

16. SWACSM Abstract

Time Course of Supine Assessment of Bioelectrical Variables: An Evaluation of Resistance, Reactance, and Phase Angle

HOLLY HALL, JEREMY B. DUCHARME, JONATHAN HOUCK, AVADNEY GERARD-OSBOURNE, CHLOE CLARK, & ANN L. GIBSON, FACSM

Exercise Physiology Laboratory; Department of Health, Exercise, and Sports Sciences; University of New Mexico; Albuquerque, NM

Category: Undergraduate

Advisor / Mentor: Gibson, Ann (alg@unm.edu)

ABSTRACT

To minimize the effect of shifts in bodily water compartments, assessments of resistance (R) and reactance (Xc) via bioelectrical impedance analysis (BIA) is recommended to occur after the individual has been supine for 15 minutes. While changes in bodily water compartments within 15 minutes of laying in the supine position may affect values for R and Xc, it's unknown how these body water shifts affect phase angle (PhA). **PURPOSE:** Investigate the effect of time for stabilization of supine measurements of R, Xc, and PhA obtained via the RJL Quantum Legacy BIA analyzer. **METHODS:** Thirty-eight men (n=16) and women (n=22) were deemed hydrated (urine specific gravity ≤ 1.020) and were prepped for standard tetrapolar electrode placement. In the supine position, R, Xc, and PhA at 50kHz were measured on the right side of the body immediately after laying down (baseline) and every 5 minutes for 15 minutes. Participants remained motionless throughout the duration of the test. Separate one-way repeated measures ANOVA were used to assess the effect of time on R, Xc, and PhA. For repeated measures ANOVA comparisons, generalized eta squared (η^2_G) was reported to quantify the observed effect size, where small = .01; medium = .06; large = .14. An alpha of .05 was used to determine statistical significance. **RESULTS:** There was a small but significant effect of time on R, $F(1.76, 65.16) = 74.091, p < .001, \eta^2_G < .001$. Average values for R increased from $553.2 \pm 90.1\Omega$ at baseline to $560.4 \pm 93.3\Omega$ post-15 minutes. A small but significant effect for time on Xc was also observed, $F(1.34, 46.01) = 20.958, p < .001, \eta^2_G = .004$. Average values for Xc increased from $68.2 \pm 7.8\Omega$ at baseline to $69.6 \pm 8.1\Omega$ post-15 minutes. Laying in the supine position for 15 minutes had no significant effect on PhA, $F(1.2, 44.51) = 3.401, p = .065, \eta^2_G < .001$. Average PhA values went from $7.13 \pm .90^\circ$ at baseline to $7.18 \pm .86^\circ$ post-15 minutes. **CONCLUSION:** While time to allow for bodily water compartment stabilization has a small but significant effect on R and Xc, this study demonstrates that PhA is likely unaffected. PhA can be accurately assessed immediately upon assuming the supine position without allowing for bodily water compartment stabilization via the RJL Quantum Legacy.