

[B65] [Poster: A47] Non-Invasive Measurement of Cardiac Output (CO) during Exercise in Chronic Heart Failure (CHF): A New Tool To Be Added to the Cardio-Pulmonary Exercise Test

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Rationale. In CHF CO measurement during exercise is used to assess severity of the disease and prognosis. Gas rebreathing (RB) of two inert gases, one insoluble (SF₆) and one soluble (N₂O), is a non-invasive and safe technique to measure CO. We evaluated the possibility to measure CO during exercise by RB in CHF.

Methods. 20 stable CHF pts (peak VO₂ 20.2±3.1 ml/kg/min) performed 3 cardiopulmonary exercise tests. The 1st was a ramp protocol test to assess exercise capacity, the 2nd and 3rd were 4 minute-step protocol tests with workload increase based on pt exercise performance. In the 2nd test CO was measured by RB method (Innocor, Innovision, DK) at rest and at each step (training test). In the 3rd, after insertion of a 7F Swan Ganz catheter in pulmonary artery and of a small catheter in radial artery, we measured CO at rest and at each step by RB, Fick (F) and thermodilution (T) simultaneously.

Results. CO values is in L/min. No.=pts number. Data are shown as mean±standard deviation.

	Rest	Step 1* (25W)	Step 2* (51W)	Step 3\$ (77W)	Step 4§ (103W)	Peak* (94W)
T	4.5±1.2	6.6±1.8	8.5±2.6	10.7±3.3	12.4±3.4	11.7±3.7
F	5.3±1.4	7.8±2	9.7±2.5	11.3±3	12.9±2.8	12±3.1
RB	5.1±1.3	7.7±1.8	8.7±2.1	10.4±2.5	12±2.1	11.3±3.2

*=20 pts; \$=19 pts; §=16 pts. Repeatability of CO measurement by RB (2nd vs 3rd test) was assessed with a variation coefficient of 10.8%. We measured a good linear correlation between CO measurements by F vs T, RB vs F and RB vs T (R=0.96, 0.95 and 0.94).

Conclusions. Our study shows that CO measurement by RB technique is repeatable and reliable at rest and during exercise in CHF.

Future clinical application. It is now possible, by plotting VO₂ and CO non-invasively measured, to discriminate, in CHF patients, exercise limitation due to cardiac failure to other causes including muscle deconditioning.

MONDAY, May 23, 2005 8:15 am, Area A (Hall C, Ground Level), San Diego Convention Center

[] Thematic Poster Session (Abstract Page: A494) Session: 8:15 am-4:15 pm, EXERCISE**