

Contribution of walking, moderate and vigorous physical activity to total physical activity amongst Portuguese adults



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Introduction and Aim

Leading an active lifestyle is one of many lifestyles' variables which influence the incidence and prevalence of non-transmissible chronic diseases. The knowledge about the contribution of different kinds of physical activity to the total physical activity practice may help drawing future interventions.

The aim of this study was to evaluate the determinants of higher percentual contribution of walking, moderate and vigorous physical activity to total physical activity among the Portuguese adult population.

Participants and Methods

Data from the first phase of the study "Portuguese Population's Food Habits and Lifestyles" (2009) were used. A national representative sample of 3529 Portuguese adults was interviewed at home between February and April 2009. The present analysis is carried out in 2459 subjects due to incompleteness of 970 records.

Physical activity was evaluated by the International Physical Activity Questionnaire (IPAQ; Craig et al. 2003). BMI categories were used according to WHO (1998). Binary logistic regression models were computed to estimate the odds of higher (above median) percentual contribution of (1) walking, (2) moderate physical activity and (3) vigorous physical activity among Portuguese adults according to their sex, age and education levels, civil status, professional occupation, region of residence, BMI category and smoking habits (OR adjusted for all other variables).

| | Walking PA Median (%) | OR adj (95%CI) | Moderate PA Median (%) | OR adj (95%CI) | Vigorous PA Median (%) | OR adj (95%CI) |
|--------------------------------|--------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|
| SEX | | | | | | |
| Female | 38.2 | 1 (reference) | 23.3 | 1 (reference) | 0.0 | 1 (reference) |
| Male | 29.2 | 0.608 (0.508 0728) | 19.8 | 0.966 (0.806 1159) | 34.3 | 2.352 (1.921 2880) |
| AGE | | | | | | |
| 18 -29years | 29.2 | 1 (reference) | 16.4 | 1 (reference) | 45.1 | 1 (reference) |
| 30 -44years | 30.6 | 0.840 (0.619 1141) | 25.4 | 1.161 (0.849 1588) | 26.1 | 0.766 (0.549 1069) |
| 45 -64years | 30.6 | 0.838 (0.606 1158) | 26.3 | 1.402 (1.004 1957) | 10.5 | 0.598 (0.422 0848) |
| ≥ 65 years | 62.3 | 2.064 (1.305 3262) | 20.7 | 0.971 (0.610 1544) | 0.0 | 0.288 (0.177 0469) |
| EDUCATION LEVEL | | | | | | |
| < 4th grade | 68.8 | 0.768 (0.485 1215) | 2.5 | 1.084 (0.691 1701) | 0.0 | 0.488 (0.296 0804) |
| 4th grade completed | 39.1 | 0.846 (0.619 1158) | 25.7 | 1.181 (0.859 1625) | 0.0 | 0.529 (0.381 0734) |
| 6th grade completed | 42.5 | 1.260 (1.896 1772) | 26.5 | 1.463 (1.025 2087) | 0.0 | 0.484 (0.339 0691) |
| 9th grade completed | 35.5 | 1.451 (1.134 1856) | 15.7 | 0.814 (0.634 1046) | 25.0 | 0.573 (0.438 0750) |
| 12th grade completed | 33.1 | 1.485 (1.166 1891) | 21.2 | 1.341 (1.044 1722) | 34.2 | 0.632 (0.488 0826) |
| Bachelor/university | 26.3 | 1 (reference) | 23.0 | 1 (reference) | 39.2 | 1 (reference) |
| CIVIL STATUS | | | | | | |
| Married | 35.5 | 1 (reference) | 25.7 | 1 (reference) | 8.8 | 1 (reference) |
| Single | 29.2 | 0.791 (0.605 1036) | 16.9 | 0.853 (0.648 1122) | 43.8 | 1.219 (0.914 1627) |
| Separated/divorced | 33.3 | 0.996 (0.744 1332) | 20.7 | 0.650 (0.484 0873) | 22.5 | 1.379 (1.018 1867) |
| Widowed | 55.3 | 1.057 (0.775 1443) | 19.6 | 0.725 (0.538 0985) | 0.0 | 0.753 (0.538 1054) |
| PROFESSIONAL OCCUPATION | | | | | | |
| Active | 29.6 | 1 (reference) | 24.7 | 1 (reference) | 25.7 | 1 (reference) |
| Student | 29.2 | 1.010 (0.734 1389) | 16.4 | 0.769 (0.555 1066) | 46.4 | 2.780 (1.866 4141) |
| Unemployed | 32.5 | 1.104 (0.807 1511) | 17.4 | 0.783 (0.567 1082) | 26.5 | 1.266 (0.908 1775) |
| Housewife/househusband | 45.2 | 1.177 (0.792 1749) | 22.4 | 0.843 (0.562 1266) | 0.0 | 0.581 (0.374 0904) |
| Retired | 51.3 | 1.337 (0.958 1877) | 22.4 | 1.129 (0.796 1603) | 0.0 | 0.699 (0.491 0996) |
| REGION OF RESIDENCE | | | | | | |
| Norte | 32.5 | 1 (reference) | 27.4 | 1 (reference) | 20.6 | 1 (reference) |
| Centro | 45.2 | 1.953 (1.548 2464) | 0.0 | 0.214 (0.168 0217) | 22.6 | 1.106 (0.861 1421) |
| LVT | 29.2 | 0.819 (0.678 0988) | 23.6 | 0.802 (0.660 0973) | 28.3 | 1.492 (1.209 1842) |
| Alentejo | 48.4 | 1.467 (0.985 2183) | 0.0 | 0.343 (0.232 0508) | 0.0 | 0.548 (0.354 0849) |
| Algarve | 42.2 | 1.537 (0.900 2625) | 15.3 | 0.445 (0.268 0752) | 0.0 | 0.639 (0.357 1144) |
| Madeira | 55.9 | 1.851 (1.062 3225) | 13.6 | 0.409 (0.239 0698) | 0.0 | 0.447 (0.244 0817) |
| Açores | 34.5 | 1.043 (0.565 1925) | 0.0 | 0.324 (0.175 0599) | 0.0 | 0.797 (0.406 1564) |
| BMI CATEGORY | | | | | | |
| Underweight (< 18.50) | 34.8 | 1.303 (0.700 2426) | 13.6 | 0.799 (0.428 1508) | 28.7 | 0.469 (0.241 0914) |
| Normal (18.50 -29.99) | 29.2 | 1 (reference) | 21.5 | 1 (reference) | 33.1 | 1 (reference) |
| Pre obesity (25.00 -29.99) | 38.2 | 1.606 (1.329 1941) | 22.3 | 0.900 (0.742 1090) | 15.5 | 0.802 (0.652 0887) |
| Obesity (≥ 30.00) | 46.3 | 1.634 (1.204 2217) | 18.0 | 0.657 (0.484 0891) | 0.0 | 0.418 (0.298 0586) |
| SMOKING HABITS | | | | | | |
| Never smoked | 36.0 | 1 (reference) | 18.8 | 1 (reference) | 18.2 | 1 (reference) |
| Ex smoker | 28.4 | 0.721 (0.565 0921) | 25.4 | 1.087 (0.848 1393) | 20.1 | 1.229 (0.946 1596) |
| Smoker | 32.5 | 1.058 (0.871 1286) | 24.6 | 1.277 (1.048 1564) | 27.0 | 0.882 (0.710 1095) |

Table 1. Determinants of higher percentual contribution of walking, moderate and vigorous physical activity (PA).

Results and Discussion

Table 1 shows the results of the three binary logistic regression models computed to estimate the odds of higher contribution of each kind of physical activity.

Women have higher contribution to total physical activity from walking and men from vigorous physical activity. Older subjects have higher contribution from walking and lower from vigorous physical activity. Normal weight subjects have higher contribution from vigorous physical activity (vs. all other BMI categories) and overweighted and obese have higher contribution from walking (vs. normal weighted). All other studied variables were significant determinants of the contribution of at least one kind of physical activity.

The contribution of different kinds of physical activity to total physical activity should be taken into account while making recommendations to promote the practice of physical activity.

References

Craig CL, Marshall AL, Sjöström M, Bauman AE, Booth ML, Ainsworth BE, Pratt M, Ekelund U, Yngve A, Sallis JF, Oja P. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc* 2003; 35: 1381-95.

WHO. Obesity: preventing and managing the global epidemic. Report of a WHO consultation on obesity. Geneva: World Health Organisation; 1998.

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