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Obesity and Cardiovascular Health Differences between Urban and Suburban Philadelphia High School Athletes

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Introduction: Limited data exist regarding hypertension and obesity levels of Philadelphia-area high school student-athletes. We aim to assess their prevalence in an urban population, investigate whether they are correlated with demographic factors, and determine whether urban student-athletes differ in these outcomes compared to their suburban/non-urban counterparts.

Methods: Demographic and physical data were extracted from Athlete Health Organization (AHO) 2018 pre-participation physical exams. Adiposity classifications were made from body mass index (BMI) calculations applied to appropriate Centers for Disease Control and Prevention (CDC) growth charts, while systolic/diastolic measurements were used to classify students' blood pressure according to current American Academy of Pediatrics (AAP) guidelines. Chi-squared and t-tests were performed with R version 3.6.1.

Results: 451 students were included, with 56.9% male, 59.9% black, and mean age 15.6 ± 1.3 years. Mean BMI was 25.3 ± 6.2 , and 22.2% were overweight with an additional 22.7% obese. 16.3% of students had measurements consistent with elevated blood pressure, and another 24.9% with class 1 hypertension and 4.7% with class 2 hypertension. Elevated blood pressure or hypertension was significantly more common in males versus females (51.0% versus 39.4%; $p=.033$), and mean BMI was significantly higher in black versus non-black students (26.1 ± 6.2 versus 23.7 ± 5.0 ; $p<.01$).

Conclusion: Blood pressure differences exist between male and female student-athletes in this Philadelphia high school population, as do differences in adiposity between students of differing race/ethnicity. Further investigation of these correlations is needed, while comparison between urban/non-urban students by geography and income is pending data from Simon's Heart and IRB approval.