A COMPARISON OF HEALTH, FITNESS AND LIFESTYLE BEHAVIORS BETWEEN SWAT OFFICERS AND PROFESSIONAL FIREFIGHTERS

Joseph Hahn[1], Anne Akagi[2], Michael Toczko[1], Marcie Fyock-Martin[1], Megan Sax van der Weyden[1], Joel Martin[1]
1. George Mason University, Sports Medicine Assessment Research & Testing (SMART) Lab
2. Kinesiology Department, Charleston Southern University, South Carolina, USA

Introduction

Law enforcement and firefighting personnel, referred to as emergency responders (ER), engage in physical job tasks that require high fitness levels in order to perform both safely and proficiently. The frequent incidence of cardiovascular disease, metabolic syndrome, and musculoskeletal injuries are well documented across all ERs and a leading cause of time lost on duty. Following entry into professional employment, fitness standards are not always consistently evaluated and may vary between sub-populations of ERs, such as SWAT officers (SO) and firefighters (FF). Additionally, differences in schedules and specific job requirements may present barriers to living a healthy lifestyle.

Purpose

The purpose of this study was to compare the health, fitness, and lifestyle behaviors between SWAT officers and firefighters in neighboring US counties.

Methods

- Data was analyzed from two unique populations of ER who completed similar testing protocols in a laboratory setting.
- The first ER population included 14 professional SO (13 male, 1 female, age: 42.9±6.0 yrs, height: 179.3±7.9 cm, mass: 90.8±13.3 kg, years of service: 18.5±5.4 yrs).
- The second ER population comprised 17 professional FF (12 male, 5 female, age: 35.9±8.7 yrs, height: 178.9±7.7, mass: 110.6± 27.4 kgs, years of service: 13.7±7.5).
- Self-reported measures collected from all participants included physical activity (IPAQ-short form), sleep quality (PSQI), and dietary behaviors (REAP-S).
- Fitness measures collected included body composition (BodPod), sit and reach, vertical jump, maximum pull-ups, maximum push-ups, and maximal plank hold.
- Descriptive statistics were computed as means and standard deviations.
- Independent t-tests and Mann-Whitney U tests were used to determine group differences and Cohen's D for effect size.

Results

Variable	SWAT	Firefighters	P-value	Effect Size
Age (years)	42.86 (6.04)	35.88 (8.71)	**0.017**	Large
Years of Service	18.54 (5.43)	13.74 (7.53)	0.055	Medium
Height	179.26 (7.9)	178.89 (7.7)	0.898	Trivial
Mass (kg)	90.78 (13.25)	110.6 (27.4)	**0.015**	Large
BMI (kg/m2)	28.1 (2.51)	34.18 (6.72)	0.002	Large
BF(%)	21.12 (5.16)	36.01 (7.04)	**<0.001**	Large
FFM (kg)	71.58 (11.1)	66.67 (13.52)	0.285	Small
FM (kg)	19.22 (5.59)	40.77 (15.36)	**<0.001**	Large
WSR (cm)	25.82 (5.52)	26.62 (7.72)	0.741	Trivial
CMJ (cm)	22.43 (3.66)	16.68 (3.7)	**<0.001**	Large
Push-ups	43.64 (8.23)	17.35 (9.35)	**<0.001**	Large
Plank Hold (s)	108.98 (31.13)	61.81 (20.64)	**<0.001**	Large
Sleep Quality (PSQI)	4.29 (1.2)	6.59 (3.84)	0.130	Small
Diet (REAP-S)	29.57 (3.01)	26.47 (5.36)	0.053	Medium
VPA (min/week)	276.07 (161.87)	107.94 (138.93)	**0.006**	Medium
MVPA (min/week)	736.07 (571.28)	422.06 (406.17)	**0.035**	Medium
Sitting Time (min/week)	715.17 (518)	1067.65 (695.12)	0.144	Small

Notes: Bold p-values indicate significance. Values are Mean(Standard Deviation); Effect sizes are interpreted as trivial (d<0.2), small (d=0.2, medium (d=0.5), and large (d=0.8). Abbreviations: BMI, body mass index; BF, body fat; FFM, fat-free mass; FM, fat mass; WSR, wall-sit and reach; CMJ, countermovement jump; PSQI, Pittsburgh Sleep Quality Index; REAPS, Rapid Eating Assessment for Participants Short Version; VPA, vigorous physical activity; MPA, moderate physical activity, MVPA, moderate to vigorous physical activity.

Conclusion

The results suggest that while both groups have physically demanding jobs, not all ER hold themselves to the same physical standards. While the SO were significantly older, their health and fitness measurements and behaviors put them at a significantly lower risk for chronic diseases and musculoskeletal injuries. A limitation of the study was that the sampling approach of the firefighters may not have accurately represented the entire department. The entire SO team was assessed, whereas some of the FF participated on a voluntary basis or recommended to undergo our fitness testing.

Practical Applications

Fitness and healthy lifestyle behaviors are vital for keeping ER proficient at their jobs. The SO have two hours at the beginning of every shift for physical training. The FF have time during their shifts for exercise, but it may be interrupted if a call comes in. Thus, providing time on shift for uninterrupted exercise may be beneficial to the health and wellness of all sub-populations of ER.