Clinical Study
The Prevalence of Cardiovascular Disease Risk Factors and Obesity in Firefighters

Denise L. Smith, Patricia C. Fehling, Adam Frisch, Jeannie M. Haller, Molly Winke, and Michael W. Dailey

First Responder Health and Safety Laboratory, Health and Exercise Sciences Department, Skidmore College, Saratoga Springs, NY 12866, USA
Department of Emergency Medicine, University of Pittsburgh, Pittsburgh, PA 15260, USA
Department of Emergency Medicine, Albany Medical College, Albany, NY 12208, USA
Department of Exercise Science, East Stroudsburg University, East Stroudsburg, PA 18301, USA

Correspondence should be addressed to Denise L. Smith, dsmith@skidmore.edu

Received 27 January 2012; Revised 22 May 2012; Accepted 30 May 2012

Obesity is associated with increased risk of cardiovascular disease (CVD) mortality. CVD is the leading cause of duty-related death among firefighters, and the prevalence of obesity is a growing concern in the Fire Service.

Methods
Traditional CVD risk factors, novel measures of cardiovascular health and a measurement of CVD were described and compared between nonobese and obese career firefighters who volunteered to participate in this cross-sectional study.

Results
In the group of 116 men (mean age 43 ± 8 yrs), the prevalence of obesity was 51.7%. There were no differences among traditional CVD risk factors or the coronary artery calcium (CAC) score (criterion measure) between obese and nonobese men. However, significant differences in novel markers, including CRP, subendocardial viability ratio, and the ejection duration index, were detected.

Conclusions
No differences in the prevalence of traditional CVD risk factors between obese and nonobese men were found. Additionally, CAC was similar between groups. However, there were differences in several novel risk factors, which warrant further investigation. Improved CVD risk identification among firefighters has important implications for both individual health and public safety.

1. Introduction

Sudden cardiac events account for approximately 45% of firefighter duty-related deaths in the US each year [1]. This is the highest occupational cardiovascular disease (CVD) proportionate mortality of any occupational group [2]. The reasons for this have been shown to be multifactorial, but early detection and treatment may be lifesaving. Obesity is one factor associated with significantly increased CVD mortality [3]. By the nature of their job, firefighters are called upon to engage in extremely strenuous activity in times of emergency. However, these periods of strenuous activity are relatively infrequent and may be interspersed among long periods of relative inactivity, which are known to contribute to obesity. Among this unique occupational group, whose members risk their lives for the sake of others, obesity has an impact beyond what is recognized in the general population. Obesity and CVD influence individual health and fitness for duty, which are critical for a firefighter’s own well-being, the safety of their fellow firefighters, and public safety.

Firefighting requires high metabolic work output and muscular strength [4–7] and results in considerable cardiovascular and thermal strain [8–10]. Furthermore, firefighting is an occupation where a high level of fitness is recognized as necessary to safely perform required job activities [11]. However, there is growing evidence that firefighters may not be as fit as they should be to perform these duties, as decreased exercise and work capacity are associated with obesity [12, 13]. Several studies have found the prevalence of overweight and obesity among career firefighters to be...