Comparison of Maximal and Supramaximal Verification Tests

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Purpose: To examine which VO\textsubscript{2}\text{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\textsubscript{2}\text{max} and the maximal verification phase (\(t(6) = -.25, p > .05\)), between VO\textsubscript{2}\text{max} and the supramaximal verification phase (\(t(6) = -.69, p > .05\)), or between the maximal and supramaximal verification VO\textsubscript{2} values (\(t(12) = .65, p > .05\)). There was a strong correlation between VO\textsubscript{2}\text{max} and the maximal verification phase (\(r = .96\)) and VO\textsubscript{2}\text{max} and the supramaximal verification phase (\(r = .84\)). It was found that the Coefficient of Variation (CV) between VO\textsubscript{2}\text{max} and the maximal verification phase was 2.0%, while the CV between VO\textsubscript{2}\text{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.