

Influence of the pedaling cadence in determining the critical power in the cycloergometer #53

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The objective of this study was to determine the critical power (PCrit) using intensities of 230, 250, 270 and 300 Watts (W) under different speeds ranging from pedaling (60 and 80 rotations per minute - rpm). Two young adults, male, healthy and active, with an average age 22 years were selected. The test was conducted in cycle model Monark® ergomedic 894 E. The depth charges were chosen randomly, changing the relationship load and speed from the cadence. The exhaustion criterion was the voluntary withdrawal or failure to maintain the speed for 5 seconds. To determine the PCrit and anaerobic work capacity (CTA) the linear model of power 1/tempo x exhaustion was used. The results are expressed as mean \pm standard deviation of the mean. The t Student test for independent samples for comparison PCrit CTA and the cadences of 60 and 80 rpm was used. During the tests the heart rate (bpm) every 15 seconds was recorded. The results of PCrit to 60 rpm (Pcrit60rpm) and PCrit at 80 rpm (Pcrit80rpm) were not statistically different (Pcrit60rpm=208.1 \pm 12.0 W and Pcrit80rpm=165.5 \pm 33.2 W). The average Pcrit60rpm was 25% higher than Pcrit80rpm. The absolute values of CTA were not different (CTA60rpm=10316.6 \pm 3766.7, CTA80rpm=15996.5 \pm 5247.4). The CTA80rpm was 55% higher compared to CTA60rpm. Thus, one can conclude that the cadence of pedaling at 60 rpm and 80 did not statistically influence the values of PCrit and CAT. However, the percentage of Pcrit80rpm was significantly below Pcrit60rpm.

Key words: critical power; cycle ergometer; pedaling cadence.