

Alternative Field Test for Wingate Test of Anaerobic Capacity

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ABSTRACT

The 30-s Wingate Anaerobic Power Test (WAPT) has been the gold standard for assessing an individual's anaerobic power since its development, but it requires expensive equipment. An alternative test, called the Anaerobic Power Run Test (APRT), has been developed as a simple method to predict anaerobic power. **PURPOSE:** This study was conducted to determine if there is a relationship between the anaerobic capacity determined by a 30-s WAPT and the time to complete the APRT. Additionally, this study will attempt to predict anaerobic capacity based on the time to complete the APRT. **METHODS:** Participants (8 females, 4 males) between the ages of 18 and 44 years old (mean \pm sd = 23.8 \pm 5.4 yrs) were included in the study. The two exercise tests were performed at least 24 hours apart in random order. A 5 min cycling warmup was performed before the WAPT. The WAPT was performed using a resistance set at 7.5% of body mass. A 5 min warmup consisting of calisthenic exercises was performed prior to the APRT. The APRT consisted of running five lengths of a NCAA standard basketball court (28.7 m/length, 143.5 m total) as fast as possible. The time it took to run the first length and all five lengths was recorded. A correlation analysis was performed between run time and peak power, mean power, and anaerobic capacity. The criterion reference for statistical significance was set at $p < .05$. **RESULTS:** Mean \pm sd for APRT run time (33.6 \pm 3.8 s), peak power (803 \pm 287 W), mean power (508 \pm 170 W), and anaerobic capacity (6.9 \pm .9 W/kg) during the WAPT were calculated. Run time was significantly correlated with anaerobic capacity ($r = -.838$, $p < 0.001$), but not with peak power ($r = -.217$, $p = 0.50$) or mean power ($r = -.334$, $p = 0.29$). Peak power was not significantly related ($r = .024$, $p = .94$) to run time during the first length (28.7 m) of the APRT. Linear regression generated the following prediction equation: Anaerobic Capacity = (-.1888 x Run Time) + 13.2807, $p < .001$. **CONCLUSION:** The time to complete the APRT was significantly correlated to anaerobic capacity during a WAPT, but not to peak or mean power. Further, the time required to complete the APRT significantly predicted anaerobic capacity determined from a 30-s Wingate test. The significant correlation is likely due to anaerobic capacity being measured relative to body mass and run time being influenced by body mass. The APRT may be an acceptable and inexpensive alternative test of anaerobic capacity when a Wingate test is not feasible. The current study is limited by a small sample size. Future research should include a running familiarization trial.