

**P-151**

**Relationship between ventricular function and exercise performances in adult patients with Fontan circulation**

*Ladouceur, M. (1), Laurito M. (1,2), Pontnau F. (1), Karsenty C. (1), Iserin L. (1), Legendre A (1,).*  
*(1) Hôpital Européen Georges Pompidou and Necker, AP-HP ; Paris Descartes university, Paris, France*

*(2) A Gemelli Hospital-Catholic University of Sacred Heart, Rome Italy*

**Background:** In adult patients with Fontan circulation, exercise performances are reduced and have a prognostic relevance. Skeletal, pulmonary and cardiac factors contribute to a progressive decline in exercise capacity. We have recently shown that chronotropic incompetence, increased pulmonary vascular resistance, and lack of adequate preload limit exercise performances in Fontan circulation. However cardiac intrinsic mechanisms involved in this exercise limitation have not been specifically studied.

**Objectives:** To evaluate the relationship between single ventricle function and exercise capacity in adult patients with Fontan circulation.

**Methods:** Patients with Fontan circulation who underwent 2-dimensional echocardiography with speckle tracking analysis and cardiopulmonary exercise testing (CPET) were included. We analyzed the associations between echocardiographic systolic and diastolic parameters, and exercise capacity measurements evaluated with CPET.

**Results:** 30 patients with Fontan circulation were retrospectively studied, 25 (83%) patients had adequate ventricular echo images allowing strain measurements. The ventricle longitudinal peak systolic strain was significantly correlated with exercise peak VO<sub>2</sub> ( $R=0,62$ ;  $p<0,01$ ) and percentage of predicted peak VO<sub>2</sub> ( $R=0,47$ ;  $p=0,01$ ). There was no significant correlation between ventricular ejection fraction and exercise measurements. Finally a significant correlation between percentage of predicted peak VO<sub>2</sub> and E/A ( $R=-0,43$ ;  $p=0,03$ ) demonstrated a role of diastolic dysfunction in exercise limitation.

**Conclusion:** In Fontan patients, decrease in global longitudinal strain and diastolic dysfunction of the single ventricle is significantly associated with exercise limitation. Like peak VO<sub>2</sub>, these parameter may have a prognostic value in Fontan circulation and could be useful to identify patients at risk for failing Fontan who should require a closer follow-up.