

41. SWACSM Abstract

Body Composition and Fitness Characteristics from Structural Firefighters in a Health and Wellness Program: Differences According to Injury Status and Location

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ABSTRACT

Structural firefighting can put firefighters at an elevated risk for injury. Numerous health and fitness characteristics (body composition, flexibility, muscular strength and endurance, aerobic capacity) can influence the performance of fireground operations, and could help prevent injury in firefighters. **PURPOSE:** To analyze the differences in health and fitness between healthy firefighters, and firefighters who reported a current upper-body, lower-body, or back injury. **METHODS:** Archival data from structural firefighters in a health and wellness program was investigated (258 males; 12 females). Body composition data included height; body mass; body mass index (BMI); body fat percentage; fat and lean body mass; waist circumference; and waist:hip ratio. Fitness data included flexibility; grip strength; predicted one-repetition maximum (1RM) leg press; crunches; push-ups; and estimated maximal aerobic capacity ($\dot{V}O_{2max}$). Firefighters self-reported whether they had a current injury, and the location of the current injury (upper-body [UBI], lower-body [LBI], or back [BI]). A one-way ANOVA ($p < 0.05$), with Bonferroni post hoc, compared the between-group differences as defined by injury status and location on body composition and fitness. **RESULTS:** Of the 270 firefighters, 208 were healthy and 62 had a current injury (UBI: 19; LBI: 26; BI: 17). When compared to healthy firefighters, UBI firefighters performed worse in the predicted 1RM leg press and push-ups ($p \leq 0.041$). Compared to healthy firefighters, LBI firefighters had worse BMI and waist circumferences ($p \leq 0.004$), and had lesser 1RM leg press, crunches, and $\dot{V}O_{2max}$ ($p \leq 0.012$). In comparison to healthy firefighters, BI firefighters performed worse in trunk extension (flexibility), 1RM leg press, crunches, and push-ups ($p \leq 0.002$). **CONCLUSIONS:** Body composition and fitness of structural firefighters may influence injury status and location. Although poorer performance in the fitness tests could be the result of the current injury, these data highlight certain fitness qualities that could be developed to prevent injuries in structural firefighters. By participating in a regimented exercise and nutrition routine (e.g. a health and wellness program), firefighters could improve overall health and fitness while minimizing their risk for injury.