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Letter to the editor

Is metabolic syndrome related to exercise cardiac autonomic modulation in obese adults?

Dear Editor,

We have read with great interest the article by Carvalho et al. (2018) which evaluated the heart rate variability (HRV) at rest and during exercise in obese adults with or without metabolic syndrome (MetS). According to the authors, the results provided evidence that MetS is negatively associated with overall HRV, parasympathetic activity and HRV complexity in obese adults. We would like to respectfully add some comments and contributions to this article.

Although many studies have shown an autonomic dysfunction at rest in obese subjects, little is known about the impact of obesity on cardiac autonomic responses to exercise (Eyre et al., 2014). El Agaty et al. (2016) have showed a delayed vagal reactivation after exercise in overweight female young adults. However, they were questioned by Lopes et al. (2017) for the use of inadequate methodological approach to investigate post-exercise cardiac autonomic recovery, as well as the lack of controlling the exercise intensity in the submaximal step test. Considering these biases, it is difficult to reach the conclusion if the differences observed on cardiac autonomic modulation were related to the presence of overweight or the greater exercise intensity achieved by the overweight group.

In addition, the study conducted by Carvalho et al. (2018) reported that not the presence of obesity but mainly MetS might induce a cardiac autonomic dysfunction at rest in obese adults. These results are in line with Robillard et al. (2011) that have found a more favorable HRV profile in metabolically healthy obese (MHO) postmenopausal women than women with metabolic risk. Therefore, the novelty of this study was that the presence of MetS in obese adults could explain differences in cardiac autonomic modulation during exercise. However, the clinical significance of the pattern observed in this population needs to be further investigated. Withal, it is important to verify whether metabolic changes induced by lifestyle changing interventions independent of weight loss could positively have an impact on cardiac autonomic modulation at rest and during exercise in obese individuals.

Unfortunately, the authors did not present any cardiac autonomic responses during exercise recovery that could bring valuable information of cardiac autonomic dynamics among obese individuals with and without MetS. Future studies should verify not only the response during exercise, but also in the recovery period, since it is considered an important indicator of the integrity of cardiac autonomic control (Michael et al., 2017; Peçanha et al., 2017).

Another point that the authors could have considered in the analysis or mentioned on the study limitations is the likely influence of gender on the autonomic cardiac control at rest and during exercise. Women seem to present greater parasympathetic activity than men in the resting condition. However, during exercise, women present a delay in the parasympathetic recovery after exercise (Mendonça et al., 2010). Although the authors have reported the number of men and women in each group, they were not adequately balanced. For this reason, it would be interesting to analyze parameters for rest and during exercise separately, by gender; to use the same number of men and women into the groups; or to control the comparisons of HRV parameters by gender.

In summary, in spite of the points mentioned above in the present letter, the reference study brings interesting contributions on the relationship between obesity and cardiac autonomic changes in adults, which seem to be more influenced by the presence of MetS than by obesity per se.

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