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### The Authors Reply

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**Reply to Letter: Atrial Strain Assessment in Left Ventricular Diastolic Dysfunction by Backhaus et al.**

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We report no additional conflicts of interest to our original paper.

We thank Drs. Backhaus and Schuster for their interest in our study. { ADDIN EN.CITE { ADDIN EN.CITE.DATA }} As they state, a multiparametric approach to diagnosis of heart failure with preserved ejection fraction (HFpEF) will undoubtedly help our understanding of the HFpEF phenotype, allowing us to improve our treatment options.

We agree that there is increasing evidence to support the theory that the atrium is not just a simple reservoir but in fact also plays an important role in the pathophysiology of HFpEF. In addition to the studies Drs. Backhaus and Schuster identify, other recent studies confirm that left atrial longitudinal strain is reduced in patients with HFpEF. { ADDIN EN.CITE

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is important to note however, that in a sub-study of the Treatment of Preserved Cardiac Function Heart  
Failure with an Aldosterone Antagonist (TOPCAT) trial, LA dysfunction was associated with poorer  
prognosis however this was not independent of left ventricular parameters.{ ADDIN EN.CITE { ADDIN  
EN.CITE.DATA }} Larger studies are required to determine whether LA deformation is truly an  
independent predictor of outcome in HFpEF or whether it is simply a reflection of ventricular systolic and  
diastolic dysfunction.

The addition of echocardiographic assessment during exercise would certainly have provided further  
insights into the differentiation of HFpEF patients and those with hypertensive heart disease. Indeed,  
often the symptomatic limitation is only apparent on exercise, and one strength of our study was the use  
of cardio-pulmonary exercise testing to specifically identify truly symptomatic patients. Exercise echo  
parameters such as E/E' and estimated pulmonary artery pressures may also have prognostic utility in  
HFpEF patients.{ ADDIN EN.CITE { ADDIN EN.CITE.DATA }}

The editorial by Dr Kosmala which accompanies our study proposes a multiparametric approach to  
diagnosis and investigation of patients with HFpEF.{ ADDIN EN.CITE  
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We agree that larger studies are required using a multiparametric approach, and only by undertaking these  
will we be able to fully understand and characterise the HFpEF phenotype and begin to identify  
therapeutic targets.

## REFERENCES

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