Mental Health and Physical Activity Level in Military Police Officers from Sergipe, Brazil

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ABSTRACT

The objective of the present study was to analyse the association between the level of physical activity and mental health indicators in this population. A total of 254 military police officers, male and female, aged between 21 and 55, participated in military battleships and police companies in the metropolitan region of Aracaju, Sergipe. They responded to an assessment form, available online, on Google Forms, containing questions about socio-demographic, anthropometric and occupational characteristics, quality of sleep (Pittsburgh scale), stress (EPS-10), anxiety and depression (HAD scale), Exhaustion syndrome (MBI - GS), suicidal ideation (YRBSS - adapted), and Physical Activity level (IPAQ-short). Officers classified as "insufficiently active" had a higher risk for "burnout syndrome" (OR = 2.49; CI: 95% 1.42-4.43) and a greater feeling of "deep sadness" (OR = 1.85; CI: 95% 1.03-3.33) compared with physically active colleagues. In addition, longer service time was a protective factor against anxiety (OR = 0.30; CI: 95% 0.13-0.68), burnout syndrome (OR = 0.28; CI: 95% 0.12 -0.67) and deep sadness (OR = 0.25; CI: 95% 0.11-0.57). Older officers are more likely to be affected by "deep sadness" (OR = 2.80; CI: 95% 1.37-5.71). It was concluded that physical activity is associated with changes in the mental health of the police officers evaluated.

Keywords: anxiety disorders, mental health, physical fitness, public health, psychological exhaustion.

INTRODUCTION

Scientific studies have shown that police work is characterized by high occupational stress. Police officers are exposed to acute and chronic stressful events at work, which may compromise psychological well-being and physical health (Lucas et al., 2012; Magnavita & Garbarino, 2013). Exposure to these events may increase burnout syndrome, anxiety, and suicidal ideation (Miranda & Guimarães, 2016; Taris et al., 2010; Vancini et al., 2018). In addition, this public has an extensive working day, with alternating shifts, which may influence the development of unhealthy behaviors, such as consuming low nutrient density foods, poor sleep quality, and a high prevalence of physical inactivity and excessive sedentary behavior (da Silva et al., 2014).

Physical inactivity is a risky behavior that may lead to health problems such as obesity, hypertension, and diabetes (Health Organization [WHO], 2017). Furthermore, there is evidence of an association between physical activity with depressive conditions, alcohol consumption, and smoking (Gigantesco et al., 2015; Ströhle, 2009).

However, although it is well documented in the literature that physical activity is an essential way of promoting health, quality of life, and physical and mental well-being, in the structure and organization chart of the Military Police there are currently no comprehensive policies for stimulating the practice of physical activity and physical training programs for agents. However, when police intervention is necessary, these professionals may sometimes need to carry out actions in an energetic manner, such as running, carrying equipment, armaments, and

transporting an injured individual (Boyce et al., 2006).

In addition to this physical demand, these moments of maximum effort may also affect the mental aspects of the military police, given that many of these individuals experience stressful experiences due to exposure to risky situations as part of this profession (Nelson & Smith, 2016). These experiences may trigger anxiety, post-traumatic stress syndrome, and depression (Acquadro Maran et al., 2018; Lee et al., 2016; Vancini et al., 2018). In addition, the presence of one or more of these factors may increase the risk of self-inflicted injuries, which ends up decreasing the effectiveness of the subject's action as a military police officer (Van der Meer et al., 2017).

However, although documented for other professional areas, it is not yet evident in the literature that physical activity may be considered a protective agent for police officers against harmful mental health conditions. Based on the above, the purpose of the present study was to analyze the association between physical activity level and mental health indicators in this population.

METHOD

Participants

A cross-sectional design was employed in this study. The sample was calculated based on the population of 2,227 police officers active in 2018, and the population was delineated by the number of military police officers active in battalions and companies in the metropolitan region of Aracaju (Aracaju, Nossa Senhora de Socorro, São Cristóvão and Barra dos Coqueiros). The sample calculation was done using the Barbetta equation, taking into account the maximum tolerable error of 5% and 95% interval (Bar-betta., 2008). 254 (N) police officers were identified. Male and female military police officers, active on duty, aged between 21 and 55, participated in the present study.

The Sergipe State Military Police Command authorized data collection. Police officers on medical leave from work were excluded. This study was approved by the Ethics and Research Committee-CEP (Nº: 2.729.750).

Instruments

The short version of the International Physical Activity Questionnaire (IPAQ) was used to analyze the level of physical activity (Matsudo et al., 2001). We characterized the classification of the instrument into two levels; the characterization of "Active = 0" was given for "very active" and "active", and "Low levels of physical activity = 1" was given for "insufficiently active" and "sedentary".

The body mass index (BMI) was calculated using the values obtained for mass and height, self-reported by participants (Vieira et al., 2006). The calculated BMI was characterized into two levels: BMI between 18.5 and 24.9 kg/m^2 as "Eutrophic ($<25.0 \, kg/m^2$) = 0" and BMI equal to or greater than 25.0 kg/m^2 as "Overweight = 1".

An interview was conducted to collect data on socio-demographic and occupational factors. Socio-demographic factors included sex, age, and economic class. Occupational factors included job characteristics, workplace, length of service, and weekly workload. Continuous variables were dichotomized from the median (Box 1). In the socioeconomic classification, categories A to B2 were characterized as "Upper/upper-middle class = 0", and C1 to E, as "Middle class = 1". This characterization is justified based on the salary of a police officer. While a soldier's salary can vary between 3,370-4,805 Brazilian reais, included up to economic class C1 (Brasil, 2019), the other positions can vary between 5,600-25,000 Brazilian reais. For the continuous values of age, length of service, and weekly workload, the median of these variables were used as a reference and then characterized into two levels, as shown in Box 1.

Suicidal ideation among the military police was assessed based on some questions adapted from the Youth Risk Behavior Surveillance System (YRBSS) (Kann et al., 2018), according to Box 1, as these are direct questions about suicidal behavior.

The EPS-10 stress perception scale (Siqueira Reis et al., 2010) was used to assess the individual's perceived stress. This questionnaire consists of 10 questions, and the subject should answer based on their thoughts and feelings in

the previous 30 days. All characterizations are shown in Box 1.

The HAD scale was used to assess the level of anxiety and depression. Participants answered 14 questions: seven focused on the level of anxiety and the other seven on the level of depression. Each component's questions were summed, and the result was assessed according to the classification (Botega et al., 1995).

The Pittsburgh scale consisting of 10 questions, was used to assess sleep quality. This questionnaire measures the usual; bedtime and sleep quality, wake-up time, and hours of sleep per night. Seven scores were summed and combined into a global score, which can vary from

0 to 21. Values between 0 and 10 were characterized as "Normality = 0" and values above 10 points as "Sleep disorders = 1" (Table 1) (Bertolazi, 2008; Buysse, Reynolds, Monk, Berman, & Kupfer, 1989).

The Maslach Burnout Inventory - General Survey (MBI-GS) (Maslach et al., 2001) was used to measure Burnout Syndrome in military personnel. This survey is a quantitative inventory, built with a Likert scale, numbered from 0 to 6. Final scores between 0-60 points were characterized as "Normality = 0" and scores between 61-100 points as "Presence of Burnout = 1" (Box 1).

Box 1

Representative chart of the questions used to assess the study variables.

Dependent variables	Questions used	Categorization
Deep sadness	During the past 12 months, have you felt excessively sad or hopeless?	No Yes (ref)
Suicidal thinking	During the past 12 months, have you ever seriously considered committing suicide?	No Yes (ref)
Suicidal planning	During the past 12 months, have you planned how to commit suicide?	No Yes (ref)
Suicide attempt	During the past 12 months, how many times have you actually attempted suicide?	No Yes (ref)
Stress	Classification based on EPS-10 criteria	Normal (0-26 points)
Anxiety	Classification based on the criteria of the HAD scale	Normal (0-11 points)
Depression	Classification based on the criteria of the HAD scale	Normal (0-11 points)
Sleep quality	Classification based on IQSP criteria	Normal (0-10 points)
Burnout syndrome	Classification based on the MBI-GS criteria	Normal (0 - 60 points)
Independent variables		
Sex	What is your sex?	Man Woman(ref)
Age	How old are you?	≤37 >37 (ref)
Socioeconomic status	Classification based on ABEP criteria	Upper/upper-middle class ("A" - "B2") Middle class ("C1" – "E") (ref)
Anthropometric characteristics	What is your height and weight?	Eutrophic (<25.0 kg/m²) Overweight (≥ 25.0 kg/m²) (ref)
Occupational characteristics	What is the characteristic of your work?	Administrative
Occupational characteristics	Are you assigned to an independent military police battalion/company or specialized units?	Battalions/CIPM
Occupational characteristics	How long have you been in the military police?	≤20 years
Occupational characteristics	What is your weekly workload?	≤40 hours
Physical activity level	Classification based on IPAQ criteria	Active Low level of physical activity (ref)

Procedures

The first stage of the study was to hold a meeting with the representative of the 3rd section of the Military Police. This served to expose the objectives and interests of the research, as well as to clarify possible doubts and questions. Then, and in possession of information on the number

of police officers, the statistical calculation for the sample was performed, as shown in figure 1.

The second step, consisting of the insertion of all the study questionnaires, was inserted in the Google Forms, and then the participants were instructed to sign the Free and Informed Consent Form. After signing the term, a new stage in

Google Forms was enabled, containing the questionnaires' questions. This entire procedure took place through a link generated through the Google platform itself, and the respondents answered for their respective electronic devices.
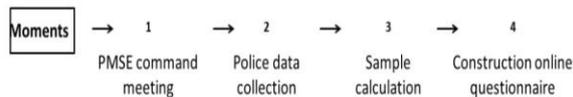
Figure 1. Timeline about the stages of the study.

Statistical analysis

Descriptive statistics were characterized as means, standard deviation, absolute frequency, and relative frequency. For data analysis, crude logistic regression analysis was used to analyze the associations between the level of physical activity (IPAQ), sleep quality (PSQI), stress (EPS-10), anxiety and depression (HAD), burnout (MBI-GS), and suicidal ideation. A Binary Logistic Regression was also conducted to estimate the occurrence of the phenomenon in the form of an Odds Ratio (OR). For the specific situations of this analysis, the inverse ratio of the OR was calculated. Chart 1 presents the variables and characterizations used in this research. The significance level of $p < 0.05$ was established for all analyses, with a 95% confidence interval, assuming a maximum error of 5%. The analyses were performed using IBM SPSS Statistics for Windows, Version 20.0 (Armonk, NY: IBM Corp).

RESULTS

The characteristics related to socio-demographic and anthropometric variables are shown in Table 1. The general analysis of the data showed that the majority of the sample comprises male military police officers, more than half of the individuals analyzed are overweight, and most of the sample has less than 20 years of service in the corporation. Concerning socioeconomic classification, 78% are middle class, with the majority operationally performing jobs (62.6%), with a higher prevalence in battalions and independent military police (74%).

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Table 1

Anthropometric, occupational, and sociodemographic characteristics (N = 254).

Variables	n (%)	CI (95%)
Sex		
Male	212 (83.5)	(0.11; 0.21)
Female	42 (16.5)	
Age		
≤ 37 years	135 (53.1)	(0.40; 0.53)
> 37 years	119 (46.9)	
BMI		
Eutrophic	88 (34.6)	(0.59; 0.71)
Overweight	166 (65.4)	
Economic class		
Upper/upper-middle	56 (22.0)	(0.16; 0.27)
Middle class	198 (78.0)	
Acting		
Operational	159 (62.6)	(0.56; 0.68)
Administrative	95 (37.4)	
Service time		
≤ 20 years	184 (72.4)	(0.22; 0.33)
> 21 years	70 (27.6)	
Weekly workload		
≤ 40 hours/week	147 (57.9)	(0.36; 0.48)
> 41 hours/week	107 (42.1)	
Workplace		
Special units	66 (26.0)	(0.68; 0.79)
Battalions/CIPMs	188 (74.0)	

Note. n, absolute frequency; %, relative frequency.

The chi-square test revealed an association between the classification of the level of physical activity and the presence of anxiety, as well as the presence of burnout syndrome and deep sadness. Insufficiently active policemen tend to be more anxious (40.5%) [$\chi^2(1) = 3.931$; $p = 0.047$; $r = 0.124$], suffer from exhaustion syndrome (20.1%) [$\chi^2(1) = 12.864$; $p = <0.001$; $r = 0.225$], and have experienced profound sadness in the last 12 months (16.9%) [$\chi^2(1) = 7.310$; $p = 0.007$; $r = 0.170$], when compared to the physically active, as shown in Table 2.

The variables that showed significance in the previous association analysis were inserted in the binary logistic regression model, as shown in

Table 3. We observed that older military police officers have a two times greater chance of reporting profound sadness (OR = 2.80; 95% CI 1.37-5.71). Also, low levels of physical activity were a risk factor against deep sadness for these individuals (OR = 1.85; 95% CI 1.03-3.33). However, from the Odds Ratio inverse ratio, individuals with less than 21 years of service are four times more likely to experience profound sadness (OR = 0.25; 95% CI 0.11-0.57).

Concerning anxiety, Table 3 also shows that female military police officers are three times more likely to be affected by this disorder (OR = 3.64; 95% CI 1.64-7.97). However, when considering the police officers with the longest service, the data indicated a protective factor against anxiety (OR = 0.30; 95% CI 0.13-0.68).

Regarding exhaustion syndrome, the protective factor of professional experience was also noted (OR = 0.28; 95% CI 0.12-0.67); however, individuals with low levels of physical activity were 2.5 times more likely to develop burnout syndrome (OR = 2.49; 95% CI 1.42-4.43) (Table 3).

Table 2

Association between the level of physical activity and mental health of the military police in the state of Sergipe (N = 254)..

Physical activity level	Active n (%)	Low level of physical activity n (%)	p-value
Sleep disorders	23 (16.1)	23 (20.7)	0.34
High stress	10 (7.0)	9 (8.1)	0.73
Presence of anxiety	41 (28.7)	45 (40.5)	0.04*
Presence of depression	13 (5.1)	12 (4.7)	0.64
Presence of exhaustion syndrome	35 (13.8)	51 (20.1)	<0.001**
Deep sadness	33 (13)	43 (16.9)	0.007*
Suicide thinking	16 (6.3)	19 (7.5)	0.17
Suicide planning	11 (4.3)	12 (4.7)	0.39
Suicide attempt	4 (1.6)	1 (0.4)	0.28

Note. n, absolute frequency; %, relative frequency; p, significance level.

Table 3

Association between "deep sadness", "anxiety", and "exhaustion syndrome" associated with the level of physical activity in Military Police in the State of Sergipe (N = 254).

Variables	Deep sadness OR(CI:95%)	Anxiety OR(CI:95%)	Exhaustion syndrome OR(CI:95%)
Sex	-	3.62(1.64-7.97)	-
Age	2.80(1.37-5.71)	-	-
BMI	-	-	-
Work type	-	-	-
Weekly workload	-	-	-
Workplace	-	-	-
Service time	0.25(0.11-0.57)	0.30(0.13-0.68)	0.28(0.12-0.67)
Physical activity level	1.85(1.03-3.33)	-	2.49(1.42-4.43)

Note. OR(CI:95%), odds ratio and confidence interval.

DISCUSSION

This study aimed to assess the association between physical activity and the variables that characterize mental health in military police officers. The main finding of this study was that military police officers classified as "insufficiently active" are more anxious, with higher levels of "exhaustion syndrome" and lower reported levels of "deep sadness" when compared to their physically active peers. In addition, longer service was a protective factor against anxiety and burnout syndrome, and older officers were more likely to be affected by "deep sadness".

Concerning anxiety, a higher prevalence was observed among female police officers. In a WHO survey on mental health worldwide, it was observed that women are more anxious than men in all age groups (World Health Organization, 2017). This difference between the sexes may occur due to the way women might react to traumatic situations and stressful events, adopting thoughts of self-blame and denial of problems (Lee et al., 2016), whereas men seek

psychoactive substances such as alcohol, tobacco and, other legal drugs to reduce the effects of these events on their lives (Miranda & Guimarães, 2016). The combination of these events usually experienced daily may lead to anxiety symptoms, such as insomnia, difficulty concentrating, exaggerated nervousness, and constant fear. Nieuwenhuys and Oudejans (2011) showed that high levels of anxiety harmed police shooting accuracy. This condition may put society at risk since it may alter the work capacity of the police agent.

However, it was observed that longer periods of service have a protective factor against anxiety, burnout syndrome, and deep sadness; it is speculated that this response is because professional experience allows the military police to deal more efficiently with situations that occur during service. Police officers are exposed to various traumatic and sad situations, such as episodes of violence, accident scenarios, threats to their lives, and death. A study by Jong-Ku Lee et al. (2016) observed that self-resilience is a protective factor that may help the agents of public security organizations to minimize the risks for trauma and sadness due to negative experiences at work.

Being over 37 years of age was shown to be a risk factor for profound sadness. This response is expected because older police officers may have experienced more stressors. It is known that police work includes moments of great stress, even terror, and the police deal with emotional alterations after encountering violent or traumatic incidents, which may help in the incidence of profound sadness. Thus, the previous findings need to be highlighted, as it is common for active military police to commit suicide due to mental and psychological health problems. These data are even more worrying since female police officers try to commit suicide more often than men (Liberman et al., 2002).

However, regular physical activity may help reduce these signs and symptoms for several reasons. During physical activity, there is an increase in brain temperature, with consequent release of hormones, such as endorphins and oxytocin, which leads to an improvement in mood state, attenuating increases in the signs and symptoms of profound sad responses are in line with the findings of the current study, which points out that low levels of physical activity are a risk factor for burnout syndrome and sadness. Other possible reasons for this attenuation with physical activity practice may be the improvement in mitochondrial function in neurons and neurotransmitters' action, such as dopamine, serotonin, and norepinephrine (Sörensen et al., 2000).

In addition to promoting health benefits for police officers, in conjunction with technical job training, regular physical activity and adequate physical fitness help this population sustain the profession's demands (Souza et al., 2013). When promoting these behavioral changes, individuals are expected to acquire more resistance to deal with their workload, thus reducing mental and professional exhaustion and increasing work performance. Thus, the systematic practice of physical activity could contribute to the psychological health of police officers. Systemic physical activities are not commonly applied to police corporations' daily tasks, except in some specialized policing units; therefore, the benefits of systematic physical activity are no widely availed.

This study had some limitations, such as the risk of memory bias through the use of questionnaires to assess past physical activity and mental health. In addition, the influence of the service scale for the application of the instrument was not taken into account, as this might be considered a factor that leads to one of the observed behaviors. However, the present study advanced the knowledge regarding the level of physical activity and mental health behavior of military police officers, providing information so that the public authorities can consider possibilities to improve this situation in this professional category.

CONCLUSION

It is concluded that physical activity is associated with changes in the mental health of military police officers in the State of Sergipe. It was possible to verify an association between physical activity and anxiety, as well as between

burnout syndrome and the perception of deep sadness.

Conflict of interests:
Nothing to declare.

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