



CAN AEROBIC AND ANAEROBIC POWER BE MEASURED IN A 60-SECOND MAXIMAL TEST FOR CANOE-KAYAK COMPETITORS?

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The primary objective of this study was to assess the efficacy of measuring both aerobic and anaerobic power in a 60-second, maximal effort test. It was hypothesized that oxygen consumption increases rapidly during maximal effort and maximal oxygen consumption (VO_2 max) may be reached in one minute. Fifteen Greek competitive kayakers performed the following tests: 1) practice 60-second maximal exertion test; 2) standard incremental workload VO_2 max test; 3) Wingate anaerobic power test (WAT); 4) VO_2 measured during 60-second maximal exertion test (60-SEC); and 5) VO_2 measured during 75-second maximal exertion test (75-SEC). All tests were performed on a wind-braked kayak ergometer. Hydrostatic weighing was performed to determine percent body fat. Peak oxygen consumption values for the 60-SEC (53.4 ml·kg⁻¹·min⁻¹, 92% VO_2 max), and 75-SEC (52.6 ml·kg⁻¹·min⁻¹, 91% VO_2 max) tests were significantly lower than VO_2 max (58.1 ml·kg⁻¹·min⁻¹). During the 75-SEC test, there was no significant difference in percentage VO_2 max from 30 seconds to 75 seconds, demonstrating a plateau effect. There were no significant differences in peak power or relative peak power between the Wingate, 60-SEC, and 75 SEC tests while, as expected, mean power, relative mean power, and fatigue index were significantly different between these tests. Power measures were highly correlated among all three tests. It was concluded that VO_2 max was not attained during either the 60-SEC nor 75-SEC test. Furthermore, high correlations in power output for WAT, 60-SEC, and 75-SEC precludes the necessity for anaerobic tests longer than the 30-second WAT.

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