TACSM Abstract

Firefighters Versus Law Enforcement Officers: A Comparison Of Cardiovascular Disease Risk

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ABSTRACT

Firefighters (FF) and law enforcement officers (LEO) have heightened cardiovascular disease (CVD) risk due to the stressful nature of their occupations. Data suggest that 45% of on-duty FF fatalities are related to CVD, while LEO have a 1.7 times higher CVD prevalence compared to the general public. To our knowledge, studies comparing FF to LEO, in terms of CVD risk factors, have not been published. This information is necessary to better understand differences in occupational disease risk, as well as to help bridge the gap between stress and CVD markers. **PURPOSE**: To compare CVD risk biomarkers, fitness, and body composition between career FF and LEO. **METHODS**: Ninety-eight career, structural male FF (age = 35.1±9.6 yrs; weight = 94.3±15.4 kg; height = 178.4±13.2 cm) and seventy-three career male and female LEO (age = 41.4±9.0 yrs; weight = 92.3±16.8 kg; height = 179.6±8.1 cm) from local fire and police departments were studied. Participants completed a maximal cardiopulmonary exercise test (CPXT), where VO2max was estimated from the Foster equation. Fasted blood samples were collected to assess biomarkers of CVD risk: advanced oxidation protein products (AOPP) and cortisol. Dual-energy X-ray absorptiometry was used to assess body composition and waist and hip measures were taken. Shapiro-Wilk Test was used to assess normality. Independent sample T-tests or non-parametric Mann-Whitney U tests (if normality was violated) were used to assess differences in CVD risk biomarkers, fitness, and body composition between the FF and LEO. Effect sizes were calculated as Cohen's d (i.e., small [0.2-0.5], medium [0.5-0.8], large [>0.8]). **RESULTS**: Firefighters had higher ($p<0.05$) CPXT exercise times (FF: 10.9±1.6 min; LEO: 10.3±2.0 min; d=0.366) compared to LEO. While not statistically significant ($p=0.64$), FF had higher VO2max values (FF: 38.2±6.6 ml/kg/min; LEO: 36.2±6.2 ml/kg/min; d=0.306). Firefighters also had higher ($p<0.05$) AOPP (FF: 134.8±90.1 µM; LEO: 106.8±67.6 µM; d=0.342), blood cortisol (FF: 14.2±5.0 µg/dL; LEO: 12.5±5.6 µg/dL; d=0.325), and waist-to-hip ratios (FF: 0.95±0.06; LEO: 0.89±0.08; d=0.792). **CONCLUSION**: These findings suggest that while FF demonstrated greater CPXT time-to-exhaustion they also expressed greater levels of stress and risk for CVD compared to LEO.