Magnesium status and the physical performance of volleyball players: effects of magnesium supplementation

Setaro L, Santos-Silva PR, Nakano EY, Sales CH, Nunes N, Greve JM, Colli C.

Author information

- Department of Food and Experimental Nutrition, Faculty of Pharmaceutical Sciences of University of São Paulo, São Paulo, Brazil.

Abstract

The aim of this study was to test the hypothesis that magnesium supplementation influences the physical performance of volleyball players, as the efficacy of this approach remains questionable. Twenty-five professional male volleyball players were assigned randomly to experimental (350 mg Mg · d(-1), 4 weeks) and control groups (500 mg maltodextrin · d(-1), 4 weeks) maintaining inter-group homogeneity of urinary magnesium. Erythrocyte, plasma and urinary magnesium levels, plasma creatine kinase activity, lactate production, maximal oxygen uptake (VO2 max) and plyometric (squat jump, countermovement jump, countermovement jump with arm swing) and isokinetic (peak torque, potency and total work) performances were evaluated before (T0) and after (T1) supplementation. Levels of erythrocyte and urinary magnesium and creatine kinase activity and VO2 max remained within normal ranges in both groups. Plasma magnesium decreased significantly only within the experimental group. Significant decreases in lactate production and significant increases (of up to 3 cm) in countermovement jump and countermovement jump with arm swing values were detected in the experimental group following magnesium supplementation, but not in the control group at T1. It is concluded that magnesium supplementation improved alactic anaerobic metabolism, even though the players were not magnesium-deficient.