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Letter to the editor

Response: Arrhythmias 72 hour post strenuous exercise at a time when cardiac troponin was not elevated

Daniel Wundersitz [a], Voltaire Nadurata [b], Carl Lavie [c], Jacqui Williamson [b], Kimberly Nolan [b], Michael Kingsley [a,*,1]

[a] Exercise Physiology, La Trobe Rural Health School, La Trobe University, Australia
[b] Cardiology Department, Bendigo Health, Australia
[c] Exercise Laboratories, John Ochsner Heart and Vascular Institute, Ochsner Clinical School, The University of Queensland School of Medicine, New Orleans, USA

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Dear Dr. Sanchis-Gomar,

Thank you for your comment on our paper [1] regarding the significance of measuring cardiac troponin (cTn) 72-hour after strenuous exercise.

We agree that cTn was likely to have been elevated during this multi-day ride (e.g., [2]), indicating disruption to the microscopic structure of cardiac muscle [3] and/or leakage of troponin through other mechanisms [4,5]. Cardio-healthy people display this response without irreversible myocardial impairment [5]. However, high sensitivity cTn concentrations were ≤4 ng/L at 72-hour post-exercise, demonstrating that post-exercise measures were taken when no evidence existed of very recent cardiac disturbance. We never suggested that cardiac damage had, or had not, occurred during the ride.

Our study was not designed to determine if exercise causes microscopic structural damage to cardiac muscle. Instead, we evaluated the influence of strenuous exercise on cardiovascular gross structure and function. Accordingly, we reported a 10-fold increase in arrhythmia rates for adults and older adults. The increase in arrhythmias occurred when gross cardiovascular structure and autonomic balance were similar to baseline values. Cardiac troponin concentrations, taken at the same time-point, confirm that any exercise-induced disruption to the microscopic structure of cardiac muscle had subsided at the time of the functional measurements.

In addition to the potential mechanisms described in our paper, it is possible that exercise-induced myocyte turnover influenced conduction pathways. However, we did not take measurements at multiple time-points to determine the time course of these outcome measures in response to challenging exercise. Further work is required to elucidate the mechanisms and significance of exercise-induced arrhythmias.

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Conflict of interest

The authors report no relationships that could be construed as a conflict of interest.

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* Corresponding author at: La Trobe Rural Health School, College of Science, Health and Engineering, La Trobe University, Flora Hill Campus, Bendigo, Victoria, Australia.
E-mail address: M.Kingsley@latrobe.edu.au (M. Kingsley).

[1] This author takes responsibility for all aspects of the reliability and freedom from bias of the data presented and their discussed interpretation.

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