

Glutamine Supplementation and Resistance Training on Anthropometric Indices, Immunoglobulins, and Cortisol Levels

Authors : Alireza Barari, Saeed Shirali, Ahmad Abdi

Abstract : Introduction: Exercise has contradictory effects on the immune system. Glutamine supplementation may increase the resistance of the immune system in athletes. The Glutamine is one of the most recognized immune nutrients that as a fuel source, substrate in the synthesis of nucleotides and amino acids and is also known to be part of the antioxidant defense. Several studies have shown that improving glutamine levels in plasma and tissues can have beneficial effects on the function of immune cells such as lymphocytes and neutrophils. This study aimed to investigate the effects of resistance training and training combined with glutamine supplementation to improve the levels of cortisol and immunoglobulin in untrained young men. The research shows that physical training can increase the cytokines in the athlete's body of course; glutamine can counteract the negative effects of resistance training on immune function and stability of the mast cell membrane. Materials and methods: This semi-experimental study was conducted on 30 male non-athletes. They were randomly divided into three groups: control (no exercise), resistance training, resistance training and glutamine supplementation, respectively. Resistance training for 4 weeks and glutamine supplementation in 0.3 gr/kg/day after practice was applied. The resistance-training program consisted of eight exercises (leg press, lat pull, chest press, squat, seated row, abdominal crunch, shoulder press, biceps curl and triceps press down) four times per week. Participants performed 3 sets of 10 repetitions at 60-75% 1-RM. Anthropometry indexes (weight, body mass index, and body fat percentage), oxygen uptake (VO₂max) Maximal, cortisol levels of immunoglobulins (IgA, IgG, IgM) were evaluated Pre- and post-test. Results: Results showed four week resistance training with and without glutamine cause significant increase in body weight, BMI and significantly decreased ($P < 0/001$) in BF. Vo₂max also increased in both groups of exercise ($P < 0/05$) and exercise with glutamine ($P < 0/001$), such as in both groups significant reduction in IgG ($P < 0/05$) was observed. But no significant difference observed in levels of cortisol, IgA, IgM in any of the groups. No significant change observed in either parameter in the control group. No significant difference observed between the groups. Discussion: The alterations in the hormonal and immunological parameters can be used in order to assess the effect overload on the body, whether acute or chronically. The plasmatic concentration of glutamine has been associated to the functionality of the immunological system in individuals sub-mitted to intense physical training. resistance training has destructive effects on the immune system and glutamine supplementation cannot neutralize the damaging effects of power exercise on the immune system.

Keywords : glutamine, resistance training, immunoglobulins, cortisol

Conference Title : ICHNFS 2015 : International Conference on Human Nutrition and Food Sciences

Conference Location : Rome, Italy

Conference Dates : September 17-18, 2015