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Title: Effect of pulmonary rehabilitation on cardiac function during exercise in COPD

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Body: Aim: We studied the effects of pulmonary rehabilitation (PR) on echocardiography cardiac function indices in 10 COPD patients (GOLD stages II-IV). Methods: PR consisted of interval cycling training at peak work capacity, (Wrpeak). Before and after PR patients underwent a constant-load exercise test (CLET) at 75% of Wrpeak for 6 min. Physiological data during CLET and Tissue Doppler Imaging (TDI) of the lateral mitral annulus was obtained from the apical 4-chamber view at rest and immediately after the CLET before and after rehabilitation. Peak mitral annular early (E') and late (A') diastolic velocities, E and A waves of mitral inflow and the E/E′ ratio were obtained to evaluate left ventricular (LV) function. Peak tricuspid annular systolic (S') velocity, tricuspid annular plane systolic excursion (TAPSE) and right ventricular systolic pressure (RVSP) were measured as indices of RV function. Results: Whilst RV systolic function indices (S' and TAPSE) improved immediately after the CLET both before and after PR, exercise training did not have an important impact on LV or RV indices.

Table 1. Cardiac function indices at CLET before and after PR

		Before PR			After PR	
	Rest	After CLET	P	Rest	After CLET	P
E' (cm/s)	10.4±2.3	11.8±2.7	0.01	10.1±2.0	11.1±3.1	NS
E/E'	6.4±1.3	5.6±0.9	NS	6.6±1.8	6.2±1.6	NS
A' (cm/s)	11.2±1.7	13.2±3.2	0.03	12.3±2.2	13.2±2.6	NS
S' (cm/s)	12.0±1.8	14.4±2.7	0.003	12.4±1.9	14.6±2.0	0.002

TAPSE (mm)	19.0±3.0	20.8±4.0	0.05	20.3±3.0	22.0±3.1	NS
RVSP (mmHg)	40.8±6.2	47.5±7.9	0.001	39.9±8.1	46.8±7.1	0.0009

Values are mean ± SD

Conclusion: The impact of rehabilitative exercise training on RV and LV cardiac function indices during exercise in COPD is not significant.