Relationship Between Body Composition, Body Fat Distribution, and Blood Lipids Among Law Enforcement Officers: Part 1

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ABSTRACT

Law enforcement officers (LEOs) have a high-stress occupation which is prone to cardiovascular disease (CVD). In fact, data suggest that LEOs have a 1.7-fold higher CVD prevalence versus the general public, in addition to 40.5% of LEOs being classified as obese. However, research is lacking regarding the relationship between body composition, body fat distribution, and blood lipid panels as it pertains to CVD risk in LEOs. **PURPOSE**: To determine if body composition and fat distribution measures correlate with predictive lipid markers in LEOs. **METHODS**: Forty-three LEOs (age = 41.7±9.6 yrs; weight = 91.9±15.4 kg; height = 179.8±8.7 cm; VO_{2max}: 37.0±6.16 ml/kg/min) from a local police department were evaluated. Fasting blood samples were collected to assess biomarkers of CVD risk: low-density lipoprotein (LDL), high-density lipoprotein (HDL), total cholesterol (TC), and triglycerides (TG). Dual-energy x-ray absorptiometry was used to measure body composition and body fat distribution. Bivariate Pearson correlation matrix was used to determine correlations ($p<0.05$* and $p<0.01$**). To further assess the relationship between body composition, fat distribution measures, and blood lipids, ordinary least square (OLS) regression analyses were used. **RESULTS**: Lower body weight correlated with greater HDL concentrations (r=-0.432**). Higher fat mass correlated with greater TG concentrations (r=0.338*), while greater lean mass was inversely correlated with HDL concentrations (r=-0.496**). Android and gynoid adiposity were positively correlated with greater TG (r=0.359*) and HDL (r=0.320*) concentrations, respectively. Lastly, higher visceral adipose tissue was correlated with greater TG concentrations (r=0.430**). The OLS regression analysis revealed ($p<0.05$) 1) weight was inversely predictive of HDL, 2) Fat mass was positively predictive of TG, 3) lean mass was inversely predictive of HDL, 4) android adiposity was positively predictive of TG, 5) gynoid adiposity was positively predictive of HDL, and 6) visceral adipose tissue was positively predictive of TG. **CONCLUSION**: Measures of body composition seen in LEOs with increased body fat showed positive correlations with blood lipid markers (TG and HDL), which can be predictive of high CVD risk and other potential medical conditions. These data provide insight into the association of body composition and fat distribution with markers of CVD risk.