Suitability of the Innocor Device for the Measurement of Cardiac Output

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We evaluated the reproducibility of the Innocor device (non-resident, nitrous oxide rebreathe technique) for the measurement of cardiac output (Q) at rest and during exercise in nine healthy adults (females=5; age 27.3 ±4.0; BMI 24.4 ±3.6; FVC, FEV_1 >100% pred). Q measurements were made at rest, during the fourth minute of cycling at 25 watts, and at workrates that elicited 60 and 70% of predicted HRmax. Reproducibility of the Innocor was evaluated over a 7-day period and was determined using the intra-class correlation coefficient ($ICC_{1,1}$), which incorporated both the within-day and between-day sources of variation. Mean values of Q at rest, 25w, 60 and 70% pred HRmax over the four testing sessions were (±SEM) 5.9 (±0.3), 9.4 (±0.2), 12.4 (±0.1) and 13.8 (±0.2) l/min respectively. Regression analysis revealed mean slopes for Q:VO_2 (±SEM) of 5.9 (±0.9), 6.1 (±1.0), 6.3 (±1.0) and 6.5 (±0.8) for tests 1-4 respectively. Reproducibility of the Innocor for Q was greatest and similar during the two higher levels of exercise ($ICC_{1,1}$ = 0.98, 95% CI 0.94,0.99), somewhat lower at rest ($ICC_{1,1}$ = 0.88, 95% CI 0.72, 0.97) and 25w ($ICC_{1,1}$ = 0.86, 95% CI 0.66, 0.96). We conclude that the Innocor device allows for the reproducible, non-invasive, measurement of Q in healthy adults at rest and during exercise.