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Title: Impacts of exposure to environmental air pollution on heart rate variability in young athletes

Mr. Renato 3105 Paceli rpaceli@gmail.com [1], Mrs. Aretusa 3106 Cardoso Der Fortes aretusa@usp.br [1], Dr. Gustavo 3108 Faibischew Prado gustavoprado@ig.com.br MD [1], Mr. Matheus 3107 Sá mat_sa@msn.com [2], Dr. Mauro 17443 Vaisberg maurovaisberg@uol.com.br MD [2], Prof. Dr Mario 3109 Terra-Filho pnemario@incor.usp.br MD [1] and Dr. Ubiratan 3114 de Paula Santos pneubiratan@incor.usp.br MD [1]. [1] Pulmonary Division, Heart Institute (Incor) Do Hospital Das Clínicas Da Faculdade De Medicina Da Universidade De São Paulo, São Paulo, SP, Brazil, 05403-900 and [2] Department of Otorhinolaryngology Surgery and Head and Neck, Universidade Federal De São Paulo, São Paulo, SP, Brazil, 04021-001 .

Body: Introduction: Air pollution has been widely associated with morbidity and mortality by cardiopulmonary diseases. Heart Rate Variability (HRV), a marker of cardiovascular risk, has been employed in several studies to evaluate the effects of air pollution. Objectives: Evaluate HRV in young volunteers during rest and exercise in two different scenarios: in a park (1) and on a high traffic avenue (2). Methods: We evaluated 19 healthy male army soldiers at rest for 15 minutes and during running (4.7 miles) for 45 minutes. Recordings of R-R intervals were conducted with the Polar RS800 heart rate monitor. During the HRV data collection, we recorded the concentration of PM2.5 with a Dust-Track Monitor. The HRV analysis was done using Paired t-test or Wilcoxon Signed Rank Test. Results: The median concentrations PM2.5 in the circuit 1 and 2 were 23.50 (IQR: 8.0 – 39.0) and 62.0 (IQR: 37.50 – 103.3), respectively ($p<0.001$). Mean values of the indicators of HRV in both circuits are described in Table 1. We observed site-dependent differences in r-MSSD during running and in LF/HF in both phases. Conclusion: In this study it was not possible to identify cardiovascular impacts of acute exposure to air pollution during exercise in healthy young volunteers.