



## ASSOCIATION BETWEEN INDIVIDUAL RESPONSES OF BLOOD PRESSURE AND FASTING GLYCEMIA IN HYPERTENSIVE WOMEN AFTER 12 WEEKS OF CONTINUOUS AEROBIC TRAINING

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### Abstract

The aim of this study was to analyze the association between changes in the fasting glycemic and changes in cardiovascular risk index in hypertensive women submitted to 12 weeks of continuous aerobic training (CAT). Methods: Thirty women ( $58.7 \pm 6.8$  years,  $160.8 \pm 6.8$  cm and  $79.5 \pm 16.6$  kg) controlled hypertensive patients (SBP  $133.10 \pm 15.55$  and DBP  $72.69 \pm 6.04$ ), physically inactive and menopausal subjects were submitted to 12 weeks of CAT with 50 minutes duration at 60% of the heart rate reserve (HRR). Blood venous samples were collected pre and post-training period for analysis of the individual responses. Association between individual responses of blood pressure and fasting glycemia were conducted by Simple Linear Regression Model ( $P < 0.05$ ). Results and discussion: post-training responses of the fasting glycemia were  $0.84 \pm 9.70$  mg/dL, SBP  $-1.58 \pm 11.34$  mmHg and DBP  $-0.44 \pm 7.07$  mmHg. Conclusion: subjects who obtained a reduction in fasting glycemia were not the same ones who obtained a reduction in SBP and DBP, thus evidencing a low relationship between SBP and DBP reduction with fasting blood glucose.

**Key words:** Hypertension, Metabolomics, Aerobic Training.

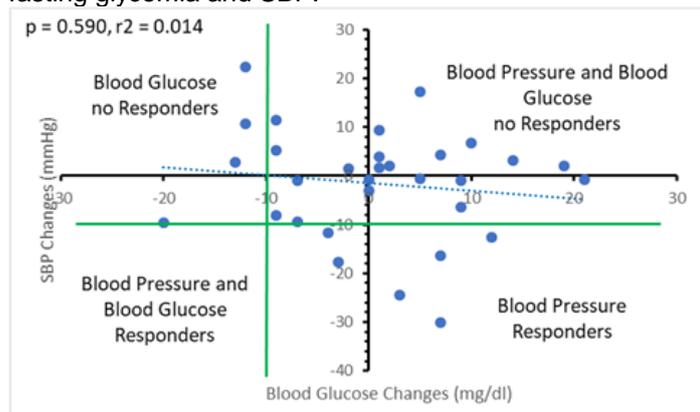
### Introduction

Elevated glycemic indexes are associated with elevated risks of cardiovascular complications as well as other risk factors, including obesity, insulin resistance, low level of physical activity and hypertension (HT)<sup>1,2</sup>. Thus, Continuous Aerobic Training (CAT) has been an effective method for the prevention and control of symptoms related to the severity of cardiovascular risks such as HT<sup>3</sup>. However, the responsiveness of markers related to metabolic disorders in response to regular training is largely heterogeneous, varying according to biological individuality<sup>4</sup>. The objective of this study was to analyze the association between individual responses of fasting glycemia and blood pressure in hypertensive women submitted to 12 weeks of CAT.

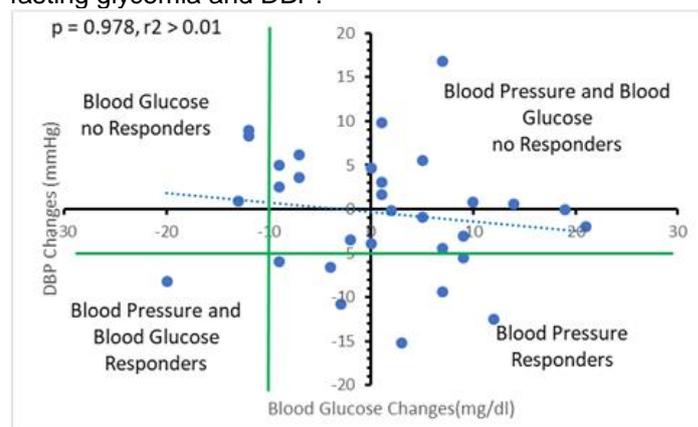
### Results and Discussion

Mean responses of fasting glycemia, Systolic Blood Pressure (SBP) and Diastolic Blood Pressure (DBP) were  $0.84 \pm 9.70$  mg/dL,  $1.58 \pm 11.34$  mmHg and  $-0.44 \pm 7.07$  mmHg, respectively. There was no significant association between individual responses of fasting glycemia and blood pressure after CAT (Figures 1 and 2). The threshold for individual responses was based on changes higher than 1x typical measurement error (fasting glucose = 10 mg/dL, SBP = 10 mmHg; DBP: 5 mmHg).

**Figure 1.** Association between individual responses of fasting glycemia and SBP.



**Figure 2.** Association between individual responses of fasting glycemia and DBP.



DBP = diastolic blood pressure; SBP = systolic blood pressure.

### Conclusions

Improvements in fasting glucose levels are not associated with a reduction in systolic and diastolic blood pressure after 12 weeks of Continuous Aerobic Training.

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<sup>1</sup>Murphy MH, Lahart I, Carlin, A, Murtagh E. The Effects of Continuous Compared to Accumulated Exercise on Health: A Meta-Analytic Review. Sports Medicine. 2019; 1-23.

<sup>2</sup>Chobanian AV., Bakris GL, Black HR, Cushman WC, Green LA, Izzo JL, et al. Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. Hypertension. 2003;42(6):1206-52.

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<sup>4</sup>Bouchard C, Blair SN, Church TS, Earnest CP, Hagberg JM, Häkkinen K, et al. Adverse metabolic response to regular exercise: Is it a rare or common occurrence? PLoS One. 2012;7(5).