105 - OBESITY AND LEVEL OF PHYSICAL ACTIVITY LEVEL IN MILITARY POLICE

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INTRODUCTION

The military police represent a class of different workers, in which high levels of physical fitness are required for the performance of military service, in compliance with the constitutional duty to maintain public order and run the ostensible policing (JESUS and JESUS, 2012). The military service physical fitness is an important feature and subject factor with low physical fitness negatively influence both the admission and in the promotional system of military career (CHARLES et al., 2008).

The World Health Organization (WHO) and the American College of Sports Medicine (ACSM) recommends that physical activity should be distributed in mild and moderate intensities with 30 minutes of daily exercise (GARBER et al., 2011). Regular physical activity increases the renewal rate of the tissues, slows aging, reduces the current rate of fat, improves blood coagulation and gas exchange in the lungs facilitates, improve the mineralization of bones and releases endorphins, neurotransmitters that decreases stress increases the feeling of well-being (DESLANDES, 2013).

Because of lack of physical activity and inadequate intake of caloric foods obesity has become a worldwide epidemic. Overweight and obesity are the fifth leading cause of death with over three million annual deaths attributed to this problem (HOLUB et al, 2013; JAIME et al, 2013). Thus, the obesity has multivariate causes and is associated with high costs for the health sector (PASCO et al., 2013; CUREAU and REICHERT, 2013). In this way, the aim of this study was to evaluate the physical activity level and body mass index of military police.

METHODS

This is a cross-sectional descriptive study with a stratified and representative sample of the population of military police of Araçatuba city, Brazil. The study was approved by the Ethics Committee on Research with human beings at the University of Franca (CAAE: 08660112.6.0000.5495). Participated of this study 274 police officer. Twelve police not completed the questionnaires correctly than was excluded. The sample size was made with 262 police officers (95% confidence interval and error of 5%). We included in study the police officers of both genders who worked regularly for a period exceeding one year. The cops were excluded if they did not answer the questionnaire correctly or were removed from the function at the time of evaluation.

The data collection procedure began with the completion of demographic questionnaire Physical activity level was assessed by the IPAQ-8 short version. The questionnaire has six questions related to the amount of days and minutes where physical activities during leisure time, occupational, mobility and housework are carried out, with reference to the previous week to the interview. The IPAQ-8 short version showed good coefficients of validity and reproducibility based on criteria of frequency, intensity and duration of activity to classify physical activity levels: sedentary, insufficiently active, active and very active (MATSUDO et al., 2001; DUMITH, 2010;BRITO et al., 2012; SILVA et al., 2012).

Weight and height were measured using a digital scale (Toledo - 2096PP model) with attached stadiometer. The Body Mass Index (BMI in kg/m2) was obtained by dividing body weight (kg) by height (m2). For BMI classification was used the criteria proposed by the World Health Organization (WHO): Eutrophic 18.5 to 24.9; Overweight 25.0 to 29.9; Class I obesity from 30.0 to 34.9; Class II obesity 35 to 39.9 and Obesity grade III ≥40,0.

Descriptive statistics were used to calculations mean, standard deviation (SD), absolute and relative values. The chi-square adherence test was used to analyze the significance of the differences between BMI categories in each gender. The Friedman test was used to analyze the significance of the differences between the categories with the frequency and volume of physical activity in every gender. Differences were considered significant at $p < 0.05$.

RESULTS

Among the 262 police officers evaluated 216 (82.4%) were male and 46 (17.5%) were female, with a mean overall age of 37 ± 7.1 years and BMI of 27.6 ± 3 7 kg/m2 (Table 1).

Table 1. Age and anthropometric data of the military police of both genders and total (mean ± SD).

Variables	Male	Female	All
Age (years)	36.8 ± 7.0	42.5 ± 2.1	37.0 ± 7.1
Weigtht (Kg)	85.0 ± 1.0	73.5 ± 13.7	83.0 ± 1.0
Height (m)	1.74 ± 0.06	1.65 ± 0.06	1.73 ± 0.06
BMI (Kg/m^2)	27.8 ± 3.5	27.0 ± 5.0	27.6 ± 3.7

Body Mass Index = BMI

Most of the participants 182 (69.47%) reported to be married. Sixty-nine (26.34%) worked in the administrative sector and 193 military police (73.66%) worked in the operational section. The mean of work in the police was 13.6 ± 2.8 years and the current function of 9.4 ± 7.2 years.

According to the BMI most of the police officer (50.7%; n = 133) were classified as overweight (Table 2).

Table 2. Frequency distribution of the sample according to the classification of body mass index (BMI; absolute and relative values) of both genders.

Classification	Male		Female		All	
	N	%	N	%	N	%
Eutrophic	47	21.7	19	41.3	66	25.1
Overweight	115	53.2 *	18	39.1	133	50.7 *
Obesity	54	25.0	9	19.5	63	24.0

*p<0.001 compared to the other classes for males and for the total.

The police officers that practiced low-intensity of the physical activity have an average frequency of 2.0 ± 2.3 days by week. The police officers that practiced physical activity of moderate intensity showed average weekly frequency of 1.9 ± 1.9 days. Already the policeman that practice has high-intensity physical activities showed an average weekly frequency of 1.5 ± 1.3 (Table 3).

Table 3. Frequency of physical activity by week in each of the intensity classes from IPAQ for both genders and total (mean ± SD).

Intensity	**Frequency** (days/weeks)		
	Male	**Female**	**All**
Low	2.0 ± 2.3	1.5 ± 1.8	2.0 ± 2.3
Moderate	1.9 ± 1.9	1.8 ± 1.7	1.9 ± 1.9
Intense	1.1 ± 1.5 *	1.0 ± 1.5 *	1.5 ± 1.3 *

*p<0.002 compared to other classes for each gender and for the total.

The overall mean of the police officers that practiced moderate physical activity had a mean of 53.1 ± 59.9 minutes by week. The police officers that practiced low-intensity physical activity had mean of 31.3 ± 36.7 minutes by week. The military officers who practiced high-intensity physical activity had mean 36.8 ± 52.9 minutes per week (Table 4).

Table 4. Physical activity level in each of the intensity classes from IPAQ for both genders and total (mean ± SD).

Intensity	**Level** (days/weeks)		
	Male	**Female**	**All**
Low	30.3 ± 37.0	27.2 ± 32.9	31.3 ± 36.7
Moderate	52.6 ± 64.8*	79.4 ± 78.2*	53.1 ± 59.9*
Intense	35.7 ± 52.5	34.7 ± 53.8	36.8 ± 52.9

*p<0.002 compared to other classes for each gender and for the total.

The results of the IPAQ questionnaire can be identified that the majority of the sample (51.5%) showed that physical activity level was insufficiently active; 30% was active and 16.4% was sedentary (Table 5).

Table 5. Distribution of frequency to IPAQ classification categories for physical activity level in both genders and total.

Categories	**Male**		**Female**		**All**	
	N	**%**	**N**	**%**	**N**	**%**
Very active	2	0.9 *	3	6.5*	5	1.9*
Active	62	28.7	13	28.2	79	30.1
Insufficiently active	118	54.6	21	45.6	135	51.5
Sedentary	34	15.7	9	19.5	43	16.4

*p<0.002 compared to other classes for each gender and for the total.

DISCUSSION

Most police officers are male confirming data obtained by Jesus and Jesus (2012). This higher prevalence of men in this type of service can be related to the history of military service in the country required for males and whose stereotype follows also male conditions. In the present study, we found that 69.4% had activity in the operational sector. A similar result was found in a study conducted in the Northeast in Brazil which showed the highest percentage of military working in the operating sector (66.7%) compared with the administrative sector (33.2%) (CALHEIROS et al.2013).

In relation to body weight research by Jaime et al. (2013) found that 35% of the Brazilian adult population is overweight. In this sense, the current research it was established that 74.7% of the police are classified as overweight and obese. This amount compared to the prevalence in the population leads to the understanding that if there is concern about the number of Brazilians overweight. The police officers are in even worse situation because the prevalence is more than twice that of the general population. Results similar to the present study were observed in police officers from North (60.8%) and South region (63.9%) of the Brazil that also classified as overweight and obese (Santos et al., 2013). In Rio de Janeiro, it was observed a prevalence of 60% or more of police (civil and military) that was classified as overweight (MINAYO et al., 2011). In another study conducted in Rio de Janeiro it was found that 70% of police officers were classified as overweight (Goncalves et al., 2012). Considering only the obese we found that 24% of the individual's police are in this rating range. Results above this value were found in the US police officers with a prevalence of obesity of 40% (GU et al., 2012). The authors suggest that this high prevalence of obese police is due to the association between long working hours, regular consumption of high calorie diet and low physical activity levels.

Obesity interferes in quality of life with a strong risk factor for the development of non-communicable diseases. In 2007, 72% of deaths in the country were attributed to non-communicable diseases. It is estimated that between 2009 and 2011 the total annual cost of outpatient admissions and procedures in Brazil related to chronic diseases associated with overweight was $ 2.1 billion with 10% of the cost attributed to overweight and obesity (Jaime et al., 2013). In this study, it was observed that most police officers showed one or more unhealthy factors related to lifestyle (sedentary lifestyle and overweight). This is worrying given considering that these factors determine the health status of these workers and prevalent risk factors for the development of non-communicable diseases.

On the other hand, regular physical activity helps control weight and has shown some benefits in reducing risk factors such as: control improvement in blood pressure and improved blood coagulation and improve immune function (DESLANDES, 2013). However, only 29.3% of the police officers of this study practice some kind of physical activity more than 3 times a week. Physical activity aims to work directly in the improvement of a number of factors related to the individual's daily life considering personal and professional issues. Silva et al. (2012) state that a well-prepared military police physically has the best conditions in the care of occurrences. In the opposite direction, the present study indicates low levels of physical activity (67.9% are sedentary or irregularly active), which may impair the performance of this professional. Jesus and Jesus (2012) also reported that subjects

with inadequate physical preparation may have low quality of military service.

In this study, the overall mean of moderate physical activity between the police officers was 53.1 minutes per week. These values are below the recommendations of the WHO which suggests 30 minutes of daily exercise (WHO, 2013). The physical condition is directly related to the service provided by police both the working day, as the physical condition required for the development of activities (JESUS, JESUS, 2012). However, the findings of this study showed that the physical activity practiced weekly expressed in minutes, are not enough for police officers (67.9% were classified as irregularly active and sedentary). Gonçalves, Veiga and Rodrigues (2012) showed that more than half of the military police (60%) did not practice any sport. In Germany, it was found that 41% of the military police have low physical fitness with 37% have moderate physical fitness and 23% have high fitness (GERBER et al., 2013). The authors reported that the low physical activity level may be due to the accumulation of functions, highlighting family commitments and working hours. The explanations for the low physical activity levels are related to police activities which is characterized mainly be sedentary, with occasional periods of strong activity (BOYCE et al., 2008). The authors mention the physical demands of this routine work, such as riding in a patrol car and prepare the paperwork are often inadequate for maintaining physical condition.

We found that almost half of the military police (51.1%) were classified as irregularly active. Better result (62.1%) was found in a study conducted in the Northeast region with police officers (Calheiro et al., 2013). The literature shows similar data for low physical activity level in adults (57.4%) in the south (Barreta et al., 2007) and teachers (46.3%) in the Southeast (Brito et al. , 2012). Despite the differences between the populations studied it is clear that the physical activity level is low; demonstrating the need for public policies focused on this issue and lifestyle. There is special concern for the military police which shows decrease in physical capacity and increasing the proportion of body fat (RODRIGUEZ-ANES, 2003). Additionally, insufficient physical activity is a public health problem particularly in developing countries which can increase the risk of non-communicable diseases such as diabetes and atherosclerosis. Such risk factors are highly relevant to understanding, diagnosis and prognosis is commonly part of the investigative medical discourse and various health care categories (JAIME et al., 2013).

CONCLUSION

We observed that most of the police officers were classified as overweight. Most of the police officers reported being insufficiently active and sedentary which indicates an unhealthy lifestyle and showed health risks. This result points out and demonstrates the need for educational and physical activity programs within the scope of health promotion to control these risk factors to health and improve the quality of life of this workers.

REFERENCES

ANDRADE, M. L. L. et al. Nível de atividade física e ingestão energético em graduandos de educação física. Revista Brasileira de Fisiologia do Exercício, v. 12, n. 2, p. 114-118, 2013.

BARRETA, E.; BARRETA, M. Nível de atividade física e fatores associados entre adultos no Município de Joaçaba. Caderno de Saúde de Pública, Rio de Janeiro v. 23, n. 7, p. 1595-1602, 2007.

BOYCE, R. W. et al. Muscular Strength and Body Composition Comparison Between the Charlotte-Mecklenburg Fire and Police Departments. International Journal of Exercise Science, Charlotte, v. 1, n. 3, p. 125-135, 2008.

BRITO, W. F. et al. Nível de atividade física em professores da rede estadual de ensino, Revista de Saúde Pública, São Paulo, v. 46, n.1, p. 104-9, 2012.

CALHEIROS, D. S.; NETO, J. L. C.; CALHEIROS, D. S. A qualidade de vida e os níveis de atividade física de policiais militares de Alagoas, Brasil. Revista Brasileira de Qualidade de vida, Ponta Grossa, v. 5, n. 3, p. 59-71, 2013.

CHARLES, L. E.et at. Adiposity Measures and Oxidative Stress Among Police Officers. Obesity, Silver Spring, v. 16, n. 11, p. 2489-2497, 2008.

CUREAU, F. V.; REICHERT, F. F. Indicadores antropométricos de obesidade como preditores de pressão arterial elevada em adolescentes. Revista Brasileira de Cineantropometria e Desempenho Humano, Pelotas, v. 15, n. 3, p. 338-349, 2013.

DESLANDES, A. The biological clock keeps ticking, but exercise may turn it back. Arquivos de Neuro-Psiquiatria, São Paulo, v. 71, n. 2, p. 113-118, Fev. 2013.

DUMITH, S. C. Atividade física e sedentarismo: diferenciação e proposta de nomenclatura. Revista Brasileira de Atividade Física e Saúde, Londrina, v. 15, n. 4, p. 253-254, 2010.

GARBER, C. E. et al. American College of Sports Medicine position stand. Quantity and quality of exercise for developing and maintaining cardiorespiratory, musculoskeletal, and neuromotor fitness in apparently healthy adults: guidance for prescribing exercise. Medicine and Science in Sports and Exercise, v. 43, n. 7, p. 1334-1359, 2011.

GERBER, M. et al.; Perceived fitness protects against stress-based mental health impairments among police officers who report good sleep. Journal of Occupational Health, v. 55, p. 376-384, 2013.

GONÇALVES, S. J. C.; VEIGA, A. J. S.; RODRIGUES, L. M. S. Qualidade de vida dos policiais militares que atuam na área da 2o CIA do 10o Batalhão Militar (Miguel Pereira e Paty de Alfenas). Revista Fluminense de Extensão Universitário, Vassouras, v. 2, n. 2, p. 53-76, 2012.

GU, J. K. et al. Long Work Hours and Adiposity Among Police Officers in a US Northeast City. Journal of Occupational and Environmental Medicine, Morgantown v. 54, n. 11, p. 1374-1381, 2012.

JAIME, P. C.; et al. Brazilian obesity prevention and control initiatives. Obesity Reviews, v. 14, n. 2, p. 88-95, 2013.

JESUS, G.M.; JESUS, E. F. A. Nível de atividade física e barreiras percebidas para a prática de atividades físicas entre policiais militares. Revista de Educação Física e Ciências do Esporte, Florianópolis, v. 34, n. 2, p. 433-448, 2012.

MATSUDO, S. M. et al. Questionário Internacional de Atividade Física (IPAQ): estudo de validade e reprodutibilidade no Brasil. Revista Brasileira de Atividade Física e Saúde, Pelotas, v. 6, n. 2, p. 5-18, 2001.

MATSUDO, S. M. et al. Nível de atividade física da população do Estado de São Paulo: análise de acordo com o sexo, idade, nível socioeconômico, distribuição geográfica e de conhecimento. Revista Brasileira de Ciência e Movimento, Brasília, v. 10, n. 4, p. 41-50, 2002.

MINAYO, M. C. S.; ASSIS, S. G.; OLIVEIRA, R. V. C. Impacto das atividades profissionais na saúde física e mental dos policiais civis e militares do Rio de Janeiro (RJ, Brasil). Ciência e Saúde Coletiva, Rio de Janeiro, v. 16, n. 4, p. 2199-2209, 2011.

PASCO, J. L.; BRENNAN, S. L.; KOTOWIC, Z. Morbid obesity in women on the rise: an observational, population-based study. BMC Public Health, v. 290, n. 13, p.1-4, 2013.

RODRIGUES-AÑES, C. R. Sistema de avaliação para promoção e gestão do estilo de vida saudável e da aptidão física relacionada à saúde de policiais militares. 2003. 143 f. Tese (Doutorado em Engenharia de Produção) - Universidade

Federal de Santa Catarina. Florianópolis, 2003.

SANTOS, J. A. B. et al. Nível de Adiposidade Corporal e de Aptidão Física de Policiais Militares de Boa Vista – Roraima. Revista Brasileira de Prescrição e Fisiologia do Exercício, São Paulo, v. 7, n. 37, p. 21-28, 2013.

SILVA, R. et al. Aspetos relacionados à qualidade de vida e atividade física de policiais militares de Santa Catarina – Brasil. Motricidade, v. 8, n. 3, p. 81-89, 2012.

SUZUKI, C. S.; MORAES, S. A.; FREITAS, I. C. M. Atividade física e fatores associados em adultos residentes em Ribeirão Preto/SP. Revista Saúde Pública, São Paulo, v. 45, n. 2, p. 311-20, 2011.

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OBESITY AND PHYSICAL ACTIVITY LEVEL IN POLICE OFFICERS

ABSTRACT

The aim of the study was to evaluate the physical activity level (PAL) and body mass index (BMI) of the police officer. It was evaluated 262 employees. 216 (82.4%) were male and 46 (17.5%) females with mean age 37±7.1 years. For assessing the PAL international physical activity questionnaire (IPAQ-8) was used and the BMI was calculated by dividing body weight (kg) by height (m2). The results of the PAL to the police were: 1.9% (n=5) very active, 30.1% (n=79) active, 51.5 % (n=135) irregularly active and 16.4% (n=43) sedentary. The results for BMI showed overall mean BMI 27.6±3.7 kg/m2. In conclusion, the study showed a high percentage of police officer classified as insufficiently active and within range of overweight and obese. These results demonstrate the need for educational and physical activity programs to control of body weight and physical inactivity within the military police.

KEYWORDS: Motor Activity, Sedentary Lifestyle, Body Mass Index, Military.

OBÉSITÉ ET ACTIVITÉ EN VOLUME PHYSIQUES POLICE MILITAIRE

RÉSUMÉ

L'objectif de l'étude était d'évaluer le volume de l'activité physique (VAF) et l'indice de masse corporelle (IMC) de la police militaire. Nous avons évalué 262 sujets, 216 (82,4%) étaient le sexe masculin et 46 (17,5%) étaient des femmes, avec un âge moyen de 37 ± 7,1 ans. Pour l'évaluation de VAF nous avons utilisé le questionnaire international de l'activité physique (IPAQ-8) .Le IMC a été obtenu en divisant le poids corporel (kg) par la taille (m2). Les résultats VAF à la police étaient: 1,9% (n = 5) très actif, 30,1% (n = 79) actif, 51,5% (n = 135) irrégulière active et 16,4% (n = 43) sédentaire. Les résultats ont montré pour IMC IMC moyenne globale de 27,6 ± 3,7 kg/m2. L'étude montre qu'un pourcentage élevé de la police militaire ont été classés comme insuffisamment active et dans la gamme surpoids. Ces résultats démontrent la nécessité de programmes d'éducation et l'activité physique pour le contrôle du poids corporel et de l'inactivité physique au sein de la police militaire.

MOTS-CLÉS: Mode de vie sédentaire, indice de masse corporelle, Militaire.

OBESIDAD Y EL NIVEL DE ACTIVIDAD FÍSICA EN LA POLICÍA MILITAR

RESUMEN

El objetivo del estudio fue evaluar el volumen de la actividad física (VAF) y el índice de masa corporal (IMC) de la policía militar. Se evaluaron 262 sujetos, 216 (82,4%) eran de género masculino y 46 (17,5%) eran mujeres, con una edad de 37 ± 7,1 años. Para la evaluación de VAF se utilizó el cuestionario internacional de actividad física (IPAQ-8). El IMC se obtiene dividiendo el peso corporal (kg) por la altura (m2). Los resultados VAF a la policía fueron: 1,9% (n = 5) muy activo, el 30,1% (n = 79) activa, el 51,5% (n = 135) irregularmente activos y el 16,4% (n = 43) sedentaria. Los resultados para el índice de masa corporal mostraron promedio general IMC 27,6 ± 3,7 kg/m2. El estudio muestra que un alto porcentaje de la policía militar se clasificaron como insuficientemente activos y dentro del rango de sobrepeso. Estos resultados demuestran la necesidad de programas educativos y de la actividad física para el control del peso corporal y la inactividad física dentro de la policía militar.

PALABRAS CLAVE: Estilo de vida sedentario, índice de masa corporal, Militar.

OBESIDADE E VOLUME DE ATIVIDADE FÍSICA EM POLICIAIS MILITARES

RESUMO

O objetivo do estudo foi avaliar o volume de atividade física (VAF) e o índice de massa corporal (IMC) dos policiais militares. Foram avaliados 262 sujeitos, sendo 216 (82,4%) do gênero masculino e 46 (17,5%) do feminino, com média de idade de 37±7,1 anos. Para a avaliação do VAF foi utilizado o questionário internacional de atividade física (IPAQ-8).O IMC foi obtido mediante a divisão do peso corpóreo (kg) pela estatura (m2). Os resultados do VAF para os policiais foram: 1,9% (n=5) muito ativo, 30,1% (n=79) ativo, 51,5% (n=135) irregularmente ativo e 16,4% (n=43) sedentário. Os resultados para o IMC demonstraram média IMC geral de 27,6±3,7 kg/m2. O estudo mostra que alta porcentagem de policiais militares foram classificados como insuficientemente ativos e dentro da faixa de sobrepeso. Estes resultados demonstram a necessidade de programas educacionais e de atividade física para o controle do sedentarismo e peso corporal dentro da policia militar.

PALAVRAS-CHAVE: Estilo de Vida Sedentário, Índice de Massa Corporal, Militares.