

## Military Special Operations and Traffic Police Officers Have Similar Lifestyles Unrelated to Physical Fitness

### Policiais Militares de Operações Especiais e de Trânsito Apresentam Estilos de Vida Similares não Relacionados à Aptidão Física

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#### Abstract

Lifestyle can be related to occupational activity; however, little is known about lifestyle of Brazilian police officers with different work demands. Thus, lifestyle and its relation to health-related physical fitness (HRPF) of police officers of the Special Operations Battalion (SOB) and Traffic Police Battalion (TPB) from Patos-PB, Brazil were analyzed. Forty-four active military personnel men were analyzed by occupational activity: SOB (n=23) and TPB (n=21). Lifestyle was analyzed by the Individual Lifestyle Profile (ILP) scale and HRPF by a battery of tests: anthropometric measurements, sit-and-reach test, 1-min curl-up test, elbow flexion and 20-m shuttle run test. Mann-Whitney U test, Chi-square and partial correlation (controlled by age and schooling) were used. Lifestyle components were similar between the groups ( $p>0.05$ ). There were no significant associations between the negative and positive profiles of lifestyle components with the groups ( $P>0.05$ ). ILP showed a weak correlation with HRPF in general or by occupational activity ( $-0.310<r<0.287$ ). In conclusion, lifestyle did not depend of the occupational activity and it was not related to the dimensions of the HRPF in the active military personnel.

**Keywords:** Occupational Health. Burnout, Professional. Occupational Risks. Military Medicine.

#### Resumo

O estilo de vida (EV) pode estar relacionado às atividades ocupacionais, contudo, pouco se sabe sobre o EV de policiais brasileiros com diferentes demandas de trabalho. Portanto, analisou-se o EV e sua relação com a aptidão física relacionada à saúde (AFRS) de policiais do Batalhão de Operações Especiais (BOPE) e do Batalhão de Polícia de Trânsito (BPTRAN) de Patos-PB, Brasil. Foram analisados 44 militares da ativa, divididos por atividade ocupacional: BOPE (n=23) e BPTRAN (n=21). O EV foi analisado pela escala do Perfil de Estilo de Vida Individual (PEVI) e a AFRS por uma bateria de testes: medidas antropométricas, sentar-e-alcançar, abdominal de 1 min, flexão de cotovelos e vai-e-vem de 20m. Foram utilizados os testes U de Mann-Whitney, Qui-quadrado e correlação parcial (controlada por idade e escolaridade). Os componentes do EV foram similares entre os grupos ( $P>0,05$ ). Não foram observadas associações significantes entre os perfis negativo e positivo dos componentes do EV com os grupos ( $P>0,05$ ). O PEVI apresentou fraca correlação parcial com a AFRS em geral ou por atividade ocupacional ( $-0,310<r<0,287$ ). Conclui-se que o EV apresentou independência da atividade ocupacional e não se relacionou às dimensões da AFRS nos policiais militares da ativa.

**Palavras-chave:** Saúde do Trabalhador. Esgotamento Profissional. Riscos Ocupacionais. Medicina Militar.

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#### 1 Introduction

Lifestyle (EV) is represented by a set of actions, values and attitudes expressed in social, cultural and professional behavior of people. This construct reflects on the physical and mental health and influence in the production and/or execution of the tasks required by different occupational activities<sup>1-3</sup>. In this sense, researchers have been concerned in studying the EV and the aspects that cause positive and negative effects<sup>4-7</sup> in health and occupational activities.

Some occupational activities require specific conditions for the work, and among the activities in public security, the military police is one of the most complex and stressful<sup>8</sup>, due to the imminent risk of accidents and death, besides several peculiar situations that require appropriate physical and cognitive fitness<sup>9</sup>. Satisfactory levels of these capabilities

directly affect the health and life of these professionals<sup>7,8</sup>, reducing many situations of vulnerability<sup>7,9</sup>. Thus, the occupational activity of the Military Police requires a physical and mental profile compatible with the work demands<sup>9</sup>.

It is known that physical exercise contributes to the improvement of physical capacity, which comprise components of physical fitness related to health (AFRS), reflecting a healthy EV<sup>9</sup>. On the other hand, sedentary behavior are directly related to many diseases<sup>10</sup>. Therefore, a healthy EV and good levels of AFRS make the professional able to exercise his or her function with quality, avoiding negative outcomes to health that straddle from work and limit him or her in the leisure activities<sup>5</sup>.

The officers of Special Operations Battalion (SOB) are highly trained to perform the occupational activities in

different environments. Therefore, they must have a physical condition to carry their equipment in long work days, as well, good mental health to make accurate decisions in the most adverse situations without endangering their lives and the population's<sup>9</sup>. Whereas the officers of the Traffic Police Battalion (TPB) have the function to maintain, preserve, and supervise the order in traffic. So, they move by means of automobilist transport in order to be effective and/or efficient so that they can reduce damage to the population through the transit<sup>11</sup>. It should be noted that, despite the different occupational activities among groups of police officers, all require a healthy EV and proper AFRS to perform their functions.

Despite the evidence, few studies have verified the EV in professionals with high levels of stress, as is the case of the military police<sup>12</sup>. Until now, no study was found with the purpose of examining the EV correlating with the AFRS of Brazilian police with different demands of work. In this context, the present study analyzed the EV and its relationship to the AFRS in officers of SOB and TPB. The hypothesis is that the officers of SOB show higher scores on the EV compared to TPB and that there is a relationship between EV and the components of the AFRS in the military officers.

## 2 Material and Methods

This was a descriptive study with a sectional comparative design, approved by the Committee for Ethics in research site, according to resolution 466/12 of the National Health Council and in accordance with the Declaration of *Helsinki*. The informed consent form was signed by all the participants.

44 military male active military officers participated, divided into 2 groups: SOB (n= 23) and TPB (n= 21), who were physically active ( $\geq 150$  min/week of moderate physical activity;  $\geq 60$  min/week of vigorous activities; or the combination of moderate and vigorous activities)<sup>13,14</sup> according to the International Physical Activity Questionnaire (IPAQ)<sup>15</sup>. The following officers were excluded during the study: those who made use of medicines, food supplements, alcoholic beverages or tobacco 48 hours prior to the data collection; had musculoskeletal or cardiovascular diseases; or with inadequate implementation of physical tests.

The officers arrived on the scene of collection 2 to 3 post-absorptive hours in the morning, responded to the questionnaire of IPAQ<sup>15</sup> and to the scale of the profile of the Individual Life Style (PEVI)<sup>16</sup>. Afterwards, anthropometric measurements of body mass (kg) using a digital balance (Filizola®, Brazil) were later collected with a resolution of 0.1kg; height (m) by means of a wooden mounted stadiometer, with resolution of 0.005m; waist circumference (cm) with stretchable anthropometric tape measure (Sanny®, Brazil) with a resolution of 0.01 m; skinfolds (chest, abdominal and thigh average) through Adipometer scientific (Sanny®, Brazil) with a resolution of 0.001m for measuring the percentage and

fat (%) according to the protocol of Jackson and Pollock<sup>17</sup>. All measurements were performed by a single trained evaluator, following the recommendations of the *International Society for the Advancement of Kinanthropometry*<sup>18</sup>.

Then, the following tests were performed: Sit and reach in *Wells* bench (flexibility, cm) following the protocol of Bertolla et al.<sup>19</sup>; abdominal test for 1 minute to localized muscle resistance (RML, repetitions) in accordance with Pollock and Wilmore<sup>20</sup>; and test of flexion of the elbows to dynamic muscle strength (repetitions), also following the protocol of Pollock and Wilmore<sup>20</sup>. Finally, the assessment of cardiorespiratory fitness ( $VO_{2max}$ , mL/kg/min) was performed by the test of race back-and-forth of 20 m<sup>21</sup>.

The scale of the profile of the Individual Life Style (PEVI)<sup>16</sup> was used to evaluate the EV. This instrument consists of 15 questions divided into five components: Nutrition, Physical Activity, preventive behavior, social networking, and control of stress. Each question has a Likert scale of response that varies from '0' to '3'. Being that '0' and '1' are linked to negative profile of EV, reporting that: 'absolutely not part of his or her life style' and 'sometimes corresponds to his or her behavior', respectively. For the responses associated with the positive profile, the values are '2' and '3', describing, respectively, 'almost always true in his or her behavior' and 'the assertion is always true in his or her day-to-day; it is part of his or her life style'. It was used the modal representation of the Well-being Pentacle to expose this information.

For the analysis of the PEVI scale, the sum of three questions pertaining to each component was held, as well as the overall score of the scale, classifying the scores of the components in the following way: up to 3 negative points (negative profile) and greater than or equal to 4 points (positive profile)<sup>22</sup>.

### 2.1 Data analysis

The scores of the EV components were reported by median and quartiles (1th-3th) and compared among the occupational activities (SOB vs. TPB) with the Mann-Whitney U test. PEVI (negative and positive) for each component was presented by absolute (n) and relative frequency (%) and its association with the battalion was verified by the Chi-square test (2x2) with correction for continuity. The chi-squared test for adherence was used for the analysis of proportions among the profiles (negative and positive) within the groups. After confirmation of the assumption of normality test (*Shapiro-Francia*), the relationship among the morphological, cardiorespiratory and neuromuscular variables, with the overall score of PEVI was evaluated from the partial correlation coefficient (with control for age and schooling)<sup>23</sup>, presented together with a confidence interval of 95% (bootstrap method, simple model). The correlations were classified as: weak (0.1-0.39), moderate (0.40-0.69) and strong ( $\geq 0.7$ )<sup>24</sup>. The analyzes were carried out with 95% confidence interval ( $P < 0.05$ ).

### 3 Results and Discussion

The sample presented age:  $38.04 \pm 7.39$  years, body mass:  $82.21 - 10.60$  kg, height:  $1.72 \pm 0.04$  m, time of service:  $15.90 \pm 8.24$  years, alcoholism: 59.1% of the officers responded that consume alcoholic beverages, while 40.9% reported that they did not consume. According to the table, in comparison to the profile of the EV between officers of SOB and TPB, Mann-Whitney U test indicated no significant difference between the groups ( $p > 0.05$ ) for the analyzed components (nutrition, physical activity, preventive behavior, social networking, control of stress and overall score).

**Table 1** - Comparison of the scores of the profile of the life style (EV) between officers of the Special Police Operations Battalion (SOB) and the Traffic Police Battalion (TPB). Patos-PB, Brazil, 2012.

Components of EV	SOB (n = 23)	TPB (n = 21)	Value of P
Nutrition	4 (3-6)	4 (3-5)	0.547
Physical activity	4 (3-5)	4 (2-5)	0.460
Preventive behavior	6 (4-7)	5 (4-6)	0.174
Social Relationship	7 (5-9)	7 (6-8)	0.666
Control of Stress	6 (3-7)	4 (2-7)	0.635
Overall Score	27 (21-31)	23 (19-28.5)	0.295

Note: Data presented by median (1st-3rd quartiles). P- value for the Mann-Whitney U test.

Source: Research data

As described in Table 2, the Chi-square test showed no

significant associations between the profile (negative and positive) of the components of the EV ( $P > 0.05$ ) and the occupational activity (SOB and TPB). Additionally, the Chi-square test of adherence pointed out that the frequencies were higher for the positive profile in all the components to SOB ( $P < 0.05$ ). However, these results have not occurred in the components of Physical Activity and stress management for TPB ( $P > 0.05$ ).

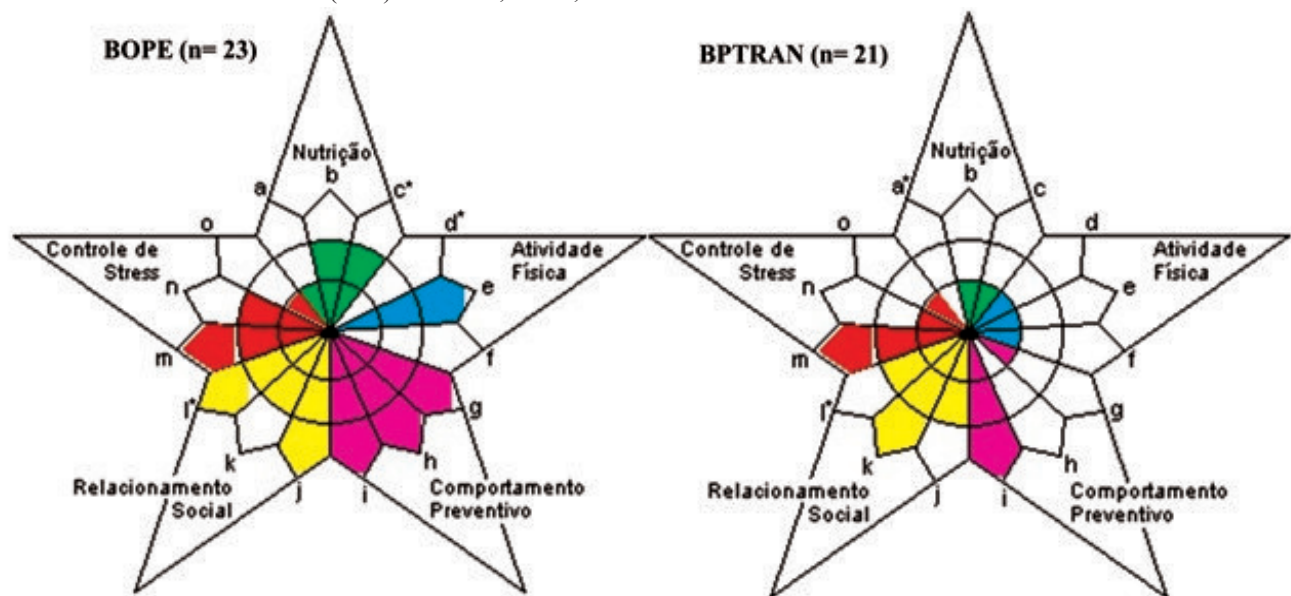
**Table 2** - Association between the profile of life style (EV) between officers of the Special Police Operations Battalion (SOB) and the Traffic Police Battalion (TPB). Patos-PB, Brazil, 2012.

Components of EV	Profile	SOB (n = 23)	TPB (n = 21)	Value of P
Nutrition	Negative	6 (326.1)	8 (338.1)	0.596
	Positive	17 (373.9)	13 (361.9)	
Physical activity	Negative	7 (330.4)	10 (347.6)	0.390
	Positive	16 (369.6)	11 (352.4)	
Preventive behavior	Negative	4 (317.4)	3 (314.3)	1.000
	Positive	19 (382.6)	18 (385.7)	
Social Relationship	Negative	1 (34.3)	2 (39.5)	0.935
	Positive	22 (395.7)	19 (390.5)	
Control of Stress	Negative	7 (330.4)	9 (342.9)	0.588
	Positive	16 (369.6)	12 (357.1)	

Note: Data presented by absolute (n) and relative frequency (%). P- value for the Chi-squared test. \*Proportion statistically higher than the negative profile ( $P < 0.05$ ).

Source: Research data

**Figure 1** - Modal representation of the Well-Being Pentacle between officers of the Special Police Operations Battalion (SOB) and the Traffic Police Battalion (TPB). Patos-PB, Brazil, 2012.



\*Questions with multiple nodes, in which the lowest value was reported.

Source: The authors.

The morphological, neuromuscular variables and maximum oxygen consumption showed little shared variance with the overall score of PEVI of military

officers ( $-0.310 < r < 0.287$ ; weak classification), both in overall as well as in separated by occupational activity (Table 3).

**Table 3** - Correlation among the morphological, neuromuscular variables and maximum consumption of oxygen and the overall score of the Special Police Operations Battalion (SOB) and the Traffic Police Battalion (TPB). Patos-PB, Brazil, 2012.

Variables	Overall (n = 44)	SOB (n = 23)	TPB (n = 21)
BMI (kg/m <sup>2</sup> )	0.230 [-0.069; 0.519]	0.252 [-0.168; 0.647]	0.279 [-0.236; 0.691]
Waist circumference (cm)	0.223 [-0.099; 0.519]	0.235 [-0.259; 0.643]	0.255 [-0.263; 0.721]
Fat percentage (%)	-0.017 [-0.383; 0.301]	-0.002 [-0.573; 0.481]	0.124 [-0.333; 0.469]
Lean mass (kg)	0.244 [-0.047; 0.526]	0.287 [-0.051; 0.639]	0.114 [-0.437; 0.600]
Lean mass (kg)	-0.053 [-0.281; 0.371]	0.104 [-0.411; 0.555]	0.125 [-0.335; 0.532]
Flexibility (cm)	0.013 [-0.290; 0.313]	-0.073 [-0.529; 0.360]	-0.007 [-0.541; 0.482]
Dynamic force (reps)	-0.086 [-0.382; 0.244]	-0.192 [-0.558; 0.299]	0.310 [-0.444; 0.057]
RML (reps)	0.033 [-0.286; 0.380]	-0.120 [-0.562; 0.410]	0.140 [-0.262; 0.548]
VO <sub>2max</sub> (mL/kg/min)	0.033 [-0.375; 0.474]	-0.071 [-0.586; 0.623]	0.151 [-0.349; 0.609]

BMI = body mass index; Circumference = circumference; RML = localized muscle resistance; reps = repetitions. Note: Data presented by the partial correlation coefficient (controlled by age and schooling) with a confidence interval of 95% [95% CI].

Source: Research data

The main findings of the present study showed that the EV showed independence of labor activity and were not related to the dimensions of AFRS. Thus, both hypotheses of the study that, the officers of SOB showed higher scores on the EV compared to TPB and that there was a relationship between PEVI and the components of AFRS, were rejected.

SOB requires from the military officers a high physical fitness, emotional balance and quick decision, especially in situations where there is higher risk to life<sup>11</sup>. In turn, TPB, which has the function of supervising and preventing tumult in transit, spends most of their time working walking or motorized. Despite the differences in the exercised functions, the military officer of SOB and TPB showed no difference in PEVI. However, there was a predominance significantly positive in all components of PEVI in the Group of SOB.

It is known that the working conditions, especially for SOB, expose these military officers to situations of risk of death, persecution, daily contact with violence, making working conditions unhealthy and stressful<sup>11</sup>. Then, specialized police corporations perform tasks which require constant improvement of physical and mental capacities to fulfill the assigned missions<sup>11</sup>. It was believed that SOB had a better EV when compared to TPB, phenomenon which was not found by overall score for comparison between the two groups. On the other hand, the modal representation of the Well-being pentacle, SOB presented a healthier EV when compared to TPB.

Minayo et al.<sup>12</sup> investigated 1,120 Military Police officers of Rio de Janeiro, noting that in relation to rest and leisure, corporals and soldiers showed higher percentages of “leisure” than officers, noncommissioned officers and sergeants (47.4% vs. 39.4%, respectively), while the latter showed higher levels of “household leisure” in relation to the corporals and soldiers (55.2% vs. 50.9%, respectively). The following were considered “community leisure”: traveling, going to the cinema, strolling, going to bars, going to clubs, going to church, practicing sports and meeting friends, i.e., activities related to non-sedentary behavior, and to “household leisure”

were: reading, watching TV, staying at home with the family, staying alone, sleeping and resting (sedentary behavior). Before this context, the behavior outside of corporations seems to have a greater influence on the EV of the military officers than those moments of work, a time that military police officers have presented similar habits outside the work environment<sup>12</sup>, in addition, the scale of work enables the military officers to occupy more weekly off-time from the occupational activity

Although the two groups had similar profile on the component “Nutrition”, SOB presented a higher proportion of positive profile than TPB according with the Well-Being pentacle. In the component “Physical Activity”, SOB exhibited higher proportions of positive profile than negative ones, while in the group TPB, the profiles were similar. These findings suggest that either by requirement or not of their corporations, the military officers of SOB seem to have a greater concern with the supply and maintenance of a routine of physical activities. According to the Ministry of Health of Brazil<sup>25</sup>, behaviors and habits are directly related to EV, as sedentary lifestyle and inadequate diet, influence over 50% of the total risk exposure to chronic diseases, evidencing that the adoption of an active EV contributes in the control and reduction of other risk factors.

Military police officers have presented unsatisfactory levels of physical activity<sup>26</sup>, which can directly affect the daily performance of work capacity, since the practice of physical activity is related to the improvement of health, well-being<sup>27</sup> and quality of life<sup>28</sup>. According to Gonçalves et al.<sup>29</sup>, there is a considerable percentage of leaves of transit agents due to occupational diseases, more precisely, 21% of the pathologies are associated with mental disorders and 12% are related to the musculoskeletal system. The adherence to physical activity as a regular habit reduces the risk of diseases and have greater job satisfaction and, consequently, minimize the number of leaves caused by diseases<sup>30</sup>. Because they have similar functions in the maintenance of order and law enforcement, these data<sup>27</sup> may serve as a warning to the military officers of

SOB and TPB.

Although SOB has presented a positive profile in the component “Physical Activity”, even though higher values were expected by high physical demands of the profession, which shows a mismatch of EV with the physical conditioning, characteristic and expected for the military officers of that corporation. The incompatibility of EV and occupational activity is very common. This statement corroborates with the study of both Nascimento and Borgatto<sup>31</sup>, who observe that the EV of physical education teachers of basic education is not compatible with the educational work of guidance and encouragement to the practice of physical activity.

Regarding the component “Stress control,” TPB did not obtain higher proportions of positive profile on the negative as occurred to SOB. This difference between the corporations may have an association with the fact that SOB, in the selection process of the soldiers and in training routines, seeks to simulate situations of extreme mental stress, providing greater chances to withstand high loads of stress in real situations of work. The profession of police officer brings factors beyond those presented earlier, which can cause overloading of stress. For example, short periods of rest favor the accumulation of stress of the routines of work that has repercussions on personal health and performance at work<sup>12</sup>.

Other elements such as weight of the equipment, blind obedience, media repercussions on the actions of the police officers and the lack of recognition of society to public safety services, contribute to this accumulation of stress<sup>12</sup>. According to Tavares et al.<sup>11</sup>, the stress can influence the increase in adipose tissue, which may evolve to obesity and, in turn, can contribute to the consolidation of a state of chronic stress<sup>11</sup>. Stress is a characteristic aspect of the profession, which exerts a strong negative influence on physical and psychological performance of occupational activities of the military officers. Choosing physical activities that provide satisfaction, associated to healthy eating habits, produce positive effects in the reduction of the implications of stress on the body<sup>26</sup>.

In the study of Domingos-Gomes et al.<sup>32</sup>, it was found that the military officers of SOB and TPB presented unsatisfactory values of BMI and body fat percentage. Still, flexibility, dynamic force, RML and  $VO_{2max}$  were higher for SOB, however, the police officers of TPB showed satisfactory values for dynamic strength and RML, and unsatisfactory for flexibility and  $VO_{2max}$ . These results are alarming, especially in the long term, bearing in mind that the military officers with sedentary EV and with more working time have a predisposition to increase the BMI, body fat percentage, reduction of cardiovascular and neuromuscular capacities<sup>32</sup>.

Finally, greater magnitude was expected in the correlation between EV and the dimensions of AFRS. This may have occurred because both groups showed similar levels of physical activity, demonstrating homogeneity in AFRS. It is known that to find strong correlations it is recommended that

the data present a behavior of variability. Although the present study did not find an association between EV and AFRS, it is important to highlight that previous studies demonstrate this relationship in the military police officers<sup>12,32</sup>. Due to being a cross-sectional study, it is limited to security in the temporality and causality of the checked relationships, however, such implication is intrinsic to the own design.

#### 4 Conclusion

The officers of SOB and TPB, even with different occupational activities, presented similar EV. In addition, the findings indicate that the EV was not correlated with the dimensions of AFRS of these military officers. Public policies directed to the Military Police officers are recommended with the aim of improving the EV and the AFRS and, therefore, maximizing the performance in the tasks carried out by the military officers in corporations.

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