A Bayesian Inference Comparing Collegiate Female Cyclists to Elite Female Cyclists from a Meta-Analysis

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ABSTRACT

Physiological characteristics of competitive female cyclist can be used as a reference to enhance performance. PURPOSE: The aim of this study was to evaluate the physiological characteristics of competitive, collegiate female cyclists (CFC) to data of elite female cyclists (EFC) obtained from a meta-analytic review. METHODS: Eleven (n=11) CFC volunteered as subjects. All subjects signed a university approved informed consent. Means and standard deviation (SD) were obtained from the following measurements: age (y), 22.5± 5.1; height (cm) 167.22 ± 6.2; weight (kg) 63.78 ± 9.71; body fat (%) 22.9 ± 3.6. Each subject performed a maximal cycling ergometer test to volitional fatigue. During the test, maximal oxygen consumption (VO$_2$ max, mL*kg^{-1}*min.$^{-1}$) was analyzed using a gas analyzer. VO$_2$ max, maximal blood lactate (mM), maximal power (W), lactate threshold (mM), ventilatory threshold (VT ,% of maximal) and heart rate threshold (HRT, % of maximal) were used to compare the performance of CFC to the data of EFC obtained from a past meta-analysis. An independent samples t-Test was used to compare the measures of the CFC vs. EFC data from the meta-analysis. Alpha was set *a priori* at p ≤ 0.05. RESULTS: Results showed the following comparisons between CFC vs. EFC, respectively: body fat %, C value* vs. Elite value: 22.9(3.6) vs 15.2(3.3); VO$_2$ max (mL/kg/min) 58.07(6.94) vs 52.5 (5.5); max power (W) 275.0(42.5) vs 450.7(256) ;lactate threshold (mM) 3.74(0.79) vs 2.8(0.28); VT (%) 87.0(4.1) vs 73.2 (9.8) and HRT (%) 93.1(2.2) vs 79.7 values. There was a significant difference * (p < 0.05) in the aforementioned measures. CONCLUSION: The CFC did fit the norm reference of female cyclist obtained from the past meta-analysis. The results of the data show that CFC had favorable performance measures compared to EFC from the meta-analysis on most, but not all measures.