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Comparison of health-related fitness and modifiable lifestyle behaviors between SWAT officers and professional firefighters: An exploratory study

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Abstract

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Keywords

wellness programs; emergency responders; exercise; physical activity; diet; sleep, men's health

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Comparison of Health-related Fitness and Modifiable Lifestyle Behaviors between SWAT Officers and Professional Firefighters: An Exploratory Study

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Keywords: wellness programs; emergency responders; exercise; physical activity; diet; sleep.

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Introduction

Emergency response occupations, such as law enforcement and firefighting, require high-intensity physical activity (PA) to be performed while wearing heavy equipment and protective gear (Pryor et al., 2012; Storer et al., 2014). Despite the physically demanding nature of their work, emergency responders often face challenges to living a healthy lifestyle (Boivin & Boudreau, 2014). Emergency responders experience high injury rates (Lyons et al., 2017; Orr et al., 2019) and are at an increased risk for chronic diseases such as cancer, cardiovascular disease, obesity, hypertension, and diabetes (Romero & Alvar, 2021). Living a healthy lifestyle, characterized by engaging in regular PA (Singh et al., 2020), consuming a healthy diet (Roberts & Barnard, 2005) and obtaining recommended amounts of sleep (Barnes & Drake, 2015), has been shown to reduce the risk of many health issues commonly experienced by emergency responders. Shift schedules and the unpredictable nature of work present a challenge for emergency responders to exercise, eat healthy (Bonnell et al., 2017)

and obtain needed sleep (Boivin & Boudreau, 2014). Furthermore, sleep deprivation has been found to have strong associations with obesity (Cooper et al., 2018), and daytime fatigue, which may contribute to lack of PA among emergency responders.

To address the health issues of emergency responders, public safety departments often implement health and wellness programs aimed at promoting fitness and healthy lifestyle behaviors (Romero & Alvar, 2021). Given that many public safety departments oversee both law enforcement and fire departments, there has been a trend towards shared health and wellness programs. A potential drawback of shared health and wellness programs may be that a 'one-size fits all' approach is utilized by all emergency responders in the department, which fails to account for differences among the distinct types of emergency responders in a large public safety department. For example, a health and wellness program in a large public safety department may serve unique groups of emergency responders, such as paramedics, firefighters, and law enforcement officers. Many large urban public safety departments also have a highly specialized group, known as special weapons and tactics (SWAT) officers. Due to the high-stress nature of the work, both firefighters and SWAT officers respond to calls that involve high-hazard risks. For SWAT officers, calls often include hostage situations, high-risk arrests, and storming or breaching structures (Williams & Westall, 2003). In contrast, firefighter emergency responses typically involve fire rescues, car accidents, medical emergencies, hazardous materials or gases, and technical rescues, with a majority of the calls being medical emergencies (NFPA Statistics - Fire Department Calls, n.d.). Additionally, an important disparity between the roles of SWAT officers and firefighters lies in the call volume (NFPA Statistics - Fire Department Calls, n.d.); SWAT officers experience a lower frequency of calls, yet these calls often involve more intense and high-stakes situations (National Special Weapons and Tactics (SWAT) Study, n.d.). Another noteworthy distinction is that law enforcement officers, including SWAT officers, commonly adhere to 12-hour shift schedules, whereas most fire departments adopt shifts lasting 24 hours. Thus, the health and wellness needs, as well as barriers, of these unique emergency responder populations potentially vary substantially.

The primary goal of this pilot study was to compare healthy lifestyle behaviors of SWAT officers to firefighters. We hypothesized that SWAT officers would have higher levels of fitness, consume healthier diets, and obtain more sleep than firefighters due to the different demands of their occupations. Several prior studies have reported descriptive health measures from emergency responder health and wellness programs yet have focused on a distinct group of emergency responders rather than comparing measures between groups (Lockie, Dulla, et al., 2022; Lockie, Orr, et al., 2022). Understanding differences in health behaviors is vital for practitioners to deliver effective wellness programs, often with limited resources. The findings could be informative to guide future intervention studies that can enhance the efficacy of health and wellness programs among emergency responders (MacMillan et al., 2021).

Methods

Participants

This study included data from 14 SWAT officers (13 men) and 17 professional firefighters (12 men). Participants volunteered to be included in the study and their employment had no formal requirement to participate. Participants met the following

criteria: (1) current employees or recruits as emergency responders in Northern Virginia; (2) no history of surgery within the last 3 months; (3) able to run and perform pull-ups and push-ups pain-free; (4) have no history of cardiovascular, pulmonary, renal, or metabolic disease; and (5) participate in daily PA for an average of 30 minutes per day. The SWAT officers were employed full-time by a county located in the suburbs of a large metropolitan area. The firefighters were also full-time, and all worked in a neighboring county having similar demographics. SWAT participants were recruited by word-of-mouth via peers who had previously completed fitness testing in the human performance laboratory. The firefighters were recruited by an email sent to the entire department, comprising over seven hundred firefighters. All the SWAT participants performed the testing during January 2022 whereas the firefighters were testing between June and August 2022.

Procedures

We used a cross-sectional design with a single testing session. Test order and procedures were the same for all participants. We asked participants to avoid strenuous exercise up to 48 hours before testing, obtain seven to nine hours of sleep the night prior to testing and avoid food or fluid intake other than water for two hours before testing. All of the assessments occurred between 10 am and 4 pm. Due to logistical constraints of scheduling around the emergency responder work schedules, not all of the testing was able to be completed at the same time of day; however, our research team avoided conducting tests early in the morning or late in the evening to avoid inducing 'time of day' testing effects (Teo et al., 2011). Informed consent and questionnaires were completed upon participants' arrival to the testing facility. Next, we recorded anthropometric measurements and participants completed movement and fitness assessments in a fixed order. The National Strength and Conditioning Association Certified Strength and Conditioning Specialists (CSCS) supervised all test sessions.

We used the Rapid Eating Assessment for Participants Short Version (REAP-S) to assess dietary habits (Gans et al., 2006a). This 16-item questionnaire consists of two parts: 13 items addressing frequency of food choices and 3 items addressing the will to change dietary behaviors. Greater total scores for the first 13 items indicated healthier diets. The REAP-S has demonstrated acceptable test-retest reliability ($r = 0.86$) (Gans et al., 2006a) and validity (Segal-Isaacson et al., 2004). We used the Pittsburgh Sleep Quality Index (PSQI) to assess sleep quality based on self-reports (Buysse et al., 1989). The PSQI is a questionnaire comprised of 19 items encompassing seven components – subjective sleep, sleep latency, sleep duration, sleep efficiency, sleep disturbance, use of sleep medication, and daytime dysfunction. We then calculated an overall PSQI global score using the sum of component scores. Individuals were categorized as 'good' or 'bad' sleepers (PSQI global sores >5 indicated bad sleep). The PSQI survey has demonstrated acceptable test-retest reliability and validity in a variety of populations (Mollayeva et al., 2016). Participants were asked to self-report PA on the International Physical Activity Questionnaire-Short Form (IPAQ-SF). The IPAQ-SF evaluates the frequency (exercise sessions per week), duration (minutes per session), intensity (light, moderate, vigorous) of PA and time spent seated (hours and minutes) over the previous seven-day period (Craig et al., 2003). The IPAQ-SF has demonstrated acceptable test-retest reliability (Flora et al., 2023; Sanda et al., 2017) and support for predictive validity of PA intensity levels (Lee et al., 2011).

A stadiometer (Detecto, Webb City, MO) and digital scale (BOD POD; Cosmed, CA, USA) were used to record height and mass to the nearest 0.01 cm and 0.01 kg, respectively. Body mass index (BMI) was computed using the height and mass as BMI = mass in kg/(height in m)^2. Following standardized procedures set forth by the manufacturer, air displacement plethysmography (BOD POD model 2000A; BOD POD, Cosmed, CA, USA) was used to measure percent body fat (BF%), fat mass (FM), and fat-free mass (FFM). During the BOD POD, test participants wore a spandex undergarment, and a swim cap. Flexibility of the hamstrings was assessed using the wall-sit and reach. Dynamic postural stability was assessed with the Y-balance test device (Functional Movement Systems, Virginia, USA). Absolute differences in reach distances between the right and left legs were computed to determine anterior reach asymmetry. Next, participants completed three repetitions of an overhead squat and the shoulder mobility assessment following the Functional Movement Screen™ (FMS) protocol (Cook, 2010). This was performed with each arm as the overhead arm and the absolute asymmetry computed from the individual arm scores. Instead of using the FMS scoring (e.g., score of 3, 2, 1 or 0) the distance between participants' first metacarpophalangeal joint of each hand was measured in cm. This was performed with each arm as the overhead arm and the absolute asymmetry computed from the individual arm scores.

Lower body power was assessed using the countermovement jump. Immediately after the conclusion of the dynamic warm-up, participants performed the countermovement jump assessment. Each participant received the same instruction to use the countermovement technique and jump as high as possible on each attempt after two warm up jumps at 50% and 75% effort. Participants all performed three attempts of the countermovement jump, with 30 seconds of rest between attempts, and researchers recorded the greatest jump height in cm. A timing mat (Just Jump, Perform Better, RI, USA) was used to complete the countermovement jump. Upper body pushing endurance was assessed by performing push-ups to failure. The push-up assessment was conducted in accordance with a previously published protocol (Merrigan et al., 2020). A prone forearm plank hold for maximum time was used to assess core muscular endurance. Each participant was required to perform the plank hold in the same position – forearms on the ground, elbows at 90 degrees and contacting the ground directly below the shoulders. The hands were not allowed to touch during the plank hold attempt. The participants were required to maintain a straight line through their head, shoulders, hips, knees, and ankles for the duration of the test. The timer was paused when participants showed fatigue or form deterioration, and participants were not told the test duration. Each participant received one warning for form deviation.

Data Analysis

We used the Shapiro-Wilk test to assess normality, and results were visualized with Q-Q plots. This revealed that fitness variables were normally distributed. However, none of the PA (vigorous, moderate, light, sitting time) or PSQI global scores followed a normal distribution. Group differences between SWAT and firefighters within the fitness and lifestyle variables were assessed with independent t-tests and Mann-Whitney U tests for variables that were normally and non-normally distributed, respectively. Cohen's *d* and the Glass rank biserial coefficient (rg) were used to compute effect size for the normally and non-normally

distributed variables, respectively (Lakens, 2013). We used the chi-square test of independence for FMS overhead squat assessment due to the scores being categorical. All analyses were completed using the R Environment (R Foundation for Statistical Computing, Vienna, Austria).

Results

Table 1 shows the participants' characteristics. Firefighters had greater body mass ($t(29) = -2.631$, $p = .015$), BMI ($t(29) = -3.451$, $p = .002$), BF% ($t(29) = -6.581$, $p < .001$), and FM ($t(29) = -5.369$, $p < .001$) than the SWAT participants. However, both groups of participants were similar in height ($t(29) = 0.129$, $p = .898$) and FFM ($t(29) = 1.089$, $p = .285$). The SWAT officers were found to be older than the firefighters ($t(29) = 2.534$, $p = .017$).

Movement and Fitness Measures

The two groups exhibited similar levels of flexibility and mobility as assessed by the wall-sit and reach ($t(29) = -0.334$, $p = .741$), Y-balance test ($t(29) = -0.812$, $p = .424$), FMS overhead squat ($t(29) = 0.591$, $p = .559$) and shoulder mobility asymmetry ($t(29) = -0.887$, $p = .382$). In terms of fitness measures collected on both groups, the SWAT officers demonstrated significantly higher scores in the vertical jump ($t(29) = 4.326$, $p \leq .001$), push-ups ($t(29) = 8.163$, $p \leq .001$) and plank hold ($t(29) = 5.052$, $p \leq .001$), with large effects observed in all cases.

Lifestyle Behavior Measures

There was no difference between the groups regarding sleep quality or dietary behaviors based on the PSQI global ($W = 81$, $p = .130$, $rg = -0.319$) and REAP-S total scores ($t(29) = 2.028$, $p = .053$), respectively. We found several differences between measures of PA between the two groups of emergency responders. The SWAT group had more reported minutes of vigorous PA ($W = 189$, $p = .006$, $rg = 0.588$) and moderate-to-vigorous PA ($W = 172.5$, $p = .035$, $rg = 0.45$). Although the results did not reach statistical significance, a small-to-moderate effect size was observed between light PA and sitting time with firefighters reporting more of each than SWAT officers. The Cronbach's alphas for the PSQI and REAP-S for our study were 0.722 and 0.671, respectively.

Discussion

In this study, we aimed to compare healthy lifestyle behaviors of SWAT officers to firefighters and found several differences. The findings partially support our hypotheses that SWAT officers exhibit higher levels of fitness and maintain healthier lifestyles than firefighters. An interesting finding was that firefighters displayed poorer body composition than SWAT officers, which is a known risk factor for many chronic diseases (Stamatakis et al., 2019) and concern among firefighters (Kaipust et al., 2019; Storer et al., 2014). Our study revealed statistically significant differences in PA levels between firefighters and SWAT officers, with no significant differences found in diet or sleep habits, which contradicted the hypotheses. However, mean values tended to be poorer for firefighters in all lifestyle behavior accounts (Table 1) and likely contributed to other differences (e.g., body composition, fitness) between the two emergency responder populations.

A second interesting finding was that despite having lower levels of fitness, the firefighters were not found to have any differences in movement capabilities. The average age difference of nearly seven years between the emergency responder

Table 1

Mean and standard deviation of SWAT and Firefighter demographic, anthropometric, movement, fitness, and lifestyle behavior measures

	Total	SWAT	Firefighters	p-value	Effect Size
Demographic and Anthropometric Measures					
Age (years)	39.03 (8.28)	42.86 (6.04)	35.88 (8.71)	.017	0.93
Years of Service	15.90 (6.99)	18.54 (5.43)	13.74 (7.53)	.055	0.73
Height (cm)	179.06 (7.66)	179.26 (7.90)	178.89 (7.70)	.898	0.05
Mass (kg)	101.65 (24.02)	90.78 (13.25)	110.6 (27.40)	.015	0.92
BMI (kg/m^2)	31.43 (6.02)	28.1 (2.51)	34.18 (6.72)	.002	1.20
BF (%)	29.29 (9.73)	21.12 (5.16)	36.01 (7.04)	< .001	2.46
FFM (kg)	68.89 (12.53)	71.58 (11.10)	66.67 (13.52)	.285	0.40
FM (kg)	31.04 (16.07)	19.22 (5.59)	40.77 (15.36)	< .001	1.86
Movement and Fitness Measures					
WSR (cm)	26.56 (6.72)	25.82 (5.52)	26.62 (7.72)	.741	-0.12
YBA (cm)	3.42 (2.51)	3.04 (1.62)	3.74 (3.07)	.424	-0.29
OHS (FMS score)	1.71 (0.64)	1.79 (0.70)	1.65 (0.61)	.311	0.21
SMA (cm)	5.02 (2.93)	4.5 (2.65)	5.44 (3.15)	.382	0.32
CMJ (cm)	19.28 (4.64)	22.43 (3.66)	16.68 (3.70)	< .001	1.56
Push-ups	29.23 (15.93)	43.64 (8.23)	17.35 (9.45)	< .001	2.97
Plank Hold (s)	83.11 (34.88)	108.98 (31.13)	61.81 (20.64)	< .001	1.79
Physical Activity, Diet, and Sleep					
PSQI Global Score	5.55 (3.14)	4.29 (1.20)	6.59 (3.84)	.130	0.32
REAPS Score	27.87 (4.66)	29.57 (3.01)	26.47 (5.36)	.053	0.71
VPA (min/week)	183.87 (169.95)	276.07 (161.87)	107.94 (138.93)	.006	0.59
MPA (min/week)	190 (196.16)	230 (227.70)	157.06 (165.75)	.300	0.22
LPA (min/week)	294.51 (431.24)	180 (378.19)	388.82 (459.95)	.133	0.32
Sitting (min/week)	908.71 (636.92)	715.71 (518.00)	1067.65 (695.12)	.144	0.31
MVPA (min/week)	563.87 (457.68)	736.07 (571.28)	422.06 (406.17)	.035	0.45

Note.

Values are presented as means (standard deviations). Cohen's *d* effect sizes were computed as SWAT minus firefighters.

Abbreviations: SWAT, special weapons and tactics; BMI, body mass index; BF, body fat; FFM, fat-free mass; FM, fat mass; WSR, wall-sit and reach; YBA, Y-balance anterior asymmetry; OHS, overhead squat; FMS, Functional Movement Screen; SMA, Shoulder Mobility Asymmetry; 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; MVPA, moderate to vigorous physical activity; s, seconds.

populations is noteworthy when interpreting these results. as generally, mobility and fitness decline with age (Holloszy, 2000). Thus, despite being older, the SWAT officers were fitter and equally as mobile. We believe that this may be due to the positive effects of body composition (Nicolozakes et al., 2018) and structured exercise (Jafari et al., 2020; Stanek et al., 2017) on movement capability. Specifically, the higher levels of vigorous PA (e.g., structured exercise) and better body composition offset the effect of age on movement ability in the SWAT officers compared to firefighters. The findings on fitness and movement ability have implications for the well-documented issue of musculoskeletal injuries among emergency responders. Higher fitness levels are associated with reduced injury risks in this population (de la Motte et al., 2017), and enhanced fitness and movement ability are crucial for an emergency responder's job requirements (Fyock-Martin et al., 2020).

Previous research has reported on the fitness levels of SWAT officers (Pryor et al., 2012) and firefighters (Chizewski et al., 2021; Fyock-Martin et al., 2020; Poston et al., 2011; Ras et al., 2023; Rhea et al., 2004; Storer et al., 2014). Pryor et al. reported that SWAT officers (n = 11) performed well in terms of muscular strength; however, body composition and flexibility ranked lower (Pryor et al., 2012). Fitness levels of firefighters reported in the previous literature are mixed (Chizewski et al., 2021; Fyock-Martin et al., 2020; Poston et al., 2011; Ras et al., 2023; Rhea et al., 2004; Storer et al., 2014), notably with some studies reporting fitness levels indicative of high levels of fitness (Rhea et al., 2004) whereas other studies have reported lower levels of fitness (Storer et al., 2014). A challenge interpreting the current literature on firefighter fitness levels is that many studies include firefighters participating on a voluntary basis, which often leads to samples of fitter firefighters (Elsner & Kolkhorst, 2008), not necessarily representative of the entire department. There is a 'healthy worker effect' where healthier individuals are more likely to participate in activities (e.g., research studies, health promotion programs) aimed at improving health and wellbeing (Chowdhury et al., 2017; Lockie, Dulla, et al., 2022). Lifestyle behaviors of SWAT officers are scarce in the existing literature. However, law enforcement officers are found to have poor sleep (Garbarino et al., 2019), diet (MacKenzie-Shalders et al., 2022) and PA (Dicks et al., 2023). In terms of lifestyle behaviors there is substantial evidence that firefighters also have undesirable sleep quality (Frost et al., 2021), dietary behaviors (Joe et al., 2022) and physical activity levels (Barry et al., 2020; Durand et al., 2011).

One key difference between the firefighters and the SWAT officers was the shift schedules. SWAT officers worked ten to 12 hours daily, whereas firefighters followed a 48-hour on, 96-hour off schedule. There is substantial evidence of the negative effects of long shifts, which disrupt the circadian rhythms, and impact on one's overall health (Boivin & Boudreau, 2014). Moreover, some evidence suggests the lengthy shift duration of firefighters is detrimental regardless of the exact shift schedule (Billings et al., 2023). However, we speculate that dedicated time on shift for exercise contributed to the differences in fitness and PA levels that we observed. During conversations that occurred during the testing, SWAT officers mentioned having set times for daily exercise as a group during their shifts, whereas firefighters stated they could work out on shift but were likely to have their exercise routines interrupted by calls. The SWAT officers did state that there were no specific structured exercise programs they were mandated to follow, just that there was dedicated time. Unfortunately, we did not document policies around ability to exercise on shift as part of our procedures

but would recommend future studies further investigate the impact of policies that permit emergency responders to exercise while on duty. A study by (Lane et al., 2022) regarding implementation of a worksite exercise program for firefighters identified barriers that included time and desire to exercise on shift, lack of financial incentives to exercise, no structured fitness program, and lack of support from colleagues and leadership. Although not the focus of our study, several of these reported barriers (Lane et al., 2022) likely explain the differences in fitness levels and higher levels of moderate to vigorous PA (MVPA) in SWAT officers.

Implications for Health Behavior Theory

There has been a growing emphasis on the importance of health-related fitness and modifiable lifestyle behaviors, such as PA, diet, and sleep for emergency responders (Sax van der Weyden et al., 2022; Storer et al., 2014). Chronic health diseases are often associated with low levels of PA; however, it is important to note that overall health and wellbeing are also influenced by other lifestyle factors such as diet, sleep, and stress levels (Boushey et al., 2020; Roberts & Barnard, 2005; Shen et al., 2016). Thus, adopting a holistic approach that promotes both fitness and healthy lifestyle behaviors in tailored health and wellness programs has shown positive results (Romero & Alvar, 2021). Incorporating health behavior theories, such as the Theory of Planned Behavior (Ajzen, 1991) and the Theory of Reasoned Action (Fishbein, 1980), can further inform tailored health and wellness programs. The theory of planned behavior posits that behavioral intentions are influenced by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). Similarly, the reasoned action approach emphasizes the role of attitudes, subjective norms, and perceived behavioral control in predicting and understanding behaviors (Fishbein, 1980). In the context of emergency responders, understanding their attitudes toward PA, dietary choices, and sleep, as well as the social norms prevalent within their teams and the perceived control they have over their health behaviors, can guide interventions effectively (Lane et al., 2022). Our findings suggest that health and wellness programs for emergency responders should be tailored to the specific needs and demands of sub-populations within public safety departments, rather than a one-size-fits-all approach. Firefighters may benefit from additional support due to the unique demands of their occupation and shift schedules.

Limitations

We must acknowledge several important limitations. First, the REAPS, PSQI, and PA levels were based on self-reported data, which may be subject to social desirability bias and overestimation of actual behaviors (van, n.d.). Thus, whereas the aggregate PSQI (Mollayeva et al., 2016), REAP-S (Gans et al., 2006b) and MVPA (Singh et al., 2020) data indicated that sleep, diet, and PA levels were generally meeting guidelines for both SWAT members and firefighters, it is plausible that participants over-reported actual behaviors. Future studies may use accelerometery (Kelly et al., 2013; Marino et al., 2013) and food logs (Karvetti & Knuts, 1992) to increase the validity of these health behavior measures. Our research team also chose not to perform the entire FMS to minimize the time commitment of the first responder volunteers visiting the lab. Based on pilot-testing and conversations with clinicians as to which assessments in our overall protocol would be most valuable, with minimal redundancy to other assessments (Karvetti & Knuts, 1992), only the FMS overhead squat and shoulder

mobility were performed. Another limitation was that aerobic fitness was not collected for firefighters, and the aerobic fitness of the two emergency responder populations could not be compared. Unfortunately, our metabolic cart system was not operable during the time that the firefighters were scheduled for testing. For health (Myers et al., 2015) and occupational performance (Fyock-Martin et al., 2020) reasons, adequate aerobic fitness is vital and would be recommended to be assessed in future studies. Although it is acknowledged that the SWAT team and firefighters operated in different counties, potentially presenting a constraint, it is crucial to highlight the distinct role of the SWAT team, one of only two full-time units in a densely populated region where both SWAT and firefighters were operational. Moreover, the county that employed the firefighters did not have its own SWAT team and often the SWAT team of the neighboring county would respond to calls in the county in which the firefighters worked. Lastly, our convenience sample was relatively small and not necessarily representative of the entire department, especially among firefighters. Other authors note similar challenges of recruiting samples representative of entire fire departments when participation is voluntary (Elsner & Kolkhorst, 2008). Nonetheless, future work should incorporate larger samples for statistical power and avoid convenience samples to generalize findings to entire public safety departments.

Conclusion

In conclusion, we observed differences in fitness and lifestyle behaviors between SWAT officers and firefighters. Comparing a robust set of health behavior and fitness metrics between sub-populations of emergency responders to gain understanding of differences to inform health and wellness programming is a novel aspect of the exploratory study and a key strength. Our findings indicate the importance of individualizing health and wellness initiatives for specific sub-populations in public safety departments, rather than using a universal approach. Firefighters may require extra support (e.g., dedicated time to exercise while on duty, departmental fitness programs, incentives to maintain and/or improve fitness, health coaching from professionals or peer-fitness trainers, etc.) due to their distinct occupational demands and shift schedules (Cameron et al., 2018; Teyhen et al., 2014). We would advise future researchers first seek to understand facilitators and barriers of health promotion programs among emergency responders before conducting larger scale implementation studies. Moreover, a mixed-methods approach may be beneficial for understanding individual-level factors influencing health behaviors and fitness of emergency responders.

Ethics Approval

The study was approved by George Mason University's Institutional Review Board (IRB #: 1389424) and all participants signed an informed consent form.

Conflict of Interest

The authors have no conflicts of interest to declare.

Discussion Questions

Our findings that SWAT officers and firefighters may have different fitness levels and unique occupational demands indicate a need to move away from one-size-fits-all approaches to health promotion programs with emergency responders. What are the best approaches for moving forward in this realm?

Apply the Theory of Planned Behavior or Theory of Reasoned Action approach to analyze the lifestyle behaviors of SWAT officers and firefighters. How might the attitudes, subjective norms, and perceived behavioral control of these groups influence their physical activity (PA), diet, and sleep habits? Consider how these psychological factors impact their overall health and body composition.

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