Elevation of leukocyte counts is associated with an increase in the intensity and duration of exercise

ABSTRACT

Purpose The aim of this study is to investigate the effect of intensity and duration of exercise related to the leucocyte count. **Methods** 25 male subjects completed all nine cycling sessions at 55±5 rpm on a cycle ergometer for 10, 20, and 30 min at workloads that corresponded to 50, 60, and 70% of an individual's pre-determined peak oxygen consumption (V̇ O2peak), in random order. Heart rate and V̇ O2peak were monitored each minute during the exercise to ensure that the subjects were exercising at the given relative intensity. Blood samples were taken before and after the exercise. **Results** The overall leucocyte counts and its subtypes including lymphocytes, monocytes, and neutrophils were significantly elevated immediately after exercise at all intensity and duration of exercise. ANOVA showed that the main effect of time (T) on leucocyte, neutrophil, lymphocyte, and monocyte counts increases over time. ANOVA analysis also showed that only exercise duration has a significant effect in overall leucocyte counts, including its subtypes. Additionally, this study also revealed that the overall leucocyte counts and its subtypes had a positive correlation with the duration of exercise using Pearson's correlation coefficient test. However, only lymphocytes were positively correlated (r=0.178) with exercise intensity. **Conclusions** This study strongly recommends a re-evaluation of current views about the intensity and duration of physical exercise. A precise definition of an individual's workload that consists of intensity and duration of exercise is crucial as it will affect blood viscosity and blood flow during and immediately after exercise.