Left ventricular diastolic function and exercise capacity in diabetes. Reply to Brassard P, Poirier P [letter]

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Abbreviation

LV Left ventricular

To the Editor: We thank Drs Brassard and Poirier for their valuable comments on our recent publication in *Diabetologia* [1, 2]. We found that female adolescent patients with type 1 and type 2 diabetes had an impaired stroke volume response to submaximal exercise and reduced maximal oxygen consumption compared with non-diabetic controls. We suggested that these impairments might be partially attributed to early cardiac impairments, which are observed in diabetic adults, including altered myocardial and left ventricular (LV) filling characteristics [3, 4].

Drs Brassard and Poirier noted that it would have been interesting if we had provided echocardiographic data from our participants. These data would help to characterise the

cardiac structure and function of our participants and therefore assist in the interpretation of our findings. We too are interested in knowing if diabetic adolescents have the same prevalence of diastolic dysfunction as has been shown in adults [5], and have subsequently obtained resting echocardiographic information from our participants. We are in the process of submitting these data for publication.

It is important to mention that data obtained at rest do not necessarily characterise the LV function of the participants during exercise. We have tried to collect echocardiographic images during submaximal exercise in our study groups without success and are currently investigating other methods, including high-resolution magnetic resonance imaging. This should provide clearer images at elevated heart rates.

Drs Brassard and Poirier correctly noted that the type 1 diabetic group had a longer duration of diabetes ($p<0.001$; 2.5 ± 1 years for type 1 diabetes vs 6.1 ± 3 years for type 2 diabetes [mean $\pm$ SE]) and suggested that the duration of diabetes may have influenced the severity of the abnormalities in our study participants. A mixed model statistical analysis failed to demonstrate that diabetes duration affected any of our outcomes, although it is possible that a mean difference of 3.6 years may not be sufficient to clarify an independent effect of diabetes duration.

In closing, we agree with Drs Brassard and Poirier that several issues need to be clarified regarding the influence of abnormal LV diastolic function on exercise capacity in young people with diabetes. We are currently extending our previous study by using magnetic resonance imaging technology to evaluate LV function at rest and during submaximal exercise response in both type 1 and type 2 diabetic adolescents [6–8]. We are also investigating the effect of exercise training on their cardiovascular function and structure.

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