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Effects of brief maximal exercise on interleukin-6 and tumor necrosis factor-alpha

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Acute bouts of prolonged strenuous exercise are often associated with immune modulation and an increased risk of infection. However, few studies have examined immunological responses to brief maximal exercise. We investigated the effects of brief maximal exercise on plasma Interleukin-6 (IL-6) and Tumour Necrosis Factor-alpha (TNF- α) concentrations in both athletes and sedentary subjects. Seven athletes [mean (SEM)] [peak oxygen uptake = 55 (0.02) ml. kg⁻¹. mn⁻¹] and eight sedentary [peak oxygen uptake = 40 (0.11) ml. kg⁻¹. mn⁻¹] healthy volunteers performed an incremental exercise on an ergometer bicycle until max was attained. Cytokines plasma concentrations were measured before and immediately after exercise using an enzyme linked immunosorbent assay. Athlete's IL-6 plasma concentrations averaged immediately before and after exercise were [mean (SEM)] [4.85 (0.89) pg/ml] and [24.74 (0.64) pg/ml] respectively ($p < 0.01$). However, no significant increase was observed in the sedentary group. Athlete's and sedentary plasma concentrations of TNF- α increased significantly immediately after exercise ($p < 0.01$). We conclude that brief maximal exercise induce in athletes a moderate increase in both TNF- α and IL-6 secretion. This finding support hypothesis that plasma IL-6 concentrations increase with intensity and duration of exercise.

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