

Change in the capability of reactive oxygen species production by neutrophils following weight reduction in female judoists.

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OBJECTIVE: Athletes undergoing weight reduction are recognised as being more prone to infection. Few studies exist for athletes on the weight reduction-mediated changes in neutrophil function and related activities such as reactive oxygen species (ROS) production capability, phagocytic activity (PA) and serum opsonic activity (SOA). **METHODS:** 16 Japanese female university judoists were examined in the early morning of the first day (pre-values) and the last day (post-values) of a 20-day pre-competition training period. Of the 16 subjects, 8 needed to reduce weight (WR group) and the other 8 did not (control group). The parameters assessed were the neutrophil count, serum immunoglobulins and complements, myogenic enzymes, ROS production capability, PA and SOA. **RESULTS:** Comparing the post-values with the pre-values, ROS production significantly increased in both groups ($p < 0.01$ for both). PA significantly decreased in the WR group ($p < 0.05$); it also decreased in the control group but the decrease was not significant. SOA significantly increased in the control group ($p < 0.05$), but showed no significant change in the WR group. **CONCLUSIONS:** The changes in the WR group were probably a direct consequence of the weight-reduction regimen coupled with the exercise regimen, suggesting that neutrophil parameters (ROS production, PA and SOA) had tended to deviate from their typical compensatory changes to maintain immune system homeostasis.