

Leisure-Time Physical Activity and Motivation in Police Cadets: A Self-Determination Study

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ABSTRACT

International Journal of Exercise Science 17(5): 1504-1516, 2024. Several studies have highlighted the importance of leisure-time physical activity (LTPA) for the health and performance of law enforcement officers. Nevertheless, a considerable proportion of officers still fail to engage in any LTPA. There is a clear need to identify correlates of physical activity among this specific occupational group to help the design of workplace physical activity interventions. Rooted in the self-determination theory, this study seeks to assess the LTPA level of police cadets and examine its relationship with the different regulatory forms of motivation. In this cross-sectional study, 188 police cadets completed a survey assessing their LTPA level and motivational regulation for physical activity. On average, police cadets reported 395 \pm 192 minutes/week of physical activity. Only 12 participants (6.4%) reported physical activity levels lower than the usually recommended minimum levels of 150 minutes/week. Overall, autonomous forms of regulation (rs = 0.46), identified regulation (rs = 0.30), and introjected regulation (rs = 0.20). To our knowledge, this study is the first to use a theoretical framework to assess the relationship between LTPA and motivation in police cadets. Our results suggest that police cadets are highly active and mainly driven to engage in LTPA through autonomous motivations. The present study highlights the importance of fostering autonomous regulation for physical activity throughout the training of cadets.

KEY WORDS: Police officers, exercise, behavior regulation

INTRODUCTION

Regular physical activity is essential for both police cadets and law enforcement officers (LEOs). Indeed, although police work is often described as highly sedentary (23, 30), LEOs may at any moment encounter physically demanding interventions. Poor performance due to lack of physical fitness could expose both the officer and civilians to possible dangers. Moreover, LEOs experience several hazardous work conditions that may affect their physical and mental health, including chronic exposure to organizational and occupational stressors (19), rotating shift work (39), long work hours (13), and highly sedentary routine work (23, 30). A physically active lifestyle could help mitigate the adverse impacts of law enforcement, as previous studies have

shown that physical activity can lead to both physical and psychological health improvements in LEOs, including reduced occupational stress and distress, improved cardiovascular health, enhanced job-related physical fitness, and lower injury risks (1, 6, 26, 28, 33). These results are in line with the large body of evidence suggesting that physical activity, in particular LTPA, is associated with various favourable health outcomes (17, 22, 40). While empirical results support the beneficial effects of LTPA in LEOs, few studies have explored the correlates of LTPA participation in this occupational group. As a result, while there is extensive literature on 'why' LEOs should engage in physical activity, less is known about 'how' to promote physical activity among these workers. This is an important shortfall given that a considerable proportion of LEOs fail to engage in regular physical activity (3, 12, 31). Additional knowledge regarding physical activity participation and its correlates in LEOs is needed to optimize the promotion of LTPA among this occupational group.

Motivation, which is defined as "the drive that gives purpose or direction to behavior" (2), is a key determinant of LTPA participation. The self-determination theory (SDT; 11, 34, 35, 36) is a widely used theories to explore motivations for health behaviours. According to the SDT, different types and forms of motivation can influence one's behaviours, each having distinct characteristics and specific impacts on the adoption and maintenance of behaviours. The SDT identifies two main types of motivation:

- 1. Intrinsic motivation is the most autonomous type of motivation and involves engaging in a behaviour for its inherent enjoyment or satisfaction.
- 2. Extrinsic motivation refers to the performance of a behaviour for the purpose of attaining some external outcome (10, 35). The SDT further breaks down extrinsic motivation into four forms, ranging from more autonomous (internally regulated) to more controlled (externally regulated). From the most autonomous to the most controlled, these forms are:
 - a. Integrated regulation: engaging in a behaviour because it is consistent with personal values and self-image.
 - b. Identified regulation: engaging in a self-endorsed behaviour to obtain personally valued outcomes.
 - c. Introjected regulation: engaging in a behaviour to avoid feelings of guilt and shame or to enhance ego and self-worth.
 - d. External regulation: engaging in a behaviour to obtain an external reward or avoid an external punishment.

Finally, the SDT also distinguishes a state of amotivation, which refers to the absence of motivation towards a specific behaviour (10). The relationship between the various forms of motivation and participation in physical activity has been studied in multiple populations. As reported in an extensive review from Teixeira et al. (38), previous results have generally indicated that autonomous forms of motivation better predict long-term LTPA adherence. Conversely, while controlled motivations can lead to short-term LTPA participation, they may not lead to the successful physical activity maintenance.

Considering the importance of physical activity participation for the health and performance of LEOs, the promotion of an active lifestyle is essential for police organizations. However, the scarcity of research examining the correlates of LTPA among LEOs could hinder the implementation of scientifically sound interventions. This study seeks to explore the LTPA levels and motivations of police cadets prior to their entry into the police workforce. Specifically, our first objective was to assess the LTPA level of police cadets in the province of Quebec. We also aimed to assess the relationship between LTPA participation and the forms of motivational regulation in these cadets. Finally, our research team sought to explore the specific motives for LTPA participation among police cadets.

METHODS

Participants

Because the main objective of the study was to assess the relationship between LTPA participation and forms of motivational regulation, a priori sample size estimations for bivariate correlation analyses were computed using G*Power software (version 3.1.9.7, Düsseldorf, Germany). A minimal sample size of 193 participants was required to detect small to moderate correlations (r = 0.20) with a statistical power of 80% and a significance level of 5% (two-sided). Therefore, 207 police cadets in basic police training at the Quebec Police Academy were invited to participate in this survey-based cross-sectional study. During their first week of training, potential participants were invited by one of their instructors to complete an online questionnaire. The only inclusion criterion for this study was being a police cadet in basic training at the Quebec Police Academy. Following the recruitment process, 193 cadets completed our questionnaire. All participants with missing data on LTPA or physical activity motivation were excluded from our analyses (n = 4). Outlier detection was performed using the interquartile range method with a multiplier of three for data relating to total weekly minutes of LTPA (Global Physical Activity Questionnaire). Only one potential outlier was detected. Upon analysis of the case, it was decided to remove the participant from our analyses, as this participant reported nearly 1300 weekly minutes of LTPA. A final sample of 188 cadets was therefore included in our analyses resulting in a participation rate of 90.8%. All participants provided written informed consent before taking part in the study. This research was approved by the ethics committee of the Université du Québec à Trois-Rivières and carried out fully in accordance to the ethical standards of the International Journal of Exercise Science (24).

Protocol

Demographic information: Self-reported age, sex, height and weight were collected from participants. Body mass index (BMI) was calculated using self-reported height and weight. Participants were then categorized as normal weight (< 24.9 kg/m²), overweight (25.0 to 29.9 kg/m²), or obese (\geq 30 kg/m²) based on BMI.

Leisure-time physical activity: The physical activity level of participants was assessed using the French version of the Global Physical Activity Questionnaire (GPAQ), which was developed by the World Health Organization (WHO) and includes information about the frequency and duration of both moderate and vigorous physical activity during a typical week. The GPAQ

measures physical activity in three different domains, namely occupational physical activity, commuting physical activity, and leisure-time physical activity (LTPA). For the purposes of the present study, only data relating to LTPA were analyzed. Overall, studies assessing the psychometric properties of the GPAQ have reported good to excellent reliability and poor to moderate concurrent validity (5, 14). The French version of the GPAQ also shows acceptable reliability and concurrent validity when compared with results from the International Physical Activity Questionnaire (32). However, agreement analyses suggest that the French GPAQ tends to underestimate total physical activity (PA) in comparison with accelerometer-based PA estimations (32). Participants were categorized based on LTPA levels using total weekly minutes of moderate-to-vigorous LTPA. Initially, four groups were created based on the recommended minimum physical activity level of 150 minutes per week of moderate-to-vigorous physical activity (low: < 150 minutes/week of LTPA, moderate: 150 to 300 minutes/week of LTPA, high: 300 to 449 minutes/week of LTPA, and very high: > 450 minutes/week of LTPA). However, given the small number of participants included in the low LTPA group, the low and moderate LTPA groups were merged for further analyses.

To investigate the types of LTPA practiced by police cadets, participants were also asked to report the number of minutes per week spent performing aerobic exercises (Usually, how many minutes per week of aerobic exercises do you practice?), resistance training (Usually, how many minutes per week of resistance training do you practice?), and sports (Usually, how many minutes per week of sports do you practice?).

Behavioural regulation of physical activity: Physical activity motivation was assessed using the French version of the Behavioral Regulation in Exercise Questionnaire-2 (BREQ-2; 21). The BREQ-2 is a 19-item questionnaire developed to assess the different forms of behavioural regulation in exercise. The BREQ-2 is the revised version of the BREQ and comprises five subscales assessing *external* (4 items), *introjected* (3 items), *identified* (4 items), and *intrinsic* (4 items) regulations along with *amotivation* (4 items). Each item corresponds to a statement regarding a specific form of regulation in exercise (e.g., I exercise because other people say I should) to which answers are provided on a 5-point Likert scale ranging from "not true for me" to "very true for me." Results at the BREQ-2 were scored using both an item-aggregation approach (individual scores for each subscale) and self-determination index (unique weighted score reflecting a level of self-determination; 10).

Finally, although the BREQ-2 allows for analysis of the forms of regulation, it does not provide information on specific motives for LTPA. Thus, an open-ended question was also included in the questionnaire (*Personally, what are your main motives for practicing regular physical activity?*) in order to explore police cadets' specific motives for LTPA participation.

Statistical Analysis

Statistical analyses in the present study were conducted using the Statistics Package for Social Sciences (SPSS Version 28.0; IBM Corporation, New York, NY, USA). Means and standard deviations for weekly minutes of moderate and vigorous LTPA were first computed. Non-parametric Mann-Whitney *U* tests were used to investigate potential sex-based differences in

LTPA and motivational variables. The effect sizes for Mann-Whitney analyses were assessed based on *r*-values with values interpreted as small (r = 0.10), moderate (r = 0.30), and large (r = 0.50) effects (7).

To explore the types of LTPA practiced by our participants, self-reported weekly minutes of aerobic exercise, strength training, and sports were used to compute percentages of total LTPA. Kruskal-Wallis one-way ANOVA tests were then used to compare percentages of total LTPA for each type of physical activity across our three groups (low/moderate, high, very high). Effect sizes for Kruskal-Wallis analyses were assessed based on Eta squared (η^{2}_{H}) with values interpreted as small (η^{2}_{H} = 0.01), moderate (η^{2}_{H} = 0.06), and large (η^{2}_{H} = 0.14) effects (7). Significant Kruskal-Wallis results were followed by pairwise comparisons using Dunn's test with a Bonferroni-adjusted alpha level of .017 (0.05/3).

The relationships between levels of LTPA and forms of motivational regulation were assessed in two ways. First, Spearman's rank correlations were used to evaluate the association of total LTPA with scores for each form of regulation as well as the self-determination index. Correlations strength was designated as small ($r_s = 0.10$), moderate ($r_s = 0.30$), or large ($r_s = 0.50$) (7). To investigate possible nonlinear relationships between LTPA and the different regulation forms, Kruskal–Wallis analyses were also used to compare scores in each regulation subscale (*amotivation, external regulation, introjected regulation, identified regulation*, and *intrinsic regulation*) across LTPA groups.

To explore the specific motives for LTPA participation, all answers to the open-ended question were analyzed through a descriptive content analysis using both a deductive and inductive approach. First, all provided answers were read thoroughly to become familiar with the data set and remove unsuitable responses (e.g., yes). Following this initial process, responses were read a second time and grouped into different categories of motives. To guide this phase, the 14 motivational subscales from the Exercise Motives Inventory-2 (EMI-2; 20) comprising stress management, revitalization, enjoyment, challenge, social recognition, affiliation, competition, health pressure, ill-health avoidance, positive health, weight management, appearance, strength and endurance, and nimbleness were used as initial codes. Furthermore, special attention was given to identifying recurrent categories of motives that may not be covered by EMI-2 subscales. During the content analysis, it was quickly obvious that cadets often mentioned motives relating to police work. Thus, the category of work-related motives was added to the previously mentioned categories. Also, given the very few occurrences of motives for nimbleness, it was decided to merge *nimbleness* and *strength and endurance* into a single category (*physical fitness*). Answers identifying more than one motive were classified into multiple categories. The content analysis was performed using Microsoft Excel (2016).

RESULTS

A total of 81 female cadets (43.1%) and 107 male cadets (56.9%) completed our survey. Descriptive statistics for male and female participants are shown in Table I. The age of participants ranged from 20 to 43 years old. A large majority of participants were Caucasian

(89.4%). In total, only 12 participants (6.4%) failed to meet the recommended minimum levels of weekly LTPA (150 minutes/week). Conversely, almost 30% of the participants (n = 54, 28.7%) reported engaging in more than 450 minutes/week of LTPA. Mann-Whitney *U* tests did not reveal significant sex-based differences for LTPA variables. However, significant differences were found between male and female participants in BREQ-2 scores for *identified regulation* (U = 3290.5, p < 0.01, r = 0.20), *introjected regulation* (U = 3576.5, p = 0.04, r = 0.15), and *amotivation* (U = 4980.0, p < 0.01, r = 0.20) subscales.

Descriptive veriables	Total	Females	Males
Descriptive variables	(n = 188)	(n = 81)	(n = 107)
Age (year)	23 ± 3.5	23 ± 3.6	23 ± 3.1
Self-reported BMI (kg/m ²)	24.7 ± 3.5	22.9 ± 3.1	26.1 ± 3.2
Normal (≤ 24.9)*	108 (57.5%)	67 (82.7%)	41 (38.3%)
Overweight (25.0 to 29.9)*	63 (33.5%)	10 (12.3%)	53 (49.5%)
Obese (≥ 30)*	17 (9.0%)	4 (4.9%)	13 (12.1%)
Leisure-time physical activity (min/week)	396 ± 192	378 ± 188	408 ± 195
Moderate physical activity (min/week)	167 ± 125	165 ± 109	167 ± 136
Vigorous physical activity (min/week)	229 ± 148	212 ± 145	241 ± 149
Self-determination Index	13.42 ± 3.32	13.79 ± 2.67	13.13 ± 3.72
Intrinsic regulation	3.45 ± 0.55	3.45 ± 0.51	3.46 ± 0.58
Identified regulation	3.04 ± 0.57	3.18 ± 0.51	2.93 ± 0.59
Introjected regulation	1.93 ± 1.05	2.12 ± 1.09	1.78 ± 1.00
External regulation	0.38 ± 0.60	0.32 ± 0.58	0.43 ± 0.62
Amotivation	0.11 ± 0.30	0.05 ± 0.19	0.16 ± 0.36

Table 1. Descriptive results ($M \pm SD$).

*Data presented as *n* (% of total sample)

Based on the answers given for the three LTPA type questions, strength training accounted for most of the weekly minutes of LTPA (52.7%). In comparison, aerobic exercises and sports accounted for 25.0% and 22.3% of the total LTPA, respectively. As reported in Table II, Kruskal-Wallis analyses followed by Dunn's tests revealed a significant difference in the percentage of total LTPA accounted for by strength training between the low/moderate PA group (46.3%) and high PA group (57.8%, p = .010).

Table 2. Physical activity types based on leisure-time physical activity levels.

Low/Moderate $(n = 73)$	High (<i>n</i> = 61)	Very high $(n = 54)$	Н	р	η^{2}_{H}
30.2 ± 26.9	23.2 ± 19.1	20.2 ± 18.0	4.028	0.13	0.01
46.3 ± 27.0^{a}	57.8 ± 24.4^{a}	55.7 ± 25.6	7.532	0.02	0.03
23.6 ± 26.0	19.1 ± 18.7	24.1 ± 23.6	0.948	0.62	0.00
	Low/Moderate (n = 73) 30.2 ± 26.9 46.3 ± 27.0^{a} 23.6 ± 26.0	Low/ModerateHigh $(n = 73)$ 30.2 ± 26.9 23.2 ± 19.1 46.3 ± 27.0^{a} 57.8 ± 24.4^{a} 23.6 ± 26.0 19.1 ± 18.7	Low/ModerateHighVery high $(n = 73)$ $(n = 61)$ $(n = 54)$ 30.2 ± 26.9 23.2 ± 19.1 20.2 ± 18.0 46.3 ± 27.0^{a} 57.8 ± 24.4^{a} 55.7 ± 25.6 23.6 ± 26.0 19.1 ± 18.7 24.1 ± 23.6	Low/ModerateHigh $(n = 73)$ Very high $(n = 61)$ H 30.2 ± 26.9 23.2 ± 19.1 20.2 ± 18.0 4.028 46.3 ± 27.0^{a} 57.8 ± 24.4^{a} 55.7 ± 25.6 7.532 23.6 ± 26.0 19.1 ± 18.7 24.1 ± 23.6 0.948	Low/Moderate $(n = 73)$ High $(n = 61)$ Very high $(n = 54)$ Hp 30.2 ± 26.9 23.2 ± 19.1 20.2 ± 18.0 4.028 0.13 46.3 ± 27.0^{a} 57.8 ± 24.4^{a} 55.7 ± 25.6 7.532 0.02 23.6 ± 26.0 19.1 ± 18.7 24.1 ± 23.6 0.948 0.62

Significant pairwise comparisons using Dunn's test are highlighted with matching letters.

Mean scores for items comprising each form of regulation are given in Table III. Spearman's rank correlation analyses showed that total weekly minutes of LTPA was significantly associated with each form of regulation. Kruskal-Wallis analyses were conducted to compare results for each regulation form across the different LTPA levels (Table IV). Results showed

significant differences in scores for all types of motivation. Significant results from pairwise comparisons using Dunn's tests are shown in Table IV.

Table 5. Spearman's rank correlations among DREQ-2 subscales and ETTA.						
	1	2	3	4	5	6
1. LTPA (min/week)	1					
2. Self-determination Index	.34**	1				
3. Intrinsic regulation	.46**	.78**	1			
4. Identified regulation	.30**	.51**	.49**	1		
5. Introjected regulation	.20*	07	.29**	.52**	1	
6. External regulation	22*	68**	36**	12	.14	1
7. Amotivation	19*	54**	38**	26**	01	.40**

Table 3. Spearman's rank correlations among BREQ-2 subscales and LTPA.

p* < 0.01; *p* < 0.001

Table 4. Kruskal-Wallis ANOVA comparisons based on leisure-time physical activity levels.

Physical activity	Low/Moderate	High	Very high	Ы	10	102
regulation	(n = 61)	(n = 61)	(n = 54)	Π	P	$\eta^{2}H$
Self-determination index	$12.16 \pm 3.55^{a,b}$	13.80 ± 2.87^{a}	14.69 ± 2.90^{b}	21.179	< 0.01	0.11
Intrinsic regulation	$3.20 \pm 0.55^{a,b}$	$3.52 \pm 0.44^{a,c}$	$3.72 \pm 0.51^{b,c}$	37.799	< 0.01	0.19
Identified regulation	$2.83 \pm 0.52^{a,b}$	3.14 ± 0.51^{a}	3.21 ± 0.62^{b}	18.640	< 0.01	0.09
Introjected regulation	1.64 ± 0.89^{a}	2.02 ± 1.09	2.20 ± 1.13^{a}	8.624	0.01	0.04
External regulation	0.48 ± 0.62^{a}	0.42 ± 0.65	0.21 ± 0.50^{a}	10.011	0.01	0.04
Amotivation	0.17 ± 0.33^{a}	0.06 ± 0.22	0.09 ± 0.34^{a}	7.100	0.03	0.03
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Significant pairwise comparisons using Dunn's test are highlighted with matching letters.

To explore the specific motives of cadets for LTPA participation, all answers provided to the open-ended question on exercise motives were analyzed through content analysis. A total of 186 participants answered the open-ended question with most participants discussing multiple motives. As shown in Table V, the content analysis allowed our research team to rank the different categories of motives based on frequency of occurrence.

Table 5. Exercise motives reported by police cadets.

Motives	N =	N = 186			
	n	%			
1. Revitalization	76	40.9			
2. Stress management	59	31.7			
3. Physical fitness	58	31.2			
4. Appearance	51	27.4			
5. Positive health	46	24.7			
6. Work requirements	45	24.2			
7. Enjoyment	38	20.4			
8. Affiliation	26	14.0			
9. Personal challenge	19	10.2			
10. Ill-health avoidance	17	9.1			
11. Weight management	12	6.5			
12. Competition	7	3.8			
13. Social Recognition	1	0.5			
14. Health pressures	0	0.0			

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DISCUSSION

The main objectives of this study were to assess the LTPA level of police cadets and evaluate the relationship between LTPA participation and types of motivational regulation in these cadets. Overall, our results suggest that police cadets are a highly physically active occupational group, with very few failing to meet the recommended minimum levels of 150 minutes per week of physical activity. Moreover, our assessment of the forms of motivation for LTPA revealed that police cadets are predominantly motivated through *intrinsic regulation* and more autonomous forms of extrinsic regulation (*identified regulation*). Finally, small to moderate associations were found between different forms of motivation and LTPA levels among police cadets. Indeed, higher autonomous regulations (*intrinsic* and *identified regulation*) were associated with higher LTPA levels. Conversely, *external regulation* and *amotivation* were associated with lower levels of LTPA.

Because the physical preparedness for duty of police cadets is an important concern for law enforcement organizations and police academies many studies focus on cadets' fitness levels (4, 18, 25, 27, 29). However, very little research has been conducted on the LTPA participation of police cadets. This is somewhat surprising as studies of this kind could not only provide valuable information for the short-term physical preparation of police cadets but also help better understand long-term physical activity adherence among LEOs. The results of the present study suggest that police cadets are a very active occupational group with an average LTPA level (395 \pm 192 min/week) that is considerably higher than reported values in young adults (8,9). Furthermore, 93.6% of the cadets in this study reported LTPA levels that meet the usually recommended minimum of 150 minutes per week of moderate-to-vigorous physical activity. Although the literature on physical activity participation in police cadets is scarce, these findings are consistent with those of Soroka and Sawicki (37), who found that Polish police cadets exhibit physical activity levels well above those of both incumbent LEOs and the general Polish population. Our results are also consistent with previous results from our research team demonstrating that police cadets and recruits in Quebec generally display significantly better cardiorespiratory fitness (29) and overall physical fitness (27) than the general population. Interestingly, Gendron *et al.* (12) recently investigated the prevalence of cardiovascular disease risk factors and health-related lifestyle among 2099 LEOs. Contrary to the findings of the present study, their results suggest that nearly 70% of LEOs are physically inactive. Thus, as previously suggested (16), it appears that the physical activity level of police cadets decreases considerably after they enter the police workforce.

In view of the association between physical activity adherence and regulation forms (10), one might expect that physical activity participation is mainly regulated through controlled forms of regulation in police cadets. However, as Table III indicates, police cadets endorsed more autonomous types of motivation such as *intrinsic* and *identified* significantly more than *introjected* and *external* regulations. These findings suggest that cadets are mainly motivated to engage in physical activity because they enjoy it or because it aligns with their personal values and needs. Furthermore, police cadets seem to widely acknowledge the health benefits of an active lifestyle. Indeed, physical activity motives relating to psychological (*revitalization* and *stress management*)

and physical *(physical fitness* and *positive health)* well-being were largely identified by cadets in the present study. Surprisingly, motives related to police work requirements, including the need to be physically active to meet either the physical requirements of police work or the physical employment standard for recruitment in the police workforce, were only identified by 45 participants (24.2%). This is consistent with previous findings by Lagestad (15) suggesting that, although police cadets recognize the importance of physical activity for police work, their main reason for engaging in LTPA is their belief that it is important for their health and quality of life.

Our results suggest that autonomous forms of regulations are positively and significantly associated with LTPA levels in police cadets (Tables III and IV). These results agree with most of the literature on self-determination in physical activity, which supports that, of the different forms of regulation, intrinsic regulation and identified regulation are the best predictors of physical activity participation and adherence (38). Interestingly, introjected regulation was also positively correlated with LTPA in this study. Although results from previous studies assessing the association of introjected regulation and physical activity are highly inconsistent (38), the unique context of police cadets should be kept in mind when interpreting this result. Throughout their nearly four years of police training, cadets in Quebec are strongly encouraged to stay physically active and maintain high levels of physical activity, cadets may also internalize these external pressures to stay physically active. Thus, they may, to a very large extent, be both intrinsically and extrinsically driven. Given the rather ephemeral nature of these external pressures, future research should seek to investigate the association of introjected regulations and long-term physical activity adherence in police cadets and incumbent LEOs.

The findings of this study have significant practical implications for law enforcement organizations and police academies. The high levels of LTPA observed among police cadets suggest that current training programs are effectively promoting physical activity, which is crucial for the physical preparedness required in police work. However, the strong association between autonomous motivation (intrinsic and identified regulation) and LTPA levels underscores the importance of fostering internal motivations for physical activity, rather than relying solely on external pressures or requirements. Given the observed decline in physical activity levels among law enforcement officers after academy training (12, 16), these insights are particularly relevant. Policymakers and training coordinators should consider implementing long-term strategies to sustain high levels of autonomous motivation throughout an officer's career. This could include continuous education on the benefits of an active lifestyle, creating a supportive environment for physical activity within law enforcement agencies, and providing opportunities for officers to engage in activities that align with their personal values and interests. In light of our findings, future studies should aim to track the physical activity levels and motivation of police cadets as they transition into active law enforcement roles using prospective designs. Additionally, future research should seek to identify potential barriers to maintaining physical activity participation among police recruits using a socioecological approach.

Our findings should be interpreted with consideration to certain limitations. First, this study relies on a small convenience sample. Nevertheless, as reflected by the very high participation rate (90.8%), our recruitment strategy was successful in maximizing the participation of police cadets. As a result, most cadets who were in training at the Quebec police academy accepted to participate. Our research team is therefore confident that the data obtained are representative of police cadets in Quebec. Moreover, the physical activity level of participants was assessed through self-reported measures. Although the validity of the GPAQ has previously been supported (5, 14, 32), the physical activity levels reported in this study may be subject to recall and desirability bias. Finally, our research team maintains that the content analysis described in this study offers valuable information that adds to our limited knowledge on the physical activity participation of police cadets. Nevertheless, the use of a single open-ended question may not be the best way to obtain an in-depth understanding of the specific motives for LTPA participation among police cadets. For example, while many cadets identified fitness-related motives (e.g., *improve my strength*), it is unclear whether these motives stem solely from a desire to be physically fit or from other underlying motives such as a wish to improve work performance or gain the recognition of peers. As physical activity motives or goals are believed to impact physical activity adherence, future research should build upon the present results and seek to better understand specific physical activity motives in police cadets and incumbent LEOs.

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REFERENCES

1. Acquadro Maran D, Zedda M, Varetto A. Physical practice and wellness courses reduce distress and improve wellbeing in police officers. Int J Environ Res Public Health 15(4): 578-577, 2018. https://doi.org/10.3390/ijerph15040578

2. American Psychological Association. APA Dictionary of Psychology: Motivation. Retrieved from: https://dictionary.apa.org/motivation

3. Anderson AA, Yoo H, Franke WD. Associations of physical activity and obesity with the risk of developing the metabolic syndrome in law enforcement officers. J Occup Environ 58(9): 946-951, 2016. https://doi.org/10.1097/JOM.0000000000833

4. Cesario K, Dulla J, Moreno MR. Relationships between assessments in a physical ability test for law enforcement: Is there redundancy in certain assessments? Int J Exerc Sci 11(4): 1063-1073, 2018.

5. Cleland CL, Hunter RF, Kee F. Validity of the global physical activity questionnaire (GPAQ) in assessing levels and change in moderate-vigorous physical activity and sedentary behaviour. BMC Public Health 14(1): 1-11, 2014. <u>https://doi.org/10.1186/1471-2458-14-1255</u>

6. Cocke C, Dawes J, Orr RM. The use of 2 conditioning programs and the fitness characteristics of police academy cadets. J Athl Train 51(11): 887-896, 2016. <u>https://doi.org/10.4085/1062-6050-51.8.06</u>

7. Cohen J. Statistical power analysis for the behavioral sciences. Hillsdale: Erlbaum; 1988.

8. Colley RC, Garriguet D, Janssen I. Physical activity of Canadian adults: accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. Health Rep 22(1): 7-14, 2011. https://doi.org/10.1016/j.yspm.2011.03.006

9. Colley RC, Butler G, Garriguet D. Comparison of self-reported and accelerometer-measured physical activity in Canadian adults. Health Rep 29(12): 3-15, 2018.

10. Conroy DE, Elliot AJ, Coatsworth JD. Competence motivation in sport and exercise: The hierarchical model of achievement motivation and self-determination theory. In Hagger MS, Chatzisarantis N, editors. Intrinsic motivation and self-determination in exercise and sport. Champaign: Human Kinetics; 2007. https://doi.org/10.5040/9781718206632.ch-012

11. Deci EL, Ryan RM. Self-determination theory: A macrotheory of human motivation, development, and health. Can Psychol 49(3): 182-185, 2008. <u>https://doi.org/10.1037/a0012801</u>

12. Gendron P, Lajoie C, Laurencelle L, Trudeau F. Cardiovascular health profile among Quebec male and female police officers. Arch Environ Occup Health 74(6): 331-340, 2019. https://doi.org/10.1080/19338244.2018.1472063

13. Gu JK, Charles LE, Burchfiel CM. Long work hours and adiposity among police officers in a US northeast city. J Occup Environ Med 54(11): 1374-1381, 2012. <u>https://doi.org/10.1097/JOM.0b013e31825f2bea</u>

14. Keating XD, Zhou K, Liu X. Reliability and concurrent validity of global physical activity questionnaire (GPAQ): A systematic review. Int J Environ Res Public Health 16(21): 4128-4154, 2019. https://doi.org/10.3390/ijerph16214128

15. Lagestad, P. Physical skills and work performance in policing. Int J Police Sci Manag 14(1): 58-70, 2012. https://doi.org/10.1350/ijps.2012.14.1.259

16. Lagestad P, Van Den Tillaar R. Longitudinal changes in the physical activity patterns of police officers. Int J Police Sci Manag 16(1): 76-86, 2014. <u>https://doi.org/10.1350/ijps.2014.16.1.329</u>

17. Li J, Loerbroks A, Angerer P. Physical activity and risk of cardiovascular disease: what does the new epidemiological evidence show?. Curr Opin Cardiol 28(5): 575-583, 2013. https://doi.org/10.1016/j.jcdr.2013.08.005

18. Lockie RG, Stierli M, Cesario KA. Are there similarities in physical fitness characteristics of successful candidates attending law enforcement training regardless of training cohort?. J Trainol 7(1): 5-9, 2018. https://doi.org/10.17338/trainology.7.1 5

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19. Magnavita N, Capitanelli I, Garbarino S, Pira E. Work-related stress as a cardiovascular risk factor in police officers: a systematic review of evidence. Int Arch Occup Environ 91(1): 377-389, 2018. https://doi.org/10.1007/s00420-018-1290-y

20. Markland D, Ingledew DK. The measurement of exercise motives: Factorial validity and invariance across gender of a revised Exercise Motivations Inventory. Br J Health Psychol 2(4): 361-376, 1997. https://doi.org/10.1111/j.2044-8287.1997.tb00549.x

21. Markland D, Tobin V. A modification to the behavioural regulation in exercise questionnaire to include an assessment of amotivation. J Sport Exerc Psychol 26(2): 191-196, 2004. https://doi.org/10.1123/jsep.26.2.191

22. Matthews CE, Moore SC, Arem H. Amount and intensity of leisure-time physical activity and lower cancer risk. J Clin Oncol 38(7): 686-697, 2020. <u>https://doi.org/10.1200/JCO.19.02407</u>

23. McKinnon CD, Callaghan JP, Dickerson CR. Field quantification of physical exposures of police officers in vehicle operation. Int J Occup Saf Ergon 17(1): 61-68, 2011. https://doi.org/10.1080/10803548.2011.11076870

24. Navalta JW, Stone WJ, Lyons TS. Ethical issues relating to scientific discovery in exercise science. Int J Exerc Sci 12(1): 1-8, 2019. <u>https://doi.org/10.70252/EYCD6235</u>

25. Orr RM, Dawes JJ, Pope R, Terry J. Assessing differences in anthropometric and fitness characteristics between police academy cadets and incumbent officers. J Strength Cond Res 32(9): 2632-2641, 2018. https://doi.org/10.1519/JSC.00000000002328

26. Orr RM, Ford K, Stierli M. Implementation of an ability-based training program in police force recruits. J Strength Cond Res 30(10): 2781-2787, 2016. <u>https://doi.org/10.1519/JSC.00000000000898</u>

27. Poirier S, Gendron A, Gendron P, Lajoie C. Fitness components associated with performance of a law enforcement physical employment standard in police cadets. J Sports Med Phys Fit 62(7): 981-989, 2021. https://doi.org/10.23736/S0022-4707.21.12464-8

28. Poirier S, Gendron P, Houle J, Trudeau F. Physical Activity, Occupational Stress, and Cardiovascular Risk Factors in Law Enforcement Officers: A Cross-sectional Study. J Occup Environ Med 65(11): 688-694, 2023. https://doi.org/10.1097/JOM.0000000002947

29. Poirier S, Houle J, Lajoie C, Trudeau, F. Cardiorespiratory fitness of police recruits: Normative reference values and temporal trend. J Strength Cond Res 37(1): 207-212, 2023. https://doi.org/10.1519/JSC.00000000004210

30. Ramey SL, Perkhounkova Y, Moon M. Physical activity in police beyond self-report. J Occup Environ Med 56(3): 338-343, 2014. <u>https://doi.org/10.1097/JOM.0000000000000108</u>

31. Richmond RL, Wodak A, Kehoe L, Heather N. How healthy are the police? A survey of life-style factors. Addiction 93(11): 1729-1737, 1998. <u>https://doi.org/10.1046/j.1360-0443.1998.9311172910.x</u>

32. Rivière F, Widad FZ, Speyer E. Reliability and validity of the French version of the global physical activity questionnaire. J Sport Health Sci 7(3): 339-345, 2018. <u>https://doi.org/10.1016/j.jshs.2016.08.004</u>

33. Rossomanno CI, Herrick JE, Kirk SM, Kirk EP. A 6-month supervised employer-based minimal exercise program for police officers improves fitness. J Strength Cond Res 26(9): 2338-2344, 2012. https://doi.org/10.1519/JSC.0b013e31823f2b64

34. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. Am Psychol 55(1): 68-78, 2000. <u>https://doi.org/10.1037//0003-066X.55.1.68</u>

35. Ryan RM, Deci EL. Overview of self-determination theory: An organismic dialectical perspective. In: Deci EL, Ryan RM, editors. Handbook of self-determination research. Rochester: University of Rochester Press; 2002.

36. Ryan RM, Deci EL. Self-determination theory: Basic psychological needs in motivation, development, and wellness. New York: Guilford Publications; 2017. <u>https://doi.org/10.1521/978.14625/28806</u>

37. Soroka A, Sawicki B. Physical activity levels as a quantifier in police officers and cadets. Int J Occup Med Environ Health 27(1): 498-505, 2014. <u>https://doi.org/10.2478/s13382-014-0279-3</u>

38. Teixeira PJ, Carraça EV, Markland D. Exercise, physical activity, and self-determination theory: a systematic review. Int J Behav Nutr Phys 9(1): 1-30, 2012. <u>https://doi.org/10.1186/1479-5868-9-78</u>

39. Violanti JM, Burchfiel CM, Hartley TA. Atypical work hours and metabolic syndrome among police officers. Arch Environ Occup Health 64(3): 194-201, 2009. <u>https://doi.org/10.1080/19338240903241259</u>

40. White RL, Babic MJ, Parker PD, Lubans DR, Astell-Burt T, Lonsdale C. Domain-specific physical activity and mental health: A meta-analysis. Am J Prev Med 52(5): 653-666, 2017. https://doi.org/10.1016/j.amepre.2016.12.008

