

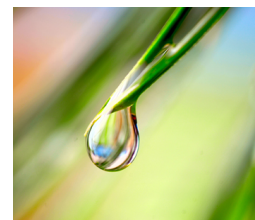


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MAGNESIUM DEFICIENCY

Magnesium's deficiency in the body has been directly linked, via extensive medical research, to many diseases and health conditions. It is estimated that perhaps 80% of people today are significantly deficient of this precious life supporting mineral.

There are numerous symptoms and conditions that people experience when suffering from low Magnesium levels. This page is dedicated to help you determine the "state of Magnesium" in your body.



BENEFITS OF MAGNESIUM ABOUND!

Magnesium is often called **The Rejuvenation Mineral** because of its critical role in catalyzing cellular regeneration as a consequence of aging, disease and stress. Before determining if Magnesium Deficiency is a concern in your life. just look at Magnesium's benefits:

- Increased energy levels and more even moods
- Better and deeper, uninterrupted sleep
- Reduced muscle aches, pains, restlessness, cramping and spasms
- Relieves pain, bruising and swelling from immediate injuries; faster healing
- Better relaxation and mental calmness in stressful situations
- Eases headaches and migraines
- Improves cardiovascular/heart health (relaxes cardiac muscle)
- Reduces symptoms of brain fog, short-term forgetfulness
- Boosts the immune system
- Improves pliability of bones and connective tissues, balancing and controlling the rigidity of too much Calcium
- Eases symptoms associated with menopause, PMS and numerous other feminine concerns
- AND SO MUCH MORE!

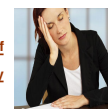
MAGNESIUM GIVES YOU . . .

ENERGY
Better Sleep
MENTAL CALM
Stress Relief
MUSCLE RELAXATION
Strong Bones

PAIN RELIEF
Cheerfulness
BEAUTIFUL SKIN
GI Health
HEADACHE RELIEF
A Healthy Heart

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[General Signs of Mg Deficiency](#)



[Assess Your Daily Mg Lifestyle](#)



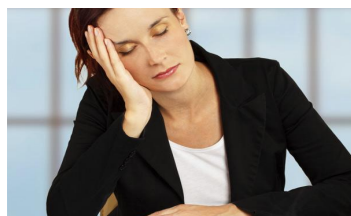
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OTHER MAGNESIUM PAGES

[Magnesium Therapy](#)
[Magnesium Therapy : HOW TO DO](#)
[The Science of Magnesium](#)
[More Magnesium in Your Life](#)

With these benefits in mind, now compare them with those general signs, and lifestyle choices you make, that may indicate Magnesium deficiency.



GENERAL SIGNS OF MAGNESIUM DEFICIENCY

The symptoms of Magnesium deficiency are diverse and often similar to those relating to other causes. These symptoms/conditions often occur in clusters together within the same individual.

Magnesium deficiency is likely their cause because the common denominator is Magnesium!

Most people are Magnesium-deficient and don't know it — and most likely, neither does their health care provider. Assessing your health and lifestyle is a critical first step to understanding Magnesium's

diverse roles and responsibility to keep the body-mental engine running smoothly and efficiently.

- Numbness & tingling
 - Muscle contractions, cramps, restlessness
 - Fatigue, listlessness, ennui, weakness
 - Abnormal heart rhythms, coronary spasms, seizures
 - Diminished or loss of appetite
- Depression, brain fog, extreme mood shifts
 - Headaches, migraines
 - Nausea, GI upsetness, vomiting
 - Personality changes (withdrawn, moody,, quiet)
 - Attention deficit
 - *More . . .*
- CIRCULATION SYSTEM**
Angina, arteriosclerosis, atherosclerosis, diabetes, hypertension, high cholesterol, heart infarctions, strokes, tachycardia (fast pulse), thrombosis
- DIGESTIVE SYSTEM**
Colic, constipation, chronic diarrhea, malabsorption, pancreatitis
- MUSCLES**
Backache, convulsions, cramps, increase excitability and jumpiness, numbness, nystagmus (rapid eye movement), spasms, tense tight muscles, tingling, tremors
- NERVOUS SYSTEM**
Apathy, confusion, depression, disorientation, epilepsy, hallucinations, irritability, mental illness, multiple sclerosis, nervousness, neuritis, paranoia, Parkinson's Disease, poor memory, senility, brain fog
- GENERAL**
Alcoholism, arthritis, body odors, broken bones, calcification in any organ, cancer, chronic fatigue syndrome, diabetes, eclampsia, headaches, infections and inflammations, liver cirrhosis, lupus erythematosus, migraines, prostrate issues, rickets, rigidity, skin issues, gall or kidney stones, overactive thyroid, etc.

Looking at Magnesium levels is important when addressing the issue of whether or not you may be deficient in Magnesium. Because symptoms and conditions caused by Magnesium deficiency are similar to many symptoms and conditions related to other causes, Magnesium deficiency can be difficult to diagnose and that its symptoms often are misdiagnosed or attributed to other causes.

Symptoms of Magnesium Deficiency

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→ Anxiety	→ Irritability
→ Weak Bones	→ Nervousness
→ Low Energy	→ Headaches
→ Weakness	→ Abnormal Heart Rhythm
→ Inability to Sleep	→ Muscle Tension, Spasms, Cramps
→ PMS and Hormonal Imbalances	→ Fatigue

NORMAL MAGNESIUM LEVELS IN BLOOD

When considering low vs. normal Magnesium levels in blood, it's important to bear in mind that serum Magnesium levels do not correlate with levels of Magnesium in muscles or cells. In fact, this factor contributes to further masking the presence of Magnesium deficiency.

The body holds blood levels of Magnesium at a fairly constant level of 1% even when experiencing an overall condition of deficiency. This means that blood tests often cannot reveal Magnesium deficiencies, and therefore may not be reliable for determining Magnesium status in the body. In fact, Magnesium levels' normal range is from 0.7 to 1.0 mmol/L and typically remains at these levels in even the most

It is highly regrettable that the deficiency of such an inexpensive nutrient results in diseases that cause incalculable suffering and expense throughout the world.

Dr. Steven Johnson

severe cases of Magnesium deficiency.

TESTS FOR MAGNESIUM BLOOD LEVEL

Magnesium blood levels may be measured by several types of tests, and most accurately by Magnesium loading tests. However, loading tests may need to be requested by patients because health care providers may not suspect magnesium deficiency, particularly when the focus remains on treating symptoms. Beyond blood level testest for **cellular magnesium** called EXATEST is available at www.exatest.com

Given the fact of widespread Magnesium deficiency, Dr. Mark Sircus, author of the book **Transdermal Magnesium Therapy**, suggests that one of the best (and easiest) ways to determine Magnesium deficiency is to apply Magnesium chloride transdermally in low doses, and then to assess improvement of symptoms that can occur within minutes, hours, or days. This method is simple, non-invasive, and effective largely because conditions marked by pain or muscle tension can show immediate improvement as Magnesium penetrates skin. This is

one of the unique benefits of transdermal Magnesium therapy.

ASSESS YOUR DAILY LIFESTYLE FOR Mg DEFICIENCY

YOUR LIFESTYLE

What Do You **DRINK**?



How It Causes MAGNESIUM DEFICIENCY

3 major liquids deplete Magnesium in our body: carbonated beverages, alcohol, and caffeinated drinks

CARBONATED BEVERAGES

Most sodas contain phosphates. Phosphates bind with Mg inside the digestive tract, rendering Mg unavailable to the body.

ALCOHOL

Alcohol has a diuretic effect — it increases excretion of Mg by the kidneys, thereby lowering availability to the cells.

Alcohol contributes to Vitamin D deficiency, and decreased efficiency of the digestive system.

Research indicates that at least up to 60% of alcoholics have severe Mg deficiency

CAFFEINATED BEVERAGES

Coffee, tea, caffeinated sodas — each depletes Mg.

The reason? Magnesium levels are controlled in the body primarily by the kidneys, which filter and excrete excess Mg and other minerals. Caffeine causes the kidneys to release extra Mg, regardless of health or bodily issues.

What **REFINED SUGARS** Do You Eat?



SWEET FOODS made with refined sugars are a significant depleter of Mg in the body.

Such foods include: *pastries, cakes, desserts, candies, cookies, and processed foods containing refined sugar.*



Sweet foods are actually "anti-nutrients" that replace whole nutritious foods in the diet, yet consume nutrients when digested. This results in a net loss of essential vitamins and minerals.

Refined sugar has zero Magnesium content, yet it causes the body to excrete Mg through the kidneys. That is a big problem.

What **MEDICATIONS** Do You Take?

Certain drugs used for medical conditions have specific effects on Magnesium levels in the body — increased Mg loss through excretion by the kidneys.

If you take a diuretic, antibiotic, heart, asthma or cancer medication, birth control pills or estrogen replacement therapy — these increase Mg loss by excretion. Similarly, NSAID's (painkillers, including over-the-counter types like aspirin, acetaminophen/Tylenol, etc.) increase Magnesium excretion.

The popular painkiller, **Celebrex**, although effective for some people, actually worsens or deteriorates the very joints one is in pain over. In scientific terms, Celebrex only inhibits COX-2, which reduces the pain, but leaves the prime cause of the arthritis, which is Arachidonic Acid



available to convert to a joint destroying LTB4 by the lipoxigenase pathway.

STRESS in Your Life



PHYSICAL AND EMOTIONAL STRESS is a major cause of Magnesium deficiency.

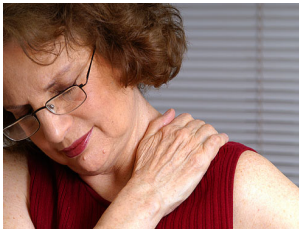
Many people suffer from Chronic Low-grade Stress because of heightened daily activities in a very busy world.

Sadly, a lack of sufficient Mg tends to magnify the stress reaction.

Our body has a natural "fight or flight" reaction to stress and anxiety-ridden conditions and situations — environment, work, relationships, chronic disease, surgery, burns, traumatic events or experiences, etc.

Stressful conditions and Chronic Low-grade Stress require more Magnesium use by the body. However, **Cortisol and Adrenaline are by-products of stress, meaning their levels are increased.** Studies show that these increased levels are associated with decreased Magnesium.

MUSCLE Issues

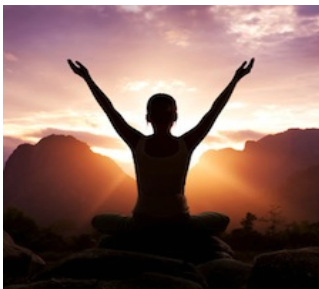


Do you experience any of the following **NEUROMUSCULAR SYMPTOMS?** (*these are classic signs of potential Mg deficiency*)

- Muscle spasms
- Muscle cramping
- Restless leg syndrome
- Fibromyalgia
- Facial tics, eye twitches, or involuntary eye movements
- Muscle wasting
- Clenched jaw

Magnesium is required for muscle relaxation — without it our muscles would be in a constant state of contraction (thanks to the aggressive nature of Calcium). These two minerals, Magnesium and Calcium, have opposing actions to each other, yet function as a team.

Energy Issues



Do you deal with any of the following **ENERGY-RELATED** issues?:

- Chronic fatigue
- Ennui and listlessness
- Headaches, migraines
- Energy depletion from assertive or sustained exercise
- Energy depletion from bodily injury or mental strain

Alongside B-complex vitamins, *Magnesium is one of the most important nutrients needed for energy production.* As a catalyst or cofactor for nearly 400 known enzyme systems, Mg is directly connected to the energy our body needs everyday to stay healthy. At its greatest extreme, Magnesium deficiency results in the cessation of life.

Specifically, Magnesium plays a pivotal role in both anaerobic and aerobic energy production, particularly in the metabolism of adenosine triphosphate (**ATP**), the "energy currency" of the body available in every

cell. The synthesis of ATP requires Magnesium- dependent enzymes called "ATPases.

MOODS & ANXIETY Issues



Do you experience any of the following (*more than usual*):

- **Depression or periods of feeling down**
- **Anxiety and tension**
- **Brain fog**
- **Mood swings**
- **Lack of focus (attention deficit)**
- **Headaches, migraines**
- **Personality changes (withdrawn, silence)**

Because our body is run by electricity, any disturbance in the flow of electricity through the nervous system has consequences. Magnesium is responsible for the movement of electrically charged ions through the blood, as well as across nerve cell membranes. Nerve conduction needs adequate Mg — it regulates electrolyte imbalances that affect the nervous system.

Magnesium is a vital catalyst and regulator of **Serotonin**. Deficiency of Serotonin affects moods — period. It also causes headaches and migraines. A Mg-deficient brain is more susceptible to allergens, foreign substances that can cause symptoms similar to mental illness or depression.

SLEEP Issues

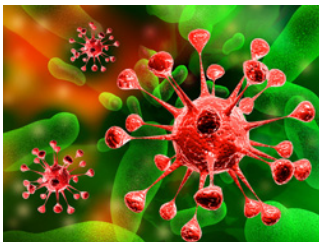


Do you have difficulty getting to sleep, staying asleep, or having an overall restful night's sleep?

Sleep problems are complex, resulting from health issues, pain and inflammation, improper diet, stress and mental duress, recent injury, disease, etc. Without restful sleep, there cannot be adequate cellular regeneration, replaced instead by chronic fatigue.

Deep, restful sleep is dependent upon proper **Melatonin** production — and this needs Magnesium as a catalyst. With Mg deficiency, lowered Melatonin production results (oftentimes, one believes a Melatonin supplement is necessary).

DISEASES & INJURIES



A disease or injury immediately affects Magnesium levels in the body, setting up a course for rapid depletion

Extensive research demonstrates the direct connection between Mg deficiency and diseases such as cancer, diabetes, arteriosclerosis, Lyme's, etc.). Following are a few issues to consider:

- **Unhealthy Digestive System** (impairs your body's ability to absorb Mg — Crohn's Disease, leaky gut, etc.)
- **Unhealthy Kidneys** (contribute to excessive loss of Mg in urine)
- **Diabetes** (leads to increased Mg loss in the urine)
- **Heart conditions** (arteriosclerosis, arrhythmia, etc., often caused by excessive Calcium build-up)
- **Hypertension** (insufficient Mg will cause spasm of blood vessels and high cholesterol — Mg regulates cholesterol!)
- **Diabetes** (low Mg tissue levels add to atherosclerosis, fatty degeneration of the liver, heart disease, nerve damage, eye problems [retinopathy])
- **Parkinson's Disease** (Mg supplementation reduces shaking, rigidity, and inappropriate nerve firing)

- **Lymes Disease** (because of its complex symptoms and unique bacteria, Lymes exhausts Mg levels in the body)
- **Athletic Endurance** (any sustained, aggressive activity uses vast stores of energy that must be replenished by Mg)
- **Immediate Injury, trauma, bruise, blunt force, breakage** (all deplete Mg necessary for cellular regeneration, pain relief and inflammation control)

Adults age 55 and older are vulnerable to Magnesium deficiency.

The obvious reasons relate to aging, disease and stress, and the fact that most older adults actually ingest less Mg from food sources than when younger.

Magnesium metabolism is less efficient as we age. This is because of natural changes in the Gastrointestinal tract and Kidneys where Mg may be less absorbed and retained.

In older adults, reduced gastric acid levels in the digestive system is a factor in mineral absorption. Hydrochloric acid supplements are often prescribed, but the best strategy is rebalancing Magnesium levels via topical (transdermal) application of Magnesium Chloride.

Are You an OLDER ADULT?



Do You Take CALCIUM Supplements?



Calcium is the most abundant (2.2 lbs!), *and assertive*, mineral in the body. In spite of its critical benefits, the issues and effects of too abundant Calcium in the body — in joints, bones, soft muscles and connective tissues, bloodstream, injured areas, etc. — cannot be understated. Calcium supplementation only adds to the problem.

Research shows that when Magnesium intake is low, Calcium supplementation may reduce Mg absorption and retention. Worth noting is that Magnesium supplementation actually improves the body's use of Calcium. Noted Magnesium researcher, Mildred Seelig, states:

The body tends to retain calcium when in a magnesium-deficient state. Extra calcium intake at such a time could cause an abnormal rise of calcium levels inside the cells, including the cells of the heart and blood vessels. Given the delicate balance necessary between calcium and magnesium in the cells, it is best to be sure magnesium is adequate if you are taking calcium supplements.

Calcium to Magnesium ratios vary individually, based upon current lifestyle and health conditions. The erroneous 2:1 ratio of Calcium to Magnesium (Americans average 3.5:1), as promoted by the medical community, is largely arbitrary. Present research supports a ratio of 1:1, or even 2:1 in favor of Magnesium for improved bone support and reduced risk of disease such as arterial calcification associated with heart disease.

What is Your DIET Like?

The typical Western diet today is primarily acidic, which is a breeding ground for disease, ill health, and slow cellular regeneration.

This is a diet primarily based upon meat, dairy, wheat-gluten, processed foods, refined sugars, saturated oils and fats, caffeine and carbonated sodas, fruit juices, nitrates, nitrites and phosphates, alcohol, etc. (The most healthy alternative diet is more alkaline, based upon eating fresh vegetables, nuts, seeds, fruits, etc. among a host of other Magnesium-restoring foods).



Unfortunately, all of the above foods contain little or no Magnesium for body bioavailability. Additionally, any produce grown by commercial/industrial agriculture is done so in mineral-depleted soil — a result of petrochemical inputs to control weeds, pest, fungus, weather extremes, freshness, and shipping capability. Consequently, any non-organic produce purchased at your local grocery store has little or no Magnesium (or other trace minerals).

Your **HOME & WORK** Environment



Your residence or work environment may have a direct effect on your health and Magnesium levels.

Environmental chemicals, products, metals and other toxins assault our *Immune System* daily. We inhale and touch such things everyday, be it the air we breathe or simply by handling or application of products or components. Allergies are definitely connected to environmental conditions.

Glutathione — "the master antioxidant" — is the body's most powerful antioxidant. It is essential for the body's detoxification of environmental chemicals, heavy metals and other toxins. **Glutathione requires Magnesium for its synthesis, plain and simple.**

High Level **PHYSICAL ACTIVITY** · EMERGENCY



Activities that require high or sustained amounts of physical effort (and perhaps mental focus as well) can easily deplete Magnesium levels in the body. This especially effects muscles, connective tissues, joints and buffering membranes.

Emergency situations often involve very physical trauma that depletes Magnesium stores.

The following types of activities are **Mag-intensive**:

- Active sports and athletics, including endurance and physical training
- Outdoor, nature activities like hiking, backpacking, mountainclimbing, rockclimbing, running, long-distance running, and more!
- Sustained physical labor, be it work, recreation, or duty
- Long yoga sessions, or yoga done in very warm rooms
- Weightlifting, power exercising, sustained cardio-exercise
- Emergency in which a force of personal energy is expended, utilizing high levels of adrenalin and will
- Emergency in which you sustain a traumatic physical and/or emotional injury
- Any disease that, especially at onset, affects physical functioning, such as Lymes Disease



HEALTH CONDITIONS & Mg DEFICIENCY

Health Condition	What Mg Deficiency Triggers
Anxiety & Panic attacks	Magnesium normally keeps adrenal stress hormones under control
Asthma	Both histamine production and bronchial spasms increase with Mg deficiency
Blood clots	Mg has an important role to play in preventing blood clots and keeping the blood thin-much like aspirin but without the side effects

Bowel disease	Mg deficiency slows down the bowel causing constipation, which could lead to toxicity and malabsorption of nutrients, as well as colitis
Cystitis	Bladder spasms are worsened by Mg deficiency
Depression	Serotonin, which elevates moods, is dependent on Mg. A Mg-deficient brain is also more susceptible to allergens, foreign substances that can cause symptoms similar to mental illness
Detoxification	Mg is crucial for the removal of toxic substances and heavy metals such as aluminium and lead
Diabetes	Mg enhances insulin secretion, facilitating sugar metabolism. Without Mg insulin is not able to transfer glucose into cells. Glucose and insulin build up in the blood causing various types of tissue damage
Fatigue	Mg-deficient patients commonly experience fatigue because dozens of enzyme systems are under-functioning. An early symptom of Mg deficiency is frequently fatigue
Heart disease	Mg deficiency is common in people with heart disease. Mg is administered in hospitals for acute myocardial infarction and cardiac arrhythmia. Like any other muscle, the heart muscle requires Mg. Mg is also used to treat angina, or chest pain.
Hypertension	With insufficient Mg, spasm of blood vessels and high cholesterol occur, both of which lead to blood pressure problems
Hypoglycaemia	Mg keeps insulin under control; without Mg episodes of low blood sugar can result
Insomnia	Sleep-regulating melatonin production is disturbed without sufficient Mg
Kidney Disease	Mg deficiency contributes to atherosclerotic kidney failure. Mg deficiency creates abnormal lipid levels and worsening blood sugar control in kidney transplant patients
Migraine	Serotonin balance is Mg-dependent. Deficiency of serotonin can result in migraine headaches and depression
Musculoskeletal	Fibrosis's, fibromyalgia, muscle spasms, eye twitches, cramps and chronic neck and back pain may be caused by Mg deficiency and can be relieved with Mg supplements
Nerve problems	Mg alleviates peripheral nerve disturbances throughout the whole body, such as migraines, muscle contractions, gastrointestinal spasms, and calf, foot and toe cramps. It is also used in treating central nervous symptoms of vertigo and confusion
Obstetrics & Gynaecology	Mg prevents Premenstrual Syndrome; prevents dysmenorrhoea (cramping pain during menses); is important in the treatment of infertility; and alleviates premature contractions, preeclampsia, and eclampsia in pregnancy
Osteoporosis	Use of calcium with Vitamin D to enhance calcium absorption without a balancing amount of Mg causes further Mg deficiency, which triggers a cascade of events leading to bone loss
Raynaud's Syndrome	Mg helps relax the spastic blood vessels that cause pain and numbness of the fingers
Tooth decay	Mg deficiency causes an unhealthy balance of phosphorus and calcium in saliva, which damages teeth

Material excerpted from Dr. Carolyn Dean. **The Miracle of Magnesium**
(2003 Ballantine Books: New York, NY), 2003. pp. 5-7.

Disclaimer:

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