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# Prevalence and Preferences of Self-Reported Physical Activity and Nonsedentary Behaviors in Portuguese Adults

**Pedro J. Teixeira, Adilson Marques, Carla Lopes, Luís B. Sardinha, and Jorge A. Mota**

**Background**: This study describes levels of self-reported physical activity, frequency of selected opportunistic nonsedentary behaviors, and preferences of leisure-time activities in a representative sample of Portuguese adults, using data from a national survey on diet and activity behaviors (National Food, Nutrition and Physical Activity Survey, IAN-AF, 2015–2016). **Methods**: Participants were 3873 Portuguese adults (1827 men). They were interviewed face to face, and the short version of the International Physical Activity Questionnaire was used. Regular leisure-time programmed activities, and 6 additional items, forming the activity choice index questionnaire, were used to assess 6 discrete nonsedentary behaviors. **Results**: Using the International Physical Activity Questionnaire categories, 42.3% of the sample were classified as low active, 30.6% as moderately active, and 27.1% as highly active. Walking, health/fitness activities, running, group gymnastics classes, swimming/pool activities, football/futsal, and cycling were the most popular leisure-time activities. Between 15% (parking further away from destinations) and 48% (using the stairs instead of elevators) of participants reported that they frequently adopted commonly recommended nonsedentary activities. **Conclusions**: This study updates self-reported physical activity prevalence for Portugal adults, including older adults. In addition, it uniquely describes leisure-time activity preferences in the population and also the relative frequency of several nonsedentary activities of daily living.

**Keywords**: Portugal, sedentary behavior, exercise, leisure-time, national survey

The health benefits of physical activity are recognized and well documented.[1] Physical activity reduces the risk of cardiovascular disease,[2] diabetes,[3] obesity,[4] and certain cancers.[5] Physical activity improves muscular strength,[6] contributes to the prevention of osteoporosis,[7,8] is associated with low stress and high mental resources,[9] and enhances cognitive function.[10] Even amounts of physical activity below the recommendations have health benefits and reduce premature mortality.[11]

Despite evidence of the health benefits of physical activity, previous studies have indicated that many Portuguese individuals are not physically active enough to benefit their health.[12–15] A recent reanalysis of 2008 accelerometer data showed that, according to World Health Organization criteria and based on bouts of ≥10 minutes in moderate to vigorous physical activity, only 21% of Portuguese adults are sufficiently active, with England, Norway, and Sweden showing similar prevalence values.[16] Loyen et al[16] also concluded that 67% of Portuguese adults spent more than 7.5 hours per day in sedentary time, which may affect several morbidity markers such as glycemic control.[17]

A limitation of most previous studies describing the prevalence of physical activity and sedentary behaviors is that they do not characterize the specific behaviors individuals report engaging in or preferring. Both physical activity and sitting/sedentary time encompass a large and diverse group of activities, conducted in a multitude of life settings. Importantly, they potentially have different determinants (personal and environmental), unique behavioral and motivational facets, and distinct health and well-being outcomes. Therefore, it is also important to assess and track tendencies for population choices of these activities.

This investigation describes the level of self-reported physical activity, the frequency of selected opportunistic nonsedentary behaviors, and the preferences of leisure-time activities in a nationally representative sample of Portuguese adults, using data from the most recent national survey on food and physical activity (National Food, Nutrition and Physical Activity Survey, IAN-AF 2015–2016).

## Methods

### Participants and Procedures

This is a cross-sectional study based on data from the IAN-AF 2015–2016 in Portugal.[18] This survey aimed to collect nationwide data on dietary habits and physical activity (including sedentary behaviors, sports, and active choices in daily living). A probabilistic sample of the Portuguese population aged between 3 months and 84 years of age was selected by multistage sampling, using as sampling frame the national health registry. The first sampling step was based on the random selection of primary health care units stratified by the 7 statistical geographic units of Portugal (NUTs II), weighted by the number of individuals registered in each primary health care unit. The second step of sampling was based on the random selection of registered individuals in each primary health care unit, according to sex and age groups. The sample selection was performed in consecutive recruitment waves in order to use the most updated versions of the national health registry lists. Individuals who were living in collective residences or institutions, living in Portugal for less than 1 year (nonapplicable to infants), non-Portuguese

Teixeira, Marques, and Sardinha are with the Centro Interdisciplinar de Estudo da Performance Humana (CIPER), Faculdade de Motricidade Humana, Universidade de Lisboa, Lisbon, Portugal. Marques is also with the Centro de Investigação em Saúde Pública, Escola Nacional de Saúde Pública, Universidade Nova de Lisboa, Lisboa, Portugal. Lopes is with the Departamento de Ciências da Saúde Pública e Forenses, e Educação Médica, Faculdade de Medicina, Universidade do Porto, Porto, Portugal; and the EPIUnit, Institute of Public Health, University of Porto, Porto, Portugal. Mota is with the Centro de Investigação em Actividade Física Saúde e Lazer (CIAFEL), Faculdade de Desporto, Universidade do Porto, Porto, Portugal. Teixeira (pteixeira@fmh.ulisboa.pt) is corresponding author.

speakers, and individuals with diminished physical and/or cognitive abilities that hamper participation were excluded. The sample comprised of 2214 children and adolescents (≤17 y old) and 4339 adults (≥18 y old). For the present analysis, 4206 individuals ≥18 years old who answered physical activity questionnaires were initially included. From the 4206 adults, those who did not report all questions about physical activity or sitting time were excluded from the sample. This resulted in a final sample of 3873 individuals (1827 men, 2046 women), aged 46.8 (16.8) years old (men: 47.9 [17.1] and women: 45.8 [16.4]).

All individuals were asked to provide their written informed consent according to the Ethical Principles for Medical Research involving human subjects expressed in the Declaration of Helsinki and the national legislation. Ethical approval was obtained from the National Commission for Data Protection and the Ethical Committee of the Institute of Public Health of the University of Porto.

## Measures

The International Physical Activity Questionnaire (IPAQ) is an instrument for the assessment of physical activity in large population-based studies and for standardizing measures of health-related physical activity behaviors at the population level, in many countries and in different sociocultural contexts. The short IPAQ has been recommended for large population-based studies because it is easier, faster, and more feasible to complete.[12,19] Using the IPAQ's scoring protocol, total weekly physical activity was estimated by weighting time spent in each activity intensity with its estimated metabolic equivalent energy expenditure.[19] According to the IPAQ's scoring results, individuals were then classified as low active, moderately active, or highly active categories (http://www.ipaq.ki.se). Moderately active means they achieved at least 600 metabolic equivalent minutes per week. High means they achieved at least 3000 metabolic equivalent minutes per week. Low active indicates that the individual does not meet "moderate" or "high" criteria.

Individuals also answered whether they regularly engaged in leisure-time, programmed physical activities. If the answer was "Yes," they were asked to list these activities and indicate the number of times a week and minutes per day. In this study, we report all activities that were reported (not frequency or duration), with the aim of assessing the preferred forms of leisure-time physical activities in the adult population. Additional questions on nonsedentary behaviors were also included by using the activity choice index, previously validated.[20] Self-reported activities representative of "opportunistic" active choices during daily living (eg, taking the stairs, parking further away from an entrance, choosing to stand instead of sitting, etc) were assessed, in relation to the last month, with 6 items with response options on a 5-point Likert scale (ie, 1 = never, 5 = always). If individuals answered "frequently" or "always" that were used to indicate that the behavior was commonly chosen.

## Statistical Analysis

Descriptive statistics is presented as means, SD, and percentages for all variables. The prevalence of physical activity categories (low active, moderately active, and highly active) are shown according the sociodemographic characteristics (sex, age, educational level, and country region). The association between physical activity categories and sociodemographic characteristics were tested with chi-square tests, with prevalence and 95% confidence intervals (CIs) reported. The association between activity choice index and sociodemographic characteristics were also tested with chi-square analysis. A poststratification weight was used for the analysis, to reduce sampling error. A $P$ value less than .05 was regarded as significant. Data analysis was performed using SPSS Statistics (version 24; IBM, Chicago, IL).

# Results

Table 1 presents the individuals' characteristics. Portuguese adults reported spending an average of 327.2 minutes per day (95% CI, 327.1–327.3) minutes per day sitting; 30.8 minutes per day (95% CI, 30.8–30.8) walking; 60.8 minutes per day (95% CI, 60.8–60.9) in moderate physical activity; and 26.9 minutes per day (95% CI, 26.8–26.9) in vigorous physical activity. According to the IPAQ

**Table 1 Sample Characteristics (n = 3873)**

| | Percentage (95% CI) or mean (95% CI) |
|---|---|
| Sex, % | |
| Male | 49.5 (49.5–49.6) |
| Female | 50.5 (50.4–50.5) |
| Age, % | |
| 18–29 y | 18.3 (18.2–18.3) |
| 30–39 y | 16.5 (16.4–16.5) |
| 40–49 y | 21.2 (21.1–21.2) |
| 50–64 y | 26.4 (26.3–26.4) |
| ≥65 y | 17.7 (17.7–17.8) |
| Education level, % | |
| <High school | 30.9 (30.8–31.0) |
| High school | 45.7 (45.7–45.8) |
| Higher education | 23.4 (23.3–23.4) |
| Country region | |
| North | 16.8 (13.9–19.7) |
| Center | 14.9 (12.0–17.8) |
| Lisbon area | 13.6 (10.7–16.5) |
| Alentejo | 12.5 (9.5–15.4) |
| Algarve | 14.0 (11.1–16.9) |
| Madeira Islands | 13.8 (10.9–16.7) |
| Azores Islands | 14.4 (11.5–17.3) |
| PA and sedentary time, min/d | |
| Sitting | 327.2 (327.1–327.3) |
| Walking | 30.8 (30.8–30.8) |
| Moderate | 60.8 (60.8–60.9) |
| Vigorous | 26.9 (26.8–26.9) |
| IPAQ category, % | |
| Low | 42.3 (42.2–42.3) |
| Moderate | 30.6 (30.6–30.7) |
| High | 27.1 (27.0–27.2) |
| Engaged in programmed LTPA | |
| Regularly | 36.9 (34.4–39.4) |
| Not regularly | 63.1 (61.2–65.0) |

Abbreviations: CI, confidence interval; IPAQ, International Physical Activity Questionnaire; LTPA, leisure-time physical activity; PA, physical activity. Note: High school is 12 complete education years; higher education is having at least a bachelor's degree.

categories, 42.3% of individuals (95% CI, 42.2–42.3) were classified as low active; 30.6% (95% CI, 30.6–30.7) as moderately active; and 27.1% (95% CI, 27.0–27.2) as highly active. Almost 37% reported regularly engaged in leisure-time programmed physical activities (36.9%; 95% CI, 34.4–39.4).

The prevalence of IPAQ categories according to sex, age, educational level, and country region is presented in Table 2. More men (31.4%; 95% CI, 31.3–31.5) than women (22.9%; 95% CI, 22.8–23.0) were classified as highly active ($P < .001$). There was an association between IPAQ categories and age ($P < .001$). Middle (23.7%; 95% CI, 23.6–23.8) and older adults (22.8%; 95% CI, 22.7–23.0) were less likely to be in the highly active category ($P < .001$). There was also an association between physical activity level and educational level ($P < .001$). Individuals with higher education account for a large percentage of the moderately active (33.3%; 95% CI, 33.2–33.4), whereas the less educated were more likely to be classified as highly active (28.3%; 95% CI, 28.2–28.4; $P < .001$). For the association between IPAQ categories and country region, individuals from the Azores Islands, North, and Alentejo were more active than individuals from Lisbon area, Alentejo, and Algarve (both regions in the southern part of the country; $P < .001$).

The prevalence of nonsedentary activities and its association with sociodemographic characteristics are presented in Table 3. More women than men usually parked away from the destination (20.9% vs 15%, $P < .001$) and chose handwork instead of automatic work (40.7% vs 37.1%, $P < .001$). On the other hand, more men than women chose to stand-up instead of sitting (42.5% vs 34.5%, $P < .001$). Regarding age, adults over 40 years walked more often than younger adults as a way of transportation ($P < .001$). Middle-aged adults (aged 50–64 y) were those who parked away from destination more often ($P < .001$). Adults ≥65 years were less likely to use the stairs instead of escalators ($P < .001$) and stand-up instead of sitting than other age groups ($P < .001$). For educational level, having high school or higher education was associated with using escalators ($P < .001$) and taking breaks during work to be physically active ($P < .001$). Conversely, individuals in lower educational levels chose handwork instead of automatic more frequently than more highly educated individuals ($P < .001$). Regionally, individuals from the south of the country (Alentejo and Algarve) and from the Azores Islands were more likely to walk than individuals from other parts of the country ($P < .001$). Individuals from Lisbon were less likely to park away from destinations ($P < .001$), and those from the north of the country and from the Azores Island used stairs more often ($P < .001$).

The preferred leisure-time physical activities reported by Portuguese adults are presented in Figure 1. For the complete sample, the most popular activities were health club/gym activities (22% for the entire sample), walking (21%), and jogging/running (13%). In men, the more frequently reported activities were fitness/health club activities, running, walking, and football. In women, health club activities and walking prevailed. There were large gender differences in running and football (substantially more popular in men) and also in walking, gymnastics classes and dancing (more popular in women). Some age-related differences were also noticeable (Figure 2). Walking was much more popular for the 64+ years group (46%) and for the 50–64 years group (42%) than for the younger group ($P < .001$). Fitness/health club activities

**Table 2 Prevalence of International Physical Activity Questionnaire Categories, by Sex, Age, Education Level, and Geographical Region**

| | Percentage (95% CI) | | | |
|---|---|---|---|---|
| | Low | Moderate | High | *P* |
| Sex | | | | <.001 |
| Male | 40.3 (40.2–40.3) | 28.34 (28.3–28.4) | 31.4 (31.3–31.5) | |
| Female | 44.2 (44.1–44.3) | 32.9 (32.8–33.0) | 22.9 (22.8–23.0) | |
| Age, y | | | | <.001 |
| 18–29 | 35.2 (35.1–35.4) | 32.2 (32.1–32.4) | 32.5 (32.4–32.7) | |
| 30–39 | 39.4 (39.3–39.6) | 28.4 (28.3–28.6) | 32.1 (32.0–32.3) | |
| 40–49 | 48.7 (48.6–48.8) | 25.0 (24.9–25.1) | 26.3 (26.2–26.4) | |
| 50–64 | 40.6 (40.5–40.7) | 35.7 (35.6–35.8) | 23.7 (23.6–23.8) | |
| ≥65 | 46.9 (46.7–47.0) | 30.3 (30.2–30.5) | 22.8 (22.7–23.0) | |
| Education level | | | | <.001 |
| <High school* | 41.1 (41.0–41.2) | 30.6 (30.5–30.7) | 28.3 (28.2–28.4) | |
| High school | 43.7 (43.6–43.8) | 29.3 (29.2–29.4) | 27.0 (26.9–27.1) | |
| Higher education** | 40.9 (40.8–41.0) | 33.3 (33.2–33.4) | 25.8 (25.6–25.9) | |
| Country region | | | | <.001 |
| North | 36.8 (36.7–37.0) | 30.5 (30.4–30.7) | 32.7 (32.5–32.8) | |
| Center | 43.4 (43.1–43.6) | 27.7 (27.4–28.0) | 28.9 (28.7–29.2) | |
| Lisbon area | 46.5 (46.2–46.7) | 32.4 (32.2–32.7) | 21.1 (20.8–21.4) | |
| Alentejo | 50.1 (49.6–50.7) | 30.1 (29.5–30.8) | 19.8 (19.1–20.5) | |
| Algarve | 47.6 (46.8–48.5) | 33.0 (32.1–34.0) | 19.3 (18.3–20.4) | |
| Madeira Islands | 37.2 (35.8–38.5) | 35.3 (34.0–36.7) | 27.5 (26.1–29.0) | |
| Azores Islands | 39.4 (37.9–40.9) | 27.6 (25.9–29.3) | 33.0 (31.4–34.6) | |

*High school is 12 complete education years; **higher education is having at least a bachelor's degree.



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**Table 3 Prevalence of 6 Nonsedentary Activities (From the Activity Choice Index), by Sex, Age, Education Level, and Geographical Region**

| | Percentage (95% CI)[a] | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Walking[b] | *P* | Park away[c] | *P* | Using stairs[d] | *P* | Handwork[e] | *P* | Work breaks[f] | *P* | Stand-up[g] | *P* |
| Sex | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 |
| Male | 40.2 (40.1–40.3) | | 15.0 (14.9–15.1) | | 47.1 (47.0–47.2) | | 37.1 (37.0–37.1) | | 40.0 (39.9–40.1) | | 42.5 (42.5–42.6) | |
| Female | 42.0 (41.9–42.1) | | 20.9 (20.7–21.0) | | 48.6 (48.5–48.7) | | 40.7 (40.6–40.7) | | 37.8 (37.7–37.9) | | 34.5 (34.4–34.6) | |
| Age, y | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 |
| 18–29 | 40.6 (40.5–40.7) | | 14.1 (13.9–14.3) | | 48.2 (48.1–48.3) | | 38.9 (38.7–39.0) | | 38.6 (38.4–38.7) | | 34.2 (34.0–34.3) | |
| 30–39 | 34.2 (34.1–34.3) | | 14.6 (14.5–14.8) | | 49.0 (48.9–49.1) | | 33.4 (33.3–33.6) | | 38.7 (38.5–38.9) | | 39.0 (38.8–39.1) | |
| 40–49 | 37.7 (37.5–37.8) | | 18.9 (18.8–19.0) | | 50.7 (50.6–50.8) | | 37.7 (37.6–37.8) | | 38.3 (38.1–38.5) | | 40.8 (40.7–40.9) | |
| 50–64 | 43.3 (43.2–43.4) | | 21.8 (21.7–21.9) | | 53.2 (53.1–53.3) | | 44.5 (44.4–44.6) | | 42.1 (42.0–42.3) | | 43.8 (43.7–43.9) | |
| ≥65 | 49.4 (49.3–49.5) | | 16.4 (16.2–16.6) | | 33.9 (33.8–34.1) | | 36.1 (35.9–36.3) | | 34.2 (34.0–34.4) | | 31.7 (31.6–31.9) | |
| Education level | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 |
| <High school | 42.3 (42.2–42.4) | | 19.1 (18.9–19.2) | | 44.6 (44.5–44.7) | | 45.9 (45.8–46.1) | | 31.6 (31.4–31.8) | | 38.5 (38.4–38.6) | |
| High school | 40.3 (40.2–40.4) | | 18.6 (18.5–18.7) | | 50.1 (50.1–50.2) | | 38.3 (38.2–38.4) | | 39.4 (39.3–39.5) | | 39.5 (39.4–39.6) | |
| Higher education | 41.3 (41.2–41.4) | | 14.7 (14.5–14.8) | | 47.1 (47.0–47.2) | | 31.0 (30.8–31.1) | | 42.5 (42.4–42.6) | | 36.5 (36.4–36.6) | |
| Country region | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 | | <.001 |
| North | 39.6 (39.4–39.7) | | 16.1 (15.9–16.3) | | 58.0 (57.9–58.1) | | 43.9 (43.8–44.0) | | 37.2 (37.0–37.4) | | 36.5 (36.3–36.6) | |
| Center | 40.0 (39.8–40.3) | | 21.5 (21.2–21.8) | | 41.2 (40.9–41.4) | | 47.2 (46.9–47.5) | | 48.1 (47.7–48.4) | | 41.3 (41.1–41.5) | |
| Lisbon area | 42.6 (42.4–42.9) | | 14.4 (14.1–14.8) | | 39.3 (39.0–39.5) | | 29.7 (29.3–30.0) | | 33.0 (32.7–33.3) | | 39.7 (39.4–39.9) | |
| Alentejo | 47.8 (47.2–48.4) | | 21.2 (20.4–22.0) | | 43.7 (43.0–44.4) | | 26.8 (26.0–27.6) | | 41.7 (41.0–42.4) | | 38.3 (37.7–38.9) | |
| Algarve | 45.6 (44.8–46.5) | | 22.7 (21.6–23.7) | | 45.1 (44.2–46.0) | | 28.1 (26.9–29.2) | | 61.5 (60.6–62.3) | | 39.3 (38.3–40.2) | |
| Madeira Islands | 24.2 (22.7–25.8) | | 18.5 (16.8–20.2) | | 48.5 (47.2–49.7) | | 30.3 (28.6–32.0) | | 21.8 (20.1–23.6) | | 31.5 (30.0–32.9) | |
| Azores Islands | 46.2 (44.7–47.6) | | 20.5 (18.6–22.4) | | 56.3 (54.8–57.7) | | 47.9 (46.2–49.6) | | 40.5 (38.5–42.5) | | 39.8 (38.3–41.3) | |

Abbreviation: CI, confidence interval. Note: High school is 12 complete education years; higher education is having at least a bachelor's degree.
[a]Percentage refers to "frequently" or "always" responses. [b]Walking instead of using transportation. [c]Parking away from your destination. [d]Using stairs instead of escalators. [e]Choosing handwork instead of mechanic/automatic. [f]Using work breaks to be physically active. [g]Choosing to stand-up instead of sitting.

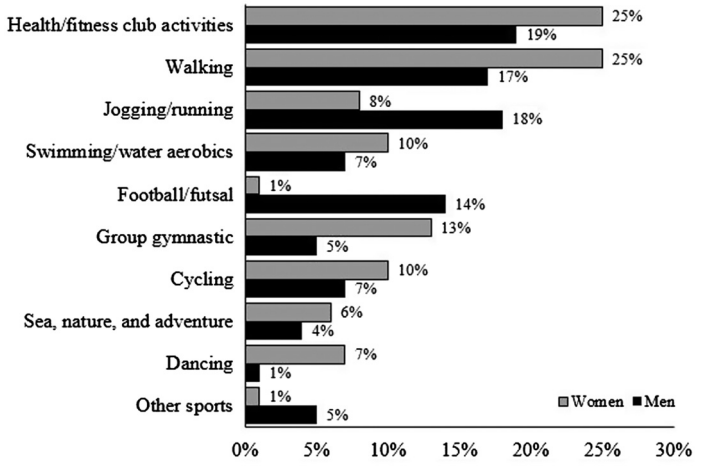


**Figure 1** — Preferred leisure-time physical activities in Portuguese adults, by sex. Note: Activities are sorted by descending order of preference.

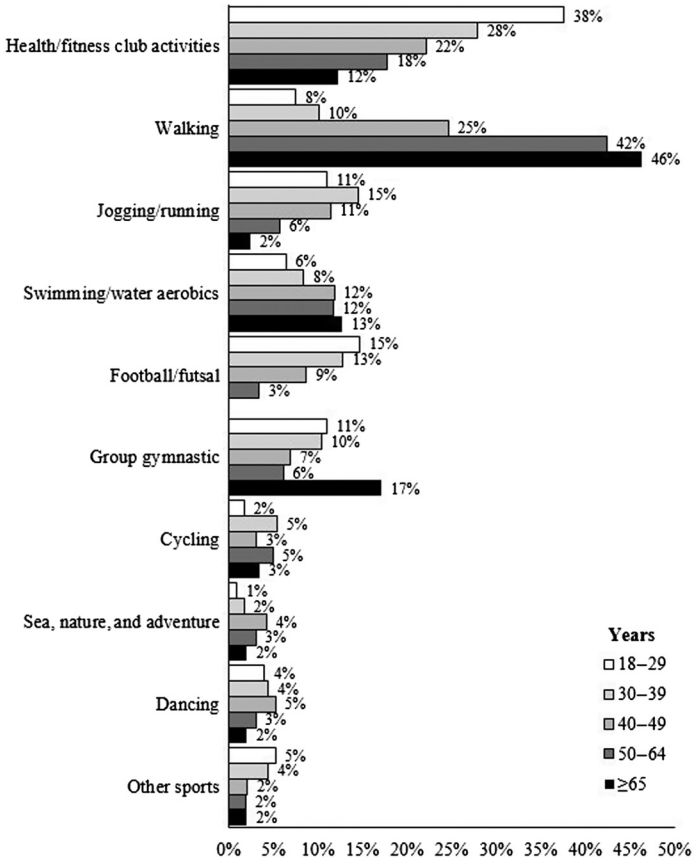


**Figure 2** — Preferred leisure-time physical activities in Portuguese adults, by age group. Note: Activities are sorted by descending order of preference.

were more popular for those aged 18–29 years (38%) and 30–39 years (28%), by comparison with older individuals (12%; $P < .001$), and football and other sports were virtually absent from the preferences of older individuals (<1%). Conversely, gymnastics classes were more prevalent in the older group (17%) than in the younger groups ($P < .001$).

## Discussion

Using self-reported data, this study describes the level of physical activity, opportunistic nonsedentary behaviors, and leisure-time activity preferences in a nationally representative sample of Portuguese adults. Main results show that about 42% of Portuguese adults (41% of younger adults and 47% of older adults) report low or very low levels of physical activity, most likely not sufficient for any health benefits. Only about one quarter of Portuguese adults (27% total, 28% of younger adults, and 23% of older adults) were included in the high active category and should meet or surpass physical activity recommendations of a minimum of 150 minutes of moderate or vigorous activity per week.[21] The remaining 31% (31% of younger adults and 30% of older adults) report a level of activity which may or may not meet recommendations but could nevertheless still improve their health. On average, Portuguese adults report walking about half an hour per day and spending more than 5 hours sitting. We could not detect a clear association between physical activity level and education level, but age was negatively associated with activity while men were clearly more active than women.

If we consider the "moderate" and "high" IPAQ categories together, their prevalence (57.7%) is relatively similar to what was observed in other countries such as in Australia,[22] Canada,[23] the United States,[24] and among European adults in general.[13] On the other hand, the prevalence of physical activity was lower when compared with individuals from middle and lower income,[25,26] suggesting that individuals from higher income countries may be less active.[26] In interpreting these results, the fact that IPAQ tends to overestimate physical activity[27] needs to be considered. In the present investigation, and for the entire sample, moderate and vigorous self-reported activity minutes had a mean value above 600 minutes per week, a clear indication of such effect. For example, this contrasts with data from a 2009 study in Portugal, using accelerometry, where the most active group (males 40–49 y old) showed about 340 weekly minutes in similar intensities.[14] On the other hand, the percentage of adults classified as high in the present study (27%) is closer to the percentage of individuals aged 15 and older estimated to meet World Health Organization recommendations (23%) based on the 2014 Eurobarometer survey.[28] Also, a recent reanalysis of the 2008 accelerometry national data for Portugal concluded that only 21% of adults were above the World Health Organization recommended levels of activity.[16]

Similar to other studies,[24,25,29] men were more active than women in the present survey. This could be due to physical activity being a higher priority for men, men perceiving lower barriers to be physically active, or it could also be due to the intensity of preferred physical activities between genders. Considering only leisure-time activities, men seem to prefer activities such as running, football, cycling, and other competitive sports, whereas women are more likely to choose activities such as walking and taking classes (in fitness clubs or in other settings) where intensity may be lower. A different possible explanation is that differences between men and women are partially due to physical activity performed while commuting, because there is evidence that women are more likely than men to walk to and from work.[30,31]

The prevalence of (higher levels of) physical activity decreased with age, which is also in line with previous studies.[12,29] As age increases, individuals tend to engage preferentially in light- and moderate-intensity activities, especially walking[32,33] and perhaps also gymnastics, including water activity groups. Furthermore, older individuals may not be able to drive and

therefore use active transportation more frequently than younger adults, as observed in the prevalence of walking instead of using transportation. From a public health perspective, the fact that walking is the preferred mode of activity in older individuals clearly suggests that this should be a key policy target. It is important that older individuals remain physically active to benefit from the diverse physical and mental health effects of exercise and daily physical activity.[6,9–11]

Although education level was statistically associated with level of physical activity, interpreting this relationship is not straightforward as individuals classified in the lowest education level had a higher prevalence of frequencies in both the "low" and "high" activity categories. A review of the literature finds studies where the more highly educated individuals choose to exercise more than less educated individuals[34,35] but also studies where this relationship was not observed.[36,37] Currently, the relation between educational level and physical activity is not entirely understood, and future studies will improve the understanding of this relationship.

The present investigation is innovative in 2 ways. First, because it describes leisure-time activity preferences of Portuguese adults across a large range of options, something which has not been reported before. Second, because it provides the first set of epidemiological national-level data for a new measure of physical activity—the activity choice index—which assesses the prevalence of a set of discrete nonsedentary behaviors of daily life. Several of these behaviors, such as taking the stairs instead of the elevator or taking active breaks during work, are often included in campaigns to increase physical activity, but there has not been a systematic effort to measure their adoption in the population or assess how they are distributed across groups. We now have "baseline" information for 6 of these behaviors and can report that some—using the stairs, choosing to stand instead of sitting (eg, while waiting to be called)—are more common than others, such as parking further away from one's destination or choosing to do manual work when an automatic option is available. Also, men are more likely to stand-up while waiting and to take breaks from work, whereas women more likely to park further way and engage in manual work. Individuals in the north of Portugal have a 20% higher prevalence of using stairs in daily life (instead of elevators) compared with inhabitants of the greater Lisbon area.

The current investigation had strengths and limitations that should be considered. The major strength of the study is the inclusion of a large and representative sample size of the Portuguese adults, which was investigated via direct interviews. Within the scope of any surveillance and monitoring system, it is worth noting the comparability and the sensitivity of the methods. The main limitation is that physical activity was self-reported rather than objectively measured, which could be subject to bias. This investigation used self-reported measures to capture prevalence estimates, but these may not be directly comparable to those found with objectively measured movement as the criterion.[38] Instead, they should be seen as complementary as differences between these methods tend to be dependent of physical activity intensity levels, gender, age, education,[39,40] and also social desirability.[41] However, there is evidence that social desirability accounts for only a small variance in physical activity.[42] The cross-sectional study design does not allow causal inferences to be made regarding determinants of physical activity in Portuguese adults.

In summary, 42% (41% of adults and 47% of older adults) reported a level of physical activity clearly not enough to benefit their health. An additional 31% may also fall below population-wide physical activity recommendations[21] or levels sufficient to attenuate the detrimental effect of sitting time.[43] Perhaps, some individuals who are low active might think that they do not need more physical activity because they overestimate their physical activity levels.[44] On the other hand, they may also have relatively limited knowledge of physical activity recommendations or how activity and sedentary behaviors relate to health and well-being.[45] Therefore, promoting all forms of physical activity at the population level must remain a priority in Portugal.

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