The impact of magnesium supplementation on the occurrence of selected disease states and physical performance - a review of the literature

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SUMMARY

Magnesium is one of the important elements in the human body. It plays an extremely important role in over 300 enzymatic reactions. Magnesium is one of the seven macroelements. Macronutrients are elements that constitute not less than 0.01% of the dry weight of each organism. By definition, their daily requirement exceeds 100 milligrams. According to Harvard T.H Chan, school of pubic health, the recommended amount of magnesium intake is 400-420 mg per day for men and 310-320 mg for women. Interestingly, it is difficult to overdose on magnesium as excess magnesium is excreted in the urine. However, high doses of magnesium can cause diarrhea or nausea. The diarrheal effect of magnesium salts results from the osmotic effect of unabsorbed salts in the intestine and colon and the stimulation of gastric motility.
INTRODUCTION AND PURPOSE

The main goal of this review is to indicate a correlation between the supplementation of magnesium and the health of people. In addition, we want to demonstrate the effect of magnesium on the reduction of the incidence of selected diseases.

DESCRIPTION OF THE STATE OF KNOWLEDGE

Daniel T Dibaba from the Department of Epidemiology and Biostatistics, School of Public Health, Indiana University, Bloomington, IN and co-authors analyzed the research results published before May 2017, on the effects of magnesium supplementation on blood pressure. These studies included people with preclinical or non-communicable diseases. Review applied articles publication in PubMed, ScienceDirect, Cochrane, clinicaltrials.gov, SpringerLink, and Google Scholar databases. As a result of this study, it has been proven that magnesium supplementation significantly lowers blood pressure in people with insulin resistance, pre-diabetes, or other noncommunicable chronic diseases. These disease states are recognized risk factors for hypertension. 5 Magnesium supplementation is inversely proportional to the occurrence of these diseases. 6

Sun Ha Jee from the Department of Epidemiology and Disease Control, Yonsei University Graduate School of Health Science and Management, Seoul, Korea and co-authors did a meta-analysis of randomized trials that tested the effect of magnesium supplementation on blood pressure. Their meta-analysis revealed a correlation between the dose of magnesium and the reduction in blood pressure. To confirm this relationship, large-scale studies should be carried out on a representative group of patients with appropriately high doses of magnesium supplements. 8

Keywords: magnesium, supplementation, hypertension, insulin resistance, blood pressure
Parrazini Fabio from the Fondazione IRCCS Ca’ Granda, Dipartimento Materno-Infantile, Ospedale Maggiore Policlinico, Università degli Studi di Milano, Dipartimento di Scienze Cliniche e di Comunità, Università di Milano, Milan, Italy and co-authors in a review article on the use of magnesium in gynecology showed that magnesium supplementation is effective in preventing painful menstruation, premenstrual syndrome, menstrual migraine and in the prevention of climacteric symptoms. Despite the not fully understood mechanism of the action of the magnesium ion, a positive correlation has been demonstrated between the administration of magnesium and the alleviation or prevention of these symptoms. Therefore, magnesium supplementation may be a real treatment for these diseases.⁹

Nicola Veronese from the Department of Medicine-DIMED, Geriatrics Section, University of Padova, Padova, Italy (NV, LB, SC, FB, MDR, EDT, GB, SP, FM, AC, EM, and GS), and the Department of Cardiac, Thoracic and Vascular Sciences, Biostatistics, Epidemiology and Public Health Unit, University of Padova, Padova, Italy (EP) and co-authors investigated the effect of oral magnesium supplementation on the physical performance of healthy elderly women participating in a weekly exercise program. The purpose of their study was to find out whether twelve weeks of oral magnesium supplementation could improve their physical performance. Their research suggests that magnesium supplementation had a beneficial effect. This finding suggests that taking magnesium may delay the decline in exercise performance.¹⁰

Sara Chacko from Department of Epidemiology, School of Public Health, University of California, Los Angeles, CA 90095, USA and co-authors investigated magnesium intake, metabolic markers, inflammatory markers, global genomic and proteomic profiling in overweight people. Magnesium supplementation for 4 weeks in overweight people led to marked changes in gene expression and proteomic profiling consistent with beneficial effects on several metabolic pathways.¹¹

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CONCLUSIONS

Nowadays, magnesium is one of the most studied medical topics. It is believed that its level in the body, like vitamin D, is of great importance for human health. Most adults have magnesium deficient, but this is not recognized by medical professionals. The problem is the difficulty in determining its level. Screening for chronic magnesium deficiency is very difficult because normal serum levels can coexist with a deficiency in the body. 12 Our literature review shows how important it is to maintain the correct level of magnesium in the body. In our opinion, a large, multicenter study is needed that will systematize knowledge and determine the amounts of magnesium to be taken.

References

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