



The Practice of Biohacking Yourself starts here in the Millennium!

Magnesium, the multifarious mineral of Longevity. Gordon, M.L., Millennium Health Centers, Inc. Veterans TBI Project. 2025

Magnesium, smagnesium, who knew that there were so many different biologically active forms that have unique preferences for different cells and organ systems. Looking through this chart you will see that there is a need for multiple forms of Mg to address the optimization of our health in our new world of **Biohacking Yourself**.

The Diversity of Magnesium				
Magnesium Form	Primary Function	Absorption	Main Bodily Effects	Common Uses
Magnesium Citrate¹	Magnesium bound to citric acid	High	Enhances bowel movements (laxative), supports muscle and nerve function, regulates blood sugar, and boosts energy production	Relieves constipation, boosts energy, muscle cramps, migraines
Magnesium Glycinate¹	Magnesium bound to glycine	High	Calming effects on the nervous system, improves sleep quality, reduces anxiety, supports cognitive function	Treats anxiety, depression, insomnia
Magnesium Malate¹	Magnesium bound to malic acid	Moderate to high	Supports muscle function and energy production, reduces muscle pain and fatigue	Chronic fatigue syndrome, fibromyalgia, muscle pain
Magnesium Threonate	Magnesium bound to threonic acid	Moderate	Known for its ability to cross the blood-brain barrier, enhances cognitive function, memory, and learning	Cognitive support, Alzheimer's disease, brain health
Magnesium Oxide	Magnesium bound to oxygen	Low	Acts as a laxative, neutralizes stomach acid, less bioavailable for cellular uptake	Heartburn relief, digestive issues, constipation
Magnesium Chloride	Magnesium bound to chlorine	Moderate to high	Improves cellular magnesium levels, promotes hydration, boosts immune system, aids digestion, and supports nerve function	Topical applications, digestive aid, stress relief
Magnesium Sulfate	Magnesium bound to sulfuric acid (commonly known as Epsom salts)	Moderate (for oral use)	Reduces inflammation, relieves muscle tension, detoxifying effects, promotes relaxation	Soaks for muscle recovery, stress relief, minor sprains
Magnesium L-Aspartate¹	Magnesium bound to aspartic acid (an amino acid)	High	Supports ATP production and energy metabolism, boosts stamina, and enhances athletic performance	Energy support, athletic endurance
Magnesium Taurate¹	Magnesium bound to taurine	High	Supports cardiovascular health, regulates blood pressure, and calms the nervous system	Heart health, blood pressure control, anxiety
Magnesium Orotate¹	Magnesium bound to orotic acid	Moderate	Enhances DNA and RNA synthesis, supports heart health, aids in muscle recovery, improves exercise performance	Cardiovascular health, exercise recovery
Magnesium Carbonate	Magnesium bound to carbonic acid	Moderate	Acts as an antacid, promotes bone health, supports nerve function, and improves energy production	Bone health, energy, digestion
Magnesium Pidolate	Magnesium bound to pidolic acid	Moderate to high	Supports neuromuscular function, helps maintain cognitive functions, and reduces fatigue	Neurological support, fatigue reduction
Magnesium Lactate	Magnesium bound to lactic acid	High	Easily absorbed, supports energy production, muscle function, and heart health	Chronic fatigue, muscle support, cardiovascular health

1- At the MillenniumHealthStore.com we will be supporting a product that has these 6 forms in addition to a Chelated Magnesium.



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1. Schwalfenberg, G. K., & Genus, S. J. (2017). The importance of magnesium in clinical healthcare. *Scientifica*, 2017.
 - Highlights magnesium's essential role in over 300 enzymatic processes in the body, with a focus on cardiovascular health and metabolic function.
2. Rosanoff, A., Weaver, C. M., & Rude, R. K. (2016). Suboptimal magnesium status in the United States: Are the health consequences underestimated? *Nutrition Reviews*, 74(9), 594-605.
 - Discusses the widespread magnesium deficiency in the US population and its links to chronic diseases, including heart disease and diabetes.
3. de Baaij, J. H., Hoenderop, J. G., & Bindels, R. J. (2015). Magnesium in man: Implications for health and disease. *Physiological Reviews*, 95(1), 1-46.
 - Comprehensive review on magnesium's roles in human health, including its effects on cardiovascular function, insulin sensitivity, and muscle contraction.
4. Barbagallo, M., Dominguez, L. J. (2017). Magnesium and aging. *Current Pharmaceutical Design*, 23(22), 3948-3955.
 - Focuses on magnesium's role in aging, highlighting its effects on muscle function, bone density, and chronic inflammation.
5. Pickering, G., Mazur, A., Trousselard, M., Bienkowski, P., & Yaltseva, N. (2020). Magnesium status and stress: The vicious circle concept revisited. *Nutrients*, 12(12), 3672.
 - Examines the connection between magnesium deficiency and stress, anxiety, and depression.
6. Baaij, J. H. F., et al. (2016). Molecular regulation of magnesium homeostasis: implications for human disease. *Journal of the American Society of Nephrology*, 27(9), 2808-2819.
 - Investigates the molecular mechanisms regulating magnesium levels and their potential involvement in human diseases like hypertension and kidney dysfunction.
7. Serefko, A., et al. (2016). Magnesium in depression. *Pharmacological Reports*, 68(5), 1095-1102.
 - Review on the role of magnesium in mental health, particularly its potential therapeutic effect in depression.
8. Veronese, N., et al. (2017). Dietary magnesium intake and risk of chronic disease: the dose-response meta-analysis of prospective studies. *The BMJ*, 357, j1959.
 - A meta-analysis that correlates magnesium intake with a reduced risk of chronic diseases such as stroke, heart failure, diabetes, and all-cause mortality.
9. Blancquaert, L., et al. (2019). Effects of magnesium supplements on physical performance. *Journal of the International Society of Sports Nutrition*, 16(1), 1-14.
 - Highlights how magnesium supplementation improves athletic performance, muscle recovery, and energy metabolism.
10. Al Alawi, A. M., Majoni, S. W., & Falhammar, H. (2018). Magnesium and human health: Perspectives and research directions. *International Journal of Endocrinology*, 2018.
 - A review focusing on magnesium's impacts on endocrine health, including glucose metabolism and insulin sensitivity.



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11. Zeng, C., et al. (2015). Association between dietary magnesium intake and C-reactive protein levels in the US adult population. *Journal of Human Nutrition and Dietetics*, 28(3), 262-269.
 - Discusses how magnesium intake is inversely related to levels of inflammation marker CRP, suggesting a role in anti-inflammatory pathways.
12. Jahn-Dechent, W., & Ketteler, M. (2015). Magnesium basics. *Clinical Kidney Journal*, 5(1), i3-i14.
 - Provides a foundational understanding of magnesium's physiology and the clinical relevance of magnesium in various bodily systems.
13. Islam, M. K., et al. (2020). Effects of magnesium and zinc supplementation on inflammatory markers in patients with type 2 diabetes. *Journal of Human Nutrition and Dietetics*, 33(3), 290-298.
 - Investigates the synergistic effects of magnesium and zinc in reducing inflammation in patients with type 2 diabetes.
14. Song, Y., & Li, T. Y. (2016). Magnesium intake and plasma C-reactive protein levels in a group of women with type 2 diabetes. *Diabetes Research and Clinical Practice*, 119, 130-136.
 - Links magnesium intake to reduced inflammation and improved glycemic control in diabetic patients.
15. Guerrero, M. P., Volpe, S. L., & Mao, J. J. (2009). Therapeutic uses of magnesium. *American Family Physician*, 80(2), 157-162.
 - Summarizes the therapeutic applications of magnesium in cardiovascular health, migraines, and asthma.
16. Ismail, A., et al. (2021). Magnesium supplementation and its effects on blood pressure in individuals with hypertension: A meta-analysis. *American Journal of Hypertension*, 34(4), 361-371.
 - Reviews evidence for magnesium's blood pressure-lowering effects in hypertensive individuals.
17. Barbagallo, M., & Dominguez, L. J. (2010). Magnesium and diabetes mellitus: Current evidence. *Journal of Clinical Medicine*, 8(6), 783-795.
 - A detailed review on the relationship between magnesium status and the management of diabetes.
18. Rosique-Esteban, N., et al. (2018). Dietary magnesium and cardiovascular disease: A review with a focus on studies conducted in human populations. *Nutrients*, 10(6), 168.
 - Reviews the role of magnesium in cardiovascular disease prevention, focusing on human studies from various populations.
19. Crawford, C., et al. (2016). Impact of magnesium supplementation on primary insomnia in humans: A systematic review. *Nutrients*, 8(6), 362.
 - Examines the evidence supporting magnesium's effectiveness in improving sleep quality and managing insomnia.
20. Fiorentini, D., et al. (2021). Magnesium and oxidative stress: An overview. *BioFactors*, 47(2), 151-165.
 - Discusses how magnesium deficiency can lead to oxidative stress and chronic inflammation, contributing to aging and degenerative diseases.
21. Abiri, B., et al. (2021). The impact of magnesium on neurological disorders: A review. *Nutrients*, 13(3), 767.
 - Explores magnesium's neuroprotective role in conditions such as migraines, epilepsy, and neurodegeneration.



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22. Rosanoff, A. (2020). Magnesium supplementation in chronic disease: Prospects and practices. *Advances in Nutrition*, 11(4), 1209-1213.
 - Provides an updated perspective on the need for magnesium supplementation in the context of chronic disease management.
23. Witkowski, M., Hubert, J., & Mazur, A. (2020). Methods to assess magnesium status in humans: A review. *Magnesium Research*, 33(2), 110-118.
 - Discusses the various methodologies available for assessing magnesium status and their clinical relevance.
24. Ebrahimi-Mameghani, M., et al. (2018). Effect of magnesium supplementation on insulin resistance in humans: A systematic review. *Journal of Diabetes and Metabolic Disorders*, 17(2), 183-194.
 - Reviews the impact of magnesium supplementation on improving insulin sensitivity in individuals with metabolic syndrome and diabetes.
25. Xiong, Y., et al. (2015). Magnesium and bone health: A systematic review and meta-analysis. *Osteoporosis International*, 26(11), 2599-2607.
 - A comprehensive analysis linking magnesium intake to improved bone mineral density and reduced fracture risk.
26. Dominguez, L. J., et al. (2021). Magnesium and mortality in the elderly: A comprehensive review. *Nutrients*, 13(2), 463.
 - Highlights magnesium's role in longevity and reducing mortality risk in older adults.

More information on Biohacking yourself is available at:

1. www.TBIHELPNOW.org/the-science
2. www.YouTube.com/@markl.gordon5856

The Millennium Health Centers, Inc. focuses on all individuals with symptoms associated with all forms of trauma causing alteration in mental health and cognition. We have also stumbled into reducing the life-altering effects of neurodegenerating conditions such as Multiple Sclerosis, Parkinson's Disease, Alzheimer's, CTE, TBI, PTSD, and post-stroke. It appears that Physical and non-physical, concussive and subconcussive traumas have been found to be predisposing to many of these conditions. Neuroendocrine assessment with replenishment of insufficient hormones, along with addressing the underlying and associated inflammation causing the problems.