

Sociodemographic profile, nutritional status and physical activity level of elderly people participating in a physical exercise program¹

Perfil sociodemográfico, estado nutricional e nível de atividade física de pessoas idosas participantes de um programa de exercícios físicos

Perfil sociodemográfico, estado nutricional y nivel de actividad física de personas mayores que participan en un programa de ejercicio físico.

[Research Article]

Rafaela Cristina Araújo-Gomes²
Leandra de Aquino³
Érika Teixeira Andrade⁴
Gabriela Vieira Barbosa⁵
William Menezes da Silveira⁶
Yuri Hariel de Brito Cruz⁷
Fabiana Rodrigues Scartoni⁸
Estélio Henrique Martin Dantas⁹

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² Msc, doctoral student in the Postgraduate Program in Nursing and Biosciences – PPGEnfBio, at the Federal University of the State of Rio de Janeiro (UNIRIO), Rio de Janeiro (RJ), Brazil.

araujogomesrc@gmail.com

<https://orcid.org/0000-0002-4607-4756>

³ Msc, doctoral student in the Postgraduate Program in Nursing and Biosciences – PPGEnfBio, at the Federal University of the State of Rio de Janeiro (UNIRIO), Rio de Janeiro (RJ), Brazil.

eleconsultoria@gmail.com

⁴ Undergraduate Medical Program, Tiradentes University (UNIT), Aracaju (SE), Brazil. erika.teixeira@souunit.com.br

<https://orcid.org/0009-0000-1676-4185>

⁵ Undergraduate Medical Program, Tiradentes University (UNIT), Aracaju (SE), Brazil.

gabriela.vbarbosa@souunit.com.br

<https://orcid.org/0009-0006-4119-7526>

⁶ Undergraduate Medical Program, Tiradentes University (UNIT), Aracaju (SE), Brazil.

william.menezes@souunit.com.br

<https://orcid.org/0009-0004-0768-3358>

⁷ Undergraduate Medical Program, Tiradentes University (UNIT), Aracaju (SE), Brazil.

yuri.hariel@souunit.com.br

<https://orcid.org/0009-0007-4513-4589>

⁸ PhD, Professor in the Catholic University of Petrópolis, Rio de Janeiro (RJ), Brazil.

fabiana.scartoni@ucp.br

<https://orcid.org/0000-0002-0466-8193>

⁹ PhD, Professor in the Postgraduate Program in Nursing and Biosciences – PPGEnfBio, at the Federal University of the State of Rio de Janeiro (UNIRIO), Rio de Janeiro (RJ), Brazil, in the Medicine Course at the Tiradentes University (UNIT), Aracaju (SE), Brazil and in the Program in Health and Environment (PSA), Tiradentes University (UNIT), Aracaju (SE), Brazil. estelio@pesquisador.cnpq.br; <http://orcid.org/0000-0003-0981-8020>

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Summary

To analyze the sociodemographic profile, nutritional status, and physical activity (PA) level of older people participating in a physical exercise program. 64 seniors (\bar{X} = 71.04±6.86 years) from the Academia Carioca Program, evaluated by anamnesis, *International Physical Activity Questionnaires* (IPAQ), modified Baecke for seniors, and body mass index (BMI). The group showed prevalence of 81.15% female, 34.38% with incomplete primary education, 64.06% taking care of the house/family, 42.20% divorced/widowed, 53.12% with income up to two minimum wages, 84.38% with preexisting diseases, 75.00% with a family history of diseases, 96.87% non-smokers, 67.19% do not drink. The Baecke score was \bar{X} = 17.83±5.24 (significant level of PA). According to the IPAQ, 70.30% were active. BMI was \bar{X} = 29.27±4.39kg/m² (overweight). Despite the participants presenting themselves as active, the verified BMI is still in the overweight range, demonstrating that PA is insufficient to regularize the BMI values of elderly individuals.

Keywords: aged, physical exercise, health profile, body mass index, lifestyle.

Resumo

Analisar o perfil sociodemográfico, estado nutricional e nível de atividade física (AF) de pessoas idosas participantes de programa de exercícios físicos. 64 idosos (\bar{X} = 71.04±6.86 anos) do Programa Academia Carioca, avaliados por anamnese, *International Physical Activity Questionnaires* (IPAQ), Baecke modificado para idosos, e índice de massa corporal (IMC). O grupo apresentou prevalências de: 81.15% do sexo feminino, 34.38% com ensino fundamental incompleto, 64.06% cuidando da casa/familiares, 42.20% divorciados/viúvos, 53.12% com renda até dois salários mínimos, 84.38% com doenças preexistentes, 75.00% com histórico familiar de doenças, 96.87% não tabagistas, 67.19% não bebem. O escore do Baecke foi \bar{X} = 17.83±5.24 (alto nível de AF). Pelo IPAQ, 70.30% estavam ativos. O IMC foi \bar{X} = 29.27±4.39kg/m² (sobrepeso). Apesar dos participantes apresentarem-se como ativos, o IMC verificado ainda está na faixa de sobrepeso, demonstrando que a AF é insuficiente para regularizar sozinha os valores do IMC de indivíduos idosos.

Palavras-chave: idoso, exercício físico, perfil de saúde, índice de massa corporal, estilo de vida.

Resumen

Analizar el perfil sociodemográfico, estado nutricional y nivel de actividad física (AF) de personas mayores que participan en un programa de ejercicio físico. 64 ancianos ($\bar{X}=71.04\pm 6.86$ años) del Programa Academia Carioca, evaluados por anamnesis, Cuestionario Internacional de Actividad Física (IPAQ), Baecke modificado para ancianos e índice de masa corporal (IMC). El grupo presentó prevalencias de: 81.5% mujeres, 34.38% con educación primaria incompleta, 64.06% cuidando la casa/familia, 42.20% divorciadas/viudas, 53.12% con ingresos hasta dos salarios mínimos, 84.38% con pre- enfermedades existentes, el 75.00% con antecedentes familiares de enfermedades, el 96.87% son no fumadores, el 67.19% no beben. La puntuación de Baecke fue $\bar{X}=17.83\pm 5.24$ (nivel alto de AF). Según el IPAQ, el 70.30% estaban activos. El IMC fue $\bar{X}=29.27\pm 4.39\text{kg/m}^2$ (sobrepeso). A pesar de que los participantes se presentan activos, el IMC verificado todavía se encuentra en el rango de sobrepeso, lo que demuestra que la AF es insuficiente para regularizar los valores del IMC de los ancianos por sí sola.

Palabras clave: Envejecido. Ejercicio físico. Perfil de Salud. Índice de masa corporal. Estilo de vida.

Introduction

Aging is increasingly present in today's society on a global scale. In 2021, in Brazil, the population of individuals over 60 reached 14.7%, approximately 31.2 million (BIGS, 2022). Meanwhile, worldwide numbers, despite being smaller in percentage, reflect the immensity of this population, reaching 761 million (UN, 2022).

Physiological aging impacts the human body, such as fat accumulation with consequent loss of function and increased comorbidities, such as arterial hypertension and arthrosis (Bandeira et al., 2019). However, although aging is a process of anatomical, social, and physiological changes, even with senescence, some learning and autonomies can be acquired and maintained (Di Domizio, 2013).

However, senescence can be delayed or even avoided through physical exercise. From it, a sedentary lifestyle and obesity, routinely favored by modernity, are statistically reduced (Di Domizio, 2013; Ziero & Navarro, 2021). Thus, it is necessary to encourage regular physical exercise through projects for the elderly population (de Sousa et al., 2021; Lima et al., 2022).

Unfortunately, performing physical activities is socially difficult for certain groups, such as Black women, with lower income and less education (Cruz et al., 2022). However, new government policies have allowed older people greater access to healthy lifestyle habits, fostering physical well-being, social collectivity, and personal wisdom, such as programs that promote physical activity (Rojas et al., 2020).

In this way, tracing the profile of this population that attends these physical activity programs can help social and government institutions to understand better what the characteristics of this population are, how their health is, and how the said program helps to improve their health, the which could help them to be more effective and to promote better health intervention in the elderly population.

Therefore, the present study aims to analyze the sociodemographic profile, nutritional status, and level of physical activity of older people participating in a public physical activity program.

Methods

This research is quantitative, descriptive, and cross-sectional, carried out in a pilot study through the evaluation of older people who attend the Academia Carioca Program.

The sample was selected for convenience in a non-probabilistic way. To participate in the research, volunteers should be 60 or older and regularly enrolled in the Academia Carioca Program at the João Barros Barreto Municipal Health Center in the Copacabana neighborhood, Rio de Janeiro - RJ. Older people who did not complete the assessments were excluded. Thus, 64 older men and women participated in this study.

The Academia Carioca Program is coordinated by the Municipal Health Department of Rio de Janeiro and operates in primary health care units. The program aims to promote health through free access to physical activity, such as bodybuilding, solo pilates, aerobics, dancing, and walking. Furthermore, most people participating in this program are elderly (Rio De Janeiro, 2022).

This research was authorized by the Research Ethics Committee (CEP) of the Federal University of the State of Rio de Janeiro, CAAE n°: 59578822.9.0000.5285 under opinion n° 5.654.923, of 09/20/2022 and also by the CEP of the Municipal Secretary of Health of Rio de Janeiro, co-participating institution, CAAE n°: 59578822.9.3001.5279 under opinion n° 5.761.671, of 11/17/2022, with institutional approval from the coordination of the Academia Carioca Program. In addition, meeting the standards for researching human beings, Resolution 466/12 of the National Health Council of 12/12/2012 (Brazil, 2012) and the Helsinki Resolution

(World Medical Association, 2008). All participants signed the Informed Consent Form - TCLE, authorizing their participation in the research.

Data collection occurred in the second half of 2022 at the João Barros Barreto Municipal Health Center in Copacabana, in Rio de Janeiro – Brazil. Initially, older adults were informed about the research and invited to participate. Subsequently, the anamnesis and level of physical activity questionnaires were administered, and the weight and height of the volunteers were also checked. Data collection took place through questionnaires based on the *Google Docs platform* to optimize data organization. Thus, the researchers applied the questionnaires in person and an interview model and filled in the data on the platform.

First, an anamnesis questionnaire with 12 questions was applied, consisting of general information from the volunteers, such as age, sex, race/color, marital status, educational level, activities performed, family income, if they have any chronic disease, if they smoke, if they drink alcoholic beverages, hours overnight stays, and history of first- and second-degree family illnesses.

The body mass and height of the volunteers were also checked to assess their nutritional status, calculated using the body mass index (BMI) formula: $\text{Body mass (kg)/height}^2(\text{m})$. A Welmy® CH110 (Brazil) anthropometric scale was used, with an INMETRO seal and capacity of 150 kg with 100g intervals. Height was checked using a vertical anthropometer attached to the scale. In which the classification for older adults is $\leq 22 \text{ kg/m}^2$ - low weight; > 22 to $< 27 \text{ kg/m}^2$ - adequate weight; and $\geq 27 \text{ kg/m}^2$ - overweight (Brazil, 2020).

Another variable analyzed in this study was the level of physical activity, assessed by two different questionnaires: the modified Baecke questionnaire for older adults and the long-form International Physical Activity Questionnaire (IPAQ) since both have different sensitivities.

The modified Baecke for older adults is a questionnaire that contains 15 questions that consider three domains regarding frequency and domestic, sports, and leisure activities, where the calculated score classifies the individual as low (≤ 9.11), moderate (9.12 – 16.17) or high (≥ 16.18) level of physical activity (Ueno, 2013).

The long-form IPAQ has 30 questions and assesses aspects of physical activity at work, as means of transport, at home, recreation, sport, exercise and leisure, and time spent sitting, also checking the frequencies of activities and classifying individuals as very active, active, irregularly active (A and B) and sedentary (Matsudo et al., 2001).

The data were tabulated and analyzed in Microsoft Office Excel®, where the mean, standard deviation, and percentage of data from the evaluated sample were calculated.

Results

Table 1 presents the descriptive data of the sample's sociodemographic characterization. The mean age of participants in this research was 71.04 ± 6.86 years, the youngest being 60 years old and the oldest 86 years old.

Table 1. Sociodemographic data of older adults (No=64).

VARIABLE		No	%
Age	60 to 79 years old (young seniors)	56	87.50
	80 years or older (long-lived elderly)	8	12.50
Sex	Feminine	52	81.15
	Masculine	12	18.75
Race/color	Black	8	12.50
	Brown	27	42.19
	White	29	45.31
Marital status	Single	19	29.68
	Married	18	12.28
	Divorced or widowed	27	42.20
Education	Never studied	3	4.68
	Incomplete primary education	22	34.38
	Complete primary education	11	17.19
	Complete high school	12	18.75
	Complete higher education	16	25.00
Occupation	Take care of home and family	41	64.06
	Work out	8	12.50
	Work outside and take care of the house	15	23.44
monthly family income	Up to 2 minimum wages	34	53.12
	From 2 to 4 minimum wages	24	37.50
	More than 4 minimum wages	6	9.38
preexisting diseases	Yes	54	84.38
	No	10	15.62
family history of illnesses	Yes	48	75.00
	No	16	25.00
tobacco use	Yes	2	3.13
	No	62	96.87
alcohol use	Yes	21	32.81
	No	43	67.19
hours of sleep	Less than 6 hours	22	34.38
	From 6 to 8 hours	30	46.87
	More than 8 hours	12	18.75

Caption: No- absolute number; %- percentage.

The nutritional status of the evaluated elderly is described in Table 2, with the average BMI being 29.27 ± 4.39 kg/m², which classifies them as overweight.

Table 2. Classification of the Nutritional Status of Older Adults (No=64).

CLASSIFICATION	No	%	AVERAGE	SD
Low weight	4	6.25%	20.85	0.72
Appropriate Weight	13	20.30%	24.96	1.55
Overweight	47	73.45%	31.18	3.25

Caption: No- absolute number; %- percentage; SD- standard deviation.

The level of physical activity calculated by the Baecke questionnaire (Table 3) demonstrated that the mean calculated score was 17.83 ± 5.24 , classifying older adults as having an elevated level of physical activity.

Table 3. Classification of Physical Activity Level According to the Modified Baecke Questionnaire for the Elderly (No=64).

CLASSIFICATION	No	%	AVERAGE	SD
Low	6	9.40	7.22	1.17
Moderate	13	20.30	13.53	1.94
High	45	70.30	20.49	3.18

Caption: No- absolute number; %- percentage; SD- standard deviation.

The level of physical activity analyzed by the extended version of the IPAQ showed that most older people are active (Table 4), which corroborates the result found by the Baecke questionnaire.

Table 4. Physical Activity Level Classification According to the International Physical Activity Questionnaire (No=64).

CLASSIFICATION	No	%
Sedentary	5	7.80%
Irregularly Active B	18	28.10%
Active	36	56.30%
Very active	5	7.80%

Caption: No- absolute number; %- percentage.

Discussion

Concerning the data from this research, most older people evaluated participating in the physical exercise program were between 60 and 79 years old (87.50%). Younger older people participate more frequently in physical exercise programs than older people because, in general,

they have better physical performance and fewer comorbidities. In addition, they can convert physical activity into health benefits in the short and long term (da Silva et al., 2023).

In addition, according to the results, most physical activity practitioners are women. (81.15%). Among the reasons for the greater demand for physical exercise programs by older women, the main one is the more significant health concern, followed by socialization, leisure, well-being, and medical order. Furthermore, other factors may be related, such as women being more concerned with body balance and aesthetics and more likely to undertake restrictive diets combined with exercise (da Silva et al., 2023).

The prevalence of white race/color in participation in physical activities according to the study in question was also verified in the study by Chiconato et al. (2022), where black and brown women were less active compared to white women, unlike data commonly found in studies where the brown race/color is predominant, as this is the majority in Brazil, justified by miscegenation due to colonization. In this sense, it may be the neighborhood where the present research was conducted, located in the south zone, a noble area of Rio de Janeiro, which concentrates many white people. Despite the importance of using the race/color variable in research on health and physical activity, the lack of a conceptual explanation of race/color that justifies its use as a relevant and helpful concept in this field of knowledge, as well as the absence of standardization or greater consensus in the ways of stratifying this variable, can produce inconsistent results, as well as reduce the possibilities of comparative studies. Consequently, this can limit the possibilities for formulating effective public policies to promote racial equity, including access to health, physical activity, and leisure (Chiconato et al., 2022).

According to the present study, most physical exercise practitioners have a divorced/widowed marital status, which contradicts some statistics. The study by Dourado et al. (2021) showed that the highest percentage of elderly participants in physical activity was married, with a percentage of 53.2%, which shows that, contrary to the sociodemographic data of the research in question, older people who have a spouse are more likely to take care of health.

Concerning education, the prevalence was among older people with only incomplete primary education. Similarly, it was observed that the low level of education of older adults in the study by Duarte et al. (2020) was not an obstacle to regular physical activity since more than half of older adults who practice regular activities are illiterate or with few years of schooling.

In addition, the greater practice of healthy habits can also be facilitated due to the security conferred by the retirement income, allowing people to dedicate more leisure time. In this sense, retirement can change lifestyles and establish new routines, such as caring for home and family. Retirement was associated with reductions in the chance of smoking, physical inactivity, sitting excessively, and having inadequate sleep patterns (Oliveira & Coelho, 2021). This corroborates what was evaluated by the present research, in which the more considerable number of older people who practice physical activity care for the house and family members and do not need to work outside, directly interfering with adherence to physical exercise practices.

Relating income and the practice of physical activity, it was observed in this study that people with up to two minimum wages are more prevalent than others. However, it was concluded in research conducted by Rodrigues et al. (2017) that high-income people are privileged to perform physical activities during leisure; on the other hand, those with lower income seem more vulnerable to a higher level of occupational, physical activity, and commuting.

At the same time, the study carried out by Silva and Boing (2021) states that the regular practice of physical activity is capable of reducing the risk of mortality, improving blood pressure levels, lowering glycemic indexes, in addition to body weight, inflammation markers and of cardiovascular risk, as well as lowering low-density lipoprotein cholesterol (LDL-C), raising high-density lipoprotein cholesterol (HDL-C) and increasing insulin sensitivity. However, the regularity of physical activity practices is still below what is expected to maintain an excellent quality of life (Silva & Boing, 2021). It corroborates what was observed in the research, in which the prevalence of levels of physical activity practice is higher in older people with preexisting diseases and a family history of some pathology.

In this sense, the survey results also indicate reduced tobacco use (3.13%) and alcohol (32.81%) by respondents. Such data reflect a promising scenario against smoking in the elderly group surveyed, as they present rates below the national average of 12.2%. This scenario can be justified by current national policies to combat smoking, such as increased rates in the trade, publicity against use, and awareness programs. However, alcohol use is still above the national average of 25% of older adults (Paula, 2021), which indicates a greater need for attention in this context since both substances are highly harmful to the body and disrupt the metabolic process. Thus, the physiological processes of exercise and fat breakdown are impaired, making these two components obstacles to BMI reduction through physical exercise.

The data indicate a variable amount of sleep among older adults, divided into 3 groups: less than 6 hours of sleep (34.38%), 6 to 8 hours of sleep (46.87%), and more than 8 hours of sleep (18.75%). Such results indicate that most research participants sleep ~~m~~above the minimum adequate amount, 6 hours of sleep, but many older people still do not reach the recommended sleep. Thus, it is noted that for most of these individuals, the effectiveness of physical exercises is reduced since the process of muscle repair, hormone release, and energy restoration is conducted during sleep. When these individuals do not sleep the recommended minimum, all of these mechanisms work inefficiently, in addition to disfavoring the reduction in BMI, since the reduction in hormone release impairs both the breakdown of food and the endocrine pattern that signals hunger and satiety through a decrease in leptin levels and an increase in ghrelin levels, which predisposes to greater food consumption and the onset of obesity (Alves, 2023).

Regarding nutritional status, the study's BMI classification divides older adults into underweight (6.25%), adequate weight (20.30%), and overweight (73.45%). Thus, there is a higher prevalence in the overweight range, which may indicate several implications for their health since the proportion of individuals with a BMI above the appropriate weight is related to several comorbidities, such as increased cardiovascular risks, chronic diseases, such as hypertension, since obese older people were 3.85 times more likely to be hypertensive when compared to eutrophic ones, and a decrease in life expectancy due to the accumulation of adipose tissue in vessels and organs, which leads to a dysfunction of this organism (dos Santos et al., 2020). In this sense, regularizing the BMI to the appropriate range would bring several benefits to this elderly population, as it would promote the restoration of their current health and more remarkable survival.

It is undeniable that physical activity and an active lifestyle are closely related. In this context, the research data confirm this relationship since 70% of the participants have an elevated level of physical activity, according to the Baecke questionnaire, which indicates significant participation of older adults in the proposed activities. In comparison, 64.1% consider themselves active or highly active. assets, according to IPAQ. Such results reflect a favorable scenario for this population, as performing physical activities brings many benefits to the individual's health, such as reducing stress and anxiety symptoms, improving sleep quality, improving learning, reducing depressive symptoms, preventing and decreasing mortality due to chronic diseases such as Hypertension and Diabetes, improvement in strength, balance and flexibility, providing socialization and coexistence, in addition to providing bodily,

social and emotional learning, as in the awareness of their ability to be autonomous even with such age (Sales et al., 2022).

Thus, the importance of body care through the practice of physical activities is perceived, as seen in the study by Castro et al. (2015), who pointed out that these activities improve physical capacity (balance, handgrip strength, leg strength, and anterior trunk flexibility) and anthropometric parameters (waist-hip ratio and waist circumference), in addition to increasing muscle strength and decrease cardiovascular risk. Such exercises must be encouraged through new public policies that promote more opportunities and improve the quality of sports and bodybuilding programs, significantly improving effectiveness when accompanied by a physical education professional. It occurs due to its practice and specialized guidelines through regular and systematic practice of exercises since the general guideline indicates at least 150 minutes of moderate to vigorous intensity per week for a healthy life in adults and older people (Mosquera & Vargas, 2021). Thus, older adults receive due attention and improve their quality of life.

Finally, when comparing the overweight shown in most individuals in the sample and the level of physical activity, which was considered high for the questionnaires used, it is understood that only two parameters cannot define a relationship. Just an active life related to physical exercises cannot delimit an adequate BMI since the intake of food and liquids, lifestyle habits, and adherence to health plans also interfere (Lima et al., 2022). To that extent, a study with greater relationships and parameters to be analyzed is considered necessary.

Conclusion

From the collected data, it was verified with the research that despite the evaluated participants being active and presenting elevated levels of physical activity, the average value of the BMI verified is still in the overweight range. Thus, it is concluded that physical activity has several benefits, such as better physical fitness, flexibility, reduced risk of chronic diseases, and improved social interaction and well-being. However, it is insufficient to regularize the BMI values of elderly individuals on its own.

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