

Swimming rats' model: influence of age and density on the maximal lactate steady state test #64

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The aim of this study was to verify whether the density plays a significant role in the swimming model for rats. To verify such possibility the rats' weight in the water was considered as an additional workload beyond the load increment. Forty *Wistar* rats divided in groups of 90, 120 and 210 days old were used. The animals had their hydrostatic weight and density determined by an apparatus for water weighing. Later, all the rats were evaluated at the maximal lactate steady state (MLSS) test adapted for swimming rats. Statistic Analysis was performed by Anova one-way and Scheffé post hoc test ($p < 0.05$). Results showed hydrostatic weight (g) and density (g/cm^3) of 10.2 and 0.997, 16.8 and 1.011, 21.4 and 1.017 for G90, G120 and G210, respectively, with significant differences between ages. Blood lactate concentrations at the MLSS were 4.1, 4.8 and 5.5 mmol/L for G90, G120 and G210, respectively and were not significantly different; but it showed a trend to increase in agreement with the presented ages. In contrast, the workloads seemed to decrease with age in the conventional method (5.3, 4.7, 4.5% of body weight for G90, G120 and G210, respectively), however when the hydrostatic weight was considered, an increase in effort was found in agreement with age (7.9, 8.4, 8.5% of body weight for G90, G120 and G210, respectively). This fact could be an explanation for the higher lactate concentration found in older groups. So, it is possible to suggest that in the conventional workload method the 210 days group has its aerobic capacity underestimated because these rats are denser than those 90 days animals.

Key words: swimming rats model; rats' body density; maximal lactate steady state.