

## Haematological Responses on Amateur Cycling Stages Race

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**Abstract :** multiple stage bicycle races require high physiological loads from professional cyclists. Such demands can lead to immunosuppression and health problems. However, in this type of competition, little is known about its physiological effects on amateur athletes, who generally receive less medical support. Thus, this study analyzes the hematological effects of a multiple stage bicycle race on amateur cyclists. Seven Brazilian national amateur cyclists ( $34 \pm 4.21$  years) underwent a laboratory test to evaluate VO<sub>2</sub>Max ( $69.89 \pm 7.43$  ml·kg<sup>-1</sup>·min<sup>-1</sup>). Six days later, these volunteers raced in the Tour of Goiás, participating in five races in four days (435 km) of competition. Arterial blood samples were collected one day before and one day after the competition. The Kolmogorov-Smirnov tests were used to evaluate the data distribution and Wilcoxon to compare the two moments ( $p < 0.05$ ) of data collection. The results show: Red cells ↓ 7.8% ( $5.1 \pm 0.28$  vs  $4.7 \pm 0.37$  10<sup>6</sup> / mm<sup>3</sup>,  $p = 0.01$ ); Hemoglobin ↓ 7.9% ( $15.1 \pm 0.31$  vs  $13.9 \pm 0.27$  g / dL,  $p = 0.01$ ); Leukocytes ↑ 9.5% ( $4946 \pm 553$  versus  $5416 \pm 1075$  / mm<sup>3</sup>,  $p = 0.17$ ); Platelets ↓ 7.0% ( $200.2 \pm 51.5$  vs  $186.1 \pm 39.5$  / mm<sup>3</sup>,  $p = 0.01$ ); LDH ↑ 11% ( $164.4 \pm 28.5$  vs  $182.5 \pm 20.5$  U / L,  $p = 0.17$ ); CK ↑ 13.5% ( $290.7 \pm 206.1$  vs  $330.1 \pm 90.5$  U / L,  $p = 0.39$ ); CK-MB ↑ 2% ( $15.7 \pm 3.9$  vs.  $20.1 \pm 2.9$  U / L,  $p = 0.06$ ); Cortisol ↓ 13.5% ( $12.1 \pm 2.4$  vs  $9.9 \pm 1.9$  µg / dL,  $p = 0.01$ ); Total testosterone ↓ 7% ( $453.6 \pm 120.1$  vs  $421.7 \pm 74.3$  ng / dL,  $p = 0.12$ ); IGF-1 ↓ 15.1% ( $213.8 \pm 18.8$  vs  $181.5 \pm 34.7$  ng / mL,  $p = 0.04$ ). This means that there was significant reductions in O<sub>2</sub> allocation / transport capacities, vascular injury disruption, and a fortuitous reduction of muscle skeletal anabolism along with maintenance and / or slight elevation of immune function, glucose and lipid energy and myocardial damage. Therefore, the results suggest that no abnormal health effect was identified among the athletes after participating in the Tour de Goiás.

**Keywords :** cycling, health effects, cycling stages races, haematology

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