil and or angstrom magnesium (www.123minerals.com)

5. If after a few months you feel a slump or some twitching or cramping comes back, that can be an indication of a need for calcium. Then you add a calcium magnesium product that has more magnesium than calcium.

4. Hi Dr. Dean, I bought your book and have started taking a magnesium citrate powder this past week. I am also taking a prescription for Pristiq, for anxiety. Is it safe to be taking the magnesium with the Pristiq since both are supposed to produce serotonin. I'd love to stop taking the Pristiq, but as you know you can't suddenly stop taking it. Thanks.

Answer: When I looked up Pristiq in an online drug manual it is an SSRI (serotonin reuptake inhibitor) antidepressant with an off-label indication for anxiety. About 90 side effects are listed.

Magnesium helps in the production of serotonin only when it is needed. Magnesium and serotonin work on a feedback mechanism so serotonin is not made if there is already enough in the body.

SSRI drugs kill the enzyme that breaks down serotonin, allowing it to build up in the body. If an SSRI drug causes an elevation of serotonin, magnesium won't make more because of the feedback loop. The same can't be said for the SSRI.

Magnesium does many things beyond helping to make serotonin to balance your mood. It supports the adrenals, slows down the nervous system and creates muscle relaxation. Magnesium is very beneficial for someone with anxiety...on or off drugs.

5. Can children and pregnant women take the mineral magnesium?

Answer: This is a great question. Magnesium is absolutely necessary for a healthy pregnancy. It should be a requirement like folic acid, which prevents spina bifida. Magnesium prevents constipation, fluid retention, high blood pressure and all the symptoms of eclampsia. Midwives used to call magnesium “the salts”. They probably used Epsom salts. However it’s not safe to take Epsom salts by mouth, it’s not food grade and can be contaminated with heavy metals. For children, you can put the oil in a bath and it absorbs beautifully through the skin. The powder would have to be diluted in water to absorb, so you could put that in a bath as well. The hot water dissolves the powder and makes it available for absorption. Go to the section, **Types and Dosage of Magnesium and Calcium** for magnesium dosage information.

6. I recently read your book The Magnesium Miracle and began implementing magnesium oil supplementation. Huge change! I feel great, my energy levels are much higher and I have an overall feeling of wellbeing. Thank you. Just had a quick question though. Would magnesium chloride (in powder form) absorb in the skin the same way magnesium oil does? Just trying to think of creative ways to give magnesium to the kiddo. Maybe I’ll add it to the baby powder.

Answer: For children, it’s probably best to put magnesium in a bath. Powder on the skin is not likely going to absorb.

7. I’m enjoying your book right now but have a question. Can taking magnesium (about 200mg) 2 hours before bedtime cause insomnia at first? I have had a real difficult time falling to sleep the last two nights since I began taking magnesium citrate in a powder form.

Answer: If magnesium has been deficient for some time, when you begin to take magnesium it can start revving up the body’s “motors” in all the 325 enzyme systems for which magnesium is the ignition key. If you take your magnesium at night hoping for sleep, it might just be doing more activating in your body than relaxing.

8. I was told if I take Ativan (half a .05 pill a day) that I can not take magnesium because it will interact. Is this true? I would like to take magnesium.

Answer: I looked up Ativan in my online drug book and searched three sections: Doses, Uses and Warnings; Detailed Monograph; and Patient Handout. Nothing was said about an interaction between magnesium and Ativan. I did see a list of fifty-six side effects however.

The only possible interaction I can see is that if you take magnesium with Ativan you would end up needing less Ativan. And hopefully you would eventually need no Ativan if you take magnesium to calm anxiety and nervousness.

9. In February I was given a prescription for a heartburn medication that has made me so anxious and ill since, that I thought I was losing my mind. Until yesterday I had no idea that it could be related to the medication. I purchased your book about magnesium, and I was searching for information online about taking magnesium with the medication and stumbled across many people struggling with the same symptoms. I believe that due to the medicine (a proton pump inhibitor) my body has not been properly absorbing vitamins and minerals, including magnesium. I also suspect I have yeast because of taking lots of antibiotics. It could be the culprit for the heartburn I've been experiencing that the medication was supposed to correct in the first place. I have struggled with panic attacks off and on since I was a teenager and I'm not in my early thirties. Off and on through that time I was taking some sort of prescribed stomach medication. Could these drugs be making me anxious.

Answer: I've had more clients in their twenties and thirties consulting me for symptoms of anxiety and panic attacks. Their stories include years of antibiotics, antacids and proton pump inhibitors that have thrown their bodies completely off balance. At this stage it takes more than just a few doses of magnesium to undo the damage. Proton pump inhibitors shut down the acid-making ability of the stomach. Without acid, the stomach contents don't get digested properly. The food begins to ferment in the stomach and causes reflux and heartburn. Minerals aren't properly converted to an absorbable form in the absence of stomach acid, so the deficiencies begin. Symptoms worsen when drugs are used to treat more symptoms as most of these young people end up on antidepressants and anti-anxiety medication.

10. I've started using magnesium oxide capsules and I could not keep my eyes open. It made me tired all day.

Answer: I've gotten many variations of this question throughout the last ten years. I think that people who really need magnesium, as shown by their symptoms and checking off several of the magnesium factors, can have such a deficit that in the beginning it's like their can't get enough of it.

However, taking magnesium oxide, which is only 4 percent absorbed is like teasing your body. It's not going to get as much as it wants without causing a laxative effect. You begin to prime the pump with magnesium oxide, you turn on the 325 magnesium enzyme systems, the body starts gearing up, but then there isn't enough magnesium being absorbed to follow through on all the jobs you just started. See the various forms of magnesium in the section **Types and Dosage of Magnesium and Calcium**. Taking magnesium citrate powder in water throughout the day will give you a higher absorption. Taking angstrom magnesium will give almost 100 percent absorption and should help break through the initial tiredness as your magnesium stores build up.

Another way to look at initial tiredness with magnesium is that since it's a detoxifying cofactor for the liver, you could be going through a natural healing reaction phase. As your body is eliminating toxins you feel tired and just want to sleep. The best way to handle this type of reaction is to sleep as much as possible, drink lots of water, and encourage detoxification through the bowels by using psyllium seed powder and food-grade bentonite clay.

11. I've developed an arrhythmia. My doctor started me on Bystolic for my blood pressure and suggesting coumadin. I usually take magnesium with my calcium. I've started taking a magnesium supplement separately. Do you think it will help with the arrhythmia? What do you think of the Bystolic and coumadin? Bystolic is lowering my blood pressure, but not helping the arrhythmia. Any input would be appreciated.

Answer: Although I can't answer personal health questions, I will give some general answers. Bystolic is a beta blocker that slows the heart rate and decreases the muscle contractility, it also relaxes blood vessels, it is mostly used for blood pressure. Magnesium does all these things...and more. Magnesium should always be the first line of treatment for arrhythmia and blood pressure. At the Nutritional Magnesium Association, you can view the video called The Balance Between Calcium and Magnesium at <http://www.nutritionalmagnesium.org>. When there is too much calcium relative to magnesium, the heart gets irritable and can produce an irregular heart beat.

Coumadin is the treatment doctors use to prevent blood clotting. Magnesium also works on this level by detoxifying the blood to keep it from becoming too "thick". It is also a mild blood thinner, but doesn't work the same way as coumadin, so people can take both without side effects.

12. I'm writing about my husband. He has all the symptoms of being magnesium deficient and I would like to have him start taking it. My concern is the medicine he is already taking for his problems. The doctors say he has heart failure, which was diagnosed two years ago. He is diabetic (insulin dependent) and has always had a lot of fluid retention in his legs. These are the medications he is taking. Protonox, Furosemide (Lasix), Digoxin, Diovan, Potassium, Coreg CR, Simvastatin, Coumadin, Aspirin. Insulin Humalin and Humalog. I wish you had a practice here in our area so we could go and talk with you. I wrote to you about my sleep problem three weeks ago. Hope to hear from you about my husband dilemma with all the meds he is taking.

Answer: I'm sorry to hear that your husband is having such a hard time and on almost a dozen medications. If someone is taking potassium then they surely need magnesium. They are both kicked out of the body by diuretics like Lasix. You notice I say "someone". I can't diagnose or prescribe in my writing but I do know that magnesium is a very safe mineral and a life-saving mineral. It's as safe as taking potassium. It's probably safer than potassium, actually, because if you take too much magnesium orally, then your body gets rid of it by giving you loose bowel movements. When people are on so many meds they start taking magnesium very

slowly and then find their doctor can lower their drug intake. As you know from reading my book, magnesium can strengthen the heart, lower blood pressure, lower blood sugar, lower cholesterol, and thin the blood. Since it can do all those things, people who are on so many meds should inform their doctor that they are going to take magnesium to help their body and help reduce their drug intake.

13. Hey Dr. Dean! Please remind me of the “physiologically desirable” ratio of calcium to magnesium. It occurred to me while reading this post that most people are consuming drinking water that comes from either surface sources – which are relatively depleted in both calcium and magnesium – or deep groundwater sources which tend to contain too much calcium (depending on the geochemistry of the specific bedrock unit) or too much sodium from the exchange of both calcium and magnesium that takes place in water softeners and that is harmful to the heart.

Answer: Many of the epidemiological studies about the benefits of magnesium come from studying people’s health and what kind of water they were drinking. In areas where the water is high in magnesium, there is less heart disease. In areas where calcium is high, there is more heart disease. As for the best ratio for the intake of calcium and magnesium, the jury is still out. There are so many factors involved that it’s very difficult to set a standard ratio. As I wrote in *The Magnesium Miracle*, magnesium comprises about 2 percent of the earth’s crust and 1.14 percent of seawater. Calcium makes up 3 percent of the earth’s crust but only 0.05 percent of seawater. So, right there we know that calcium is a much harder mineral because it doesn’t dissolve in seawater nearly as readily as magnesium. I’ve made the point many times that calcium doesn’t dissolve in the blood stream without the help of magnesium.

Magnesium makes up about 0.05 percent of the body’s weight but the proportion is much larger for calcium at 2 percent. The amount of *magnesium in bone is only 2-2.5 percent*

Approximately 70 percent of bone weight is accounted for by calcium phosphate crystals

Calcium constitutes a larger proportion of the body weight (about 2 per cent) than does any other of the "inorganic" elements. It is very unevenly distributed in the body, over 99 per cent of the total amount being in the bones.

14. Thank you Carolyn – you are truly an inspiration! I am learning so much – where else can one find such valuable information and be able to trust it? I have one question about magnesium: I started several years ago taking magnesium chloride for restless legs (believe it or not a doctor recommended it) and realized it was also a good laxative so have continued taking it (they grind it at my drug store). Everyone seems to refer to magnesium oxide so I’m wondering if this is a good idea to continue taking this form?

Answer: Magnesium chloride is a very good source of magnesium, much like magnesium citrate but the taste is stronger so it's not used as much as magnesium citrate in the US.

A doctor friend of mine in Peru has a magnesium company and he uses magnesium chloride exclusively. Magnesium oxide is only absorbed about 4 percent. Magnesium chloride and citrate, about 15 percent. What's not absorbed becomes laxative.

When people get too much of a laxative effect, I recommend magnesium oil to be applied to the skin and absorbed that way or angstrom magnesium which is low potency but closer to 100 percent absorbed at the cellular level and has no laxative effect. More research should be done on all the forms of magnesium and their absorption. But thankfully people are hearing about magnesium and using it and finding out about its benefits for their health.

15. I think I used too much transdermal oil last night for the first time. I could not fall asleep. I did not have this problem with magnesium citrate powder. I took them both together last night. I have not taken calcium in awhile. I thought maybe that I was taken too much magnesium without calcium so I took 300 mg calcium citrate. I woke up with a leg cramp! That has not happened in weeks. Should I just get my calcium from food for now?

Answer: See my answer in the section **Types and Dosage of Magnesium and Calcium** to judge the amount of magnesium and calcium to take.

16. Thanks for a great book. I have read it over and over to make sure I don't miss a thing. I am a little confused on when to add calcium after starting on magnesium. In your book you recommend to patient to start calcium after 3 months on the magnesium. I am afraid to take calcium. Last week I took 2 antacids (a calcium carbonate), not realizing the high dose of calcium and my feet and legs cramped for days. Could you please give me advice on introducing calcium again. And can they be taken together. For now I have been trying to do eat food sources with calcium and keeping a log.

Answer: Calcium and magnesium intake is very individual and there hasn't been enough research on this or on the various rates of absorption of magnesium from foods and supplements to give a definitive answer.

Also, in our diet we obtain much more calcium from foods than we do magnesium. In produce, calcium and magnesium are found together, so I don't hold to the notion that as supplements they should be taken apart.

You can check lists of calcium-rich foods and get an estimate of how much you might be getting in your diet. It's usually in the order of 500 mg per day for calcium and 150mg per day for magnesium. That's why I often recommend that

people start by taking a magnesium supplement first for a few months to see how they respond before adding calcium.

It's very difficult to judge symptom relief when you just take calcium; when you first begin to take it you can actually feel it's helping your magnesium deficiency symptoms because to keep a balance the extra calcium is forcing magnesium out of storage. However, after a few months on magnesium alone, if you don't feel you are getting enough calcium from your diet you can start taking calcium but in a ratio of 2-3 parts magnesium to 1 part calcium. I mainly recommend angstrom calcium in an effort to avoid the build up of calcium that can occur with other forms.

17. Magnesium seems to bother my stomach giving me diarrhea. I mostly use magnesium malate. I tried magnesium gel, but it is sticky and doesn't feel like it absorbs. I was diagnosed with ulcerated colitis and before that any NSAID bothered my stomach. MSM is the only pain supplement that helps. Any suggestions for another magnesium?

Answer: Personally, I have a problem with oral magnesium causing loose stool. Also, when I was researching for my book, IBS for Dummies, I realized I had to find some form of magnesium that would not cause a laxative effect. I found magnesium oil applied to the skin to be a non-laxative product and wrote about it in the second edition of The Magnesium Miracle. Then I discovered angstrom minerals. You can read about these two non-laxative forms of magnesium in the section **Types and Dosage of Magnesium and Calcium**.

18. I came across your book and website and started taking magnesium (250mg x 2 per day). However, one of the side effects that I am getting is a flushing and redness of my face. Is that normal? Will this go away?

And a similar question:

I just finished reading your book, The Magnesium Miracle and loved it. I started taking magnesium citrate powder but after the second day, my face got red and blotchy. Nowhere in the book could I find any info on possible negative or allergic reactions to magnesium. Could this be die off? On a good note, my foot cramps and twitching are gone!

Answer: I don't know specifically what's causing the flushing/redness of your face with magnesium but I do know that when I've had IV magnesium, I get that reaction and many people do. When flushing is specific to a certain body part, I wonder if it's the magnesium flushing out toxins from that particular area. The face is often targeted because of old dental anesthetic stored in tissues or dental amalgams with mercury.

19. I have read a lot of info lately about the importance and benefit of taking malic acid with magnesium for fibromyalgia. You haven't mentioned it in your blog. What is your comment on malic acid?

Answer: I speak about the magnesium malate studies in my book. The malate part of the compound is derived from malic acid, which comes from apples or can be made in a lab. Malic acid is a chemical involved with energy production. It seems to be helpful to some people but I've never seen great improvements in fibromyalgia in patients using malic acid as a supplement. Whereas I have seen great improvements when people are taking enough magnesium.

20. Please comment on the effects of magnesium stearate as a "filler" in so many supplements.

Answer: Magnesium stearate is a compound created by combining stearic acid (a product of coconut oil or palm oil) and magnesium. It's a white and just like coconut oil it melts at about 88°C. It's regarded as entirely harmless, is not absorbed and really has no effects on the body in the small amounts that are present. Magnesium stearate is used for its lubricating and no-stick properties. It's not that it's important for our lubrication or stickiness but to prevent manufacturing ingredients from sticking to equipment during the process of compressing of solid tablets. So, you'll often see the name on your supplement labels.

22. I have a question relating to magnesium citrate powder. A friend is going through thyroid balancing with her doctor. She would like to take magnesium but was told not to have any mineral supplements till the thyroid was balanced. Why would it matter if she does?

Answer: I can't think of any reason why a person on thyroid medication should be denied minerals. However, in spite of the epidemic of iodine deficiency and hypothyroidism in the U.S. and possibly around the world, doctors seem to be afraid of iodine. So her doctor may have wanted to warn her against iodine but cast his net over all minerals, instead.

23. My question is, I have a mom that is in the nursing home and her doctors don't believe in supplements much less fungus in the intestinal tract even though after being scoped the doctor said she has yeast all the way down her esophageal tract. My question is would it be okay to give her olive leaf extract, grapefruit seed extract, garlic, fish oil, probiotics etc, She takes meds for numerous health issues, diabetes which is out of control and the doctor says its fine in the 200's and 300's! She has heart problems, angina, and anxiety. She takes Paxil, Zantac, and Remeron. Whoa right!! She also takes Digoxin and Mylanta and drinks Pepto like its going out of style. And takes Advair because can't breath. She currently is being treated for Clostridia. Her stomach really hurts, I think all the meds and intestinal fungus are to blame. I tried to get her doctor to prescribe Nystatin but he won't. Any suggestions I (she) needs help, I really think they are trying to kill her. She is 78 yrs old.

Answer: Most people in nursing homes need magnesium, iodine (Iodorol), and the antifungal Nystatin. I can't tell you whether it will be OK or not to use the

supplements you suggested with your Mom. Even with all the meds, be prepared to be accused of causing side effects when you start using natural supplements. Magnesium is the safest and most beneficial supplement to introduce first and you can use the transdermal magnesium oil or gel. When family members are put in this terrible position, I just tell them to go slowly and watch improvements happen and try to get the doctors to cut back on the meds.

24. I take my magnesium citrate at meal times with my food, is this the best way to take it too receive the maximum absorption?

Answer: Magnesium citrate is probably best taken with meals because being combined with food slows down its digestion and therefore absorption so you get more absorbed into your tissues and less staying in the intestines to cause a laxative effect.

25. Last and least, I'd like to address a critique from the comment section on amazon.com.

"This book offers only weak anecdotal evidence and interlaces it with medical studies which are outdated. Very few of the references are from reliable sources."

Answer: *The Magnesium Miracle* is a book that can easily be read by the layperson with its many case histories. I also included over 400 references with all the scientific backup that may be required by a health practitioner to understand the importance of magnesium. The forward to the book is written by the top two magnesium researchers in the world. Their work is cited throughout.

MAGNESIUM PRODUCT RECOMMENDATIONS

Companies and products change, sometimes overnight. Magnesium product recommendations will be updated frequently on my website at www.drcarolyndean.com/resources.