Comparison of Maximal and Supramaximal Verification Tests

kbly1@ithaca.edu, kdolan2@ithaca.edu, sesimunovich@gmail.com, kcorrig1@ithaca.edu, tswensen@ithaca.edu

Purpose: To examine which VO$_2$max verification technique—constant load vs. supra maximal is most effective.  Methods: A repeated measures design was used in which 14 college students ($M = 19.1$, $SD = 1.3$) completed, on the Monark cycle ergometer, two maximal incremental ramp tests separated by at least 48 hours.  After the second ramp test, subjects performed a 10-min active recovery followed by a maximal or a supramaximal verification test.  Results: Paired t-test showed no significant differences between VO$_2$max and the maximal verification phase ($t(6) = -.25$, $p > .05$), between VO$_2$max and the supramaximal verification phase ($t(6) = -.69$, $p > .05$), or between the maximal and supramaximal verification VO$_2$ values ($t(12) = .65$, $p > .05$).  There was a strong correlation between VO$_2$max and the maximal verification phase ($r = .96$) and VO$_2$max and the supramaximal verification phase ($r = .84$).  It was found that the Coefficient of Variation (CV) between VO$_2$max and the maximal verification phase was 2.0%, while the CV between VO$_2$max and the supramaximal verification phase was 4.0%.  Conclusion: When performing a verification phase on a cycle ergometer, examiners may use either a maximal or supramaximal verification phase.  However, given the stronger correlation and the lower, CV, a maximal verification phase may be preferred.