

Relationship Between Body Fat Distribution and Cardiovascular Disease Risk Biomarkers Among Firefighters

MACILYNN E. COLES¹, M. HUNTER MARTAINDALE², STEVEN E. MARTIN¹, LISA, C. COLVIN¹, DREW E. GONZALEZ¹, & MATTHEW J. MCALLISTER³

¹Tactical Athlete Research Unit, Department of Kinesiology and Sports Management, Texas A&M University, College Station, TX

²ALERRT Center, Texas State University, TX

³Metabolic and Applied Physiology Laboratory; Department of Health and Human Performance, Texas State University, San Marcos, TX

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Advisor / Mentor: McAllister, Matthew J. (mjm445@txstate.edu)

ABSTRACT

Firefighters are at risk of premature mortality due to cardiovascular disease (CVD). Firefighting is linked to elevations in oxidative stress, inflammation, and stress biomarkers, which all play a role in the development and progression of CVD. High prevalence rates of overweight and obesity have been found among U.S. firefighters. Obesity is considered a CVD risk factor, and firefighters who are classified as overweight or obese have been shown to express lower levels of high-density lipoprotein cholesterol (HDL-C) and higher levels of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG), and biomarkers of oxidative stress and inflammation. However, little is known regarding the relationships between fat mass distribution and CVD biomarkers among firefighters. This information can aid the understanding of CVD risk factors among firefighters. **PURPOSE:** This study examined the relationship between body composition measures and traditional and non-traditional CVD biomarkers among firefighters. **METHODS:** Ninety-eight career, structural male firefighters (age = 35.1±9.6 yrs; weight = 94.3±15.4 kg; height = 178.4±13.2 cm) from a local fire department were studied. Body composition (i.e., body fat percentage, BF%) was assessed via dual x-ray absorptiometry. Fasted blood samples were analyzed for concentrations of lipids, advanced oxidation protein products (AOPP), and ultra-sensitive C-reactive protein (CRP). Ordinary least square regression analyses were used to assess the relationship between body composition and blood biomarkers. **RESULTS:** Gynoid fat percentage was inversely predictive ($p<0.05$) of AOPP, TC, LDL-C, and TG, as well as positively related ($p<0.05$) to HDL-C, while android fat percentage was positively predictive ($p<0.05$) of AOPP, CRP, and TG, as well as inversely related ($p<0.05$) to HDL-C. Increased BF% was positively predictive ($p<0.05$) of CRP, TC, and LDL-C. **CONCLUSION:** These findings provide insight into the relationship between body composition and various biomarkers of CVD risk, and may aid future interventions aimed at attenuating CVD risk among firefighters.