# [Relationship of Aortic Stiffness to Exercise and Ventricular Volumes in Single Ventricles.](https://www.ncbi.nlm.nih.gov/pubmed/30959013)

Biko DM, Gaynor JW, Partington SL, Harris MA, Whitehead KK, Trusty P, Yoganathan AP, Fogel M.

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**Take Home Points:**

* Single ventricle patients with previous aortic reconstruction have higher aortic pulse wave velocity (PWV) compared to single ventricle (SV) patients without aortic reconstruction.
* There is an inverse relationship between aortic distensibility and exercise stress test parameters in SV patients who underwent aortic reconstruction.



**Comment from Dr. Inga Voges (Kiel, Germany), section editor of Pediatric Cardiology Journal Watch:** In this very interesting prospective study, the authors examined the relationship between parameters of aortic stiffness and exercise performance in SV patients after Fontan completion. 48 SV patients underwent real-time exercise cardiovascular magnetic resonance (CMR) imaging. 18 out of 48 patients had previous aortic reconstruction. Aortic pulse wave velocity PWV, aortic distensibility, ventricular volumes as well as metabolic exercise stress test parameters were measured.

Patients with previous aortic reconstruction had a higher aortic PWV compared to those without aortic reconstruction (figure 1). In addition, the authors found an inverse relationship between PWV and indexed end-diastolic volume, indexed end-systolic volume and stroke volume (at rest and during exercise) in the group of patients with aortic reconstruction. There was no significant difference in aortic distensibility between patients with a reconstructed aorta and those without aortic reconstruction. In patients with previous aortic reconstruction the authors found inverse correlations between aortic distensibility and peak O2 pulse, peak oxygen consumption (figure 2), oxygen consumption at the anaerobic threshold as well as peak work, respectively.

These results might improve our understanding of decreased exercise capacity in single ventricle patients who had previous aortic reconstruction.

Figure 1



Figure 2

