

Response of immune system after ultra endurance event: relation between magnesium and immunological response #81

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Magnesium (Mg) is one of the most important micronutrients, and therefore its role in biological system has been extensively investigated. Particularly, Mg has a strong regulatory role in the immune system. The aim of this study was to investigate the behavior of plasma magnesium and the immune response after half-ironman triathlon. Blood samples from six athletes were collected before and immediately after the triathlon competition. Magnesium plasma concentration and immune parameters were analyzed (total white blood cells (WBC), neutrophils, (NE), lymphocytes (LY), eosinophils (EO) monocytes (MO) and basophils (BA)). Pre and post race values were compared by paired t-tests. Pearson's product-moment correlation coefficients were used to examine potential relationships between magnesium concentration, WBC and finishing time. Significant changes after triathlon completion were found for Mg, WBC, NE, LY, EO and no significant changes were found for MO and BA over time. There was no correlation between Mg, WBC and finishing time, possibly due to type β error. We can conclude that long duration exercise cause a depletion of magnesium reserves in the organism that may produce hypomagnesaemia. Magnesium deficit has been show to be related to impaired cellular and humoral immune function. Significant increase in WBC, which could lead to an increased susceptibility to infection after ultraendurance exercise due to duration, intensity and the extreme ambient conditions, commonly observed in ultra-endurance events. There is significant evidence in the literature that immune response is influenced by transient magnesium deficiency.

Key words: endurance exercise; magnesium concentration; immune system.