

Salivary IgA Responses During a Week of Training In Under-15 Soccer Players

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Introduction

There is an apparent consensus around the idea that light exercise can improve the immune response whilst strenuous exercise can depress the defense system, including the mucosal immune system, with reduction of salivary immunoglobulin A (IgA) levels. Salivary IgA acts as a main barrier against the colonization of infectious agents. The purpose of this study was to examine the influence in the pattern of salivary IgA responses in an under-15 soccer team, during a training week.

Methods

The study was performed during the winter training season, in the competitive period. The training sessions were planned by the coaches without any interference from the researchers. Thirteen players (13 to 15 years) were tested before each of four training sessions during a week period. Before and after training, saliva samples were collected and salivary IgA concentrations and secretion rates determined by ELISA. Thirty minutes after each session, rated perceived effort (RPE) was assessed to quantify training load. Changes in pre-training IgA responses were examined based on multilevel modeling regression using polynomial model (model I). Influence of training load was explored including the explanatory variable at level 2 (model II).

Results

Multilevel regression analysis showed no differences between training sessions throughout the week. However, significant residual variance at level I (within-individuals) and at level II (between-individuals), in the intercept and slope (i.e., training sessions). Although limited by the small sample size, a curvilinear trend in pre-training IgA response became apparent when individual athletes' training loads were controlled in the model. The results showed a significant decrement in IgA response pre-training from the first to the second training session ($p < 0.05$), and a significant exponential increase in IgA response in the next two training sessions ($p < 0.05$). The significant random effects at level I suggest that the fit of individual responses may need to be validated in larger samples, although the non significant random effects at level II suggest that the mean responses accounting individual training loads describes well the group behavior in pre training IgA responses.

Conclusion

The specific relationship that appears to be linked to the intensity, duration and type of physical activity were detected in our study. Monitoring mucosal immune parameters during training periods may provide an assessment of the risk status of these young athletes for upper respiratory tract Infections and allow the coach to have an effective management of periodization.