

## Response to Letter Regarding “Differential Hemodynamic Effects of Exercise and Volume Expansion in People With and Without Heart Failure”

We thank Dr Guazzi for his interest in our study comparing the hemodynamic effects of volume loading and exercise in patients with and without heart failure with preserved ejection fraction (HFpEF).<sup>1</sup> We agree that impairments in right ventricular (RV)–pulmonary arterial coupling are important in the pathophysiology of this disorder and that one might expect a better RV adaption to fluid loading compared with exercise, given the heightened afterload-sensitivity of the RV in HFpEF,<sup>2</sup> and the common presence of pulmonary hypertension that develops during exercise in these patients.<sup>3</sup> We are currently evaluating RV–pulmonary arterial coupling with exercise in this cohort as a part of a separate article, but looking at changes in tricuspid annular systolic velocities with saline loading, we do see acute reduction in RV velocities with saline in HFpEF (from 12.4 to 11.0 cm/s;  $P<0.05$ ), indicating impaired reserve, even with pure volume loading. In contrast, RV systolic velocities remain unchanged with saline loading in the control group ( $P=0.4$ ).

Dr Guazzi’s group has shown in an elegant set of experiments that alveolar membrane conductance is decreased by saline infusion in HF with reduced EF.<sup>4</sup> Changes in gas exchange with saline loading (or exercise) have not been reported to date in HFpEF. However, in experimental lung preparations, acute increases in interstitial congestion may increase pulmonary vascular resistance, suggesting potential cross talk between lung water content and hemodynamics.<sup>5</sup> This relationship has not been evaluated in humans, but we agree that further research is warranted in this regard.

None.

## Disclosures

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