

Effects of Lab Technician Administered vs. Subject Administered Resistance on Wingate Performance

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The Wingate cycle ergometer test (WCET) is a widely utilized sports performance test, which can yield peak power, mean power, and fatigue index values. Accurate assessment of these specific values are necessary in order for strength and conditioning professionals to use these values for the design of the most appropriate training programs for their athletes. Multiple studies have been conducted assessing the performance of various athletic and highly fit individuals on the WCET and the resistance that these individuals cycled against when applied by the lab technician. However, no prior study has evaluated the effects of lab technician administered resistance vs. subject-administered resistance. **PURPOSE:** To evaluate the differences in peak power, mean power, and fatigue index using a Wingate cycle ergometer test where the resistance is administered by the subject and then another WCET where the resistance is administered by the lab technician. **METHODS:** In a counterbalanced order, male ($n = 39$) subjects of at least average fitness levels completed a WCET at maximum revolutions per minutes (rpms) at a resistance of 7.5 percent of the subject's bodyweight (in kg) for thirty seconds. During this test, either the lab technician (LTA) or subject (SA) would administer the resistance that was cycled against. Seventy-two hours later, subjects completed another WCET using the alternative resistance administration technique that they did not use for the first WCET session. Peak power (in Watts), mean power (in Watts), and fatigue index (expressed as a percent) were compared using an independent T-Test and results were considered significant at $p \leq 0.05$. **RESULTS:** Although the results slightly favored SA, differences between peak power for SA ($963.16 \pm 195.56W$) vs. LTA ($959.59 \pm 193.02W$), for mean power for SA ($683.69 \pm 107.69W$) vs. LTA ($682.83 \pm 104.70W$), and fatigue index for SA ($56.23 \pm 7.96\%$) vs. LTA ($56.28 \pm 8.68\%$) were not significant. **CONCLUSIONS:** The results of the current study suggest that having resistance applied by a lab technician vs. the subject, during a Wingate cycle ergometer test, does not significantly affect peak power, mean power, or the fatigue index. Further research is needed to determine if changes in fitness level, cycling experience, age, or utilizing females may impact these results.