

Effects of fasting on critical velocity and anaerobic capacity determination in running rats #12

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The non-invasive critical power model suggested for aerobic/anaerobic evaluation of human beings was adapted for rats in our Laboratory. The aim of the present study was to verify the effects of 12-hours fasting on the critical velocity (CV) and the anaerobic running capacity (ARC) determination in sedentary rats. 11 adult Wistar rats (90 days old, weighing 395.5 ± 17.6 g) were submitted to four exercise tests at 25, 30, 35 and 40m/min (with 48 hours of interval), performed randomly and continuously until exhaustion, for the CV and ARC estimations. The protocol was executed with the rats in the fed state and after 12-hours fasting. The hyperbolic curve velocity versus time to exhaustion (t_{lim}) was linearized to $V = CV + ARC/t_{lim}$, where the CV and ARC were the linear and slope coefficients, respectively. For comparison of the parameters obtained in the fed state and after fasting, the Student t test for dependent measures was used ($p < 0.05$). The CV (m/min) and ARC (m) were 25.5 ± 1.5 and 21.8 ± 16.4 m in fed state and 22.5 ± 4.2 and 25.9 ± 14.0 m after fasting. The linear regression showed significant values ($R^2 = 0.85 \pm 0.07$ in fed state and 0.88 ± 0.09 after fasting). The 12-hours fasting modified the CV without changing ARC. The results indicate that there is a caution need with the alimentary condition of running rats previously to evaluation test. The physiological characteristics can mask the determination of the aerobic condition, resulting in the inadequate exercise prescription based on the parameters estimated by the non-invasive protocol.

Key words: critical velocity; anaerobic capacity; fasting; running rats.

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