

## Cardiac Medications Can Influence the Exercise Prescription in Chagas Heart Disease

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### Dear Editor,

The study by Nascimento et al.<sup>1</sup> provides information on the effects of physical training and the Heart Rate Variability (HRV) in patients with Chagasic heart disease. Changes in HRV were not observed after exercise intervention, but the intervention group showed improved functional capacity after 12 weeks of the study.

Changes in the autonomic nervous system are observed in Chagasic heart disease and although physical training can improve HRV in other forms of heart failure, evidence suggests it does not happen in Chagasic heart disease<sup>2</sup>, corroborating findings by Nascimento et al.<sup>1</sup>. However, in addition to the relatively few studies on the subject, which limits further conclusions, questions related to exercise prescription in the present study need to be better clarified.

Although the protocol was established through a previous publication of a randomized clinical trial on

the subject<sup>3</sup>, the lack of description on drug use by the study subjects such as beta blockers, which can have an effect on chronotropism, reducing the heart rate, might have altered the study outcome. Therefore, formulas that estimate the intensity of training, such as the one used in the aforementioned study, become limited in the presence of drugs with chronotropic interaction.

In addition, the non-use of the ergospirometry test when prescribing exercises may have impaired the actual establishment of training intensity. In this context, it is known that different intensities produce different adaptations in the system, which, in turn, may have influenced different autonomic adaptations after the intervention period.

These factors might have influenced the intervention in the clinical trial carried out by Nascimento et al.<sup>1</sup> and influenced the measured outcome. Thus, other studies are needed to further investigate these questions, with greater control of variables, in order to assess the autonomic adaptations, using better standardization of the prescription / monitoring of physical training in group of patients with Chagasic heart disease, so that we might have auspicious data.

### Keywords

Exercise; Chagas Cardiomyopathy; Heart Rate / drug effects.

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## Replay

We thank the authors for their comments and relevant questions they have raised on our article "Effects of Exercise Training on Heart Rate Variability in Chagas Heart Disease"<sup>1</sup> and would like to expand our discussion, clarifying some points raised by our esteemed colleagues.

Regarding the influence of drugs that have an effect on the chronotropic response when assessing heart rate variability (HRV) index, actually there are literature data demonstrating the effects of beta blockers<sup>2,3</sup> and amiodarone<sup>4,5</sup> on autonomic modulation, both in patients with heart failure and other medical conditions.

In general, the use of such drugs seems to promote index improvement in the time and frequency domains, but specific data on Chagasic heart disease are scarce. The rates of beta-blocker and amiodarone use are described in the Results section of the article: the first were prescribed to 22.2% and 21.1% ( $p = 1.00$ ) of patients in the Intervention (IG) and Control (CG) Groups, respectively, and the second to 77.8% and 84.2% ( $p = 0.62$ ). Therefore, even though they definitely constitute a confounding factor, their use at similar proportions by patients in the groups possibly balanced the effects in the final analysis. Additionally, due to ethical reasons, it would not be possible to discontinue drug use during the study period for relatively long periods, as these drugs are essential for the management of patients with left ventricular dysfunction.

The ideal training intensity was calculated using the Karvonen formula, as previously described. Similarly, it has also been shown that beta blockers affect the estimate of this intensity, which aims at a heart rate between the aerobic

and anaerobic thresholds<sup>6</sup>. In this context, certainly the use of the ergospirometry test would be ideal and could provide a more reliable estimate of the actual intensity of training, standardizing it in the patients. This is a study limitation, mentioned specifically in this section of the article.

On the other hand, it is proposed that, although the heart rate is not the ideal parameter for determining training intensity in patients with cardiovascular disease – as it is subject to multiple confounding factors – the correct standardization and systematization of training sessions, as performed in our supervised program, can improve the accuracy of available formulas<sup>7</sup>. Thus, the impact of not performing the functional test with gas analysis on the assessed outcome is minimized.

We thank the authors' for their comments, which certainly contributed to further discussion of our study and raised important points to be considered in further research about this subject, aiming to reach a more definitive conclusion about the seemingly peculiar effect of physical training on autonomic modulation in Chagasic heart disease.

Sincerely Yours,

Bruno Ramos Nascimento  
Marcia Maria Oliveira Lima  
Manoel Otávio da Costa Rocha  
Antonio Luiz Pinho Ribeiro.

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